

Magnetic rotary and linear motion sensors





KEEPING PACE WITH OUR VISION

We design, produce and supply advanced rotary and linear motion sensors to meet growing global market demands. Our experience and knowledge combined with innovative ideas enable us to offer custom product solutions to match customer's needs.

Over the last few decades we worked closely with partners from a broad range of industries. From heavy machinery, advanced surgical and collaborative robots, aerospace and submarine applications to one of the largest solar power plants in the world, our encoders work in diverse environments.

We will maintain our high level of investment in research and development, as it is our aim to create the most technologically ground-breaking solutions and innovations. This is also the type of knowledge we are able to protect the most effectively. Investing in our employees' knowledge and forging long-lasting bonds with external partners are crucial parts of realizing our vision and in continuing our trend of fast growth.

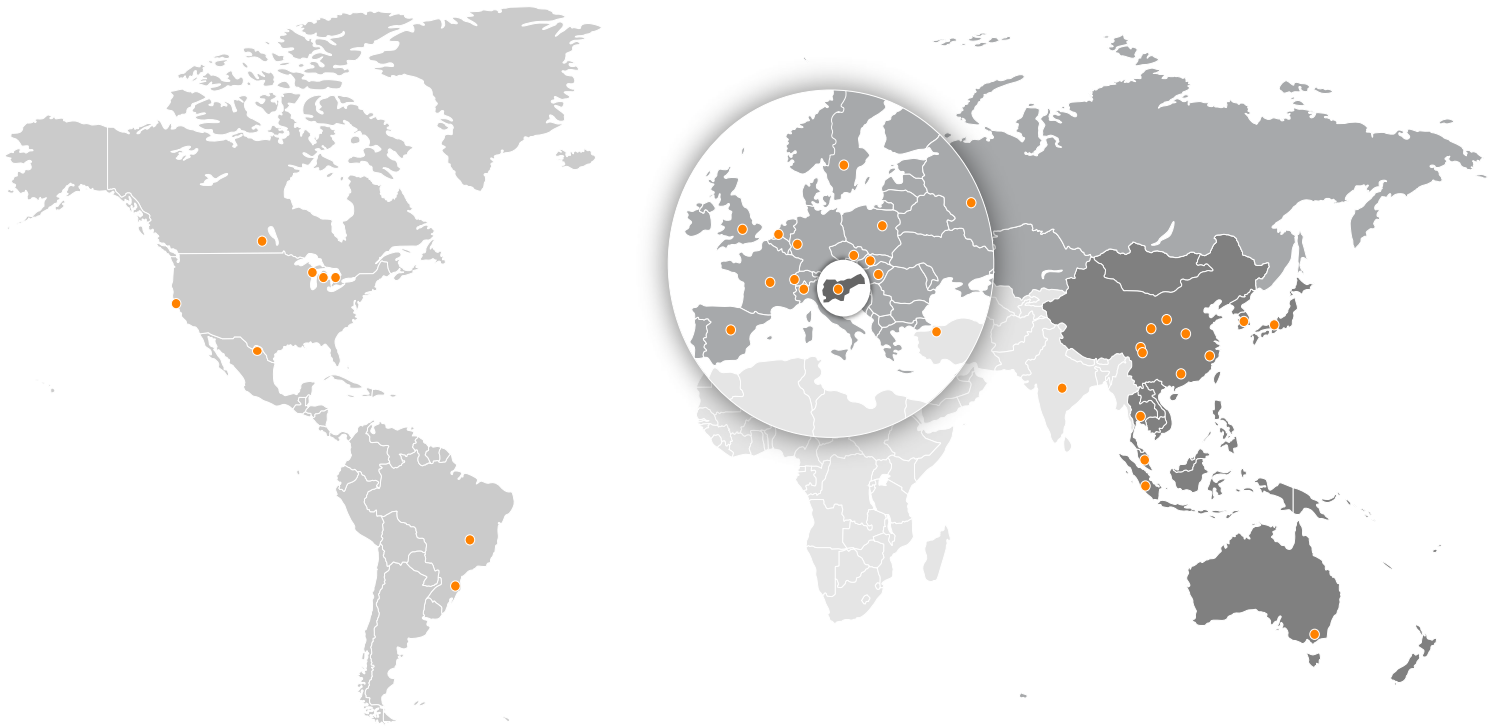
We will strive to understand our customers' needs and the trends in individual industries with even greater nuance.

