RLS®

We make **encoders.**







Innovation at the Forefront
of Motion Sensing

At the heart of RLS is the development, manufacture and distribution of state-of-the-art rotary and linear sensors that meet the changing demands of the global market. Our blend of extensive experience, in-depth knowledge and a forward-thinking approach enables us to deliver customized solutions that meet the exact requirements of our customers.

Throughout our history, we have built strong partnerships across a wide range of industries. Our products play a central role in a wide range of applications, from heavy industry and cutting-edge medical robots to aerospace, underwater exploration and some of the world's most ambitious solar energy projects. This wide-ranging expertise underlines our adaptability and commitment to innovation in challenging environments.

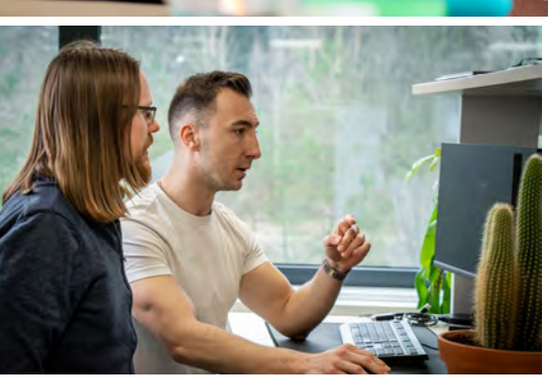
Investment in research and development is the cornerstone of our strategy and drives us to develop breakthrough technologies and innovations. We are convinced that we can secure our progress through solid intellectual property protection and thus secure our leading position in this area. Equally important is our investment in our people and maintaining lasting relationships with our partners, which are critical to our continued rapid growth and the realization of our vision.

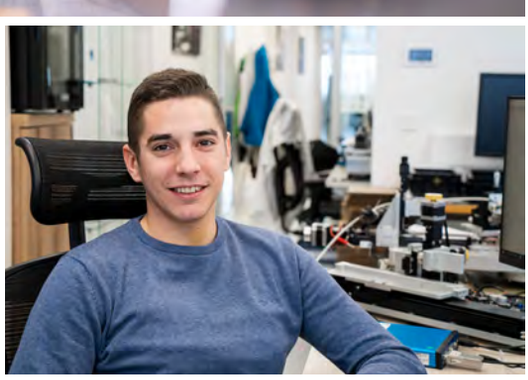
Looking to the future, we are committed to deepening our understanding of customer needs and industry trends and improving our ability to respond with even more tailored and effective solutions.

Healthy partnerships,
healthy growth.

A healthy environment built on trust, collaboration and personal growth is the foundation for everything we do. By encouraging open dialogue and valuing the contribution of each individual, we create the conditions for long-term success. This approach not only enables people to thrive, but also supports the development of sustainable communities and a healthier, more resilient future for all.

RLS was awarded as best employer among big companies in 2024 and recognised as a company with best organisational energy in Slovenia.





Applications

Position encoders are one of the key components for position, orientation and motion control of electric drives. RLS magnetic encoders provide reliable and cost-effective solutions for various applications. Non-contact technology and IP68 protection, extended operating temperature and easy installation with low maintenance costs are the main features for these demanding applications.

MEDICAL

PAN/TILT POSITIONING

GREEN ENERGY HARVESTING

ROBOTIC ARM JOINTS

AUTOMOTIVE

MOTOR CONTROL

PRECISE GEAR BOX

AGRICULTURE

INDUSTRIAL AUTOMATION

SMT PICK AND PLACE

PRINTING TECHNOLOGY

ASSEMBLY LINES

AksIM-4™
Big Ring Encoders

AksIM- is an extension of the AksIM family of encoders, suitable for applications where a larger shaft size is required. It consists of a readhead and axially magnetized rings with various outer diameters from 115 mm to 150 mm. The high performance non-contact off-axis absolute rotary encoder is designed for applications with limited installation space. The low profile readhead detects and evaluates the magnetic field of a thin magnetized ring. The larger size also brings higher resolution (up to 2 million counts per revolution) and exceptional accuracy (up to ±14 arc seconds).

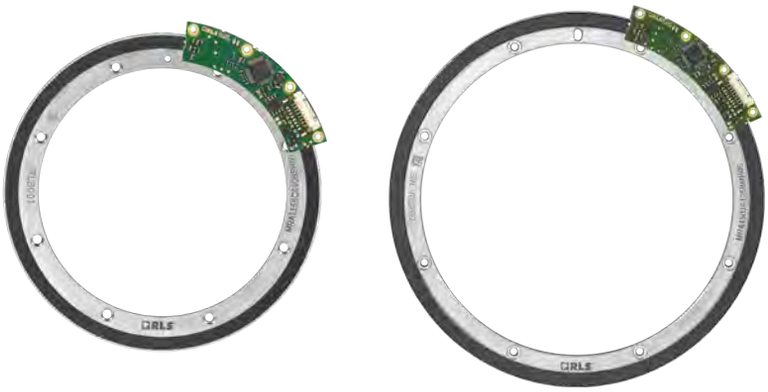
COBOTS

INDUSTRIAL AUTOMATION

MEDICAL

ROTARY TABLES

PAN/TILT POSITIONING



TECHNICAL SPECIFICATIONS

SYSTEM DATA		
Reading type	Axial reading	
Resolution	20 and 21 bits with optional multiturn counter	
Maximum speed	MRA115 MRA150	3,150 rpm 2,400 rpm
Accuracy (without eccentricity)	Up to ±0.004° / ±14 arcsec	
ELECTRICAL DATA		
Supply voltage	4.5 V to 5.5 V at the connector	
Current consumption	Typ. 125 mA, max. 160 mA (without load on the outputs)	
MECHANICAL DATA		
Available ring sizes	MRA115 MRA150	ID: 90 mm, OD: 115 mm ID: 125 mm, OD: 150 mm
Ring material type	MRA115 MRA150	EN 1.4016 / AISI430 with glued CPE rubber filled with ferrite particles EN 1.4057 / AISI431 with glued CPE rubber filled with ferrite particles
ENVIRONMENTAL DATA		
Operating and storage temperature	–40 °C to +105 °C	

FEATURES

- True absolute, high accuracy
- Low profile
- Resolution up to 21 bits
- Large inner diameter
- Excellent repeatability

BENEFITS

- Built-in self-monitoring
- Immunity to external magnetic fields
- BiSS, SPI or SSI output
- Wide temperature range

AksIM-2™
Off-axis Absolute Rotary Encoders

AksIM-2 is a non-contact, high performance off-axis absolute rotary encoder designed for applications with limited installation space. The compact, low profile readhead detects and evaluates the magnetic field of a thin, axially magnetized ring.

