35th

35 YEARS YOUNG
1982.2017

lika

Smart encoders & actuators

Products for the elevator industry 2017

1982

35th

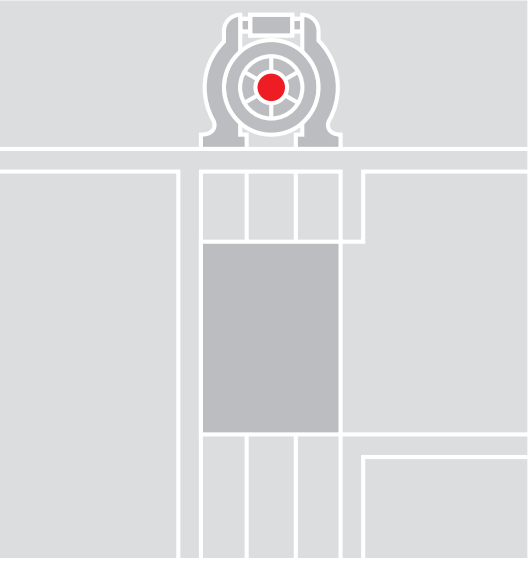
35 YEARS YOUNG

2017

Since its inception in 1982, Lika Electronic **develops and manufactures incremental and absolute, optical and magnetic, rotary and linear encoders, incremental & absolute sensors, linear and rotary incremental & absolute magnetic measurement systems, integrated positioning units, displays & position controllers.**
Thanks to a wide range of technical engineering skills and in-depth knowledge and expertise in digital and analogical electronic design, software development & mechanical and optical components design, all managed inside the company, Lika Electronic is able to translate the **customers' specific requirements** and needs into **high-reliability and performance solutions** both serial and customized.
This has allowed Lika Electronic to be recognized among the leading manufacturers of encoders in Europe.
Lika Electronic operates worldwide providing a widespread and efficient global distribution network and an excellent customer service and superior technical support.

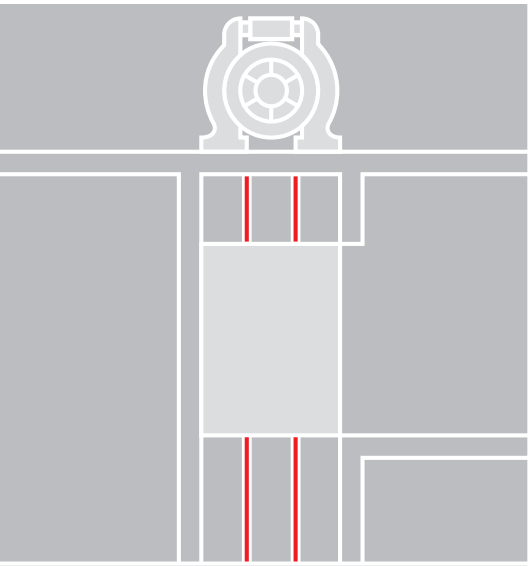
Lika Electronic is certified for compliance with **ISO 9001:2000 quality management system** and is now committed to adopt an environmental management system complying with ISO 14001:2004 requirements.

Index



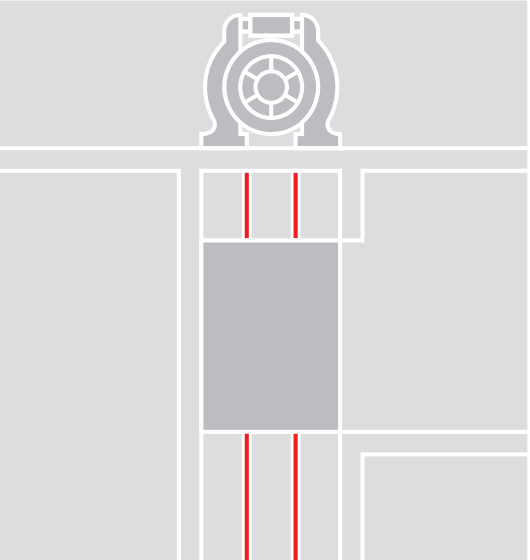
Moving

Core of the elevator system is the motor used to raise and lower the elevator car.
Traditionally a geared traction motor drives a gear-type reduction unit, which turns the hoisting sheave. While slower than a typical gearless elevator, the gear reduction offers the advantage of requiring a less powerful motor to turn the sheave. These elevators typically operate at speeds up to 2.5 m/s (500 ft/min) and carry loads of up to 14,000 kg (30,000 pounds).
Gearless traction motor technology has brought about rapid changes within the elevator industry.
A few reasons for its increased popularity include the ability of longer travels up to the tallest buildings; higher mechanical and electrical efficiency; elimination of parts and thus reduced physical size that allows for a smaller machine room or machine-room-less (MRL) installations; and low overall maintenance.
Whatever you choose, both geared and gearless traction motors require rugged, vibration-resistant, high accuracy, high precision and long service life encoders to improve the car comfort and reduce the maintenance costs, at the highest safety levels.



