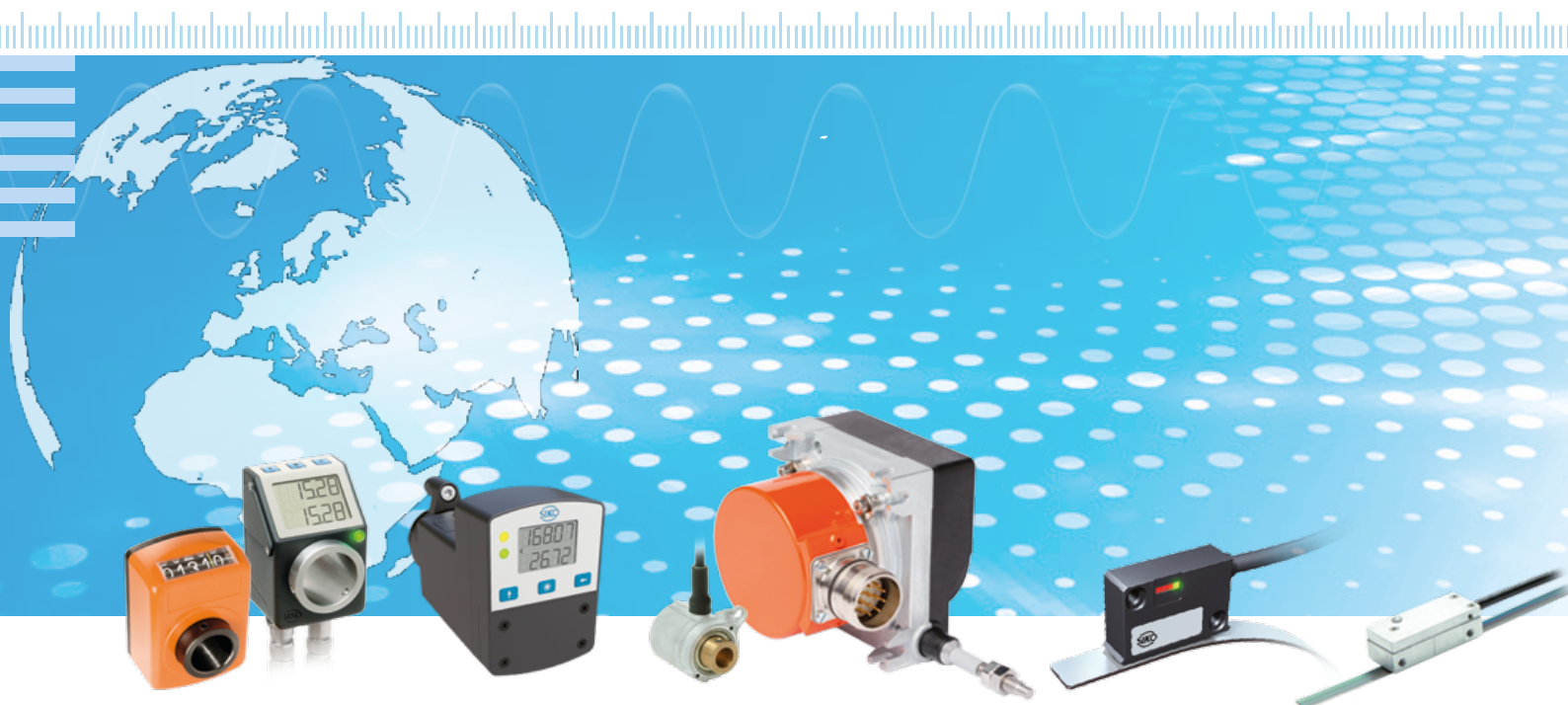


SIKO | Product Overview



Measuring systems for length, angle and speed

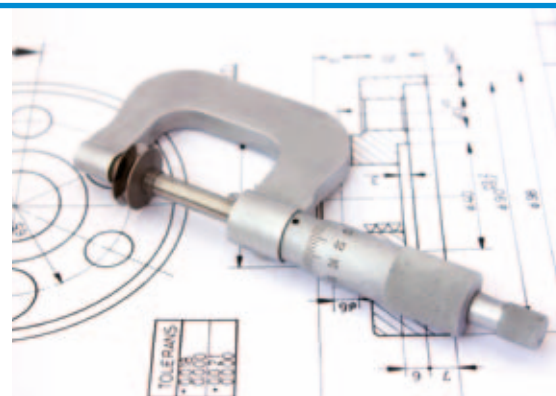
Positioning systems OEM / Retrofit

Actuators

Technical advancement and long-standing competence:

Today SIKO signifies more than five decades of experience in length, angle and speed metrology. The highest demands of our customers in both the industry and the mechanical engineering sectors result in the outstanding quality, precision and functionality of our products and services.

SIKO is certified to DIN EN ISO 9001 : 2008. Careful handling of raw materials and resources is a matter of course.



