

## Solutions for Linear Measurement



- **Magnetic Linear Measurement Systems**  
*LIMES*
- **Draw Wire Sensors from Mini to Maxi**
- **Measuring Wheels, Length Measurement Kits**

■■■ *pulses for automation*

# Linear Measurement Technology

Solutions for all applications



Long Service Life



max. acceleration



Temperature



High IP Value



Mechanical gear



Shock/Vibration resistant



**Kübler offers 3 technologies for professional positioning and measurement of length and displacement in industrial applications.**

■ **Magnetic Measurement Systems**

Very compact solution for contact-free sensing in industrial applications.

- Non-contact technology, high shock and vibration resistance
- Optimal protection due to metal housing
- Status LED for index signal and error

■ **Draw wire sensors**

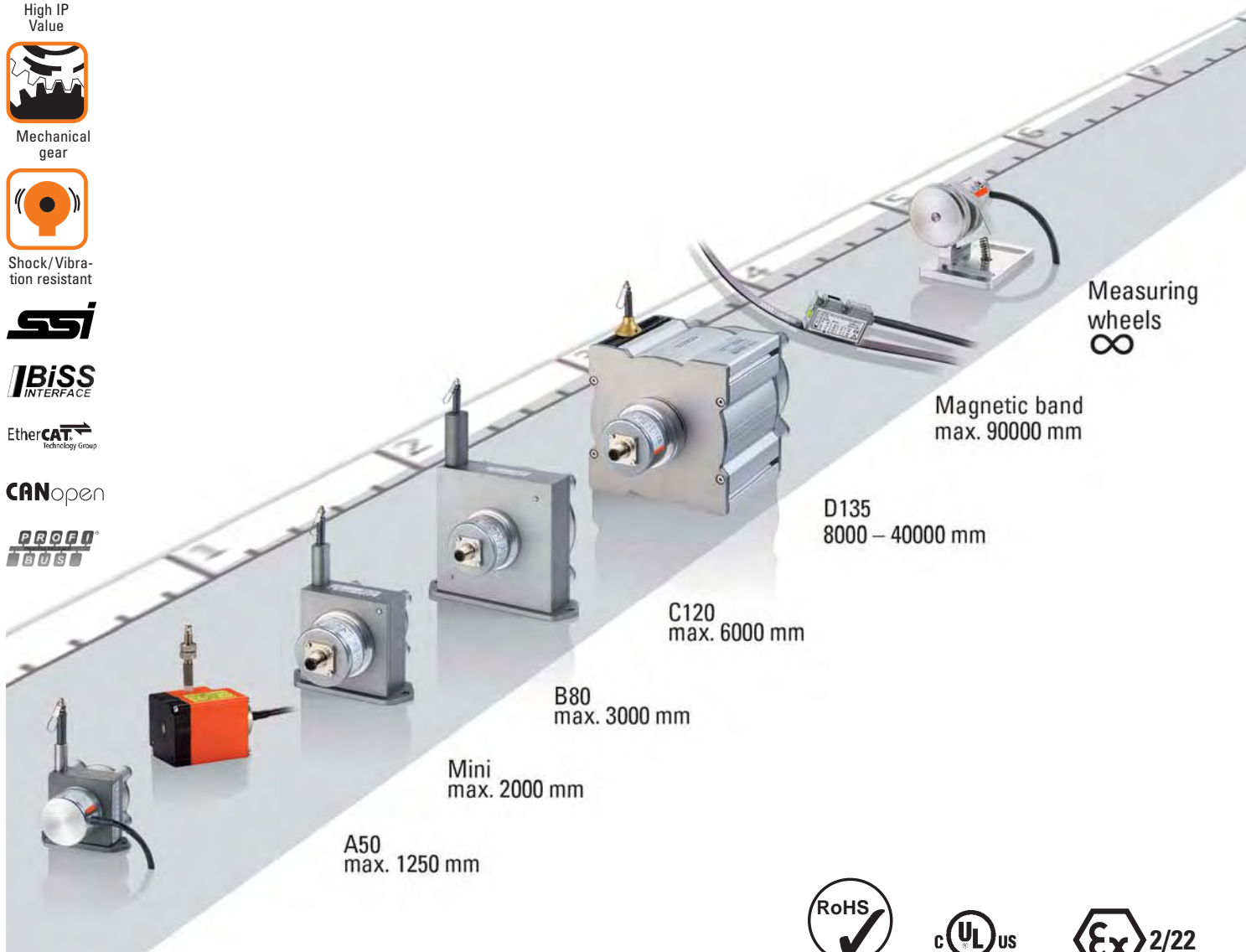
Especially for demanding applications, e.g. in machine building industry.