Janez Novak
Director



GLOBAL SUPPORT

RLS is an associate company of Renishaw, a world leading metrology company which holds a 50% share in the ownership of RLS, and which sells and supports our magnetic encoders through an extensive global network.



OUR VISION

Becoming the front-runner in terms of advanced rotary and linear motion sensors on a global scale, and tapping into the **global market** together with Renishaw. Becoming the leading provider of advanced metrology solutions for machine building and process automation on **local markets**.

OUR MISSION

RLS' mission is to design, manufacture and supply advanced motion sensors and their components that meet the increasingly demanding requirements of the market.



AKSIM™ ROTARY TRUE ABSOLUTE ENCODER

The AksIM rotary through-hole magnetic encoders have been designed for integration into space-constraint applications. A hollow ring, true-absolute functionality and high speed operation make this encoder suitable for robotic applications.

NEW!



Technical specifications

Reading options	Rotary axial, true absolute
Ride height	0.2 mm \pm 0.1 mm
Interfaces	SSI, PWM, SPI, BiSS-C bidirectional, Asynchronous serial
Resolution	Up to 20 bit and 16 bit multiturn
Maximum speed	10,000 rpm
Power consumption	120 mA
Accuracy	\pm 0.1°
System thickness	7.8 mm

Features

- NEW! ring diameters and readhead sizes
- Resolutions up to 20 bits
- Multiturn counter option
- High speed operation
- Low profile, non-contact
- Built-in self-diagnostics

Applications

- Robotic arm joints
- Video-surveillance systems
- Hub motors
- Steering systems



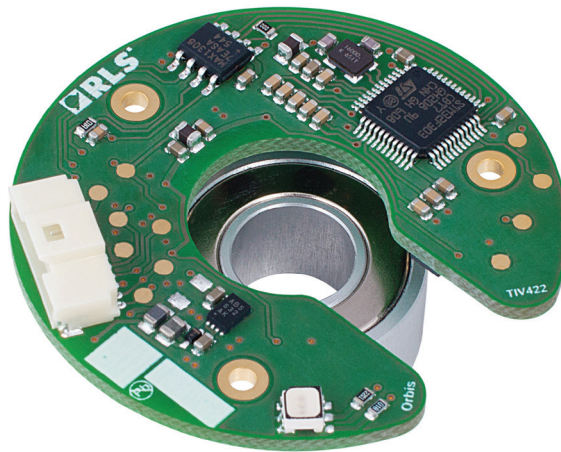
»RLS encoders are a compact and lightweight solution for our robots.«

PAL Robotics, Spain

AksIM absolute rotary board level encoder in joints of PAL robotics' humanoid robot.

ORBIS™ ROTARY TRUE ABSOLUTE ENCODER

Orbis is a true-absolute through-hole rotary magnetic encoder. With wide installation tolerances this encoder is especially suitable for applications at the end of the rotating shaft and built-in self-monitoring feature and the self-calibration after installation bring reliable and accurate position feedback in even the toughest environments.



Technical specifications

Reading options	Rotary axial, true absolute
Ride height	4 mm ± 1 mm
Interfaces	Absolute SSI, PWM, SPI, BiSS-C, Asynchronous serial
Resolution	14 bit and 16 bit multiturn
Maximum speed	10,000 rpm
Power consumption	65 mA
Accuracy	±0.25°

Features

- True absolute encoder
- Wide installation tolerances
- Built-in self-diagnostics
- Self-calibration after installation
- Status LED

Applications

- Robotic arm joints
- Video-surveillance systems
- Hub motors
- Steering systems (off-road, non-automotive)

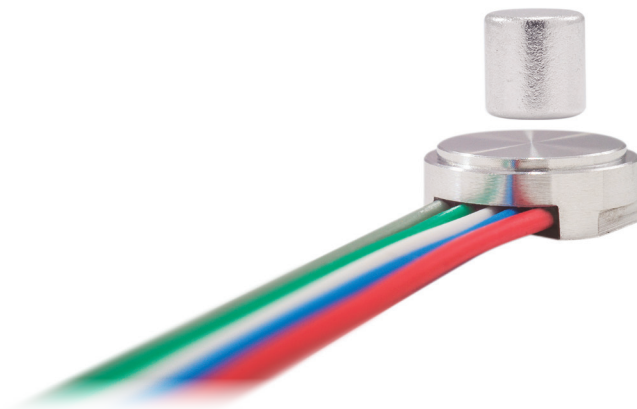


Compact, lightweight magnetic encoders bring reliable position feedback for gimbals and surveillance cameras.



