

Four-row ball guidance system KUV...-B with inductive measuring system

These linear recirculating ball bearing and guideway assemblies comprise a carriage with an adapted measuring head and a guideway for location of the dimensional scale and covering strip, *Figure 1*. They expand on the advantages of the proven linear recirculating ball bearing and guideway assemblies KUV... without a measuring system by the direct measurement of travel distances.

Mechanical element

The mechanical element corresponds to the KUV...-B. The units can support forces from all directions and moments about all axes, are preloaded and have high accuracy, rigidity and load carrying capacity. The maximum travel speed of the carriage is 300 m/min. The housing containing the integrated measuring head is fixed to one side of the linear recirculating linear ball bearing and guideway assembly, *Figure 1*. The dimensional scale (tape measure unit) is fixed in a slot in the guideway and protected by means of a covering strip.

Measuring system

The measuring system directly measures the distance covered (displacement distance) by means of scanning, irrespective of the quality of the drive. It has no magnetic parts and is therefore completely unaffected by disruptive electromagnetic fields. Furthermore, it exhibits no hysteresis. The system delivers an analogue signal with a subdivided signal period up to 10 μm . The electronic evaluation system is integrated in the scanning head. Technical data on the inductive measuring system: see table.

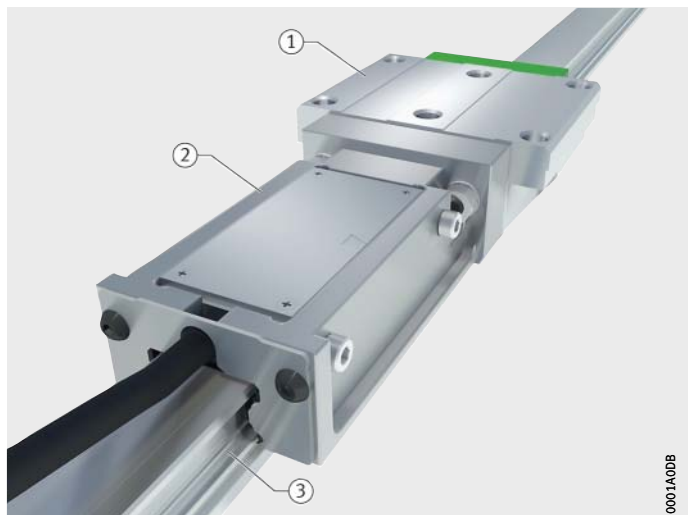
Applications

The integrated measuring system is suitable for use in:

- machine tools
- direct drives
- sheet metalworking machines
- automatic assembly machines
- measuring machines
- medical equipment
- printing machinery
- assembly and handling axes etc.

- ① Carriage
- ② Adapted measuring head
- ③ Guideway with dimensional scale and covering strip

Figure 1
KUV...-B with integrated inductive measuring system



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Technical data for the inductive measuring system

Features	Technical data
Measurement principle	Inductive
Type of measurement	Incremental
Operating voltage	5 V DC $\pm 5\%$
Cable length	9 000 mm with 12 pin CONNEI coupling, other designs available by agreement
Accuracy	$\pm 15 \mu\text{m/m}$ without compensation
	$\pm 3 \mu\text{m/m}$ after compensation
Output signal	Sine $1 V_{SS}$
Signal period	0,02 mm
Pitch factor	25
Pitch period	500 μm
Maximum travel speed	5 m/s
Distance between strip and sensor	$0,1 \pm 0,05 \text{ mm}$
Temperature range	Operating temperature $-10 \text{ }^\circ\text{C}$ to $+100 \text{ }^\circ\text{C}$
	Storage temperature $-30 \text{ }^\circ\text{C}$ to $+80 \text{ }^\circ\text{C}$
Protection class	IP67
Vibration	$< 200 \text{ m/s}^2$ at 55 Hz to 2 000 Hz
Shock	$< 2 000 \text{ m/s}^2$ at 6 m/s



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