Ensuring Safety

Overspeed governor is a mechanical speed control mechanism required by the standards for the prevention of free fall or the downward and even upward movement at excessive speed of the elevator car. It is a wire-rope driven device actuated by the centrifugal force exerted on a pulley when the motor speed has increased a set percentage over the rated name plate speed.
It acts both mechanically by driving the safety gear which stops and holds the movement of the car and electrically by tripping a switch which cuts off the power supply to the machine.
"Safety, first!" is the keyword. It is not inappropriate to state that elevators have started or at least have been developed after the overspeed governor has been devised. Nowadays there are several safety devices which are intended to control the proper running of the elevator and they are often invisible to passengers. Speed control, for instance, is a prerequisite for a comfortable but first and foremost safe and protected ride. For maximum safety and permanent and accurate control of the car position, high-resolution absolute encoders must be installed, that are precise and dependable at any situation. Although unexpected. Because safety comes first!

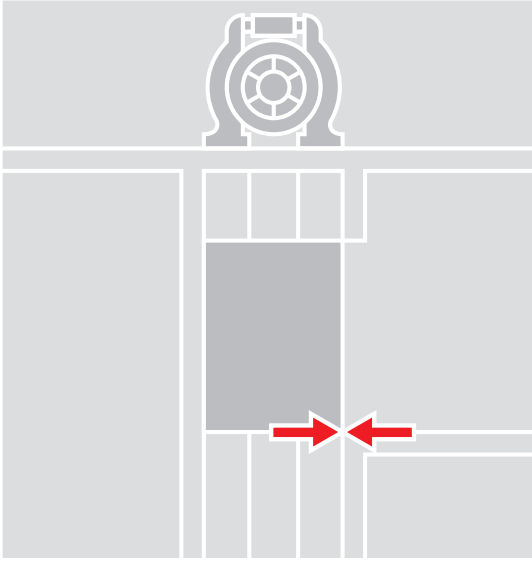


Controlling

Controlling the position of the elevator car and ensuring an accurate measurement of the speed is of the utmost importance in any modern elevator installation. Quiet and smooth ride, gentle stopping and greatest safety require the shaft copy system not to miss a pulse!
Thus the most dependable and finest absolute encoders must be installed to achieve exact monitoring of distances, speeds and accelerations of the elevator car. Furthermore, they have also to be insensitive to adverse ambient conditions such as high atmospheric humidity, dust and high temperature variations. Because every single movement must always be performed the safest and comfortable way, without exception.

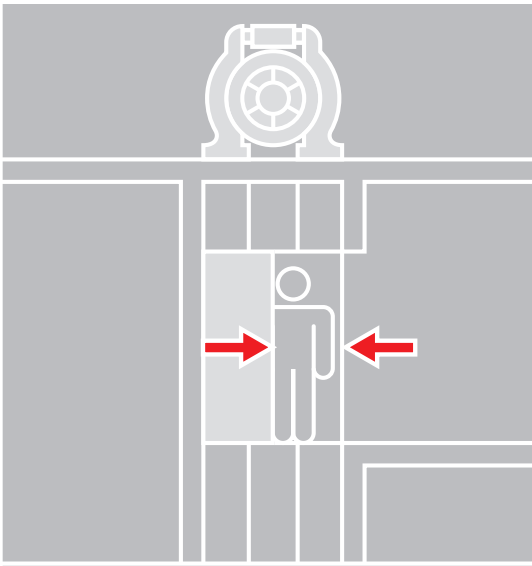
Positioning

Perfect precision of levelling at landings is not only an unavoidable safety need, but also a specific requirement of lift directives. UNI EN 81-70 states that the stopping accuracy of the car shall be ± 10 mm (0.393"); while a levelling accuracy shall be maintained to ± 20 mm (0.787").
Even a small difference between the landing sill and the car sill can thus be unacceptable.
Car position measurement systems play a fundamental role in fully satisfying these strict requirements. Lika Electronic offers simple, robust and affordable solutions, capable of resolutions up to 0.1 mm (0.0039"). They allow for a balanced motion profile and high levelling accuracy in the most different load conditions.



