



**30 YEARS
YOUNG**
1982.2012

..... **lika**[®]
Smart encoders & actuators



Products for the elevator industry 2013



.....lika



Moving

Core of the elevator system is the motor used for raising and lowering the elevator car.

Traditionally 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 gear and gearless traction motors require rugged, vibration-resistant, high-accuracy and precision and long service life encoders for improving the car comfort and reducing 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! We could say 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, 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, 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!

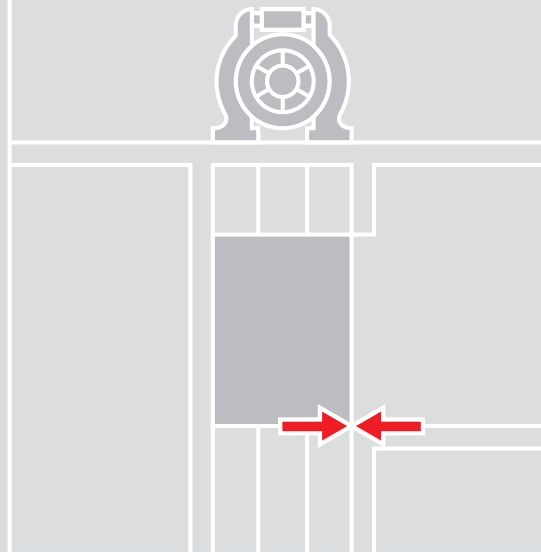
Thus the most dependable and finest absolute encoders must be installed for achieving exact monitoring of distances, speeds and accelerations of the elevator car. Moreover, they have also to be insensitive to adverse ambient conditions such as high atmospheric humidity, dust and high temperature variations.

For every single movement must always be performed the safest and comfortable way, without exception.



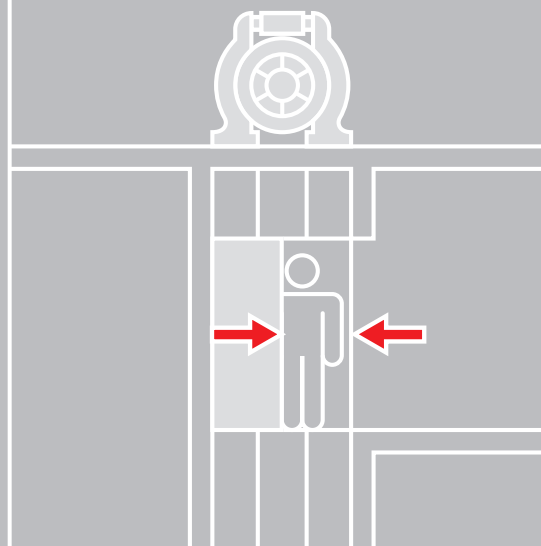
Positioning

Apart from being an unavoidable safety need, perfect precision of levelling at landings is also a specific requirement of recent lift directives. UNI EN 81/70 states that the stopping accuracy of the car shall be ± 10 mm (0,39"); while a levelling accuracy shall be maintained to ± 20 mm (0,79"). 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, unaffected by environment conditions, non-contacting and therefore wear-free, 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.



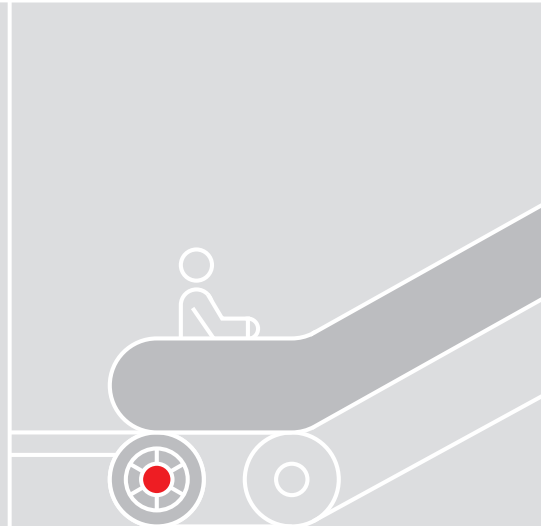
Sliding

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 an aesthetic 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, allowing accurate doors movement. They are the most suitable solution for a 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 together 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, capable of unlimited enduring service, accurate and dependable at any time.



