









适用于搬运车、自动运输系统 和移动平台的传感器解决方案

直线式和旋转式位置检测以及倾斜度 和速度检测。

优势

- 高灵活性和耐用性
- 安全传感器的性能等级高达 d
- 极其紧凑的传感器
- 温度范围 (零下40℃至 零上 105°C)
- 高度的电磁兼容性
- 传感器具备 PURE.MOBILE 科技技术
- 100% 专注于移动式机械设备

Smart sensors for industrial trucks, AGV and mobile platforms

We offer sensors for linear and rotary position detection and detection of inclination and speed.

Advantages

- High flexibility and service life
- Safety sensors up to PLd
- Extremely compact sensors
 Temperature ranges from (-40° C... + 105° C)
- High electro-magnetic compatibility
- Sensors with PURE.MOBILE technology
- 100% focus on mobile machines



成就来自不懈的努力

来自德国的高新测量技术遍及全球,贯通机械制造行业。

近60个国内和国际总经销商为您提供 直接联系和技术指导。

5家分别位于美国,中国,新加坡,瑞士和意大利的成功 的子公司加强了SIKO公司的全球业务。

德产品质-我们愿意传达的一个优势

SIKO基于其高水平研发的机械装置来进行资源节约性的生 产,业主的期望通过磨合的一经要求的生产来转化为相应 的供货期。高自动化程度在许多领域中与专业的手工劳动 相遇。

SIKO坚持传统生产地: 德国和瑞士生产。现今和将来:德国 生产/瑞士生产

Global success

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

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

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

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 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.



第一个产品理念: 带有集成模拟显示的手轮。

Ing. Günther Wandres 博士创建了 SIKO公司。

handwheel with an integrated analogue indicator

Dr.-Ing. Günther Wandres founded SIKO GmbH



First geared potentiometer for position detection is developed



迈向世界市场的重要一步: 在美国建立SIKO分公司。

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



电子时代长度和角度测量技术 的曙光: 测量指示器的研发和 第一代电子式空心轴编码器

technology; development of measurement indicators and



引入磁性测量原理和线拉 编码器。

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



适用于搬运车、自动运输系统和移动平台的传 感器解决方案

SIKO作为一个有能力的专业服务公司, 在位置检测领域拥 有超过50年的经验,是您强大和可靠的合作伙伴。 凭借在 移动式机械领域多于30年的应用经验,我们提供各种用于 位置、速度和倾斜度检测的广泛的传感器产品系列。

SIKO提供独特的纯垂针对移动式机械和移动式液压技术而 研发的传感器, 其开发始终专注于应用本质。根据 DIN EN 1175 标准开发的传感器,提供高度的电磁兼容性 和抗冲击性及耐振动性、高达 IP6K9K 的防护等级以及性能 等级高达d (PLd) 级的安全传感器是几乎所有传感器的组成 部分。为了将坚固的传感器进行数控连接,我们提供各种 各样的接口: CANopen, CANopen Safety, SAE J1939 以及经 典的模拟式电流和电压接口或用于速度测量的 HTL 和 TTL 信号输出。

我们明确,我们是位置检测方面的系统供应商,经常与我 们的客户一起制定独特的具体的解决方案,来保证在低工 艺成本情况下的同时获得最好的效率。 SIKO 通过独特的 "PURE.MOBILE"传感器构造套件强化了这一技术优势,该 套件100%为商用车辆的应用而研发,比以往任何时候的传 感器更加灵活、坚固耐用和安全可靠。借此我们专注于客 户的未来: 数字化、效率性和可持续性。

Sensor solutions for industrial trucks, AGV and mobile platforms

SIKO is your strong, reliable and professional partner with over 50 years of experience in position measurement to draw on. With more than 30 years of experience in applications for mobile machines, we offer a wide range of sensors for detecting position, speed and inclination.

SIKO supplies sensors that have been developed specifically and exclusively for mobile machines and mobile hydraulics, always with a focus on the application itself. Sensors developed according to DIN EN 1175, high electromagnetic compatibility as well as shock and vibration resistance, protection up to IP6K9K and reliable sensors for applications up to Performance Level d (PLd) are an integral part of almost any sensor. A wide range of interfaces are available to network the robust sensors digitally: CANopen, CANopen Safety, SAE J1939 as well as conventional analog current and voltage interfaces or for speed measurements HTL and TTL signals.