Sliding

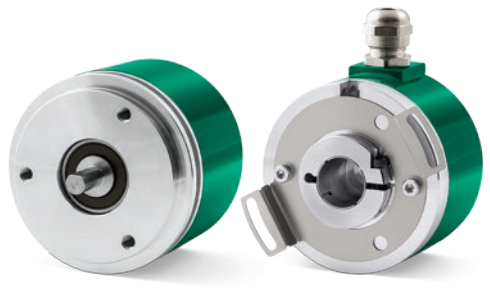
Car doors are the first impression. They flatter our eyes through their shiny and fashionable surfaces, they wink while sliding smoothly and quietly in front of us. Actually they are much more than just aesthetic and design. Each day they open and close several thousand times, in a comfortable but quick way: the handling capacity of the lifts also depends on the controlled movement of the doors. The door operators must be simple and reliable and have a proven strength with high comfort levels. Nowadays, modern door operators are of the linear type: the movement of motor rotation is directly transferred to the panels by means of a toothed belt in order to limit the load.
Specific rugged encoders and heavy-duty pulley encoders for direct application on timing belts control the position of the doors at any moment and allow accurate doors movements. They are the most suitable solution to ensure highly increased reliability, lifetime and smoothness of operation.



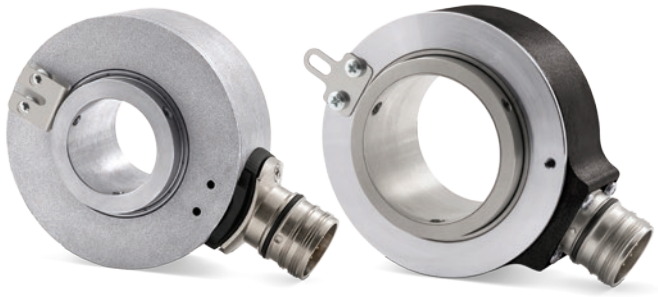
Travelling

People-flow management is increasing in importance day after day as millions of people need to be moved comfortably and safely through urban spaces.
Escalators and moving walks are thus gaining ground all over the world and are becoming indispensable in train stations and airports, shopping centres and hotels, underground stations and trade fairs. Safety, durability and maintenance-free reliability are the key words for each single component, although hidden away in the inside, not to convert motion into chaos. Reinforced velocity feedback encoders along with brakes are expressly designed to control the ride of the escalators and to ensure a safe stopping whenever required. For reliable 24-hour operation, heavy-duty escalators and moving walks need compact and rugged encoders, that are accurate and dependable at any time and capable of unlimited enduring service.