Encoders for Gear Traction Motors



I58	CK58 • CK59	C80 • C82	C81
Standard incremental encoder for elevators	Blind hollow shaft incremental encoder	Hollow shaft encoder for direct installation on motors	Big hollow shaft encoder for direct installation on motors
<ul style="list-style-type: none"> Robust design for long lifetime Cable or connector output Universal output circuit 	<ul style="list-style-type: none"> Robust design for long lifetime Cable or connector output Universal output circuit 	<ul style="list-style-type: none"> Robust die-cast housing Reduced housing length Cable or M23 connector output 	<ul style="list-style-type: none"> Robust stainless steel structure Cable output
<ul style="list-style-type: none"> 1024, 2048, 2500, 4096, 5000 PPR Other pulse rates available 	<ul style="list-style-type: none"> 1024, 2048, 2500, 4096, 5000 PPR Other pulse rates available 	<ul style="list-style-type: none"> 1024, 2048, 4096 PPR Other pulse rates available 	<ul style="list-style-type: none"> 1024, 2048, 4096 PPR Other pulse rates available
<ul style="list-style-type: none"> Universal output circuit (HTL+TTL) 5-30Vdc Push-Pull (HTL) 10-30Vdc Line Driver (TTL) 5Vdc Sine/cosine 1Vpp 	<ul style="list-style-type: none"> Universal output circuit (HTL+TTL) 5-30Vdc Push-Pull (HTL) 10-30Vdc Line Driver (TTL) 5Vdc Sine/cosine 1Vpp 	<ul style="list-style-type: none"> Universal output circuit (HTL+TTL) 5-30Vdc Push-Pull (HTL) 10-30Vdc Line Driver (TTL) 5Vdc 	<ul style="list-style-type: none"> Universal output circuit (HTL+TTL) 5-30Vdc Push-Pull (HTL) 10-30Vdc Line Driver (TTL) 5Vdc
<ul style="list-style-type: none"> Solid shaft Ø 6, 8, 9.52, 10, 12 mm 	<ul style="list-style-type: none"> Hollow shaft Ø 14, 15 mm Other Ø with reduction sleeves 	<ul style="list-style-type: none"> Hollow shaft Ø 25, 30 mm (C80) Hollow shaft Ø up to 44 mm (C82) 	<ul style="list-style-type: none"> Hollow shaft Ø 30, 35, 38, 40, 44 mm Other Ø with reduction sleeves
Options			
<ul style="list-style-type: none"> Bicoder versions (2 different resolutions) Connectors for all common lift controllers available Special shaft design 	<ul style="list-style-type: none"> Bicoder versions (2 different resolutions) Connectors for all common lift controllers available 	<ul style="list-style-type: none"> Connectors for all common lift controllers available Custom designed fixing plates 	<ul style="list-style-type: none"> Connectors for all common lift controllers available Custom designed fixing plates
Application			
<ul style="list-style-type: none"> Feedback on gear traction machines Position control on overspeed governors & shaft copying systems 	<ul style="list-style-type: none"> Feedback on gear traction machines 	<ul style="list-style-type: none"> Feedback on gear traction machines with Ø25-30 mm shafts 	<ul style="list-style-type: none"> Feedback on gear traction machines with Ø30-44 mm shafts

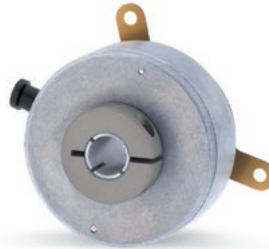


With more than 15 years of extensive experience worldwide in the elevator industry, Lika Electronic can boast a comprehensive range of incremental encoders for installation on geared traction motors. They are all designed to fulfil the hard requirements of such an application concerning reliability, resilience and long service life, not giving up accuracy and precision.

