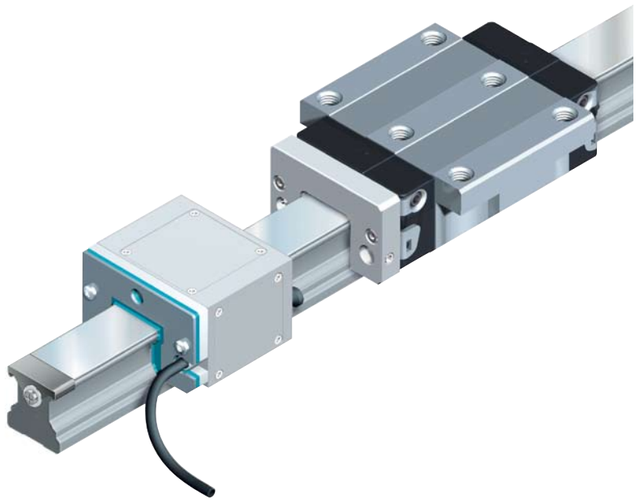
Inductive
- Contact-free scanning ensures zero maintenance
- Resistant to water, oil, dust, shavings, etc.
- Insensitive to magnetic fields
- Virtually indestructible
- One-piece guide rails: Standard length up to 4000 mm, special orders up to 4500 mm
- Several sensor units can be mounted on one rail

Incremental
- Precise position detection through a high-precision scale paired with distance coded reference marks or a single reference mark
- High resolution, up to 0.25 µm



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Bosch Group

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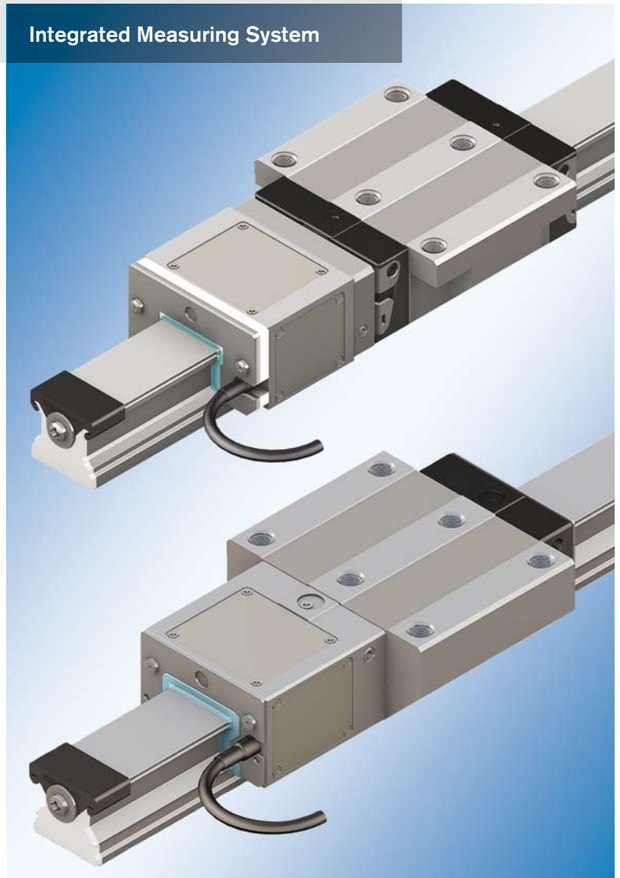
All-in-One Guiding and Measuring

Integrated Measuring System



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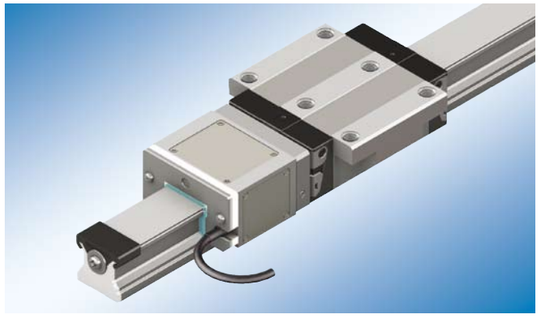
Precise, direct, robust

Position measuring systems should ideally satisfy three main requirements: They should be easy to use, deliver precise measurements, and be robust enough to operate in harsh environments. The Integrated Measuring System for Ball and Roller Rail Systems from Rexroth offers all of these features – plus the benefit of being an all-in-one system.

Fully integrated
The guide system and the measuring system form one unit, building on standard guide elements. The measuring system is fully integrated and requires no additional space, which simplifies design and installation. As a non-contacting system it delivers highly precise measurement data. And because it measures the position directly on the rail, there is no need for complex algorithms to compensate for parallelism offsets.
A further major advantage is that the system meets the requirements of protection class IP 67, which makes it ideal for harsh production environments.

The sensor is mounted to the runner block via an adapter, so that it can be replaced separately if required during any servicing of the Integrated Measuring System.