Encoders for gear traction motors



I58 • CK58 • CK59

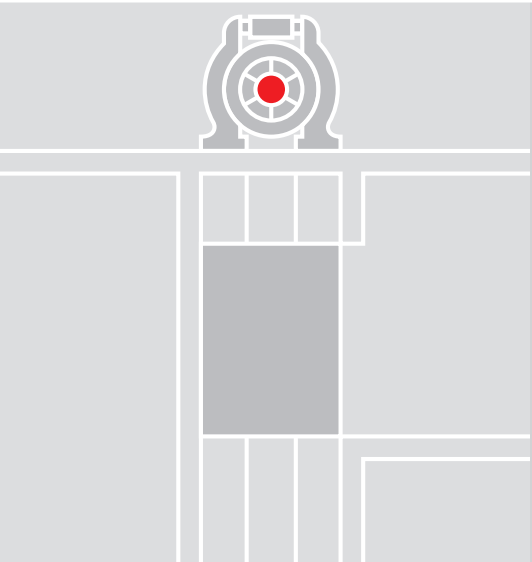


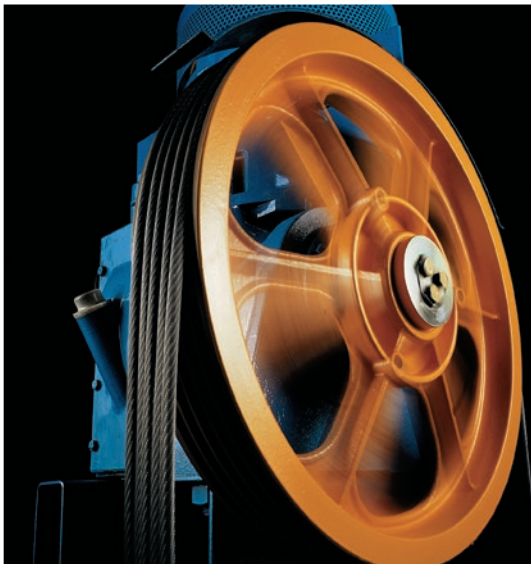
C80 • C81 • C82

FEATURES	
Standard incremental encoder for elevators Solid and blind hollow shaft	Hollow shaft encoder for direct installation on motors
• Robust design for long lifetime • Cable or connector output • Universal output circuit	• Robust die-cast housing • Low profile housing • Cable or M23 connector output
• 1024, 2048, 2500, 4096, 5000 PPR • Other pulse rates available	• 1024, 2048, 4096, 8192 PPR • Other pulse rates available
• Universal output circuit (HTL+TTL) 5-30Vdc • Push-Pull (HTL) 10-30Vdc • Line Driver (TTL) 5Vdc • Sine/cosine 1Vpp	• Universal output circuit (HTL+TTL) 5-30Vdc • Push-Pull (HTL) 10-30Vdc • Line Driver (TTL) 5Vdc
• Solid shaft Ø6, 8, 9.52, 10, 12 mm • Hollow shaft Ø14, 15 mm	• Hollow shaft Ø25, 30, 35, 38, 40, 44 mm • Other Ø with reduction sleeves
OPTIONS	
• Bicoder versions (2 different resolutions) • Connectors for all common lift controllers available • Special shaft design	• Connectors for all common lift controllers available • Custom designed fixing plates
APPLICATION	
• Feedback on gear traction machines • Position control on overspeed governors & shaft copying systems	• Feedback on gear traction machines with up to 44 mm shafts

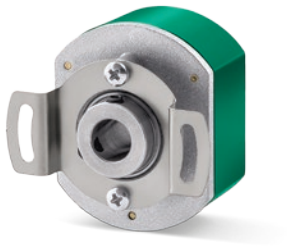
After 20-plus years of extensive experience worldwide in the elevator industry, Lika Electronic offers a full lineup of incremental encoders for feedback on geared traction motors. They are designed to be rugged and durable as well as accurate in order to improve the car comfort and reduce the maintenance costs. Solid, blind hollow and through hollow shaft versions and a wide variety of mechanical and electrical interfaces give customers a great choice.
Shaft encoders such as cost-effective **I41 or versatile I58** with resolution up to 10,000 PPR and high IP protection are installed using mounting bells and couplings. Hollow shaft encoders such as popular **C80, C81 and C82** series can be mounted directly on motor shaft so saving space and avoiding mechanical adjustments. C82 is equipped with a large through hollow shaft for direct mounting onto up to 44 mm / 1.732" diameter axles. It further features increased shaft loading values (up to 200 N) and an extended range of the operating temperature (-40°C +100°C / -40°F +212°F). C50 is among the most popular incremental encoders from Lika. Because of the slim and compact design, C50 is ideal for installation where tight space is a primary concern. Despite its small size, it is very tough. The standard operating temperature is extended to –40°C +100°C (-40°F +212°F), the protection rate is IP65. It is available in both through hollow shaft and tapered solid shaft versions. For maximum versatility and compatibility with elevator drive interfaces all encoders for geared motors are equipped with Universal circuit (HTL + TTL).

I58R	I41 • CK41	C50
FEATURES		
Encoder with REO interface	Compact encoder for small lift motors	Hollow shaft encoder for small lift motors
• Cable output • Safe signal transmission up to 80 m cable length	• Cable output, 7 or 10 m • Inline connectors available	• Cable output, 7 or 10 m • Inline connectors available
• 1024 PPR	• 512, 1024, 2048, 4096 PPR other resolutions on request	• 512, 1024, 2048, 4096, 8192 PPR other resolutions on request
• Universal output circuit (HTL+TTL) 5-30Vdc	• Universal output circuit (HTL+TTL) 5-30Vdc • Push-Pull (HTL) 10-30Vdc • Line Driver (TTL) 5Vdc	• Universal output circuit (HTL+TTL) 5-30Vdc • Push-Pull (HTL) 10-30Vdc • Line Driver (TTL) 5Vdc
• Solid shaft Ø11 mm	• Shaft Ø6, 8 mm	• Hollow shaft Ø6, 8, 10 mm
OPTIONS		
• Connectors for all common lift controllers available	• Connectors for all common lift controllers available	• Connectors for all common lift controllers available
APPLICATION		
• Feedback on gear traction machines • Long transmission cables • Tacho generator replacement	• Feedback on small traction machines	• Feedback on small traction machines