Shaft encoders such as the well known "green" I58 with resolution up to 10000 PPR and high IP-rated environmental protection are installed using mounting bells and couplings; while the popular C80 and C81 series hollow shaft encoders can be installed directly in the motor shaft saving space and requiring no mechanical adjustments.

Recently C80 series has been completed by the new C82 hollow shaft encoder with increased shaft loading values (up to 200N) and extended operating temperature range (-40°C +100°C).

UNIVERSAL CIRCUIT (HTL + TTL) developed by Lika Electronic allows all users to have always the right encoder suitable for the right elevator drive interface.



I58R

Encoder with REO interface

- Cable output
- Safe signal transmission up to 80 m cable length

- 1024 PPR

- Universal output circuit (HTL+TTL) 5-30Vdc

- Solid shaft Ø 11 mm

I41 • CK41

Compact encoder for small lift motors

- Cable output, 7 or 10 m
- Inline connectors available

- 512, 1024, 2048, 4096 PPR
other resolutions on request

- Universal output circuit (HTL+TTL) 5-30Vdc
- Push-Pull (HTL) 10-30Vdc
- Line Driver (TTL) 5Vdc

- Shaft Ø 6, 8 mm

C50

Hollow shaft encoder for small lift motors

- Cable output, 7 or 10 m
- Inline connectors available

- 512, 1024, 2048, 4096 PPR
other resolutions on request

- Universal output circuit (HTL+TTL) 5-30Vdc
- Push-Pull (HTL) 10-30Vdc
- Line Driver (TTL) 5Vdc

- Hollow shaft Ø 6, 8, 10 mm

FD • FDB

Robust tachogenerator with rotatable connection box

- Cable output or terminal box connection

- 1000 rpm / 20V
- 1000 rpm / 60V

- Voltage output

- Shaft Ø 7, 11 mm

Options

- Connectors for all common lift controllers available

- Connectors for all common lift controllers available

- Connectors for all common lift controllers available

- Tandem version (2 different voltage rates)
- Additional encoder feedback

Application

- Feedback on gear traction machines
- Long transmission cables
- Tacho generator replacement

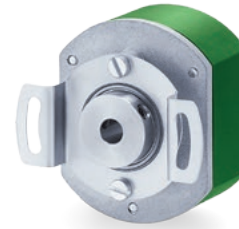
- Feedback on small traction machines

- Feedback on small traction machines

- Replacement on gear traction machines



Encoders for Gearless Motors



CB59 • CB60

Sine/Cosine feedback encoder with CD track

- 2048 PPR sin/cos
- CD track (absolute signal)

- 1Vpp 5Vdc±5%
- Sin/cos + CD

- Cable output with standard PCB connector

- Hollow shaft Ø 12.7, 15 mm
- Tapered shaft (1:10)

CB50

Feedback encoder with commutation signals for servo-motors

- 1000, 1024, 1250, 2000, 2048, 2500 PPR
- 4, 6, 8 poles UVW signals

- Push-Pull (HTL) 10-30Vdc
- Line Driver (TTL) 5Vdc

- Cable output with PCB connector

- Hollow shaft Ø 6, 8, 10 mm

Options

- Connectors for all common lift controllers available
- Special fixing plates

- Connectors for all common lift controllers available
- Special fixing plates

Application

- Feedback on gearless motors
- Replacement of common market products

- Feedback on gearless motors & servomotors



Gearless motors especially in MRL installations require sturdy, vibration-resistant and last but not least compact encoders.

Lika Electronic has developed a new range of products to meet the requirements of this innovative technology. They feature both incremental signals for speed feedback and an absolute signal to detect the position of the motor poles. Furthermore a wide range of fixing options is available. CB59 and CB60 incremental encoders with sine-cosine output and additional absolute track are available in both hollow and solid shaft versions.

Absolute encoders of the HS and HSC series have improved interfaces such as SSI + sin/cos and the fully digital BiSS. Resolutions up to 18 bits (262144 counts per rev) allow very accurate detection of the rotor/stator position.

All encoders only fit selected high-quality components and are inspected one by one before delivery ensuring they can operate safely and reliably throughout the lifetime of the lift.