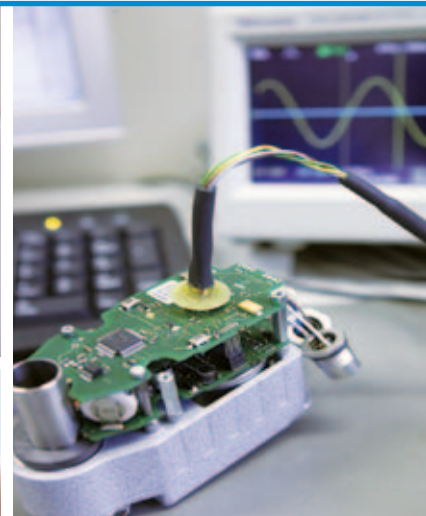
Company Profile 4

Product lines

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Global success is no coincidence

The measuring technology from Buchenbach at the edge of the Black Forest is well represented around the world and throughout the entire mechanical engineering sector.

Around 60 agencies ensure that our customers have access to direct contacts and technical support both at home and abroad.

The four successful subsidiaries in the United States, China, Switzerland and Italy are the cornerstones of the global representation of SIKO GmbH.



Wide range of products

The SIKO product portfolio encompasses six product ranges:

- Digital position indicators and hand wheels (PositionLine)
- Rotary encoders, geared potentiometers and measurement indicators (RotoLine)
- Wire-actuated encoders (LinearLine)
- Actuators (DriveLine)
- Magnetic measuring systems (MagLine)
- Optical measurement systems (OptoLine)

Working for you

Around the world more than 220 SIKO employees are working for you today with a tremendous team spirit and in-depth know-how. All our committed teams are focused on „doing it better“ with the ambition and passion they need to get it right. The constant, healthy growth of SIKO GmbH is truly a team effort.

Visions for the future

Since 1990 Horst Wandres, a graduate industrial engineer and son of the company founder, has been leading the company with a vision for the future. Even today the company's course is being steadily plotted in Buchenbach for the coming decades.



1963

The initial product idea for a handwheel with an integrated analogue indicator.

Dr.-Ing. Günther Wandres founded SIKO GmbH.

1976

Introduction of the first digital position indicator DA08. Today SIKO is the global market leader in the area of position indicators.



1980

A milestone on the way to a global market: establishment of the subsidiary SIKO Products in the USA.

1982

Dawn of the electronic era of distance and angle measurement technology; development of measurement indicators and the first electronic hollow-shaft encoders.



1991

Introduction of the first electronic position indicator (DE09).

1992

Introduction of the magnetic measuring principle (MagLine) and wire-actuated encoders (LinearLine).

Quality features

At SIKO continuous product optimisation is a natural phenomenon. Competence, state-of-the-art equipment and resources guarantee the highest possible quality:

- End-to-end 3D-CAD construction
- Rapid Prototyping
- In-house trials and test laboratories for long-term tests and material testing
- Calculation programmes specifically designed for gear wheel optimisation
- Use of computerised systems for simulation and collision tests
- Quality management in compliance with DIN EN ISO 9001

Direct contact to our product specialists

We are here for you and offer:

- Qualified, personal advice
- Global accessibility at sales subsidiaries and agencies
- Technical support
- International trade fair attendance
- Multi-lingual website with download area for the latest catalogues, data sheets, 3D design data and much more.

Production site Germany – an advantage we like to pass on

SIKO relies on streamlined, resource-saving, high-tech production with prompt fulfillment of customers' wishes, thanks to well-coordinated, on-demand production mechanisms. In many sectors of industry, a high degree of automation can be found alongside specialized handwork.

SIKO GmbH is true to its tradition of manufacturing its products in Germany and Switzerland. Today and in the future we stand by our credo - Made in Germany / Swiss made.

The human factor

At SIKO you will find a motivated workforce, and its members identify themselves personally with the products they make. The necessary technical know-how and a dollop of pride in their own products are factors which should not be underestimated. Only with this spirit is it possible to produce outstanding products and ensure that even the "last 2 percent" are right.



Modern, structured production sites in Germany and Switzerland

1995

Introduction / development of the magnetic compact sensors.

1996

Introduction / development of magnetic, absolute length measurement.



2001

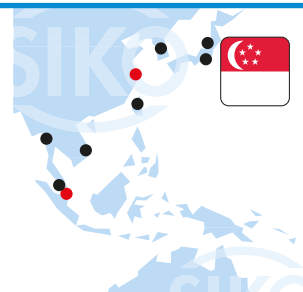
Debut of the new product family DriveLine.

2003 und 2005

On the way to key markets: Foundation of subsidiaries in Switzerland, Italy and China.

2011

Introduction of a new level of evolution of compact actuators with the SIKO AG05.



2013

Foundation of the Singapore affiliate.

2014

Introduction of the Optical Measurement Systems (Optoline)



2014

Mr Sven Wischnewski has been appointed as a Member of the Management Board to support Mr Horst Wandres.