RM08 ROTARY INCREMENTAL ENCODER

The RM08 is a compact, super small high-speed rotary magnetic encoder designed for use in harsh environments. The non-contact two part design removes the need for seals or bearings ensuring longterm reliability and simple installation.



Technical specifications

Reading options	OnAxis rotary
Ride height	To 1 mm \pm 0.5 mm
Interfaces	Incremental RS422, Absolute SSI, Sin/Cos, Linear voltage
Resolution	To 12 bit
Maximum speed	30,000 rpm
Power supply	3.3 V or 5 V
Encoder accuracy	Up to $\pm 0.3^\circ$

Features

- Super small Ø8 mm body
- High speed operation
- Non-contact, frictionless design
- Excellent shock resistance
- Operating temperature from -40°C to $+85^\circ\text{C}$

Applications

- Motor motion control
- Robotic grippers
- Video-surveillance systems



Physically small enough to use where space is at a premium and, at the same time robust, simple and reliable.

RM08 miniature rotary magnetic encoder in robot gripper application.

LA11 LINEAR TRUE ABSOLUTE ENCODER

LA11 is a true absolute encoder system designed for motion control applications as a position and velocity control loop feedback element. The encoder is highly reliable due to contactless absolute measuring principle, built-in safety algorithms and high quality components used.



Technical specifications

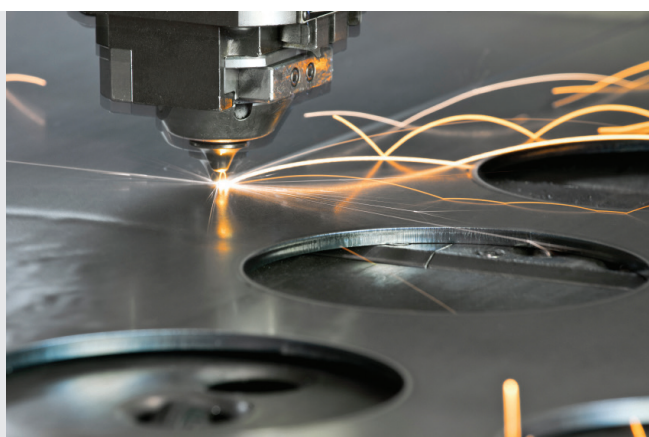
Reading options	Linear, true absolute
Ride height	From 0.1 mm to 0.6 mm
Interfaces	RS422, SSI, SPI, BiSS-C, 1 Vpp
Resolution	To 0.244 μm
Maximum speed	Up to 7 m/s
Power consumption	Max. 170 mA
Accuracy	$\pm 40 \mu\text{m/m}$

Features

- True absolute system
- Integral status LED
- Excellent degree of protection
- Suitable for highly dynamic control loops

Applications

- Textile manufacturing
- Printing, packaging, plastics processing
- Automation and assembly systems
- Laser/flame/water-jet cutting
- Electronic assembly equipment



LA11 linear absolute magnetic encoder in a laser cutting application.

LM13 LINEAR AND ROTARY INCREMENTAL ENCODER

LM13 is a compact, high-speed linear or rotary incremental magnetic encoder designed for use in harsh environments.



Technical specifications

Reading options	Linear and rotary
Ride height	From 0.1 mm to 1.0 mm
Interfaces	RS422, 1 Vpp
Resolution	To 0.244 μm
Maximum speed	Up to 80 m/s
Power consumption	Max. 50 mA
Accuracy	$\pm 20 \mu\text{m/m}$ (depends on scale accuracy)

Features

- Compact design
- Bidirectional reference mark
- High-speed operation
- Integral set-up LED
- Excellent resistance to chemicals commonly found in industry

Applications

- Stone-cutting, sawing, woodworking
- Textile manufacturing
- Printing, packaging, plastics processing
- Automation and assembly systems
- Laser/flame/water-jet cutting
- Electronic assembly equipment



LM13 linear magnetic encoder with IP68 environmental protection in a stone cutting application.