HS58

Absolute single turn encoder with additional incremental track

- Up to 18 bit (262144 cpr)
- Sine/Cosine 1024 or 2048 PPR
- Incremental from 1024 to 16384 PPR

- Absolute BiSS or SSI output
- Incremental 1Vpp, Push-Pull or Line Driver output

- Cable output
- M12 or M23 connector

- Solid Shaft \varnothing 6, 8, 10 mm
- Hollow shaft \varnothing 14, 15 mm

ASB60

Absolute encoder for gearless motors

- Up to 18 bit (262144 cpr)
- Sine/Cosine 1024 or 2048 PPR
- Incremental from 1024 to 16384 PPR

- Absolute BiSS or SSI output
- Incremental 1Vpp, Push-Pull or Line Driver output

- Cable output with standard PCB connector

- Tapered shaft (1:10)

Options

- Connectors for all common lift controllers available
- Other shaft \varnothing with reduction sleeves

- Hollow shaft on request
- Connectors for all common lift controllers available
- Special fixing plates

Application

- Feedback on gearless motors

- Feedback on gearless motors



Encoders for Shaft Copying & Overspeed Governors



SGSM • SGSD	MM36 • MMC36	EM58 • EMC58	HMCT
Single or Double bearingless encoder	Miniature absolute encoder with magnetic sensing	Optical multiturn encoder with solid or blind hollow shaft	Absolute through hollow shaft encoder Additional incremental track
<ul style="list-style-type: none"> • Up to 1024 PPR 	<ul style="list-style-type: none"> • 12 + 12 bit (4096 cpr x 4096 turns) 	<ul style="list-style-type: none"> • 13 + 12 bit (8192 cpr x 4096 turns) 	<ul style="list-style-type: none"> • 16 + 12 bit (65536 cpr x 4096 turns) • Sine/Cosine 1024 or 2048 PPR • Incremental from 1024 to 16384 PPR
<ul style="list-style-type: none"> • Push-Pull • Line Driver 	<ul style="list-style-type: none"> • SSI Gray or Binary output 	<ul style="list-style-type: none"> • CANopen (DS406) • CANlift (DSP417) • SSI 	<ul style="list-style-type: none"> • Absolute BiSS or SSI output • Incremental Push-Pull, Line Driver, 1Vpp
<ul style="list-style-type: none"> • Cable output 	<ul style="list-style-type: none"> • Cable output 	<ul style="list-style-type: none"> • Cable output • M12 or M23 connectors 	<ul style="list-style-type: none"> • Cable output • M12 or M23 connectors
<ul style="list-style-type: none"> • Hollow shaft up to Ø50 mm 	<ul style="list-style-type: none"> • Solid or blind hollow shaft Ø6 mm 	<ul style="list-style-type: none"> • Shaft Ø 6, 8, 9.52, 10, 12 mm • Hollow shaft Ø 14, 15 mm 	<ul style="list-style-type: none"> • Through hollow shaft Ø 14, 15 mm
Options			
<ul style="list-style-type: none"> • Most common controller connectors available 	<ul style="list-style-type: none"> • 4096 cpr x 16384 turns on request • M12 inline connector 	<ul style="list-style-type: none"> • Connectors for all common lift controllers available • Other shaft Ø with reduction sleeves 	<ul style="list-style-type: none"> • Connectors for all common lift controllers available • Other shaft Ø with reduction sleeves
Application			
<ul style="list-style-type: none"> • Direct installation on overspeed governors for shaft copying systems • Unintended movement detection 	<ul style="list-style-type: none"> • Position feedback on overspeed governors (shaft copying) 	<ul style="list-style-type: none"> • Position feedback on overspeed governors (shaft copying) 	<ul style="list-style-type: none"> • Position feedback on overspeed governors (shaft copying)