ROBOTIC ARM JOINTS

MOTOR CONTROL

MEDICAL

PAN/TILT POSITIONING

PRECISE GEAR BOX

TECHNICAL SPECIFICATIONS

SYSTEM DATA		
Reading type	Axial reading	
Resolution	AksIM-2: from 17 bit to 20 bit	16 bit multiturn counter option
	AksIM-2 Redundant: 19 bit or 20 bit	
Maximum speed	10,000 rpm	
Final system accuracy	±0.004° to ±0.020° / ±14 to ±72 arcsec (after encoder self-calibration)	
ELECTRICAL DATA		
Supply voltage	4.5 V to 5.5 V at the connector	
Current consumption	Typ. 130 mA, max. 150 mA (without load on the outputs)	
MECHANICAL DATA		
Available ring sizes (inner diameter)	AksIM-2: 8 mm, 10 mm, 12.7 mm, 20 mm, 25 mm, 30 mm, 34 mm, 40 mm, 55 mm, 64 mm, 68 mm	
	AksIM-2 Redundant: 20 mm, 30 mm	
Ring material type	EN 1.4016 and EN 1.4005 stainless steel with glued CPE rubber filled with ferrite particles	
System thickness	8 mm in a typical configuration	
ENVIRONMENTAL DATA		
Operating and storage temperature	–40 °C to +105 °C	

FEATURES

- True absolute
- Low profile
- High accuracy
- Multiturn counter option
- Redundant version for safety applications

BENEFITS

- Excellent repeatability
- Built-in self-monitoring
- Immunity to external magnetic fields
- BiSS, SPI, SSI or async serial output
- Wide temperature range

Orbis™
True Absolute Rotary Encoders

Orbis is a true absolute rotary encoder suitable for applications where a typical OnAxis encoder cannot be mounted at the end of the rotating shaft due to space constraints or if hollow shaft is required. Orbis with battery backup mutiturn option allows the encoder to count shaft rotations even when the main power supply is unavailable.

MOTOR CONTROL

PAN/TILT POSITIONING

PRECISE GEAR BOX

MEDICAL

ROBOTIC ARM JOINTS

TECHNICAL SPECIFICATIONS

SYSTEM DATA	
Reading type	Axial reading
Resolution	14 bit
Maximum speed	12,000 rpm
Accuracy	±0.25° (BR10), ±0.3° (BR20), ±0.5° (BR30)
ELECTRICAL DATA	
Supply voltage	4.5 V to 5.5 V
Current consumption	Typ. 65mA
MECHANICAL DATA	
Available magnet sizes (inner diameter)	12 mm, 16 mm, 22 mm, 30 mm
Magnet material	NeFeB with Ni-Cu-Ni protective layer (BM120, BM160, BM220) NeFeB with plastic resin (BM300)
Available magnet actuator (inner diameter)	6 mm, 8 mm, 10 mm, 12 mm, 14 mm, 15 mm, 20 mm, 25 mm
Actuator material	Anodised aluminium
ENVIRONMENTAL DATA	
Operating and storage temperature	–40 °C to +105 °C
Humidity	0 % to 70 % non-condensing
External magnetic field	Max. ±10 mT (DC or AC) on top side of readhead

FEATURES

- True absolute
- Extended temperature range
- Battery backup multiturn option (BR10)
- 14 bit resolution
- Built-in self-diagnostics

BENEFITS

- Wide installation tolerances
- Through-hole design
- Integrated status LED
- SSI, SPI, PWM, BiSS C and sync serial output
- Optional self-calibration after installation

Orbis™
Through-hole Analogue sin/cos and Incremental Rotary Encoder

MOTOR CONTROL

PAN/TILT POSITIONING

PRECISE GEAR BOX

AGRICULTURE

AGV

Orbis family is extended by Analogue, Incremental and Commutation through-hole encoders. Orbis Analogue provides sinusoidal outputs with a single sine/cosine period per revolution. Orbis Commutation is designed for use in BLDC motor feedback applications requiring both A, B, Z incremental and U, V, W commutation signals. To simplify alignment to the motor rotor, the encoder allows setting of the zero position.

TECHNICAL SPECIFICATIONS

SYSTEM DATA	
Analogue outputs	One sin/cos per revolution, single-ended, differential
Commutation (for Ux) and incremental outputs	U, V, W A+, A-, B+, B-, Z+, Z- (RS422)
Maximum speed	30,000 rpm (BR10, BR20), 25,000 rpm (BR30)
Accuracy	±0.5°
ELECTRICAL DATA	
Supply voltage	5 V ±10 %
Current consumption	Max. 35 mA
MECHANICAL DATA	
Available magnet sizes (inner diameter)	12 mm, 22 mm, 30 mm
Magnet material	Neodymium with Ni-Cu-Ni protective layer
Available magnet actuator (inner diameter)	6 mm, 8 mm, 10 mm, 20 mm, 25 mm
Actuator material	Anodised aluminium
ENVIRONMENTAL DATA	
Operating and storage temperature	–40 °C to +105 °C (with connector) –40 °C to +120 °C (without connector)

FEATURES

- 5 V power supply
- Analogue output with one sin/cos per revolution
- Incremental with 4096 cpr
- UVW signals for commutation up to 8 pole pairs motors

BENEFITS

- Excelent price performance ratio
- High speed
- Through-hole design
- Zeroing function
- Non-contact, frictionless design

Orbis™
Housed Through-hole Rotary Encoder

Orbis housed through-hole rotary encoder is designed for mounting on electric motors or other devices for position and speed control. The solid metal housing offers high IP67 protection and high EMC immunity and best possible shock and vibration resistance.