- Very robust system, high speed, long service life
- High acceleration
- Measurement length from 250 mm ... 40 000 mm

■ **Measuring wheel systems**

For measurement of moving objects.

- Complete solution, easy mounting
- Fast and easy to set up



# Linear Measurement Technology

## Magnetic Measurement System



### Linear Measurement Systems *LIMES LI 20/B1, LIMES LI 50/B2*



Shock/  
vibration  
resistant



High IP  
value



Reverse  
polarity  
protection

#### New measurement systems LI 20/LI 50

The measuring system offers an economical alternative to optical systems in applications where the high accuracy of glass scales is not absolutely necessary but where up till now no other suitable alternative has been available.

#### The compact solution for linear applications:

- Easy installation
- Resolutions from 0,005 mm ... 1 mm
- Very high repeat accuracy
- Non-contact magnetic measurement system:
  - Free from wear
  - No errors caused by backlash or play
  - Resistant against oil, dust, grease or liquids
- Optimal protection due to metal housing
- Status LED for index signal and error
- Installation depth 10 mm, Installation height 28 mm
- High tolerances (see drawings below)

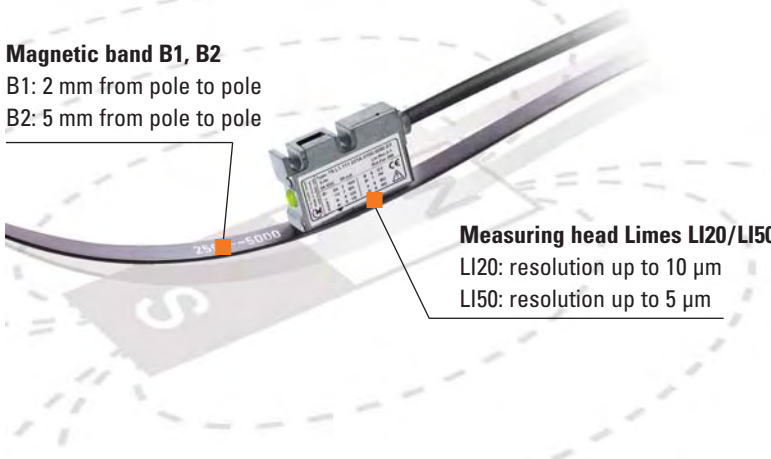
#### Application examples:



#### Magnetic band B1, B2

B1: 2 mm from pole to pole

B2: 5 mm from pole to pole

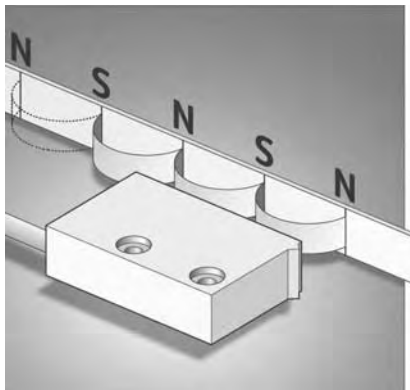


#### Measuring head Limes LI20/LI50

LI20: resolution up to 10 µm

LI50: resolution up to 5 µm

Status LED

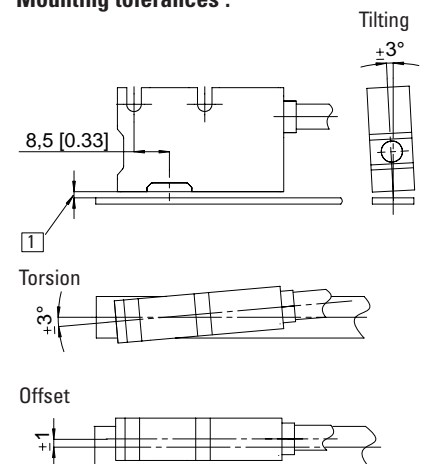


#### Functional principle:

A magnetic sensor is guided across a magnetic band without coming into contact with it, the system is thus free from wear.