LM10 LINEAR AND ROTARY INCREMENTAL ENCODER

LM10 is a high-speed linear or rotary incremental magnetic encoder designed for use in harsh environments. The robust magnetic scale is also resistant to a range of chemicals commonly found in industry.



Technical specifications

Reading options	Linear and rotary
Ride height	From 0.1 mm to 1.0 mm
Interfaces	RS422, Push-pull, 1 Vpp, Open collector
Resolution	To 0.244 μm
Maximum speed	Up to 80 m/s
Power consumption	Max. 50 mA
Accuracy	$\pm 20 \mu\text{m/m}$ (depends on scale accuracy)

Features

- Bidirectional reference mark
- High-speed operation
- Customer selectable resolutions
- Integral set-up LED

Applications

- Stone-cutting, sawing, woodworking
- Textile manufacturing
- Printing, packaging, plastics processing
- Automation and assembly systems
- Laser/flame/water-jet cutting
- Electronic assembly equipment



LM10 linear incremental magnetic encoder is capable of working in extreme conditions.



LM15 LINEAR AND ROTARY INCREMENTAL ENCODER

The solid-state LM15 encoders have been designed as a position feedback sensor with wide installation tolerances. The robust magnetic scale is also resistant to a range of chemicals commonly found in industry.



Technical specifications

Reading options	Linear and rotary
Ride height	From 0.1 mm to 4 mm
Interfaces	RS422, Push-pull, 1 Vpp, Open collector
Resolution	To 0.61 μm
Maximum speed	Up to 200 m/s
Power consumption	Max. 50 mA
Accuracy	$\pm 100 \mu\text{m/m}$

Features

- High-speed operation
- Customer selectable resolutions
- Integral set-up LED
- Wide installation tolerances
- Suitable for high dynamic control loops

Applications

- Stone-cutting, sawing, woodworking
- Textile manufacturing
- Printing, packaging, plastics processing
- Automation and assembly systems
- Laser/flame/water-jet cutting



LM15 linear incremental magnetic encoder in a printing application.

MAGNETIC INCREMENTAL RING ENCODERS

The magnetic incremental rings are a reliable solution for tough, hard-working applications including spindles, lathes and other machine tool applications. The robust magnetic rings are resistant to a range of chemicals commonly found in industry and by use of protective foil these features can be improved even more.



Technical specifications

Reading options	Rotary axial or radial
Ring sizes (OD)	From 19.5 mm to 406 mm
Pole length	2 mm or 5 mm
Maximum operating temperature	-40 °C to +160 °C
Installation options	Gluing, adhesive tape, shrink-fit, fasteners or press-fit
Cover foil	Available as a special option

Features

- Various diameters and sizes
- Wide operating temperatures
- High rotational speeds
- Excellent shock resistance

Applications

- Machine tool
- Transportation
- Motor motion control



Escalators and lifts benefit from magnetic ring encoders' reliable operation.



ONAXIS™ PACKAGED ROTARY MAGNETIC 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.



Technical specifications

Reading options	OnAxis rotary
Interfaces	Incremental RS422, Absolute SSI, Sin/Cos, Linear voltage
Resolution	To 13 bit
Maximum speed	60,000 rpm
Power supply	5 V or 24 V
Encoder accuracy	±0.5°

Features

- Various diameters and sizes
- Excellent resistance to chemicals commonly found in industry
- Easy to install