Coming soon

- MOTOR CONTROL
- PAN/TILT POSITIONING
- PRECISE GEAR BOX
- OFF-ROAD VEHICLES
- INDUSTRIAL AUTOMATION

TECHNICAL SPECIFICATIONS

SYSTEM DATA	
Reading type	Axial reading
Resolution	BiSS / SSI: 14 bit Analogue: One sin/cos per revolution
Maximum speed	BiSS/SSI: 12,000 rpm Analogue: 25,000 rpm
Accuracy	±0.3° (VG17), ±0.5° (VG25)
ELECTRICAL DATA	
Supply voltage	4.5 V to 5.5 V
Current consumption	BiSS/SSI: Typ. 65mA, analogue: Typ. 30 mA
MECHANICAL DATA	
Available magnet sizes (inner diameter)	22 mm, 30 mm
Magnet material	NeFeB with Ni-Cu-Ni protective layer (VG17) NeFeB with epoxy (VG25)
Available magnet actuator (inner diameter)	16 mm, 24 mm
Actuator material	Anodised aluminium
ENVIRONMENTAL DATA	
Operating and storage temperature	–20 °C to +85 °C (with connector) –30 °C to +120 °C (with cable)
Environmental protection	IP67

FEATURES

- True absolute with 14 bit resolution
- BiSS and SSI output
- Analogue output with one sin/cos per revolution
- M12, M8 connector or cable with flying leads

BENEFITS

- IP67 protection for harsh environments
- Easy installation
- Two sizes
- Built-in-self-diagnostics
- Through-hole design

Artos™
Absolute Rotary, Linear and Partial-arc Encoder System

MACHINE TOOL

ASSEMBLY LINES

INDUSTRIAL AUTOMATION

GIMBAL

HARSH ENVIRONMENT

The rotary absolute magnetic encoder system is designed for motion control applications as an angle and velocity control loop feedback element. A highly reliable measurement principle and processing deliver low position latency, high resolution and angular velocity. The robust design protects the readhead and magnetic ring against the ingress of liquid and high tempererature, allowing them to remain undamaged even in extremely contaminated and hot environments.

TECHNICAL SPECIFICATIONS

READHEAD	ENCLOSED	PCB-A MODULE
Supply voltage	From 4.75 V to 30 V	From 4.75 V to 30 V
Output communication protocols	BiSS C or SSI	BiSS C or SSI + parallel quadrature ABZ
Computational latency	11 µs	11 µs
Operating temperature	–40 °C to +85 °C	–40 °C to +85 °C
Environmental protection	IP67	Humidity: Up to 70 % non-condensing
Housing material	Aluminium (Eloxal - anodised)	-
Connection	M12 - 8 way; Flying leads; D SUB 9;	Molex locking 12 way (vertical or horizontal options)

FEATURES

- True absolute after power-on
- Operating temperature from –40 °C to +85 °C
- Resolution up to 23 bits
- Revolution speed up to 30,000 rpm
- Ring sizes up to OD 478 mm

BENEFITS

- Wide operating temperature range
- Simple and fast installation
- Robust EMC and IP67 construction
- SSI and BiSS C output
- Self-monitoring and set-up LED

FlexIN™
Magnetic Scale System for Large Diameters

FlexIN is a rubber-supported magnetic scale system with built-in tensioning mechanism compatible with LM10 or LM15 incremental encoders. It is designed for installation onto large shafts as an element of the position and speed control loop. The compact readhead has wide installation tolerances and offers industry standard output types and a reference pulse for relative position. The non-contact measuring principle ensures high reliability in demanding applications.

New

WIND TURBINE

RADIO TELESCOPE

SOLAR PANELS

CT SCANNING

HARSH ENVIRONMENT

TECHNICAL SPECIFICATIONS

SYSTEM DATA	WITH LM10	WITH LM15
Substrate diameter	350 mm to 3,500 mm	350 mm to 3,500 mm
Number of magnetic poles	564–5510	226–2204
Accuracy (at 1 m diameter)	±0.043°	±0.064°
Resolution	0.244 µm	0.61 µm
Hysteresis	<3 µm at 0.3 mm ride height	<12.5 µm at 1 mm ride height
MECHANICAL DATA		
Carrier material	1.4310 stainless steel	
Thickness	6.25 ±0.6 mm	
Width	$15^{+0.15}_{-0.05}$ mm	
Length	Min. 1.1 m; Max. 11 m	
Reference mark position (position of scale joint is 0°)	Recommended value: 180°	
	Min. 5°; max. 355°	
Reference mark position tolerance [°]	±1 mm × 360° / Ls (scale length in mm)	
ENVIRONMENTAL DATA		
Operating temperature	–40 °C to +85 °C (without readhead)	
Storage temperature	–40 °C to +60 °C (without readhead)	

FEATURES

- Rubber spring profile supported scale with bulit-in tensioning mechanism
- For external diameter installation
- Full circle measurements
- Compatible with LM10 and LM15

BENEFITS

- Wide operating temperature range
- For diameters from 350 mm to 3,500 mm
- Substrate thermal expansion compensation
- Large allowable shaft diameter tolerance ±0.2 mm

RoLin™
Miniature Incremental Linear and Rotary Encoders

RoLins are high-speed linear or rotary incremental encoders designed for use in space-constrained applications.

SMT PICK AND PLACE

ASSEMBLY LINES

INDUSTRIAL AUTOMATION

MEDICAL

PRINTING TECHNOLOGY

TECHNICAL SPECIFICATIONS

SYSTEM DATA		
Reading type		Linear, Rotary (Radial, Axial)
Pole length		2 mm
Available resolutions		From 250 µm up to 0.244 µm
Accuracy		Up to ±10 µm
Available output types	RLM RLC2IC RLC2HD and RLB	Differential and single ended ABZ, SSI, BiSS Differential RS422 Single ended TTL
Hysteresis		<3 µm (at 0.3 mm ride height)
ENVIRONMENTAL DATA		
Operating temperature	RLM RLC2IC RLC2HD and RLB	–40 °C to +85 °C –40 °C to +125 °C –30 °C to +85 °C

FEATURES

- Bidirectional reference mark
- Suitable for highly dynamic control loops
- Various connectors available
- High speed

BENEFITS

- Wide installation tolerances
- Miniature design
- Customer selectable resolutions
- Non-contact measuring principle

MR
Incremental Magnetic Rings

MOTOR CONTROL

INDUSTRIAL AUTOMATION

MEDICAL

ROBOTIC ARM JOINTS

The robust magnetic radial and axial rings are compatible with RLS standard LM family and component level RoLin readheads, which bring reliable solutions to surveilance, transportation, industrial automation, renewable energy and other tough, heavy duty motion control applications.