PositionLine

SIKO is the inventor of the SIKO counter and the world leader in the mechanical-digital position indicator sector. The latest generation of SIKO programmable electronic indicators is a consistent further development of the versatile mechanical-digital position indicators and handwheels and also ensures an outstanding performance in bus-controlled applications.



Format change in packaging applications

Mechanical-digital position indicators

permit reliable numeric measured data indication and clear positioning of adjustment axes.

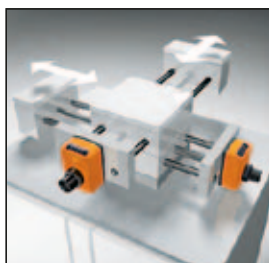
Benefits:

- Low-cost, robust measurement system
- Easy hollow-shaft mounting
- Clear, precise digital display values thanks to integrated counter
- Individual gear ratios and displays



Specifications

Hollow shafts Ø 6 ... 35 mm
Metric or inch unit display
Mechanical detent/blocking
Selectable design (reading position)
Plastic or metal housing



X,Y positioning



Tool positioning



End stop adjustment



Angle indicator



Electronic-digital position indicators

provide flexible, electronic capture of measured values and semi-automatic adjustment control at axles.

Benefits:

- Display reading, sense of rotation and decimal place are freely programmable
- Display reading, sense of rotation and decimal place are freely programmable
- Compatible with mechanical SIKO counters
- Bus-compatible for monitored format changes

Specifications

LCD indicators
Absolute, battery-buffered
Programmable parameters
RS 485 bus interface, CANopen



Control knobs

are handy adjustment units with an integrated measurement system for variable mounting situations.

Benefits:

- Compact design
- Unit consisting of a handwheel and a position indicator
- Arbitrary mounting positions
- Analogue or digital display of measured values
- Special scales (analogue control knobs)
- Electronic or mechanical design

Specifications

Hollow shafts Ø 6 ... 20 mm
Display integrated in the adjustment element
Analogue and digital displays
Design (reading position) freely selectable



Mechanical-analogue position indicators and handwheels

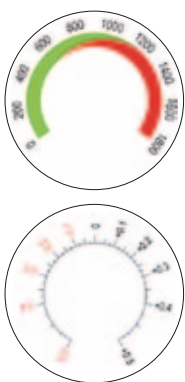
measure rotations via high-resolution analogue displays.

Benefits:

- Freely imprintable scales for flexible display of values
- Excellent reading quality thanks to large analogue scales
- Precise display of measurement values on a two-line display
- Angle display
- Robust handwheels made of metal or fibreglass-reinforced plastic

Specifications

Handwheel Ø 56 ... 200 mm
Analogue display with scale
Digital thanks to integrated display
Corrosion and vibration-resistant, oil-filled
Metal or plastic handwheel



Intelligent new development: AP04 with bus interfaces for monitored format adjustment.



open film

RotoLine

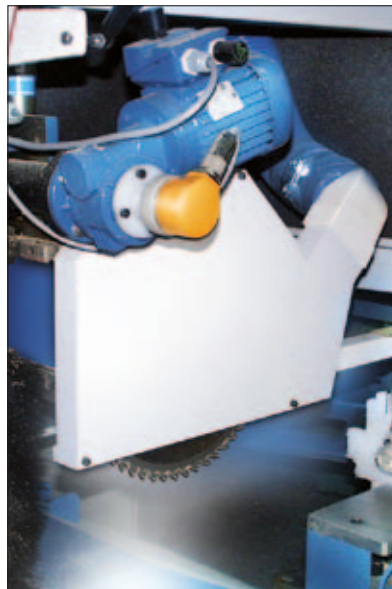
SIKO has combined the “rotary encoder” family under the joint brand name RotoLine. The comprehensive product know-how permits a versatile range of types that extends from inexpensive incremental rotary encoders of very varied design through to high-resolution absolute rotary encoders with fieldbus interfaces of industrial design or in robust heavy-duty housings.

Insight into a magnetic sensor with integrated real-time signal processing.



Incremental rotary encoders

are the simplest and most inexpensive solutions for measuring speeds, positions and angles.

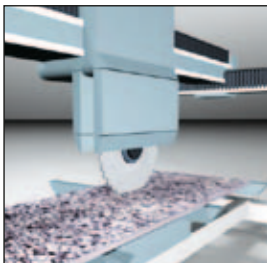


Benefits:

- Optical and magnetic incremental rotary encoders
- High shock, vibration and temperature resistance
- Insensible e.g. to oils, lubricants, dirt, and water
- Wear- and maintenance-free sensor unit
- Universally usable: various hollow and solid shaft versions
- Compact design owing to highly integrated sensor unit
- High speeds up to 12000 rpm

Magnetic incremental encoders

Hollow shafts Ø 6 ... 22 mm
Solid shafts Ø 5 ... 10 mm
Resolutions up to 2560 pulses/revolution
Output circuits: PP, OP, LD5, LD24
Up to IP65 protection category



Absolute rotary encoders sense positions precisely and detect movements even in the currentless state.