Applications

- Marine
- Industrial automation
- Motor motion control



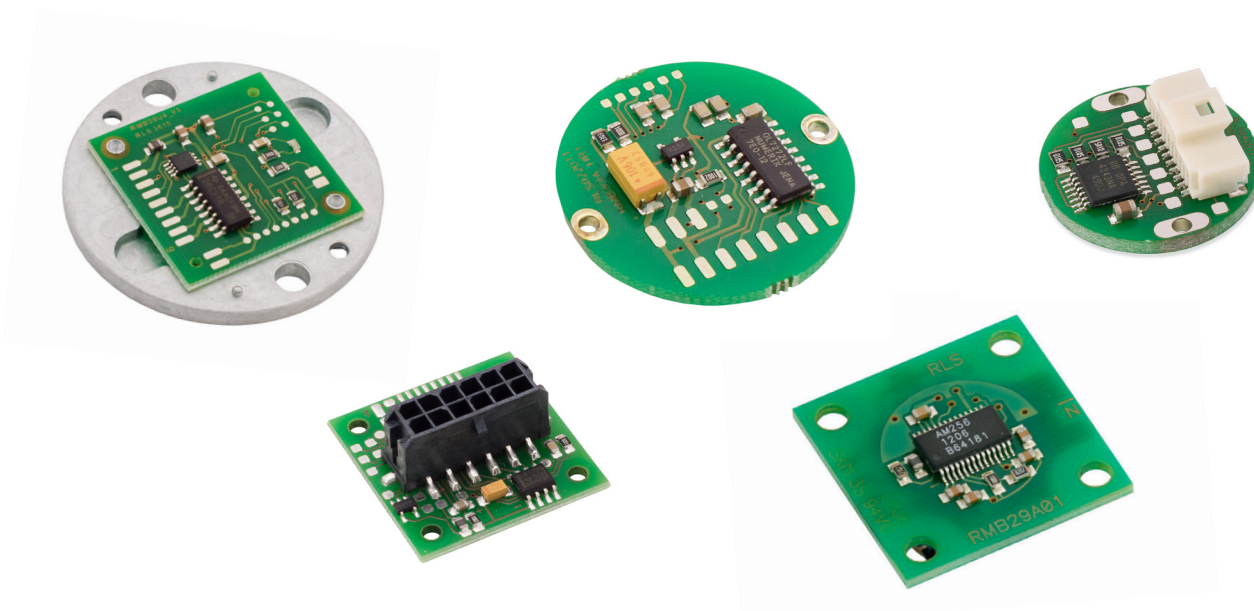
»I honestly think that only a space rocket would be a tougher environment for the encoder.«

Salakazi Racing team

RM22 encoder installed in KTM dragster motorcycle by Salakazi Racing team.

ONAXIS™ ROTARY MAGNETIC ENCODER MODULES

A family of modular, high-speed encoders designed for use in harsh environments. The encoder module consists of a magnetic actuator and a separate sensor board for simple OEM integration.



Technical specifications

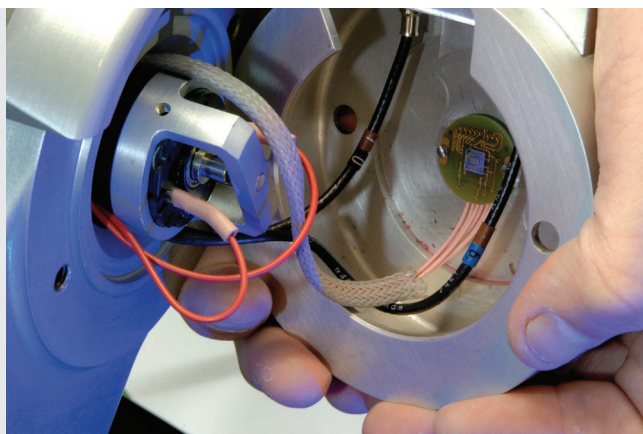
Reading options	OnAxis rotary
Ride height	From 0.8 mm to 1.9 mm
Interfaces	Incremental RS422, Absolute SSI, Sin/Cos, Commutation, Linear voltage
Resolution	To 13 bit
Maximum speed	60,000 rpm
Power supply	5 V or 24 V
Encoder accuracy	±0.5°

Features

- Various sizes and connector options
- Industry standard output formats
- Low cost for OEM integration
- Easy to install

Applications

- Industrial automation
- Metal working
- Motor motion control



RMB20 module installed in the Guardian, explosive disposal remotely operated vehicle.



ONAXIS™ ROTARY MAGNETIC ENCODER ICs

A family of compact, high-speed encoders designed for use in harsh environments. A magnet and a separate sensor IC that comes in different packages allow various mounting options and provide a reliable position feedback for OEMs.