TECHNICAL SPECIFICATIONS

SYSTEM DATA	
Reading options	Rotary axial or radial
MECHANICAL DATA	
Ring sizes (outer diameter)	Axial rings: 19.5 mm to 282 mm Radial adhesive bonded rings: 31 mm to 325 mm
Installation options	Gluing, adhesive tape, shrink-fit, fasteners or press-fit
Cover foil for radial rings	Avilable as a special option. Welded cover foil is available for radial adhesive bonded rings.
ENVIRONMENTAL DATA	
Operating temperature	Axial rings (CPE): –40 °C to +100 °C Axial rings (HNBR): –40 °C to +160 °C Radial rings (HNBR): –40 °C to +85 °C

FEATURES

- Various diameter sizes
- Wide operating temperatures
- High rotational speeds
- Excellent shock resistance
- Compatible with LM and RoLin encoders
- Excellent environmental protection (welded cover foil option)

BENEFITS

- UV and ozone resistance
- Resistance to chemicals
- High reliability
- Single or distance coded reference mark

SpinCo™
High-speed Incremental Rotary Encoders

SPINDLE

INDUSTRIAL AUTOMATION

HARSH ENVIRONMENT

MOTOR CONTROL

ASSEMBLY LINES

SpinCo is an incremental magnetic encoder system designed for use as primary position and speed feedback sensor for machine tool spindles. It consists of two key elements, a readhead and a magnetic ring.
RLS proven AMR and GMR sensor technologies are used for sensing magnetized pattern on the magnetic ring to ensure accurate and reliable operation over the entire operating range.

TECHNICAL SPECIFICATIONS

SYSTEM DATA	
Pole length	1 mm or 2 mm
Resolution	Up to 4,096 steps per magnetic pole
Accuracy	Up to ±0.02°
Maximum speed	Up to 55,000 rpm
ELECTRICAL DATA	
Supply voltage	5 V ±10 % (absolute maximum 6 V) Reverse polarity and overvoltage protected
Current consumption	<50 mA (without load)
Set-up time	100 ms
Interface	1 Vpp differential or RS422 ABZ
MECHANICAL DATA	
Mass	Readhead: 120 g (1 m cable, no connector)
Cable	TPE AWG 26, shielded, Ø4.8 ±0.15 mm
Ring hub material	EN 1.4057
ENVIRONMENTAL DATA	
Operating and storage temperature	–40 °C to +85 °C
Environmental sealing	IP67 (according to IEC 60529)

FEATURES

- Speeds up to 55,000 rpm
- From 50 to 556 sin/cos ppr
- ABZ digital or analogue outputs
- 1 mm or 2 mm pole length
- Various ring diameters

BENEFITS

- 1 Vpp signal stability
- IP67 protection
- Wide installation tolerances
- Compact readhead size

LA11 and LF11
Absolute Linear Encoder Systems

LA11 and LF11 are absolute magnetic linear encoder systems designed for motion control applications as position and velocity control loop elements. Both systems offer high reliability due to their contactless absolute measuring principles. The LA11 is characterised by its built-in safety algorithms and high-quality materials/components that ensure reliable performance. The LF11, on the other hand, is a board-level encoder characterised by its miniature design and low weight, making it ideal for applications with limited space in relatively clean environments.

INDUSTRIAL AUTOMATION

PRINTING TECHNOLOGY

MACHINE TOOL

MEDICAL

ASSEMBLY LINES

TECHNICAL SPECIFICATIONS

SYSTEM DATA	LA11	LF11
Incremental pole length	2 mm	2 mm
System accuracy	±20 µm/m to ±30 µm/m	±30 µm/m
Hysteresis	<2 µm at 0.1 mm ride height	<2 µm at 0.2 mm ride height
Output communication protocols	SSI, SPI, BiSS C + parallel incremental AB or 1 Vpp	BiSS C
ELECTRICAL DATA		
Supply voltage	4.75–5.75 V or 8–30 V	5 V
Set-up time after switch-on	<350 ms	<1 s
Current consumption	<150 mA at 5 V power supply (without load)	<160 mA at 5 V power supply (without load)
MECHANICAL DATA		
Cable	PUR high flexible cable, double-shielded	-
Predefined scale lengths	AS: 16.3 m; SAS10: 1.36 m	AS: 16.3 m
ENVIRONMENTAL DATA		
Operating temperature (readhead)	0 °C to +55 °C	0 °C to +55 °C
Storage temperature (readhead)	–20 °C to +70 °C	–20 °C to +70 °C
Environmental protection	IP68 (readhead) IP67 (solid scale)	Humidity: up to 85 % non-condensing

FEATURES

- True absolute
- Resolution up to 0.244 µm
- Speeds up to 7 m/s at 1 µm resolution
- Scale lengths up to 16.3 m

BENEFITS

- Simple and fast installation
- Built-in self-monitoring
- Integrated status LED
- SSI, SPI, BiSS C + parallel incremental AB or 1 Vpp
- Excellent degree of protection to IP67

LA12

Absolute Encoder System with Mitsubishi, Yaskawa and Fanuc Serial Communications

MACHINE TOOL

LINEAR MOTOR

ASSEMBLY LINES

INDUSTRIAL AUTOMATION

COMPACT SIZE

LA12 is a true absolute magnetic encoder system designed for motion control applications as a position and velocity control loop feedback element. The encoder readhead is sealed to IP67 providing reliable and robust operation with high resolution.