Encoders for gearless motors



CB50

CB59 • CB60

FEATURES	
Feedback encoder with commutation signals for servo motors	Sine/Cosine feedback encoder with CD track
• 1000, 1024, 1250, 2000, 2048, 2500 PPR • 4, 6, 8 poles UVW signals	• 2048 PPR sin/cos • CD track (absolute signal)
• Push-Pull (HTL) 10-30Vdc • Line Driver (TTL) 5Vdc	• 1Vpp 5Vdc
• Cable output with PCB connector	• Cable output with PCB connector
• Hollow shaft Ø 6, 8, 10 mm	• Hollow shaft Ø 12.7, 15 mm • Tapered shaft (1:10)
OPTIONS	
• Connectors for all common lift controllers available • Special fixing plates	• For all common lift controllers • Special fixing plates
APPLICATION	
• Feedback on gearless motors & servo motors	• Feedback on gearless motors • Replacement of common market products

Gearless motors require sturdy, vibration-resistant and compact encoders, especially in MRL installations. Lika Electronic has developed a comprehensive range of incremental and absolute encoders to meet the varied needs of gearless motors.

CB59, CB60 and CB62 incremental encoders offer many fixing options including the tapered solid shaft + expansion flange for easy plug & play installation: it is ideal for high-precision direct coupling and guarantees an absolutely backlash-free and torsionally rigid mating. They feature both Sine-Cosine signals for speed feedback and additional absolute CD signals to detect the position of the motor poles. When digital pulses and UVW encoder signals are required, CB50 model is the most compact solution currently available on the market.

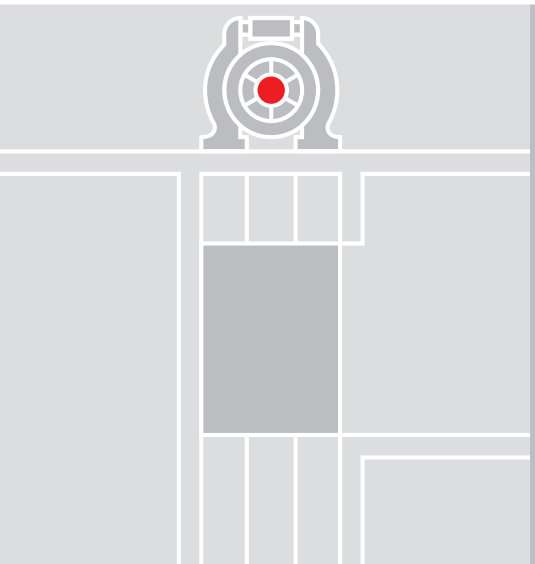
ASB62 absolute encoder is equipped with tapered solid shaft and expansion flange. It features 21 bit singleturn resolution and BISS C-mode / SSI interfaces + 1Vpp incremental track for rotor absolute position and speed feedback.

ASC85 absolute encoder is equipped with a 50 mm / 1.968" through hollow shaft for direct mounting onto large diameter axles. It provides a space-saving clamping system with flexible fixing plate that allows to comfortably and firmly secure the encoder to the drive shaft by means of three eccentric screws. It features very high singleturn resolution up to 25 bits (33,554,432 cpr) and very high accuracy of ±0.005°. BiSS-C / SSI interfaces available.

CB62 • ASB62

ASC85

FEATURES	
Incremental and absolute feedback encoder for gearless motors	Absolute encoder for advanced motor feedback systems
• CB62: 2048 PPR sin/cos + CD track • ASB62: 21 Bit + 2048 sin/cos	• Resolution 25 bit • High accuracy optical sensing
• CB62: 1Vpp 5Vdc • ASB62: BiSS-C/SSI + 1Vpp	• BiSS-C / SSI
• Cable output with PCB connector	• Cable output • M12, M23 inline connector
• Tapered shaft (1:10) • Expansion flange for easy installation	• Ø50 mm through hollow shaft
OPTIONS	
• Customized connection cables	• Smaller shaft diameter • Connectors for all common lift controllers
APPLICATION	
• Feedback on gearless motors	• Feedback on gearless motors