We see ourselves first and foremost as system suppliers in the field of position detection and frequently work with our customers to develop specific solutions to deliver maximum efficiency combined with low process costs. SIKO backs up this technical edge with its unique "PURE.MOBILE" sensor platform, which has been developed exclusively for mobile machine applications. This means greater flexibility, resilience and safety than ever before. Our focus here is on the future of our customers: digitization, efficiency and sustainability.

年研发第一台冗余安全式拉绳 编码器

Development of the first redundant safety wire-actuated encoders



2010 开发出基于 MEMS 技术的首款倾 斜传感器

ter based sensor on MEMS



引入用于在液压缸中直接进行冲 程测量的新型拉绳编码器。

Introduction of a new wire-actuated



开发出首款绝对安全旋转编码 器性能等级高达 d

The first absolute safety rotary encoder with PLd is introduced



年推出首款无轴承旋转编码器 产品系列 "MagLine Roto"

Introduction of the first bearing-

the "MagLine Roto" product family



拉绳编码器

用于简易而坚固的直线性位置测量,特别适用于检测搬运车叉的高度位置。通过紧凑的设计结构易于集成!

- 坚固的机械装置适合用于移动机械
- 温度范围 40° C 至 + 85° C
- 非常紧凑的结构用于空间受限的安装条件
- 冗余传感器 性能等级高达 d
- 安装和操作简便
- 测量长度达到 15 m
- 灵活的接口方式: 模拟式、CANopen, CANopen Safety, SAE J193

MagLine:: 磁性、无轴承旋转编码器

用于搬运车和自动运输系统的转速或角度测量。 无磨损的开放系统特别耐用,因为强机械负载不会传递给该测量系统。

- 安全可靠地检测速度和行进方向
- 在安全应用中性能等级可达 d 级
- 分辨率高达 200.000 脉冲/转
- 系统精确率最高可达 ±0.05°
- 使用寿命长
- 防护等级高达 IP67
- 灵活,定制的环形解决方案
- 冗余版本可用
- 检测直径约为 30 至1.500 mm

-

Wire-actuated encoders

For easy, robust linear position measurement.
Particularly suitable for detecting the position of the fork height.
Easy to integrate thanks to its compact design!

- Robust mechanics for applications in mobile machines
- Temperature range -40° C ... +85° C
- Very compact design for restricted installation conditions
- Redundant sensors up to Performance Level d
- Easy assembly and handling
- Measurement length up to 15 m
- Flexible interfaces: analog, CANopen, CANopen Safety, SAE J1939

MagLine: magnetic, bearingless rotary encoders

For speed or angle measurement in industrial trucks and AGV. The wear-free, open system is particularly durable, as heavy mechanical loads are not transferred to the measurement system.

- Reliable detection of speed and direction of travel
- Can be used in safety applications up to PLd
- Resolution up to 200.000 impulses/rotation
- System accuracy up to ±0.05°
- Long service life
- High protection rating up to IP67
- Flexible, customized ring solutions
- Redundant version available
- Diameter of the scales approx. 30 ... 1.500 mm

旋转编码器

用于精确、可靠和标准化的位置、角度和速度检测。 特别适用于检测调向转角度。

- 36 mm 和 58 mm 规格的单圈和多圈旋转编码器
- 坚固的外壳设计,适用于最苛刻的条件
- 通过 IP6K9K 防护等级,坚固抵抗外部的影响
- 接口方式: 模拟式, CANopen 和 SAE J1939
- 也可提供作为冗余版本: CANopen 和 CANopen Safety
- 适用于性能等级高达 d (PId) 的应用领域
- 可通过选项卡灵活扩展应用 (倾角传感器, DIP 开关, I/O 卡)

Rotary encoders

For precise, reliable position, angle and speed detection in accordance with standards. Particularly suitable for detecting the position of the steering angle.

- Single-turn and multi-turn rotary encoders in 36 mm and 58 mm format
- Robust housing design for the toughest conditions
- Protection rating up to IP6K9K
- Interfaces: analog, CANopen and SAE J1939
- Also available as a redundant version: CANopen and CANopen Safety
- Can be used up to Performance Level d (PLd)
- Flexible extension with option cards (inclination sensor, DIP switch, I/O card)



Various wire types and rope fixture available





高防护等级达IP67 High protection class up to IP67



按客户要求定制的磁环 Customized magnetic rings





用于液压缸的位置传感器

用于液压缸的位置和速度检测,即使在最恶劣的环境条件 下也特别坚固耐用。

- 缸体位置的绝对检测
- 直接集成在缸体中
- 测量范围高达 5.000 mm
- 在安全应用中性能等级达 d
- 无需在活塞上钻孔
- 也可用于伸缩式液压缸
- 凭借 IP6K9K 防护等级达到绝对防护
- 灵活的接口方式: 模拟式,、CANopen,CANopen Safety, SAE J1939

Position sensors for hydraulic cylinders

For position and speed detection of hydraulic cylinders.