Incremental rotary encoders sense speeds, velocities as well as distances and angles.



Geared potentiometers operate according to an absolute principle, making them suitable for level and distance as well as path, position and angle measurement (e. g. fire extinguishing cannons or with gate control).



Rotary encoders and geared potentiometers



Absolute rotary encoders

register all motion precisely and absolutely. Motion is also detected and recorded in a de-energised state. They are therefore the first choice for industrial and heavy-duty applications.

Benefits:

- Absolute measuring system
- Very high resolution
- Precise positioning
- Various interfaces
- Fieldbus interfaces
- Miniature designs
- Also available in heavy-duty housings

Magnetic, absolute rotary encoders

Hollow shafts up to Ø 8 mm
Solid shafts of Ø 6 ... 10 mm
Resolutions up to 4096 pulses/revolution (12 bit)
Resolution multiturn up to 8192 pulses/revolution (13 bit)
Output circuit: SSI, CAN bus, analog
Up IP69K protection class



Geared potentiometers

are well known for their robust analogue technology. Measured values are recorded absolutely, which means there is no need for referencing.

Benefits:

- Long service life
- Optimized installation size
- Absolute measurement
- The encoder's analogue output signal can be used in a variety of ways
- Easy integration thanks to hollow-shaft and solid-shaft technology
- Numerous gear ratios enable adaption to the customer's individual measuring range

Geared potentiometers

Hollow shafts Ø 14 ... 20 mm
Solid shafts Ø 6 ... 20 mm
Potentiometer output: current 4 ... 20 mA, voltage 0 ... 10 V
Up to IP68 protection category



Electronic displays

SIKO electronic displays are multifunctional, electronic measurement solutions. They are ideal for simple indication of information on length and angles, speed, rotation or quantities.

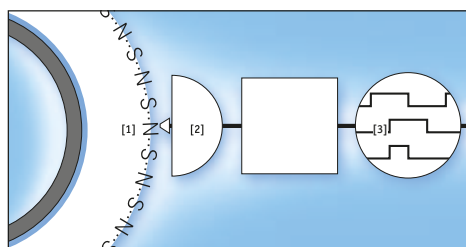
Benefits:

- Easy adaptation to various sensor interfaces
- Freely programmable parameters
- Different operating voltages
- Good readability of the display unit
- Standardised designs for easy integration

Electronic displays

7 segment digit LED or LCD displays
Operating voltages 24 V DC, 24 V AC, 110 V AC, 230 V AC
Counter inputs: PP 24 V signals, LD 5 V signals, serial SSI, number of pieces, speed and analogue 0 ... 10 V, 4 ... 20 mA
External calibration or referencing possible
Optional interfaces: RS232/RS485

Absolute encoders and their signal sources: the actuating cams of the geared potentiometer, the tried and tested optical disk, and the particularly robust magnetic measurement method.



Successful measurement principles

The inner values of our measurement technology are the key to determining possible areas of application. SIKO's high-tech know-how of recording position values has resulted from decades of constant development.

Magnetic ring [1], sensor [2], digital signals [3]



LinearLine

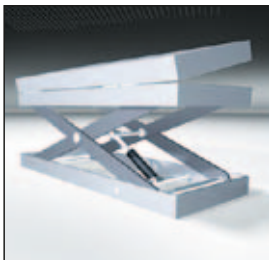
New technologies for discerning demands in the linear metrology sector. The result of decades of experience, the compact SIKO wire-actuated encoders are a reliable and easy to install option for linear position measurement. The possible range of applications is very wide, even under difficult ambient conditions.

Benefits:

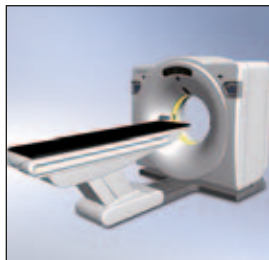
- Temperature range up to -40 °C
- Robust and durable, even in wet, dirty conditions
- Easy wire run-out installation
- Flexible system integration of any output signals and interfaces
- Optional, enhanced safety due to a redundant sensor system

Specifications

Measurement lengths of 600 ... 15 000 mm
Output potentiometer: current 4 ... 20 mA, voltage 0 ... 10 V
Incremental or absolute outputs: SSI, CAN bus, Profibus
Robust plastic or metal housings
Various wire designs



Ensuring firm stance or determination of optimum work height – wire encoders are used for support adjustment and control of elevating platforms.



Wire-actuated encoders are the preferred solution in medical technology applications for adjusting the height or length of tomographs, operating tables, examination chairs and also x-ray equipment.



Wire-actuated encoders are ideal for integration when combined with car, truck and train lifting platforms. They are therefore also protected against environmental influences.



Firm stance due to monitored positioning of the crane supports as well as the travel of the boom.

Wire-actuated encoders



Don't compromise on safety:
Redundant sensor units of our special wire-actuated encoders ensure double safety for persons and processes!