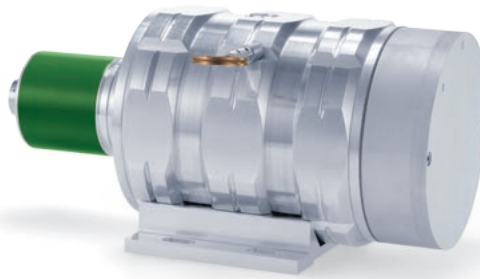
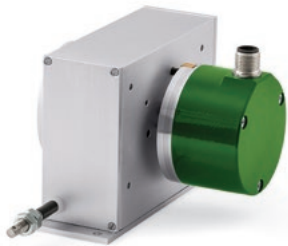
Nowadays an overspeed governor and an incremental or absolute encoder for simple and reliable shaft copy are a safety system absolutely necessary for any elevator installation.

HMCT absolute through hollow shaft encoder is among the market leaders and the most versatile product suitable for this application: it offers proven reliability and rugged quality, resolution up to 16 + 12 bits, reinforced IP-rated environmental protection, several output interfaces as well as cables and plug connectors to suit the most common drives.

CANopen and CANlift interfaces together with SSI are available on EM58 – EMC58 series to allow direct connection to all kind of elevator controllers.

For outstanding dependability and absolute safety Lika Electronic offers now the SGSM / SGSD incremental magnetic sensors. The SGSM / SGSD non-contact operation and the advanced magnetic technology ensure a steady and reliable functioning even in critical conditions. These encoders 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 in the same still compact housing and independent circuitries.

Lift Car & Freight Lift position measurement systems



SF-I • SF-A

Compact draw wire actuator for incremental or absolute encoders

- Measurement range from 5 to 6,8 m

- Resolution up to 0,1 mm

- For:
Incremental encoders (SF-I + CK58)
Absolute SSI (SF-A + EMC58)
Absolute CANopen/CANlift (SF-A + AMC58)

- Cable or connector (depending on encoder)

SAK • SBK

Long range draw wire actuator for incremental or absolute encoders

- Measurement range from 10 to 50 m

- Resolution up to 0,1 mm

- For:
Incremental encoders (I58)
Absolute SSI (EM58)
Absolute CANopen/CANlift (AM58)

- Cable or connector (depending on encoder)

SMAL2

Non-contact magnetic measurement system

- Measurement range up to 500 m

- Resolution up to 0,1 mm

- Absolute CANopen/CANlift, SSI, RS485
• Incremental Push-Pull, Line Driver

- DSub connector

Options

- Other resolutions on request

- Seawater-proof housing
- Versions with ATEX encoder
- Other resolutions on request

- Customer specific transmission RS485 protocol

Application

- Hydraulic lift
- Scissor lifts
- Lifting platforms
- Freight lifts

- Lifting platforms
- Freight lifts
- Hydraulic lift
- Portal cranes

- Lifting platforms
- Freight lifts
- Hydraulic lift
- Handling equipment
- Cranes

DRAW-WIRE units can be easily installed to measure car or platform positions on freight lifts, mobile platforms, scissor lifts and hoists and cranes as well. Small ranges up to 6,8 metres can be covered with the SF-I series while SAK and SBK are suitable for ranges up to 50 metres.

The SMAL2 series of magnetic measurement systems has been designed for demanding elevator car positioning applications.

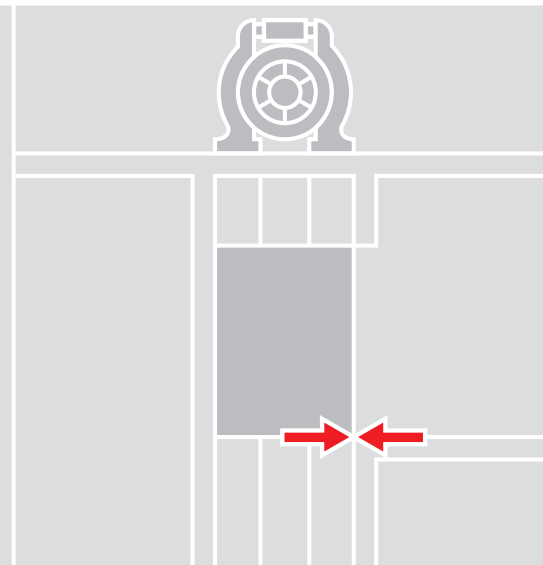
With a measuring range up to 500 metres and a resolution of 0,1 mm, the SMAL2 series is suitable not only for new installations but also for modernizing existing elevators.