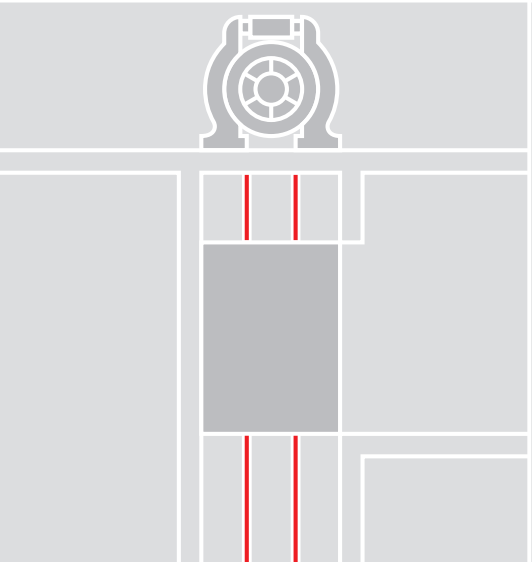
Encoders for shaft copying & overspeed governors

SGSM • SGSD

AM58 CB • AMC59 CB

EM58S • EMC59

FEATURES		
Single or Double bearingless encoder	Absolute multiturn encoder with solid or blind hollow shaft	Absolute multiturn encoder with solid or blind hollow shaft
• Up to 1024 PPR	• 13 + 12 bit (8192 cpr x 4096 turns)	• 13 + 12 bit (8192 cpr x 4096 turns)
• Push-Pull • Line Driver	• CANopen (DS406)	• SSI interface
• Cable output	• Cable output • M12 or M23 connectors	• Cable output • M12 or M23 connectors
• Hollow shaft up to Ø50 mm	• Shaft Ø6, 8, 9.52, 10, 12 mm • Hollow shaft Ø14, 15 mm	• Shaft Ø6, 8, 9.52, 10, 12 mm • Hollow shaft Ø14, 15 mm
OPTIONS		
• Most common controller connectors available	• Connectors for all common lift controllers available • Other shaft Ø with reduction sleeves	• Connectors for all common lift controllers available • Other shaft Ø with reduction sleeves
APPLICATION		
• Direct installation on overspeed governors for shaft copying systems • Unintended movement detection	• Position feedback on overspeed governors (shaft copying)	• Position feedback on overspeed governors (shaft copying)



Nowadays an overspeed governor paired with an incremental or absolute encoder for simple and reliable shaft copy is a safety system absolutely necessary for any elevator installation.
EM58S and EMC59 multiturn absolute encoders are among the most versatile products to fit this application: they offer proven reliability and ruggedness, resolution up to 13 + 12 bits, reinforced protection rate, extended range of the operating temperature as well as cables and plug connectors to suit the most common drives.
SGSM/SGSD bearingless incremental encoders are designed for outstanding dependability and absolute safety. Their non-contact operation and the advanced magnetic technology ensure steady and reliable functioning even in critical environments. They are virtually wear & maintenance-free, highly immune to dirt, finest dust particles, oil and grease and are also available in redundant version encompassing two separate sensors and independent circuitries in the same still compact housing.
Easy-CAN encoders are the cost-effective solution for standalone applications and simple point-to-point integrations. They are ideal for Single Master-Single Slave networks and profit from all CAN benefits and an essential compact design at the same time. Single connection cable and simplified electronics minimize the overall foot-print and costs and ease installation especially in constrained space. They comply with DS301 and DS406 Class 2 profiles and include the whole packet of CANopen functions.

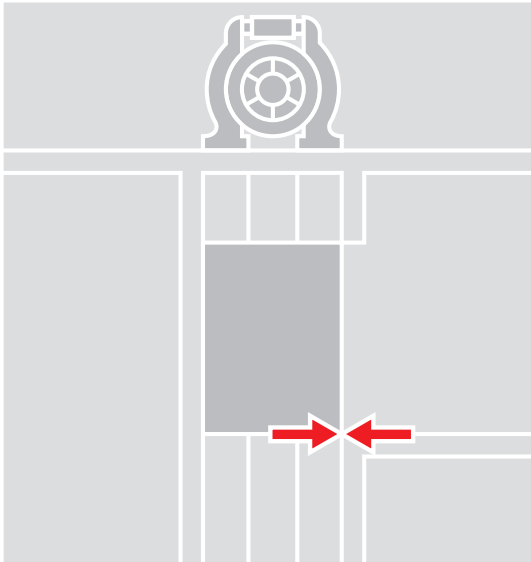
Lift car & freight lift position measurement systems