Reliable recording of the support and the telescopic cylinder for monitoring the maximum range with wire-actuated encoders of redundant design.



Exact positioning of the operating table for fully-automatic adjustment with wire-actuated encoders requires maximum reliability and a compact design.



Robust and compact wire-actuated encoders for height adjustment and side positioning of the lifting fork of unmanned transport systems.



open film

DriveLine

„Short cycle times and changeover times, high productivity and quality with lower capital expenditure“ is the recipe for success of ideal industrial processes.

The DriveLine actuators are particularly well suited for automatic format adjustment, stop positioning, tool alignment and valve adjustment as well as many other comparable positioning tasks – all of these tasks are easily mastered.

Benefits:

- Flexible machine concept, simple control behavior
- Low installation and mounting effort
- Highly available and maintenance-free
- Short cycle or retrofitting time
- High productivity and quality

DriveLine

Hollow shafts with diameters 10 ... 20 mm

Torques up to 14 Nm

Speeds up to 500 min

Magnetic multiturn encoder with resolutions up to 1600 pulses/revolutions

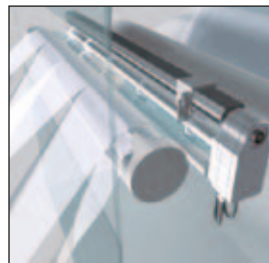
Interfaces: OP, LD5, LD24, Analog (R, U, I),
Fieldbus and Industrial Ethernet



End stop adjustment



Angle adjustment

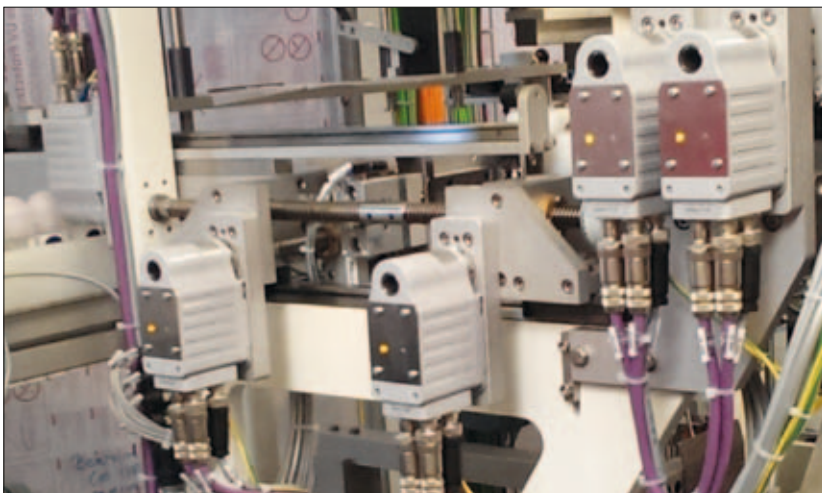


Indirect adjustment



Rotative adjustment





More efficient axis adjustment: The strength of DriveLine is its serial connection – centrally controlled, the SIKO actuators carry out their adjustment assignments synchronously.

Flexible and modular axis automation with DriveLine actuators makes it easy to achieve a long-term increase in both the machine efficiency as well as the product quality.

Adjustment with DriveLine actuators is around four times faster and much more accurate than with manual processes. Users speak of a boost in the production capacity of up to 50 percent.



DriveLine actuators ensure precise product position when on-the-fly production change is required.



Packaging machine manufacturers use DriveLine actuators in complex packaging machines with growing demands regarding version variety, productivity and accuracy.

Photos courtesy of ADCO Manufacturing



Direct positioning:
Direct action via axle or spindle. The principle of action corresponds to that of a compound table or of linear guides..



Indirect positioning:
Indirect action (offset) on racks via cogwheel or worm gear.



Rotative adjustment:
Direct action on the rotation axis or indirect action (offset) on a rotation axis via bevel gear or worm gear.



open Film

MagLine

The MagLine product line offers the possibility to replace measurement systems based on encoders with rack-and-pinion by a contactless system based on a magnetic principle.

MagLine is a versatile measuring solution with very flexible integration options, both incremental and absolute. Modern mechanical engineering applications profit in particular from the robust and economical measuring systems.

Key areas of application are measurement of linear and radial positions, angle values and rotational speed.