The complete system consists of two components only, a sensor and a magnetic scale available in both incremental and absolute coding.

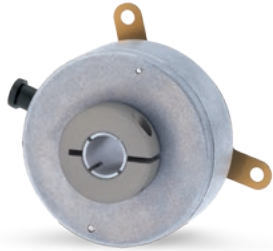
A fixing kit is supplied to mount the scale directly on the guides of the elevator car, in a simple and affordable way.

The measuring principle is contactless. The scale is guided by the sensor casing in order to keep it always aligned with the sensor.

The SMAL2 can be supplied with several interfaces such as CANopen (DS406), CANlift (DS417), SSI and RS485 for direct connection to all common elevator controllers.



Encoders and Modules for Lift Doors & Escalators



C50

Compact incremental hollow shaft encoder

- 500, 1024 PPR
- Universal output circuit (HTL+TTL) 5-30Vdc
- Push-Pull (HTL) 10-30Vdc
- Line Driver (TTL) 5Vdc

- Cable output

- Hollow shaft Ø 6, 8, 10 mm

C50

Extra-reliable low-cost incremental encoder for lift doors

- 500 PPR
- Push-Pull (HTL) 10-30Vdc

- Cable output

- 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



Specific car door and escalator encoders 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 like off-shore or tropical climate.

I70 is the newest compact solution for high performance door position from Lika Electronic: I70 is a harsh duty incremental encoder with optical sensing fully integrated into the compact and robust assembly of a pulley and thus 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 reaching shaft loads up to 1000 N (or 100 kg).

Miniature cost-effective encoder modules are also available for standard door position control.



I70

Incremental pulley encoder

- 500 PPR
- Push-Pull (HTL) 10-30Vdc
- Cable output
- Pulley type 20 T8 22

IM30 • IM31

Bearingless encoder modules
Standard size for common motors

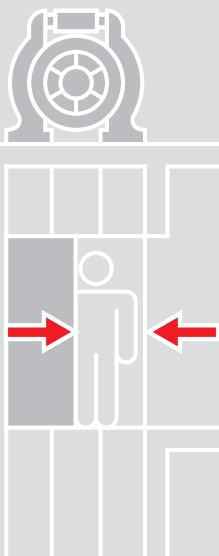
- Up to 2048 PPR
- TTL 5Vdc
- Pin or flat cable output
- Hollow shaft \varnothing 3, 4, 5, 6, 6.35, 8 mm

Options

- Connectors for all common door controllers available
- Snap-in shaft
- -40°C to +100°C operation

Application

- High volume applications
- Door position control on high-end lifts
- Direct integration in timing belt system
- High volume applications
- Low-cost door position control



Flexible Encoder Couplings



PGF

Standard double sleeve coupling

- Fixing by grub screws

- Standard diameters:
 \varnothing 6-6 mm
 \varnothing 8-8 mm
 \varnothing 10-10 mm

- Special diameters:
 \varnothing 6-8 mm
 \varnothing 7-8 mm
 \varnothing 8-10 mm

PAN

Flexible helix coupling

- Fixing by grub screws

- Standard diameters:
 \varnothing 6-6 mm
 \varnothing 8-8 mm
 \varnothing 10-10 mm

- Special diameters:
 \varnothing 6-8 mm
 \varnothing 6-10 mm
 \varnothing 8-10 mm

MOL • MOS

Oldham coupling, standard (MOL) and compact (MOS)