SFE • SFA

SAK • SBK

FEATURES	
Compact draw wire actuator for incremental or absolute encoders	Long range draw wire actuator for incremental or absolute encoders
• Measurement range from 5 to 10 m	• Measurement range from 10 to 50 m
• Resolution up to 0,1 mm	• Resolution up to 0,1 mm
• SFE with programmable incremental encoder • SFA with absolute encoder, SSI, analogue or CANopen	• In combination with: Incremental encoders (I58) Absolute SSI (EM58) Absolute CANopen (AM58)
• Cable or connector	• Cable or connector (depending on encoder)
OPTIONS	
• Other resolutions on request	• Seawater-proof housing • Versions with ATEX encoder • Other resolutions on request
APPLICATION	
• Hydraulic lift • Scissor lifts • Lifting platforms • Freight lifts	• Lifting platforms • Freight lifts • Hydraulic lift • Portal cranes

Draw-wire units can be easily installed to measure car or platform positions on freight lifts, mobile platforms and scissor lifts as well as hoists and cranes.
SFE / SFA series draw-wire encoders are designed to be robust and reliable in short travels up to 10 m (32.8 ft) and offered in a very wide selection of interfaces: fully programmable incremental, SSI, analog with external buttons and a variety of bus and Ethernet-based interfaces.
SAK and SBK draw-wire encoders are suitable for long travels ranging between 10 m (32.8 ft) and 50 m (164 ft). They come in a robust enclosure with seawater-proof housing surface protection and can be supplied also in ATEX version.
The working principle of draw-wire encoders enables their installation also in inaccessible areas, even in aggressive environments.