Benefits:

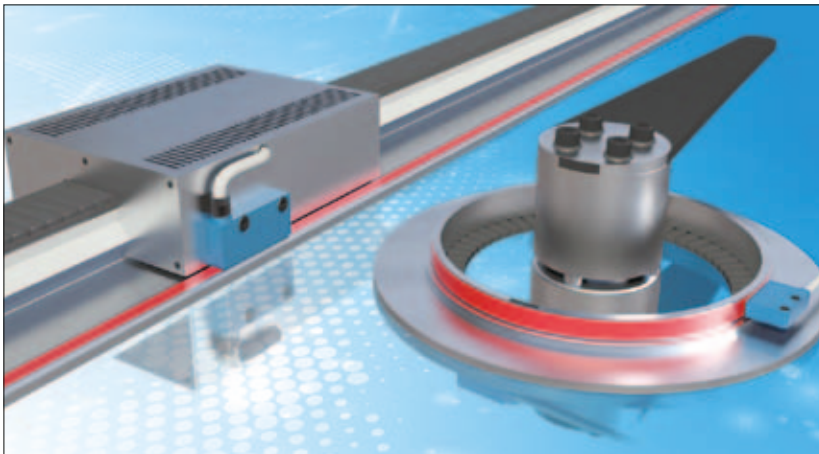
- Absolutely wear-free technology
- Insensitive to dust, chips, humidity, oils, fats, etc.
- Robust with shock and vibrations
- No measurement errors due to gear ratios or gear play
- High system accuracy and reproducibility
- Easy handling and mounting
- Nearly maintenance-free

MagLine Micro

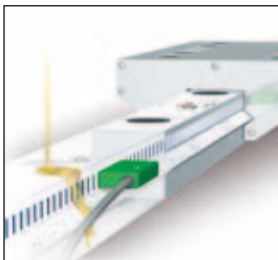
This high-resolution feedback system is especially designed for precise, highly dynamic processes with special measurement requirements in the μm range, particularly in linear and rotative guidance and drive technologies as an alternative to optical systems.

MagLine Micro

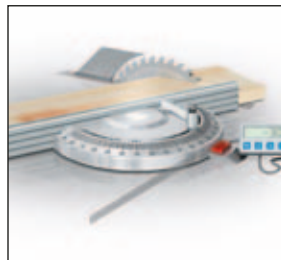
Resolution max. 0.2 μm
System accuracy $\pm 10 \mu\text{m}$
Repeat accuracy $\pm 1 \mu\text{m}$
Sensor-band gap max. 0.4 mm
Measurement lengths: up to max. 90 m
Freely selectable parameters



MagLine Micro:
The sensor and the magnetic band of the measurement system are both perfectly integrated.



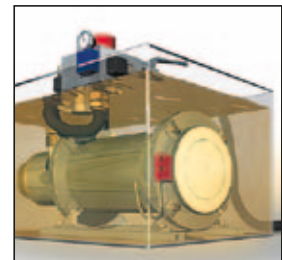
MagLine Micro detects length information in the μm range even in extremely dirty environments. It is typically used on linear drives.



In MagLine Basic, the magnetic band is also used as the system's measuring scale. The flexible design of the magnetic band allows it to be bent to a radius and used for simple angle measurement, e. g. with limit stop systems.



The small, compact band and sensor design allows integration of MagLine Macro in nearly every kind of linear guide system. Typical applications include storage technology.



Even when the magnetic band is completely covered with oil, MagLine Roto's measurement system still captures motor speed reliably and passes it on to the controls, for instance by way of motor feedback.

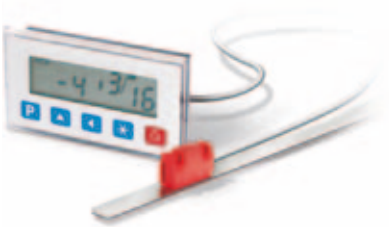
Magnetic length, angle and speed measurement systems

MagLine Basic

The application-proven, cleverly-devised Basic product series offers a particularly wide spectrum of components. An efficient solution for many individual applications, which fulfills all standard requirements of measurement precision in mechanical engineering or in the wood industry. Also available as a complete system with display and plug-and-play sensor!

MagLine Basic

Resolution max. 1 μm
System accuracy $\pm 25 \mu\text{m}$
Repeat accuracy $\pm 5 \mu\text{m}$
Sensor-band gap max. 2 mm
Measuring lengths up to max. 90 m



MagLine Macro

Specially designed for very long measurement distances, MagLine Macro enables safe position detection with millimeter accuracy and interplay of many flexible units, particularly in storage or conveyor applications.

MagLine Macro

Resolution max. 0.25 mm
System accuracy $\pm 1 \text{ mm}$
Repeat accuracy $\pm 1 \text{ mm}$
Sensor-band gap max. 20 mm
Measuring lengths up to max. 160 m



MagLine Roto

The Roto Series is the ideal alternative to conventional optical encoder systems – especially for exact revolution or angle measurement under extreme conditions such as oil baths (e.g. on round tables).

MagLine Roto

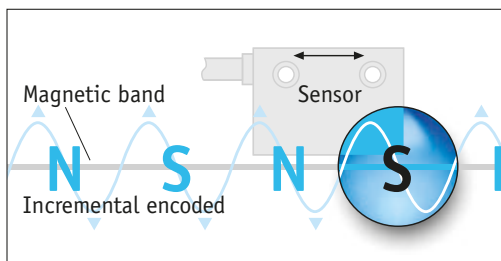
Typ. resolution up to 200 000 pulses/revolution
System accuracy $\pm 0.1^\circ$
Repeat accuracy $\pm 1 \text{ increment}$
Sensor-band gap max. 2 mm



Wilhelm Altmendorf GmbH & Co. KG



Magnetic measurement technology in a customized solution: Closed-loop, electronic length stop with circular saws.



