



## **OUR PRODUCTS**

**LINEAR ENCODERS**

**ROTARY AND ANGULAR ENCODERS**

**MAGNETIC ENCODERS**

**DIGITAL READ OUTS (DRO)**

**CONTROL SYSTEM**

**COUPLINGS**

**INTERFACES AND SIGNAL CONVERTERS**

**SALES STORY**

**SKBIS INTERNATIONAL**

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## OUR ADVANTAGES

Popular and cheap solutions for machine tools, industrial automation and medicine

Wide range of models and specifications of linear and angular encoders

Delivery time from 2 weeks

Expedite replacement of encoders made by other companies including obsolete encoders

Warranty 36 months

Expedite and high quality service

Provide encoder installation on customer's equipment

Accept special design as per customer's unique requirements

# NEW PRODUCTS

## NEW CONSTRUCTION OF LINEAR ENCODERS



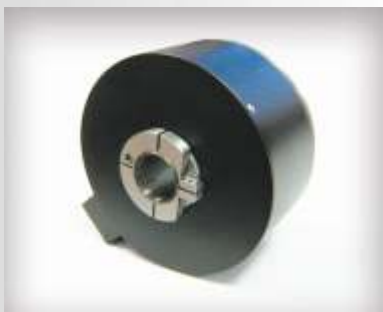
Only one LED is used in new construction.  
New design of reading head makes mounting easy.  
Better protection of extrusion. Metal-armored cable.

## DIGITAL READ OUT LIR-500



Compact DRO for 2 axes. It can be used with angular and linear encoders.  
Usually LIR-500 is installed to measuring systems or small machine tools.

## ABSOLUTE PRECISION ENCODER LIR-DA395



Absolute encoder with hollow shaft with in-built coupling.  
Used for angular measuring with high accuracy up to  $\pm 3.5$  arc seconds  
and resolution up to 24 bit.  
Built-in coupling makes mounting easy.

## **ABSOLUTE MULTITURN ENCODER AC36**



AC36 is an absolute optical encoder with a true geared multiturn, optical sensing technology and 36 mm diameter.  
The technical facilities of absolute encoders can be used for the first time in equipment engineering and also in medical engineering.

## **MOTOR FEEDBACK ENCODER S21**



Incremental encoder for AC-Synchronous and BLDC motors with additional sine-wave signal.  
Wide operating temperature range of -15°C up to +120°C, therefore optimum use of motor capacity.

## **LINEAR ENCODER LIR-3**



Super compact linear device LIR-3.  
Reflective principle of work.  
Measuring length up to 380 mm on glass and up to 1000 mm on metal.  
Resolution up to 01  $\mu\text{m}$  with accuracy  $\pm 1 \mu\text{m}$  per 100 mm.  
Was successfully implemented in compact high precision devices.

# LINEAR ENCODERS

SKBIS is in production of linear encoder since 1991. At present time offers about 15 different models. Has the leading position in domestic market due to experience and knowledge. Provides a wide range of products for heavy duty machine tools as well as for high precision microscopes.

## INCREMENTAL



Super compact linear device LIR-3.  
Reflective principle of work. Measuring length up to 380 mm.  
Resolution up to  $0,1 \mu\text{m}$  with accuracy  $\pm 1 \mu\text{m}$  per 100 mm.  
Was successfully implemented in compact high precision devices.



Industrial series LIR-7M, LIR-8M, LIR-9M, LIR-10M.  
Measuring length up to 3190 mm. Resolution up to  $01 \mu\text{m}$  with accuracy  $\pm 3 \mu\text{m}$  per 1 meter. Mostly used in machine tools, measuring systems (microscopes) and for replacement of encoders made by other companies.



Linear gauges.  
Measuring length from 10 up to 40 mm. Resolution up to  $0,1 \mu\text{m}$ .  
Accuracy up to  $\pm 05 \mu\text{m}$  per measuring length.  
Protection up to IP 64.



Small-sized linear gauge LIR-19A.  
Accuracy up to  $\pm 0,3 \mu\text{m}$ , resolution up to  $0,1 \mu\text{m}$ .

## Why linear encoders from SKBIS?

- easy installation;
- fast and high quality service;
- high reliability;
- wide range of measuring lengths and signals;
- fast delivery.



We can find in linear encoders market – more and more popular become absolute and magnetic type encoders. SKBIS absolute and magnetic linear encoders take their niche because they fit all customers requirements to such type of products.

## ABSOLUTE



Industrial series LIR-DA7, LIR-DA8, LIR-DA9, LIR-DA10.  
Measuring length up to 1890 mm. Resolution up to 0,1  $\mu\text{m}$ .  
Accuracy up to  $\pm 3 \mu\text{m/m}$ .  
Can be made with SSI or CAN (with LIR-918) interface.