Encoders and modules for lift doors & escalators

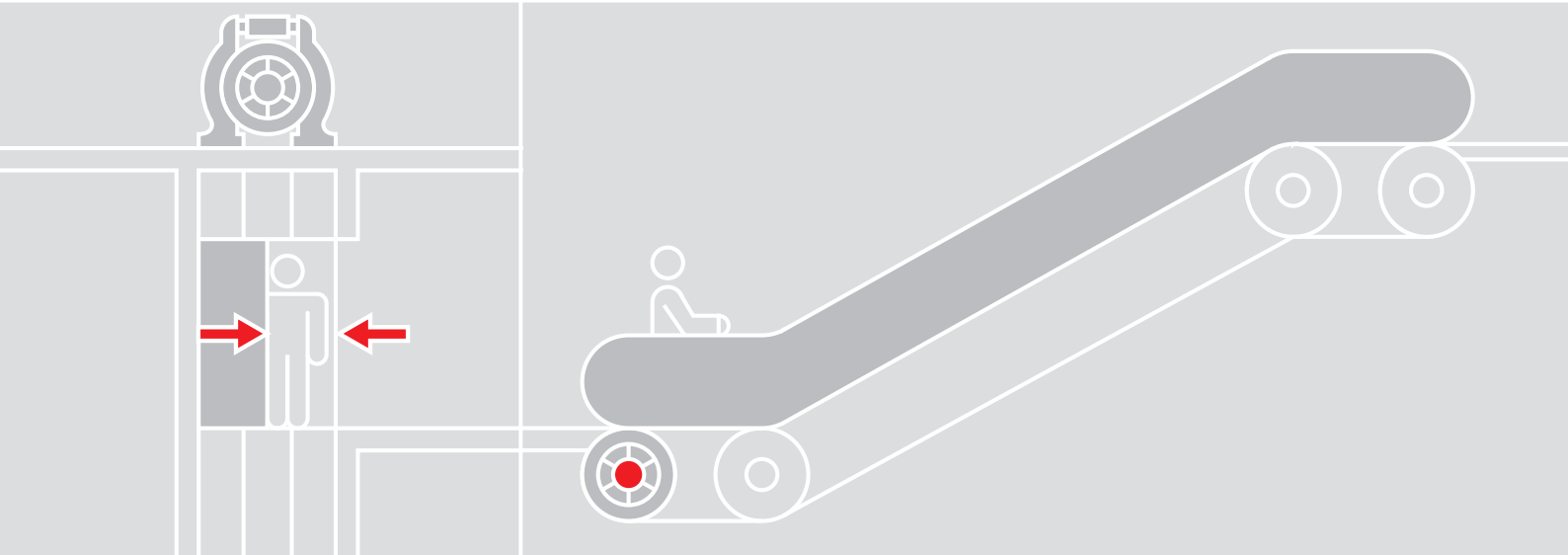
C50

C50

FEATURES	
Compact hollow shaft incremental encoder	Extra-reliable low-cost incremental encoder for lift doors
• 500, 1024 PPR	• 500 PPR
• Universal output circuit (HTL+TTL) 5-30Vdc • Push-Pull (HTL) 10-30Vdc • Line Driver (TTL) 5Vdc	• Push-Pull (HTL) 10-30Vdc
• Cable output	• Cable output
• Hollow shaft Ø 6, 8, 10 mm	• Hollow shaft Ø 9 mm
OPTIONS	
• Other resolutions on request • Connectors for all common door controllers available • Low-cost versions • Special fixing plates	• Connectors for all common door controllers available
APPLICATION	
• Speed control on lifts & escalators	• Door position control on high-end lifts

Encoders specific to car doors and escalators have been developed by Lika Electronic to meet the requirement of a high number of cycles and continuous duty.
The **C50 series** is a long-lasting solution for reliable 24-hour operation of both car doors and elevators, suitable also for installations in critical environments such as off-shore and tropical climate.
I70 is the compact solution for high performance door position. I70 is a harsh duty incremental encoder with optical sensing that is fully integrated into the compact and robust assembly of a pulley. So it can be driven directly by a timing belt. The exceptionally robust construction makes it ideal for use in harsh environments and allows to tension the belt and reach shaft loads up to 1,000 N (or 100 kg).
Miniature cost-effective encoder modules are also available for standard door position control.

I70	Kit encoders
FEATURES	
Incremental pulley encoder	Bearingless encoder modules for integration into servo motors & brushless motors
• 500 PPR	• Incremental or absolute
• Push-Pull (HTL) 10-30Vdc	• TTL / HTL • BiSS-C/SSI
• Cable output	• Pin or PCB connector output
• Pulley type 22 8M 20F	• Hollow shaft Ø 6, 8 mm
OPTIONS	
• Connectors for all common door controllers available	• -40°C to +100°C operation
APPLICATION	
• High volume applications • Door position control on high-end lifts • Direct integration into timing belt system	• High volume applications • Low-cost door position control



Flexible encoder couplings

PGF	PAN	MOR • MOM	MSF
Standard double sleeve coupling	Flexible helix coupling	Oldham coupling, standard (MOR) and compact (MOM)	Modular coupling with high reliability
• Fixing by grub screws	• Fixing by grub screws	• Fixing by grub screws or collar	• Fixing by grub screws
• Standard diameters: Ø 6-6 mm Ø 8-8 mm Ø 10-10 mm	• Standard diameters: Ø 6-6 mm Ø 8-8 mm Ø 10-10 mm	• Standard diameters: any combination of Ø 6, 6.35, 8, 9.52, 10 mm	• Standard diameters: any combination of Ø 6, 6.35, 8, 10, 12 mm
• Special diameters: Ø 6-8 mm Ø 7-8 mm Ø 8-10 mm	• Special diameters: Ø 6-8 mm Ø 6-10 mm Ø 8-10 mm	• Special diameters: on request	• Special diameters: on request
FEATURES			
• High misalignments at slow speed • Silent running • Good vibration absorption	• Good misalignments • Good stiffness	• High misalignments at medium speed • Excellent vibration absorption • Long lifetime • Electric insulation of encoder shaft	• Extra-long lifetime • Good misalignments at medium speed • Good vibration absorption • Electric insulation of encoder shaft
MATERIAL			
• Metal hubs • Thermoplastic sleeves	• Aluminum	• Aluminum hubs • Polyacetal or steel spacer	• Metal hubs • PUR spacer
APPLICATION			
• Encoders connection on gear traction machines • Medium-slow speed elevators	• Encoder connection on gear traction machines • Medium speed elevators	• Encoders connection on gear traction machines • Medium-high speed elevators	• Encoders connection on gear traction machines • Medium-high speed elevators

Smart encoders & actuators

Lika Electronic Srl
Via S. Lorenzo, 25
36010 Carré (VI) • Italy
Tel. +39 0445 806600
Fax +39 0445 806698
info@lika.it • www.lika.biz

Asia branch

Lika South East Asia Co. Ltd
Banwah Ind. Estate • Bang Pa-in Ayutthaya
13160 Thailand
Tel. +66 (0) 3535 0737
Fax +66 (0) 3535 0789
info@lika.co.th • www.lika.co.th

Edition 1710LIFT-E