TECHNICAL SPECIFICATIONS

SYSTEM DATA		
Maximum length	AS: 16.3 m; SAS10: 1.36 m	
Incremental pole length	2 mm	
System accuracy	±20 µm/m to ±30 µm/m	
Hysteresis	<2 µm at 0.2 mm ride height	
Unidirectional repeatability	<1 µm	
Available resolutions	Up to ~0.244 µm	
Maximum speed	Up to 7 m/s	
ELECTRICAL DATA		
Supply voltage	From 4.75 V to 5.5 V, reverse polarity protection	
Set-up time after power-on	<1 s	
Current consumption	<250 mA (at 5 V power supply and 15 m cable length, without load)	
MECHANICAL DATA		
Cable	PUR high flex cable, UL AWM recognised, drag-chain compatible, tinned braided shield. RoHS approved.	
ENVIRONMENTAL DATA		
Temperature	Operating	0 °C to +55 °C
	Storage	–20 °C to +85 °C

FEATURES

- True absolute system
- Fanuc Alpha I, Mitsubishi and Yaskawa serical communication protocols (Half-Duplex, RS-485)
- Robust design

BENEFITS

- Great EMC compatibility
- IP67 sealing
- Speeds up to 7 m/s
- Resolutions up to ~0.244 µm
- Built-in LED

AS and SAS
Absolute Magnetic Scales

The robust AS absolute magnetic scales consist of a stainless steel carrier and an elastomer-bonded ferrite. The elasto-ferrite layer is magnetised with an incremental magnetic pattern and a pseudo-random code for reliable absolute position sensing. The solid absolute scales consist of stainless steel substrate, which allows thermal expansion and improves thermal compensation, while the welded cover foil completely encapsulates the scale and protects it from aggressive industrial chemicals. The absolute AS and SAS magnetic scales are compatible with RLS LA11 and LA12, which ensure reliable operation due to the non-contact design.

INDUSTRIAL AUTOMATION

LINEAR MOTOR

MEDICAL

ASSEMBLY LINES

MACHINE TOOL

TECHNICAL SPECIFICATIONS

SYSTEM DATA	AS10	SAS10, SAS19	DS19
Compatible with readheads	LA11, LF11, LA12	LA11, LF11, LA12	Artos
Pole length	2 mm	2 mm	2 mm
Scale accuracy at 0.2 mm ride height	±30 µm/m	SAS10: ±20 µm/m SAS19: ±6 µm/m	±10 µm/m ±15 µm/m (option 003)
MECHANICAL DATA			
Length	16.3 m	1.36 m	32 m
Width	10 mm	18 mm	15 mm
Thickness	1.43 mm	6.08 mm	1.43 mm
Cover foil thickness	0.076 mm	-	0.076 mm
ENVIRONMENTAL DATA			
Maximum operating temperature	–40 °C to +100 °C	–40 °C to +100 °C	–40 °C to +100 °C
Environmental sealing	85 % non-condensing	IP67	85 % non-condensing

FEATURES

- Wide operating temperatures
- Excellent resistance to dirt, dust and humidity
- Totally enclosed SAS10 scale protected from contaminants (oils, coolants)
- Compatible with LA11, LA12 and LF11 encoders

BENEFITS

- Optional welded protective cover foil for heavy duty applications
- High reliability
- Easy installation with adhesive tape, end clamps or track section

HiLin™
High-accuracy Incremental Linear Encoders

LINEAR MOTOR

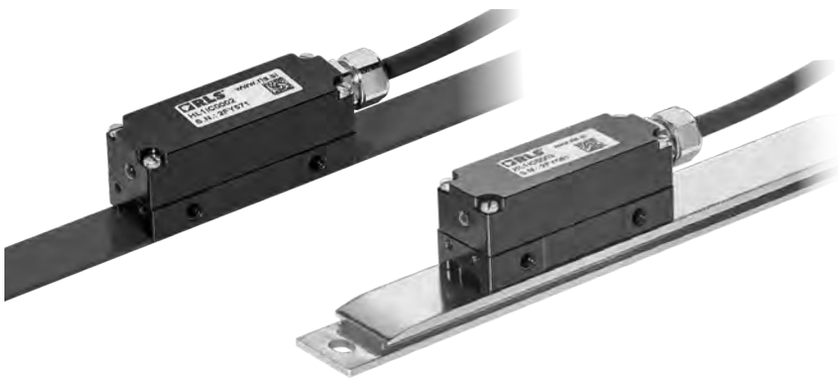
PRINTING TECHNOLOGY

MACHINE TOOL

SERVO MECHANISMS

HARSH ENVIRONMENT

The HiLin series of high accuracy magnetic encoders is a family of linear incremental systems suitable for a variety of demanding applications. The incremental encoder system consists of a compact sealed readhead and a separate magnetic scale.



TECHNICAL SPECIFICATIONS

SYSTEM DATA	HILIN + MS19/MS20 MAGNETIC SCALES	HILIN + HMS SOLID MAGNETIC SCALE
Pole length	2 mm, 2.032 mm	2 mm, 2.032 mm
Accuracy (at 20 °C)	±10 µm/m	±5 µm/m
Short length (30 mm) accuracy (at 20 °C)	±5 µm	±3 µm
Hysteresis	≤1 µm	≤1 µm
Repetability (unidirectional)	±0.4 µm	±0.4 µm
Ride height	0.1 mm–0.4 mm	0.1 mm–0.3 mm
SDE	±2 µm	±1.5 µm
Maximum measuring length	20 m	1.3 m
ELECTRICAL DATA		
Power supply	4.75 V to 12 V – voltage on readhead Reverse polarity and overvoltage protection (up to 15 V)	
Current consumption	<450 mA (with termination) <250 mA (without termination)	
Start-up time	<1 s	
ENVIRONMENTAL DATA		
Operating and storage temperature	–40 °C to +75 °C	
Environmental sealing	Resistance to dirt and dust	IP67

FEATURES

- Customer selectable resolutions down to 0.1 µm
- Unique, periodic or distance-coded reference mark
- Low hysteresis: ≤1 µm

BENEFITS

- High speed: 25 m/s with 1 µm resolution
- Industry-standard digital incremental RS422 output
- Wide operating temperature range from –40 °C to +75 °C

LM
Incremental Linear and Rotary Encoders

Linear and rotary incremental encoders are a compact, high-speed linear or rotary incremental magnetic encoders designed for use in harsh environments.