- 1 The distance between the magnetic band and the sensor head can be
- 0,1 ... 1,0 mm for LI20 / B1
  - 0,1 ... 2,0 mm for LI50 / B2

#### Mounting tolerances :



# Linear Measurement Technology

## Draw wire encoders

### Draw wire encoders A 50, B 80, C 120, D 135



Long service life



Shock/vibration resistant



Reverse polarity protection



Temperature



max. acceleration

#### ■ Robust

- Insensitive to the environment, Titanium-anodised aluminium housing
- High-resistance wire, stainless steel
- Wire exit free from wear
- Diamond-polished ceramic

#### ■ Dynamic

- High traverse speed
- High acceleration
- Dynamic spring traction by means of a constant force spring
- Long service life, approx. 2 million complete cycles

#### ■ Versatile

- Fast and easy installation
- Flexible connection possibilities: cable, M12 connector, radial, axial
- Suitable for various sensors/encoders: Incremental, Analogue, Absolute, Fieldbus

Simple wire fixing using clip

**Sendix**

Suitable for outdoor applications (Sensor up to IP67)



Titanium-anodised aluminium housing, Insensitive to the environment

Flexible mounting solutions

### A 50: up to 1250 mm

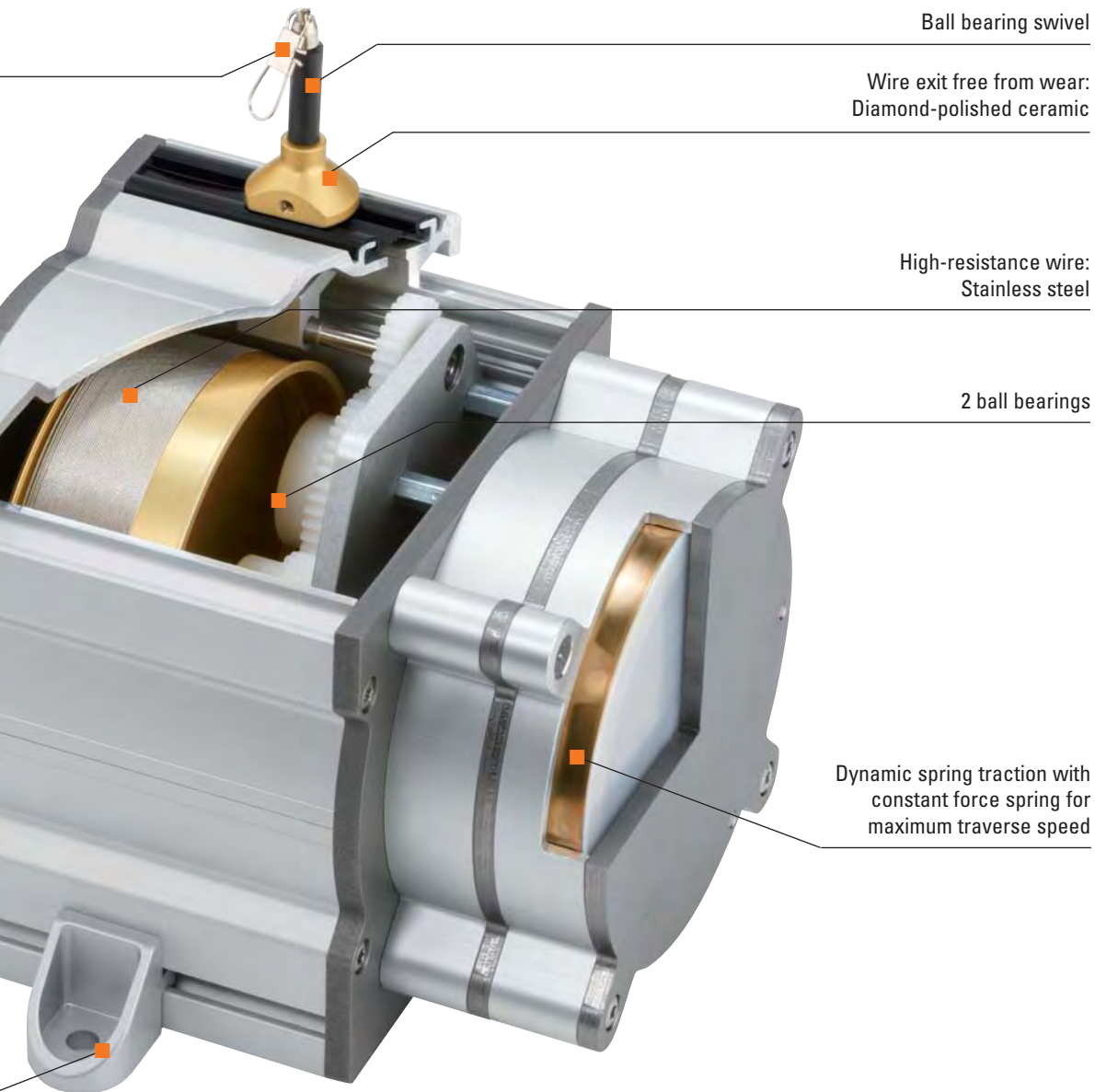


- Traverse speed max. 10 m/s
- Acceleration max. 100 m/s<sup>2</sup>
- Size: 50 x 50 mm
- Easy fixing with 2 screws
- Linearity up to: 0,05 %
- Temperature max. -20 ... +85 °C