MagLine senses magnetic fields contactlessly and converts the periodic signals received into analogue or digital values. The direct, contactless measurement principle prevents mechanical influences affecting the measurement result and allows simple integration in mechanical engineering situations.



open film

OptoLine

The OptoLine LSC20 and TS20 measuring systems round off the SIKO solutions for length and angle measuring equipment in the high-accuracy segment.

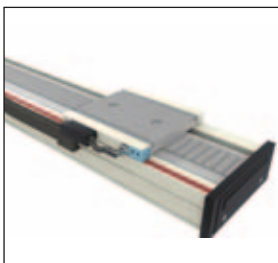
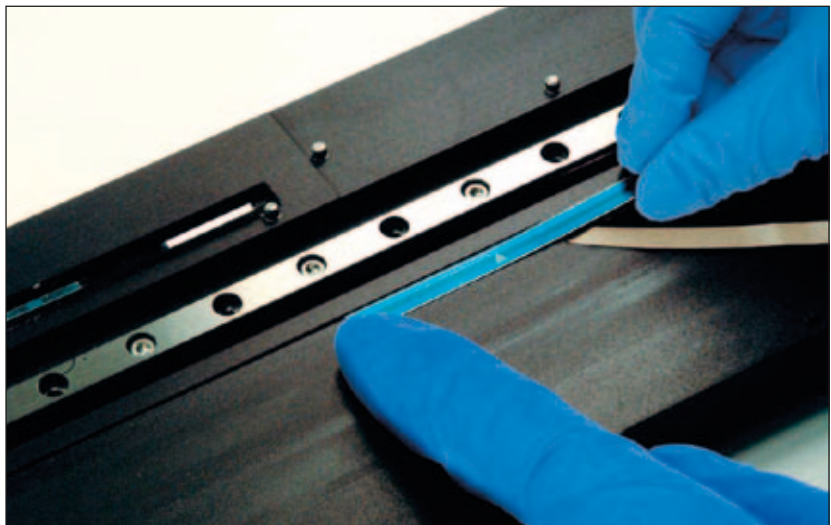
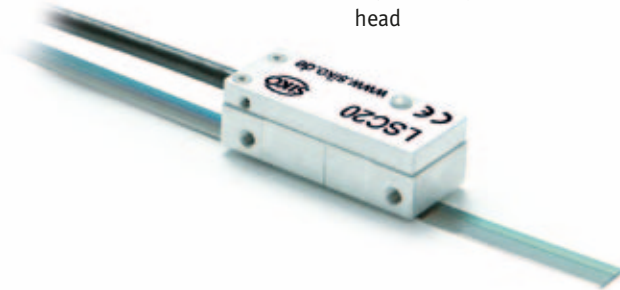
The system works on the basis of optical laser scanning of fine structures and is completely hysteresis-free. It is used for length measurement of up to 30 metres and angle measurement of $<360^\circ$.

The main applications are measurement operations with high electromagnetic interference fields or high-precision measurement with a system accuracy of $5\text{ }\mu\text{m}$ or a resolution of up to $0.05\text{ }\mu\text{m}$. The OptoLine products can be found, for example, as feedback features on linear motors or in clean rooms in medical and analysis laboratories.

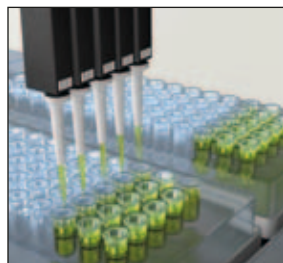
Additional applications are ultra-precision machines and high-precision equipment as well as measuring microscopes and other high-precision measuring instruments.

Benefits:

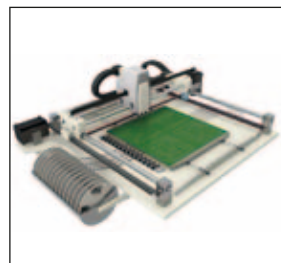
- High system accuracy up to $5\text{ }\mu\text{m}$
- High resolution up to $0.05\text{ }\mu\text{m}$
- No hysteresis
- Free from electromagnetic interference
- Large tape/sensor gap $1.0\text{ mm} \pm 0.15\text{ mm}$
- Mounting according to industry standard
- Signal interpolation in the sensing head



OptoLine is particularly suitable as a feedback feature on linear motors, e.g. for system accuracy requirements of $5\text{ }\mu\text{m}$ or in the case of high electromagnetic interference fields.



Path or angle measurement in the medical or analysis equipment sector is virtually pre-destined for OptoLine measuring systems due to the clean room conditions.



With its small, compact design, OptoLine is ideal for the acquisition of path information in pick-and-place systems.