INDUSTRIAL AUTOMATION

ASSEMBLY LINES

LINEAR MOTOR

LABORATORY EQUIPMENT

PRINTING TECHNOLOGY

TECHNICAL SPECIFICATIONS

SYSTEM DATA	LM10	LM13	LM15
Reading type	Linear, Rotary (Radial, Axial)		Linear
Pole length	2 mm	2 mm	5 mm
Available resolutions	13 bit	13 bit	13 bit
Available output types	Incremental, analogue		
Hysteresis	<3 µm at 0.3 mm ride height	<4 µm up to 0.5 mm ride height	±12.5 µm up to 1 mm ride height
ENVIRONMENTAL DATA			
Operating temperature	–10 °C to +80 °C Cable under non-dynamic conditions: –20 °C to +85 °C		

FEATURES

- Bidirectional reference mark
- Integral set-up LED
- High speed

BENEFITS

- Wide installation tolerances
- Compact design
- Customer selectable resolutions
- Simple and fast installation
- Suitable for highly dynamic control loops

MS
Incremental Magnetic Scales

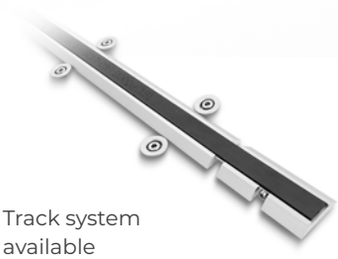
SMT PICK AND PLACE

INDUSTRIAL AUTOMATION

MEDICAL

PRINTING TECHNOLOGY

The robust RLS magnetic scales consist of a stainless steel carrier and an elastomer-bound ferrite. RLS incremental magnetic scales are compatible with RLS standard LM family or component level RoLin readheads, which bring reliable operation due to non-contact design. To minimise scale damaging caused by possible debris the scale can optionally be covered with a protective stainless steel cover foil.



Track system available

TECHNICAL SPECIFICATIONS

SYSTEM DATA	
Pole length	2 mm, 2.032 mm, 5 mm
Reference mark	Unique / DCRM / Multiple upon request
Accuracy class	±10 µm/m, ±20 µm/m, ±40 µm/m, ±100 µm/m
MECHANICAL DATA	
Length	Up to 150 m
Width	5 mm, 10 mm
Thickness	1.43 mm (with adhesive tape)
Minimum bend radius	75 mm
Cover foil thickness	0.076 mm
ENVIRONMENTAL DATA	
Operating temperature	–40 °C to +100 °C

FEATURES

- Wide operating temperatures
- Partial arc application available
- Compatible with LM and RoLin encoders

BENEFITS

- Optional protective cover foil for heavy duty applications
- Easy installation with adhesive tape, end clamps or track section
- Single or distance coded reference mark

OnAxis™
High Resolution Rotary Encoders

A family of modular, high-speed encoders designed for industrial standard output formats now offers an upgraded line with 14-bit resolution and 32 pole pairs for commutation. Available in various options to suit your needs, including board configurations, a range of flanges, and housing option.

INDUSTRIAL AUTOMATION

MOTOR CONTROL

OFF-ROAD VEHICLES

PAN/TILT POSITIONING

AGRICULTURAL AUTOMATION

TECHNICAL SPECIFICATIONS

SYSTEM DATA		
Resolution	Up to 14 bit	
Maximum speed	30,000 rpm	
Accuracy	±0.5 °	
Output types	Incremental A, B, Z; Absolute SSI; Absolute BiSS C	Complementary RS422
	Commutation + incremental	UVW Complementary RS422 + ABZ Complementary RS422
ELECTRICAL DATA		
Power supply	5 V	
Current consumption	Max. 60 mA	
ENVIRONMENTAL DATA		
Operating and storage temperature	–40 °C to +105 °C (Limited by connector. All other components are specified for operation from –40 °C to +125 °C)	

FEATURES

- Various diameters sizes
- UVW signals for commutation up to 32 pole pairs motors
- Incremental and absolute up to 14 bit resolution
- 5 V power supply

BENEFITS

- Simple installation and setup
- Non-contact, frictionless design
- Industry standard output format
- Long term reliability

OnAxis™
Housed Rotary Encoders

A family of compact, high-speed encoders designed for use in harsh environments. Available in different sizes and allowing various mounting options, these encoders provide a reliable position feedback for OEMs.

INDUSTRIAL AUTOMATION

MOTOR CONTROL

OFF-ROAD VEHICLES

PAN/TILT POSITIONING

AGRICULTURAL AUTOMATION

TECHNICAL SPECIFICATIONS

SYSTEM DATA		
Resolution	Up to 13 bit	
Maximum speed	60,000 rpm – depending on configuration	
Accuracy	Up to ±0.5°	
Output types	Analogue sin/cos	Single ended and differential
	Incremental A, B, Z	Complementary RS422, Open collector
	Absolute BiSS C and SSI	Complementary RS422
	Analogue linear voltage	Single ended
ELECTRICAL DATA		
Supply voltage	5 V or 24 V	
Current consumption	Max. 35 mA	
ENVIRONMENTAL DATA		
Operating and storage temperature	–40 °C to +125 °C	

FEATURES

- Various diameters and sizes
- Redundant version (RM44)
- 5 V or 24 V power supply
- Options with shaft and shaftless

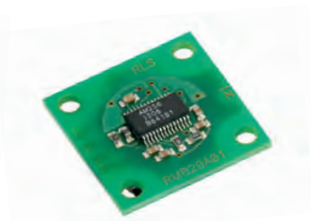
BENEFITS

- Simple installation and setup
- Setting the encoder zero position after the installation
- Long term reliability
- Non-contact, frictionless design
- Industry standard output formats

OnAxis™
Rotary Encoder Modules

A family of modular, high-speed encoders designed for industrial standard output formats. The encoder module consists of a magnetic actuator and a separate sensor board for simple OEM integration.