### B 80: up to 3000 mm



- Traverse speed max. 10 m/s
- Acceleration max. 140 m/s<sup>2</sup>
- Size: 80 x 80 mm
- Easy fixing with 2 screws
- Linearity up to: 0,05 %
- Temperature max. -40 ... +90 °C



Ball bearing swivel

Wire exit free from wear:  
Diamond-polished ceramic

High-resistance wire:  
Stainless steel

2 ball bearings

Dynamic spring traction with  
constant force spring for  
maximum traverse speed

Application examples:



**C 120: up to 6000 mm**



- Traverse speed max. 10 m/s
- Acceleration max. 140 m/s<sup>2</sup>
- Size: 120 x 120 mm
- Easy fixing with 2 screws
- Linearity up to: 0,05 %
- Temperature max. -40 ... +90 °C

**D 135: up to 40000 mm**



- Traverse speed max. 5 – 10 m/s
- Acceleration max. 140 m/s<sup>2</sup>
- Size: 135 x 135 mm
- Easy fixing with 2 screws
- Linearity up to: 0,05 %
- Temperature max. -40 ... +90 °C

# Linear Measurement Technology

## Draw wire encoders and measuring wheel systems

### Mini draw wire

#### Mini draw wire encoder

- Compact draw wire encoder with incremental or analogue output
- Measuring range max. 2000 mm
- Traverse speed max. 0.8 m/s
- For easy applications
- Stainless steel rope



### Length Measuring System: measuring wheel and encoder

For direct detection on the running material or conveyor belt

#### Measuring wheel system

- New fixing solution for measuring wheels permits freely adjustable contact pressure
- Can be mounted in all positions
- Allows for greater distance between wheel and running material
- Measuring point can also be in the centre
- Can be combined with all standard encoders (Incremental, SSI, Fieldbus,...)



### Mini Measuring Wheel System

- With incremental interface
- Very compact (74 mm x 50 mm x 52 mm)
- Simple to install: one unit. Screw on, connect, ready



### Displacement measuring device

- Encoder (Incremental, Absolute, Fieldbus)
- Preset counter for simple control tasks, display and voltage supply for the encoder
- Flexible, spring-loaded holding device for encoder, ensures optimal pressure and protects the encoder shaft



# Encoder Solutions

Fit for any use



## Sendix<sup>®</sup>



Safety-Lock™



High shaft load



High speed



Temperature



High IP value



Mechanical gear



Shock/Vibration resistant



Magnetic field resistant



Short-circuit proof



Reverse polarity protection

### The Sendix encoder technology for draw wire systems and measurement wheels: Incremental, Absolute Singleturn and Multiturn, Fieldbus

#### ■ Safe

The sturdy Safety-Lock™ Design bearing construction and the magnetic-field resistant technology eliminate machine downtime and repairs.

#### ■ Fast

Very high clock frequency (up to 10 MHz), short control cycles, quick start-up.

#### ■ Versatile and compact

The unique modular concept allows for an undreamt of array of versions. Through hollow shafts up to 15 mm in 58 mm or 50 mm sizes. Highly compact construction.



## Request additional catalogues

### ■ Position and Motion Sensors

- Incremental Encoders
- Absolute and Fieldbus Encoders
- Draw-wire Systems
- Linear Measuring Systems
- Inclinometers



### ■ Connector and Signal Transmission Technology

- Slip Rings
- Fibre Optic Module
- Cables, Connectors and Cable Assemblies

### ■ Display and Control

- Display and Preset Counters
- Timers, Frequency Meters and Tachometers
- Process Displays and Controllers
- Time and Energy Meters



### ■ OEM Products and Systems

- Customised Display, Measurement and Control Components
- Complete Systems Solutions: Sensor Technology, Electronics, Mechanics



Fritz Kübler GmbH  
Zähl- und Sensortechnik

■■■ pulses for automation