Retrofit

Boost efficiency! Reduce tooling times! The SIKO Retrofit division works in line with these aims. SIKO Retrofit offers a full retrofitting system for existing plants for monitored format adjustment - all from one source.

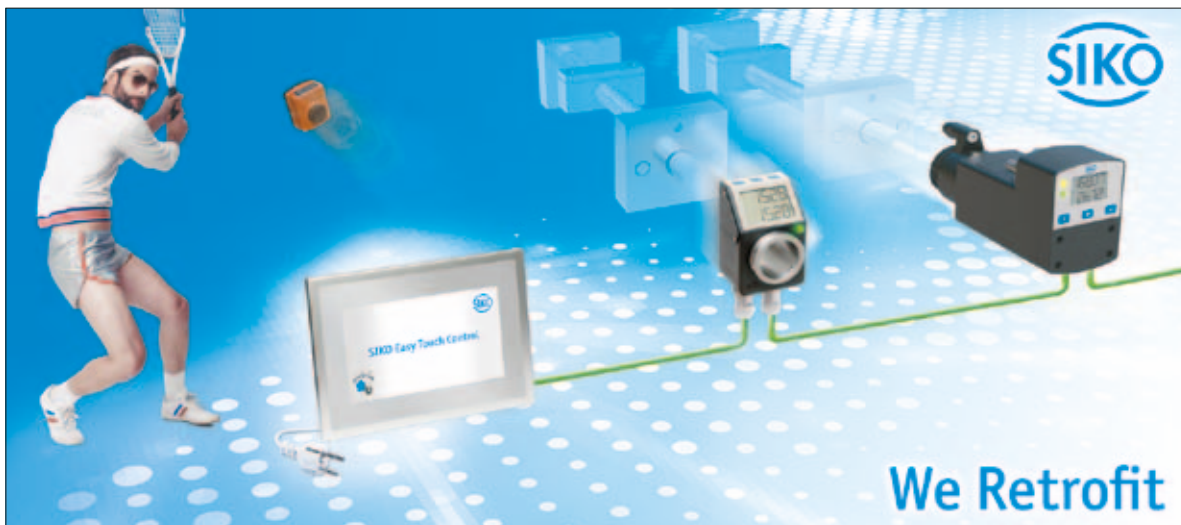
The system flexibly adapts to the needs of the respective plant, whether the application requires electronic position indicators for spindle or slide positioning or if actuators are used for fully-automatic positioning of spindles.

Simply plug and play! The user interface developed especially for format changes is intuitive and easy to use.

Our product specialists are at your disposal to work out the best solution for upgrading your machine.

Benefits:

- Higher machine efficiency owing to reduced downtimes
- Operative user interface enables quick commissioning
- Higher process safety thanks to monitored change of format
- Flexibly configurable system
- Turnkey system, completely from one source



Simple retrofitting of existing systems: The efficiency of existing systems can be improved considerably, down times are minimized and off-spec products prevented.



Retrofitting of existing systems which previously contained manual wheels or mechanical position indicators.



Monitored format adjustment on spindles with electronic position indicators.



Monitored format adjustment on slide adjustment features with electronic position indicators.



Full automation of spindles and machines by means of actuators.

Sales / personal contact

Our sales team and our international sales partners would be pleased to answer your enquiries. Contact us at
Tel. +49 7661 394-0

Website with download area

PDF data and program routines for our programmable devices are available via the SIKO Homepage.

At www.siko-global.com you can find:

- Data sheets
- Catalogues
- User information
- Manuals
- GSD and EDS files
- 3D design files
- Product films
- Sales partners directory

Technical support

Our technical support team provides assistance and first-hand information.

Tel. +49 7661 394-457

E-Mail: support@siko.de



Advantages are:

- Native and neutral data formats, suitable for your CAD system
- Preview function and direct download
- Full-text search
- 24 h access to product catalogue
- Versatile display options
- Free service

3D models for mechanical engineering

We offer constructors true-to-size, reduced-detail 3D data via the Cadenas platform. This allows configuration of attributes which define the contours of the SIKO device. After registering via our product pages on the internet, there is 24-hour online access to this service: www.siko-global.com

Cadenas PARTcommunity ...

Do you want to contact an agency near you?

Visit or website www.siko-global.com, and go to the „Contact“ menu item to access all the latest contact data of our agencies.

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South Africa

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India
Indonesia
Iraq
Iran
Israel
Japan
Malaysia
Singapur
South Korea
Taiwan
Thailand
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Australia

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Estonia
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Germany
Great Britain
Greece
Hungary
Italy
Latvia
Liechtenstein
Lithuania
Luxembourg
Montenegro
Netherlands
Norway
Poland
Portugal
Romania
Russia
Serbia
Slovakia
Slovenia
Spain
Sweden
Switzerland
Turkey
Ukraine

America


Argentina
Brazil
Ecuador
Mexico
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 **SIKO Magline AG**

 **SIKO International Trading (Shanghai) CO., Ltd.**

 **SIKO Products Asia Pte. Ltd.**

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