New

INDUSTRIAL AUTOMATION

ROBOTIC ARM JOINTS

MOTOR CONTROL

PAN/TILT POSITIONING

MEDICAL

TECHNICAL SPECIFICATIONS

SYSTEM DATA		
Resolution	Up to 13 bit	
Maximum speed	60,000 rpm – depending on configuration	
Accuracy	Up to ±0.5°	
Output types	Analogue sin/cos	Single ended Differential
	Incremental A, B, Z	Complementary RS422, Open collector
	Absolute SSI	Complementary RS422
	Analogue linear voltage	Single ended
ELECTRICAL DATA		
Supply voltage	5 V or 24 V	
Current consumption	Max. 35 mA	
ENVIRONMENTAL DATA		
Operating and storage temperature	–40 °C to +125 °C	

FEATURES

- Various diameter sizes and connector options
- Redundant version (RMB28)
- Optional encoder module on metal flange
- Industry standard output formats
- 5 V or 24 V power supply
- High speed

BENEFITS

- Simple installation and setup
- Optimisation after installation with SATI
- Low cost for OEM integration
- Industry standard output formats
- Excellent price performance

The smallest OnAxis™
Rotary Encoders

With their compact and lightweight design the miniature OnAxis™ encoders are perfect for medical applications, optics positioning, robot joint control, 3D printers, gimbals and hand held devices. The proven RLS non-contact sensing technology brings high reliability and performance in harsh applications.

ROBOTIC GRIPPERS

PAN/TILT POSITIONING

INDUSTRIAL AUTOMATION

MEDICAL

MOTOR CONTROL

TECHNICAL SPECIFICATIONS

	Non-contact encoders		Housed encoders		Shaft encoder
SYSTEM DATA	RMB20	RMB14	RM16	RM08	RE16
Encoder type	Incremental and absolute				
Maximum speed	60,000 rpm		30,000 rpm		
Accuracy	±0.5	±0.5	±0.5	±0.3	±0.3
Maximum resolution	13 bits	12 bits	12 bits	12 bits	12 bits
ELECTRICAL DATA					
Supply voltage	5 V	3.3 V or 5 V	3.3 V or 5 V	3.3 V or 5 V	3.3 V or 5 V
Current consumption	Max. 35 mA				
ENVIRONMENTAL DATA					
Operating temperature	–40 °C to +125 °C	–40 °C to +85 °C	–40 °C to +125 °C	–40 °C to +85 °C	–30 °C to +125 °C

FEATURES

- Various diameters sizes
- Industry standard output formats
- 5 V or 3.3 V power supply
- High speed

BENEFITS

- Miniature size
- High precision for maximum efficiency and control
- Resolution up to 13 bits
- True absolute rotary encoders

RMC
Motor Commutation Encoders with Zeroing Feature

The RMC is designed for use in motor feedback applications requiring both A, B, Z incremental and U, V, W commutation signals. The RMC22BC provides analogue complementary sinusoidal outputs.

TEXTILE INDUSTRY

PAN/TILT POSITIONING

INDUSTRIAL AUTOMATION

AGRICULTURAL AUTOMATION

MOTOR CONTROL

TECHNICAL SPECIFICATIONS

SYSTEM DATA		
Commutation outputs	Ux	U, V, W (±24 mA output drive)
	Wx, RMC35	U, V, W, U-, V-, W- (RS422)
Incremental outputs		A+, A-, B+, B-, Z+, Z- (RS422)
Maximum speed		30,000 rpm
Accuracy		Typ. ±0.5°
ELECTRICAL DATA		
Supply voltage		5 V
Current consumption (without load)	RMC22	RMC22BC: 20 mA RMC22Ux: 30 mA
	RMC35	Max. 40 mA
ENVIRONMENTAL DATA		
Operating and storage temperature		–40 °C to +105 °C Limited by connector. All other components are specified for operation from –40 °C to +125 °C.

FEATURES

- Compact body
- UVW signals for commutation up to 8 pole pairs motors
- Incremental resolution to 8,192 cpr
- High speed

BENEFITS

- Simple installation and setup
- Zeroing function
- Non-contact, frictionless design
- Long term reliability
- Excellent price performance

LinACE™ Flat-Board
InAxis Absolute Linear Shaft Encoder

LinACE flat-board is a high accuracy absolute linear magnetic encoder system with excellent resolution and repeatability. The encoder system consists of a board level encoder readhead and coded solid steel shaft that serves as the measuring standard.

New

PROCESS AND CONTROL

INDUSTRIAL AUTOMATION

MACHINE TOOL

MEDICAL

SERVO MECHANISMS

TECHNICAL SPECIFICATIONS

SYSTEM DATA		
Maximum measuring length		300 mm
Shaft diameter		6 mm
System accuracy		±10 µm, ±25 µm, ±50 µm, ±100 µm
Maximum speed		5 m/s
Repeatability		Less than unit of resolution
Hysteresis		Less than unit of resolution (without mechanical assembly influence)
ELECTRICAL DATA		
Supply voltage		4.5 V to 5.5 V – voltage on readhead.
Output load		±40 mA
Set-up time		5 ms (after power up)
Current consumption		Typ. 115 mA, max. 150 mA (without output load)
MATERIAL		
Coded shaft	Option A	Carbon steel, nickel coating, code is visible
	Option B	Carbon steel, hard-chrome coating 800 HV to 1100 HV (except end surfaces and threaded holes), code is hidden
Readhead		Assembled PCB
ENVIRONMENTAL DATA		
Operating and storage temperature		–40 °C to +105 °C

FEATURES

- Non-contact technology for high reliability
- Absolute position at power up (SSI, BiSS C and Asynchronous serial output)
- Resolutions up to 0.5 µm
- Measuring length up to 300 mm

BENEFITS

- Coded shaft can rotate during measurement
- Built-in self monitoring
- Excellent resistance to stray magnetic fields
- Stable over whole temperature range
- Suitable for highly dynamic control loops

LinACE™
InAxis Absolute Linear Shaft Encoder

PROCESS AND CONTROL

INDUSTRIAL AUTOMATION

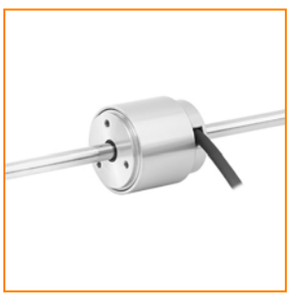
MACHINE TOOL

MEDICAL

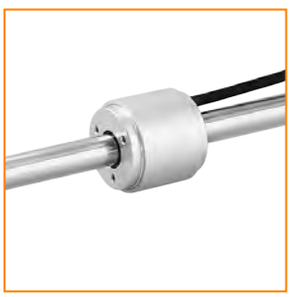
SERVO MECHANISMS

LinACE is an extremely robust absolute linear cylindrical encoder system designed to be integrated into the servomechanism as a transducer, providing accurate measurements with excellent resolution and repeatability. It can be used as a control device or integrated directly into hydraulic, pneumatic, electromechanical actuators and linear motors as a position or velocity feedback element.