Technical specifications

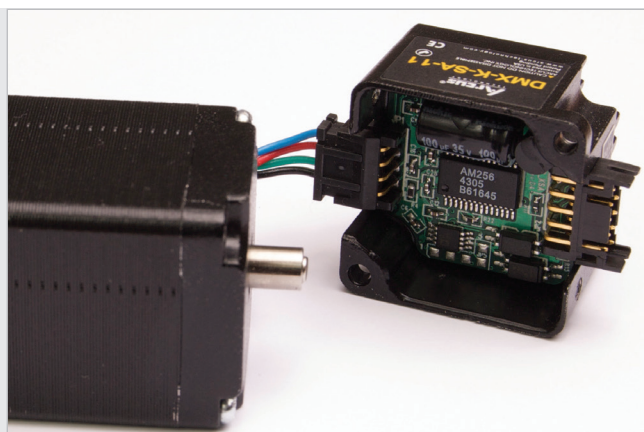
Reading options	OnAxis rotary
Ride height	1 mm ± 0.1 mm
Interfaces	Incremental, Absolute SSI, Sin/Cos, Commutation, Linear voltage
Resolution	To 13 bit
Maximum speed	60,000 rpm
Power supply	3 V or 5 V
Encoder accuracy	±0.5°

Features

- High speed operation
- Selectable resolutions
- Programmable zero position
- Reliable operation due to non-contact sensing principle

Applications

- Robotics
- Camera positioning
- Motor motion control



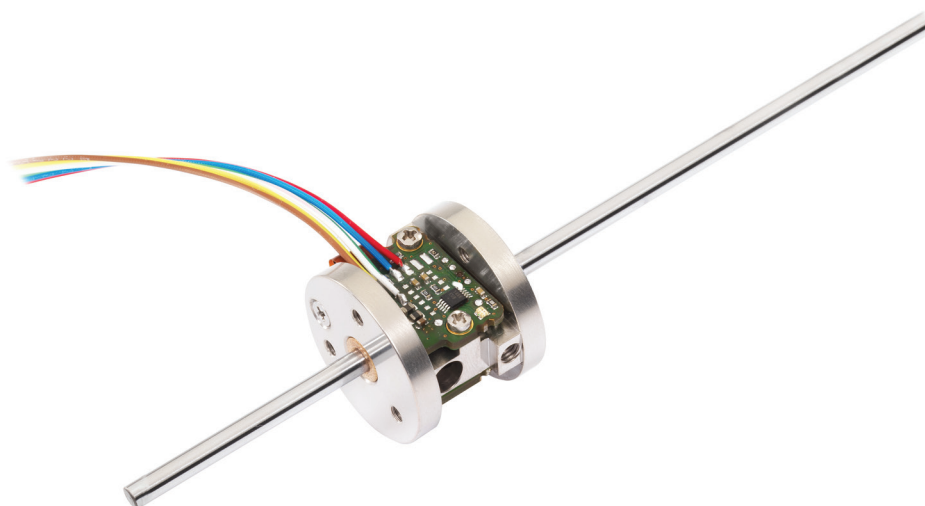
The AM256 combines ruggedness and performance needed for harsh environments.

Arcus Technology

AM256 encoder IC installed in Arcus Technology's NEMA 11 microstep motor.

LINACE™ ABSOLUTE LINEAR SHAFT MAGNETIC ENCODER

An innovative, extremely robust absolute linear cylindrical encoder system designed for integration into hydraulic, pneumatic and electromechanical actuators as a feedback element for position and velocity closed loop applications.



Technical specifications

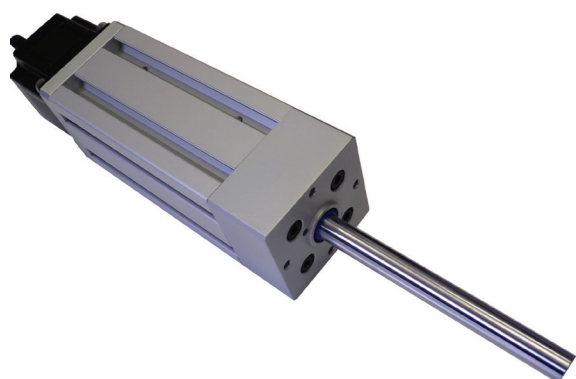
Reading options	InAxis linear
Shaft diameter	4 mm, 8 mm and 12 mm
Shaft overall length	500 mm
Interfaces	Asynchronous serial, PWM, SSI, BiSS, CAN
Resolution	To 0.5 μm
Maximum speed	5 m/s
Power consumption	Typ. 115 mA, max. 150 mA
Encoder accuracy	$\pm 5 \mu\text{m}$

Features

- InAxis™ measuring technology
- Custom ASIC based magnetic sensor
- For direct integration into an actuator
- Built-in self-monitoring

Applications

- Medical
- Actuators
- Industrial automation



LinACE in an electric actuator.

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