Extremely robust and durable, even under the harshest conditions.

- Absolute detection of cylinder position
- Direct integration into the cylinder
- Measurement range up to 5.000 mm
- Can be used in safety applications up to PLd
- No drilling of the piston required
- Can also be integrated into telescopic cylinders
- Perfect protection with protection rating IP6K9K
- Flexible interfaces: analog, CANopen, CANopen Safety, SAE J1939

倾角传感器

用于简便采测一维或二维倾斜度的传感器。 凭借 MEMS 技术(微电子机械系统)和紧凑的设计,特别坚固耐用。

- 单向或双向倾斜度传感器 (0至360°或+80°至-80°)
- 温度补偿范围为 -40° C 至 + 85° C
- 灵活的接口方式: 模拟式、CANopen、CANopen Safety 或 SAE J1939
- 可用于高达 PLd 等级的安全应用
- 符合 CAT3 的冗余式结构方式
- 简单的三点式安装方式
- 防护等级高达 IP6K9K

Inclinometers

Sensors for simple detection of the inclination in one or two dimensions. Particularly robust thanks to MEMS technology (Micro-Electronic-Mechanical System) and compact design.

- Single or dual axis inclinometer (0 ... 360°; ±80°)
- Temperature compensated from -40 ... +85°C
- Flexible interfaces: analog, CANopen, CANopen Safety or SAE J1939
- Can be used in safety applications up to PLd
- Redundant design according to CAT3
- Easy three-point mounting
- Protection rating up to IP6K9K



Easy three-point mounting

简便的三点安装



MEMS 传感器元件 MEMS sensor unit 输出信号: 模拟式、CANopen、 CANopen Safety 或 SAE J1939 Output signals: analog, CANopen, CANopen Safety or SAE J1939



防护等级: IP68, IP6K9K Types of protection: IP68, IP6K9K

用于可靠的位置检测的安全传感器g

"保功能又安全" - 这句话大家都在议论。不仅仅是通过新机械指令 EN 13849 的实施,安全概念始终是搬运车领域的热门话题。 SIKO 的传感器帮助移动机械实现智能安全方案,并满足各种搬运车的特定安全标准的严格要求。

SIKO 的安全冗余传感器和系统可帮助您根据有关标准设置完整的系统,传感器满足高达性能等级 d (PLd) 的应用要求。根据 CAT3 标准设计的既安全又冗余的结构、以及安全的机械设计使我们的产品注定在特别苛刻的安全要求下的应用,即使在特殊条件下也是如此。无论是角度和距离测量、倾斜度测量,还是速度和转速测量,都能通过我们的传感器为安全的机器和车辆做出重大贡献。

Safety sensors for reliable position detection

"Functional safety" – a term that is on everyone's lips. Safety concepts for industrial trucks were an important issue even before the new EN 13849 Machinery Directive was introduced. Sensors from SIKO help to implement intelligent safety concepts for mobile machines and meet the high requirements of the individual safety standards for various industrial trucks.

Safe, redundant sensors and systems from SIKO help you to design an overall system that complies with the standards. The sensors meet the requirements for use in applications up to Performance Level d (PLd). Safe, redundant design in accordance with CAT3 and a reliable mechanical design make our products ideal for use in safety-critical applications, even under extreme conditions. Whether it's for angle and position detection, inclination or (rotational) speed measurement, we make a significant contribution to machine and vehicle safety with our sensors.



此外,我们的传感器提供的工艺数据不仅可以满足安全要求,还可以为机器本身增加价值。其工艺数据可以提供有关液压系统或其他机器部件的即将到来的间隔性需维护信息。搬运车具备的记忆功能可节省时间并使工作更安全。搬运车叉的升降高度和车叉宽度的精确记录有助于叉车驾驶员即使在非可见区域也能安全地工作。所有这些只是SIKO传感器如何使您的机器不仅更安全、也更高效工作的几个例子。

In addition, our sensors provide process data which are used not only to meet safety requirements but also to provide added value for the machine. As a result, the process data can provide information about a possible upcoming maintenance interval of the hydraulics or other machine components. Flexible outriggermonitoring system in industrial trucks extends the working range of the machine. Memory functions in forklift trucks save time and make work safer. Accurate detection of the lifting height and fork width in forklifts helps the driver to work safely even in areas that cannot be seen. These are just a few examples of how sensors from SIKO make your machines not only safer, but also more efficient.