Radial cable exit



Axial cable exit



TECHNICAL SPECIFICATIONS

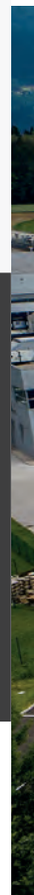
SYSTEM DATA	
Maximum measuring length	450 mm
Shaft diameter	6 mm, 8 mm, 12 mm
System accuracy	±5 µm (for measuring lengths up to 100 mm) ±10 µm, ±25 µm, ±50 µm, ±100 µm (for measuring lengths up to 450 mm)
Maximum speed	5 m/s
Repeatability	Less than unit of resolution
Hysteresis	Less than unit of resolution (without mechanical assembly influence)
ELECTRICAL DATA	
Supply voltage	4.5 V to 5.5 V – voltage on readhead
Set-up time	200 ms (after power up)
Current consumption	Typ. 100 mA, max. 120 mA (without output load)
Voltage drop over cable	~ 55 mV/m (without output load)
MATERIAL	
Shaft	Carbon steel, Hard chrome coating 800 HV to 1100 HV
Readhead	Aluminium 6082; anodized 10-15 µm (except threaded holes)
ENVIRONMENTAL DATA	
Operating and storage temperature	–30 °C to +105 °C

FEATURES

- High accuracy
- Absolute position at power-up
- Resolutions up to 0.5 µm
- Measuring length up to 450 mm

BENEFITS

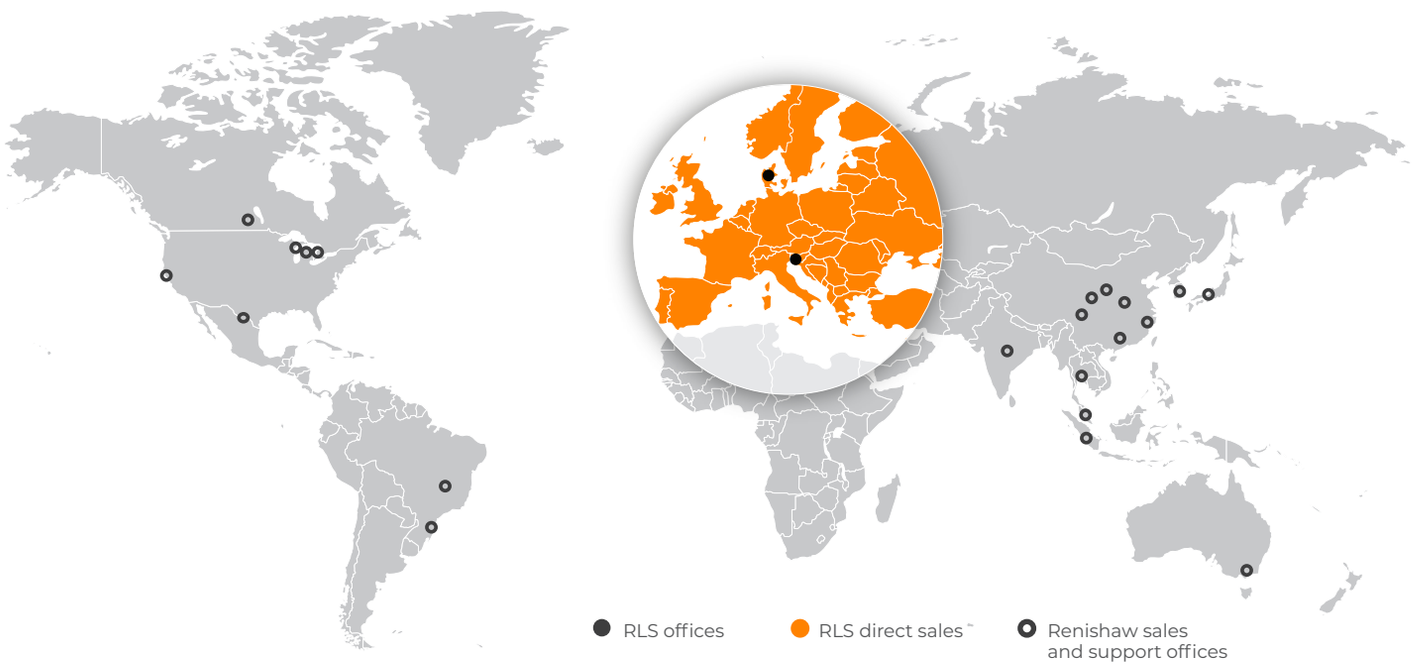
- Coded shaft can rotate during measurement
- Built-in self monitoring
- Excellent resistance to stray magnetic fields
- Stable over whole temperature range
- Suitable for highly dynamic control loops



Global Support

RLS is proud to be an associate company of Renishaw, a world-leading metrology specialist, which holds a 50% share in RLS and supports the global distribution of our magnetic encoders through its extensive international network.

At RLS, we see ourselves not just as a team, but as a global family dedicated to providing exceptional support. Across all major markets, our diverse team of experts is ready to connect, collaborate, and help your business reach its full potential.



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RLS Direct Sales Team

At RLS, we're not just a team; we're a global family committed to ensure excellent support for you. Our professionals are more than salespeople; they are industry advisors who stand ready to guide you through every step of your journey with us.
Meet our diverse team of experts in every major market who are excited to connect with you and help your business achieve its fullest potential.

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