- Fixing by grub screws or collar

- Standard diameters:
any combination of \varnothing 6, 6.35, 8, 9.52, 10 mm

- Special diameters:
on request

MSF

Modular coupling with high reliability compact

- Fixing by grub screws

- Standard diameters:
any combination of \varnothing 6, 6.35, 8, 10, 12 mm

- 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 spacer

- Metal hubs
- PUR spacer

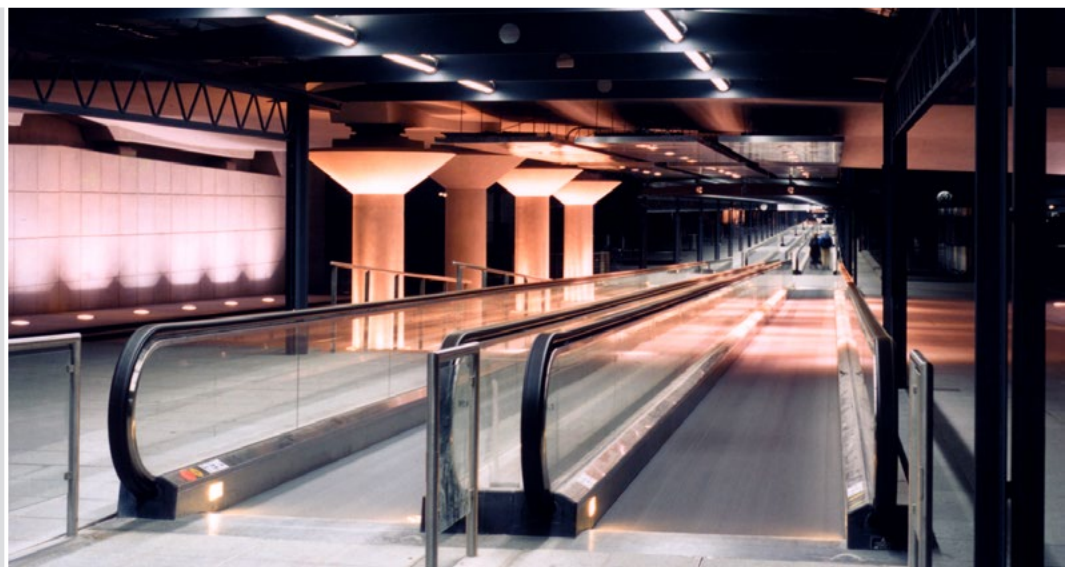
Application

- Encoders connection on gear traction machines
- Medium-slow speed elevators

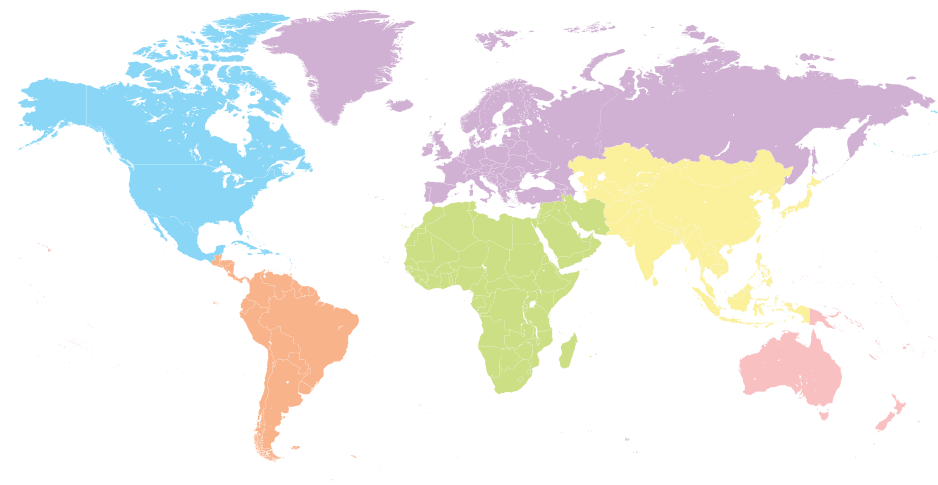
- Encoder connection on gear traction machines
- Medium speed elevators

- Encoders connection on gear traction machines
- Medium-high speed elevators

- Encoders connection on gear traction machines
- Medium-high speed elevators



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in the following countries:**



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Estonia	South Africa
Finland	South Korea
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