SAFETY!

PURE.MOBILE: 用于移动机械的传感器套件

无论是叉车、正面吊车还是自动运输系统 搬运车在物流工作过程中不间断使用,以实现最高效率性和最佳准确性。为了持续地提高效率,并进一步优化和提高自动化工作流程,必须为此提供必要的数据 ,并需要持久耐用的传感器。为此,SIKO 开发了 PURE.MOBILE 科技技术,并将其作为模块化传感器推出市场。

该技术平台100%为商用车辆的位置检测而设计和研发。与市场中常可以买到的只匹配商用车辆的工业传感器不同,来自该技术平台的 SIKO 传感器专门为此应用情况而设计。因此每个 PURE.MOBILE 传感器能满足建筑机械以及农业机械和林业机械的电磁兼容性要求、公路车辆 E1 (UN ECE R10) 要求、并基于无磨损、坚固的磁性扫描技术。独特的是灵活的可扩展的模块化原理。例如 PURE.MOBILE 产的旋转编码器,可以通过用户可选的选项卡扩展其他功能;例如一台集成的倾角传感器,其用于编程的 DIP 开关可转化为数字化输入端和输出端。每台具备 PURE.MOBILE 技术的传感器也提供冗余版本可用于性能等级达 d (PLd)的应用。这些功能通过大量的模拟式和数字式接口得以完善。这意味着提供比以往更多的灵活性、坚固性和安全性。通过PURE.MOBILE 我们专注于客户的未来并通过自动化、数字化和效率来支持客户。

PURE.MOBILE 技术的优点

- 100% 为移动机械而研发
- 用于线性、转动和速度检测
- 防护等级: IP65 到 IP6K9K
- 宽广的温度范围 (-40 ... +85° C 或 105° C; -40 ... +185° F or 221° F)
- 高电磁兼容性(建筑机械、农业机械和林业机械)
- 高抗冲击性和抗震性
- 安全传感器性能等级可达 d (PLd)

PURE.MOBILE: the sensor platform for mobile machines

Regardless of whether forklifts, reach stackers or AGV systems, industrial trucks in logistics are continuously in use to offer maximum efficiency with optimal precession. To increase this efficiency sustainably and further optimize and automate work processes, durable sensors are necessary that provide the required data for this purpose. SIKO has developed PURE.MOBILE technology for these cases and launched it on the market as a sensor module.

The technology platform has been designed and developed exclusively for position-detection in mobile machines. Unlike many of the sensors on the market that come from industry and are then merely adapted for mobile machines, sensors from SIKO that use the technology platform have been developed exclusively for applications of this sort. Every PURE.MOBILE sensor meets the EMC requirements for construction, agricultural and forestry machines, the requirements of E1 (UN ECE R10) for road vehicles, and is based on wear-free, robust, magnetic sensing technology. The flexibility of the extendible modular design is also unique. The rotary encoders that use the PURE.MOBILE platform can be extended to include additional functions through option cards selected by the user; these include, for example, an integrated inclinometer, DIP switches for parameterization, and digital inputs and outputs. All of the sensors with PURE.MOBILE technology are also available in a safety version for applications up to Performance Level d (PLd). These features are rounded off by a large number of analog and digital interfaces to choose from. This means greater flexibility, resilience and safety than ever before. With PURE.MOBILE, our focus is on the future of our customers, and we provide support for: automation, digitization and efficiency.

Advantages of the PURE.MOBILE technology

- Developed exclusively for mobile machines
- For linear, rotation and speed detection
- Protection ratings: IP65 to IP6K9K
- Wide temperature range (-40 ... +85° C or 105° C;
 -40 ... +185° F or 221° F)
- High EMC (construction machines, agricultural and forestry machinery)
- High shock and vibration resistance
- Safe sensors up to Performance Level d (PLd)



