Features of Rexroth's Integrated Measuring System

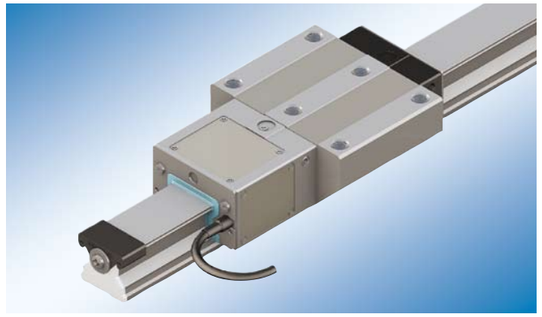


Ball Rail Systems

The sensor is mounted on an adapter plate. If servicing is required, the adapter plate allows Rexroth service engineers to replace the sensor without having to remove the runner block. The sensor fastening screws must, however, be accessible and there must be sufficient clearance at the end of the rail for pulling the sensor off.

Product details

Signal type	1 V_{pp} / TTL
Sizes	20, 25, 30, 35, 45
Accuracy class	P
Preload	0.08 C
Other accuracy and preload classes on request	
Versions	Flanged, normal, standard height, FNS Flanged, long, standard height, FLS Slimline, normal, standard height, SNS Slimline, long, standard height, SLS Slimline, normal, high, SNH (except size 20) Slimline, long, high, SLH (except size 20)



Roller Rail Systems

The sensor and runner block form one unit and must be replaced together when being serviced.

Product details

Signal type	1 V_{pp} / TTL
Sizes	35, 45, 55, 65
Accuracy class	SP
Preload	0.08 C / 0.13 C
Accuracy class P on request	
Versions	Flanged, normal, standard height, FNS Flanged, long, standard height, FLS Slimline, normal, high, SNH Slimline, long, high, SLH

Accuracy of the measuring system

Pitch accuracy at 20°C	Interpolation	System accuracy
± 3 µm	± 3 µm	± 6 µm
± 5 µm	± 3 µm	± 8 µm
± 10 µm	± 3 µm	± 13 µm
± 30 µm	± 3 µm	± 33 µm

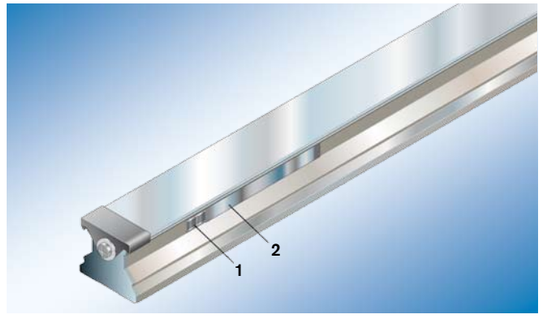
The pitch accuracy is the maximum deviation from the mean of any position over a measuring distance of 1 m, expressed in ± a (µm). Four different pitch accuracies are available.

The system accuracy is composed as follows:
- Scale pitch accuracy + guideway accuracy
- Deviation of the interpolation (± 3 µm)

Technical Data

Resolution with TTL signal	0.25	1	5	10 µm
Repeatability	2	2	5	10 µm
Interpolation accuracy at 5 V and 20°C	± 3	3	3	3 µm

Max. travel speed	5 m/s at resolution 5 µm; 10 µm, 1 V_{pp} 0.5 m/s at resolution 0.25 µm 1 m/s at resolution 1 µm		
Vibration (55 – 2000 Hz)	≤ 100 m/s²		
Shock (11 ms)	≤ 500 m/s²		
Max. one-piece rail length	4000 mm (standard) 4500 mm (special order)		
Enclosure (DIN EN 60529)	IP 67		
Operating temperature	0 to 50°C		
Storage temperature	-10 to 70°C		
Power supply	5 V (+5% / -3%)		
Power consumption	1 V_{pp}:	250 mA	
	TTL 5 µm; 10 µm:	400 mA	
	TTL 0.25 µm; 1 µm:	350 mA	
		Standard	Ext.
Voltage drop (for standard cable / extension cable per 1 m length)	1 V_{pp}:	60 mV	20 mV
	TTL 5 µm; 10 µm:	100 mV	30 mV
	TTL 0.25 µm; 1 µm:	80 mV	25 mV



Guide rail with integrated scale

Choice of single reference mark or distance coded reference marks over the entire rail length.

1) Steel scale integrated in the guide rail, covered by a laser-welded stainless steel strip:
   - Insensitive to vibration
   - Thermal expansion matches that of the rail, guaranteeing consistently accurate measuring data
   - Non-magnetic, suitable for metalcutting machine environments

2) Scale and distance coded reference marks protected by laser-welded stainless steel strips

Mounting hole patterns of guide rail and runner blocks identical to those of standard components.

For design and ordering details, please refer to our catalog Integrated Measuring System R310EN 2350.