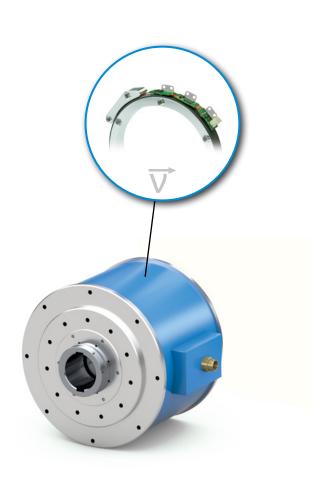
无人驾驶运输车 Automated Guided Vehicle (AGV)



- 通过伸缩杆检测车叉位置(拉绳编码器)
- 通过液压缸检测车叉位置(SGH传感器)
- 速度和方向检测(无轴承旋转编码器MagLine)转向角度检测(旋转编码器)
- 检测伸缩杆的倾斜角度(倾斜度传感器)
- Detection of the fork position on the lifting gear (wire-actuated encoder)
- Detection of the fork position in the hydraulic cylinder (SGH sensors)
- Speed and direction of travel detection (bearingless rotary encoder MagLine)
- Steering angle detection (rotary encoder)
- Tilt detection of the lifting gear (inclination sensor)

无轴承式检测速度和行进方向 Bearing less detection of speed and travel direction





- 无轴承式通过发动机、变速箱或轮毂检测速度和行驶方向(MSK/LEC传感器)
- 集成在牵引驱动机中的速度和行程方向检测 (flexCoder/linCoder)
- 可高度集成的客户定制的位置传感器 (至 PLD 级)根据 DIN EN 1175标准 (MagLine)
- Bearingless detection of the speed and direction of travel on the engine, transmission or wheel hub (MSK/LEC sensor)
- Speed and direction detection integrated into the drive (flexCoder/linCoder)
- Highly integrable customer-specific position sensors (up to PLd) according to DIN EN 1175 (MagLine)

伸缩式装载机 Telescopic Loaders



- 检测桅杆的角度: 集成在缸体中 (SGH), 旋转式 (旋转编码 器), 倾斜度 (倾角传感器)
- 检测桅杆的位置: 集成在缸体中 (SGH), 集成在桅杆中 (拉
- 检测转向角度: 集成在缸体中 (SGH), 旋转式 (旋转编码器) 检测倾斜缸: 集成在缸体中 (SGH), 倾斜度 (倾角传感器)
- Detection of the boom angle: integrated into cylinder (SGH), rotational (rotary encoder), inclination (inclinometer)
- Boom position detection: integrated into cylinder (SGH), integrated into mast (wire-actuated encoder)
- Steering angle detection: integrated into cylinder (SGH), rotational (rotary encoder)
- Monitoring of tipping cylinder: integrated into cylinder (SGH), inclination (inclinometer)

吊车 Reachstacker



- 安全的绝对转向角度检测,高达 Pld 级(旋转编码器)
- 桅杆的位置和倾斜度检测 一体化! (带集成倾斜度传感器的拉绳编码器)
- 桅杆的位置检测:集成于缸体(SGH)
- 桅杆的角度检测(倾斜度传感器)
- 集成在缸体的吊臂倾斜度和宽度检测 (SGH)
- Absolute and reliable steering angle detection up to PLd (encoder)
- Position and tilt detection of the boom All in One! (wire-actuated encoder with integrated inclination sensor)
- Position detection of boom integrated in the cylinder (SGH)
- Boom angle detection (tilt sensor)
- Tilt and width detection spreader integrated in the cylinder (SGH)

服务

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Tel. +86 21 5640 1978

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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
- Installation Instructions
- Manuals
- Configuration files
- 3D design files
- Product films
- Sales partners directory



技术支持

通过我们的技术支持给您提供帮助和第一 手的资料信息。

Tel. +49 7661 394-457

E-Mail: support@siko-global.com

YouTube上的SIKO

在我们的SIKO YouTube频道中,您将找到有用的教程,专家视频或我们产品的内幕贴士

www.youtube.com/sikoglobal



Technical support

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

Tel. +49 7661 394-457

E-Mail: support@siko-global.com

SIKO at Youtube

In our SIKO Youtube channel you will find helpful tutorials, expert videos or insider tips for our products.

www.youtube.com/sikoglobal



Kontakt

您在寻找附近的代理吗?

在我们的网页 www.siko-global.com 上的菜单项 "联系", 您可以找到我们世界范围内所有代理机构的联系方式。

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Australia

Australia New Zealand

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Cyprus
Czech Republic
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Contact

Do you want to contact an agency near you?

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

America

Argentina	
Brazil	
Canada	
Ecuador	
Mexico	
USA	





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