Absolute linear gauge LIR-DA13.  
Measuring length up to 10 mm. Resolution up to 1  $\mu\text{m}$ .  
SSI or CAN (with LIR-918).

## NON-CONTACT MAGNETIC



Measuring length up to 50 meters.  
Wide range of resolutions, output signals.  
Correct installation control light.  
Protection IP 67.

## Why absolute linear encoders from SKBIS?

- low price;
- easy installation;
- fast and high quality service;
- high reliability;
- wide range of measuring lengths and signals;
- fast delivery.

# ROTARY ENCODER

Our optical incremental and absolute encoders have a wide nomenclature of features and different specifications. Could be used in variety of different industry branches like automation, measurements, process control. Among them: machine tool industry, motion control, medical industry, science, space technology, robotics, nuclear technology, etc.

## INCREMENTAL



Miniature rotary encoder: sizes from 12 to 28mm.  
Modifications with solid and blind hollow shafts. Integral couplings are available.  
Resolution up to 230400 counts per rev and accuracy up to  $\pm 75$  arcsec – highest specs in industry!



Popular industrial models: sizes from 37 to 85mm.  
Modifications with solid, hollow and blind hollow shafts.  
Integral couplings are available.  
Resolution up to 1440000 counts per rev and accuracy up to  $\pm 15$  arcsec.



High accuracy angular encoders. Sizes from 90 to 200mm.  
Modifications with solid, hollow shafts.  
Integral couplings are available.  
Resolution up to 3600000 counts per rev and accuracy up to  $\pm 1.5$  arcsec.

## Why rotary and angular encoders from SKBIS?

- speed up to 10000 rev/min;
- operating temperature  $-40$  to  $+100$  °C;
- protection up to IP 65;
- easy installation;
- easy, fast and cheap replacement of encoders made by other companies.



At present time the most popular encoders are absolute rotary and angular encoders and SKB is following such world trends. Among them it is an interesting achievement – absolute rotary encoder with CAN interface, size 19mm and high precision models with resolution up to 24 bit and accuracy  $\pm 3$  arcsec.

## ABSOLUTE



Miniature rotary encoder: size 19mm.

Can be designed with solid or blind hollow shaft with or without the integral coupling. Resolution up to 15 bit per revolution with accuracy  $\pm 75$  arcsec. SSI, Parallel, CAN interfaces.



Multiturn absolute encoders: size 36mm.

Resolution single turn up to 12bit, multi turn up to 12bit. Accuracy  $\pm 75$  arcsec. SSI, CAN interfaces.



Popular industrial absolute encoders: size from 36 to 58mm.

Modifications with integral shaft are available. Resolution up to 17bit with accuracy  $\pm 30$  arcsec. SSI, Parallel, CAN interfaces.



High accuracy angular absolute encoders: size 90 and 95mm.

Modifications with blind, hollow shafts are available. Resolution up to 24bit with accuracy up to  $\pm 3$  arcsec.

## Why absolute encoders from SKBIS?

- high accuracy;
- operating temperature  $-25$  to  $+85$  °C;
- protection up to IP 65;
- wide range of resolutions;
- wide range of interfaces.

# ROTARY MAGNETIC ENCODERS, COUPLINGS

Robust design and low price is an important combination. Magnetic encoders from SKBIS are designed to cover that: they fit very well in harsh environment (liquids, fast temperature changings, high vibrancy, etc.).

## INCREMENTAL AND ABSOLUTE



Rotary magnetic encoders are designed in versatile way: the same model can be incremental or absolute.

Format of output signals is very different:

Incremental:  $\sim 1V_{pp}$ , TTL, HTL.

Absolute: SSI, Open Collector, Open Emitter.

Sawtooth wave form (voltage 0...10V and 0...5V).

Sawtooth wave form (current 0...20mA and 4...20mA).

Sizes from 8mm to 58mm.

Resolution for incremenatl models up to 4096 counts per revolution, for absolute - 12bit.

SKBIS offers wide range of couplings. Couplings are used for encoder shaft connection with customer's equipment. Wide variety of couplings for different industrial rotary encoders, precision rotary encoders, and heavy duty encoders with high torque shafts.

## MAIN INDUSTRIAL TYPES



Couplings LIR-800, 801, 814, 825 – for industrial encoders.

Bores from 3mm up to 12mm.

Types of couplings – bellows and diaphragms.

## PRECISION COUPLINGS



Models LIR-803, 805, 807 – for high precision encoders.

Precision rotation couplings fit such requirements.

(Kinematic accuracy is no more then  $\pm 2$  arsec)

# CONTROL SYSTEM

LIR-581 system is in production since 2006. It takes important place in SKBIS products range and has success among customers. LIR-581 positions itself very well between DRO and CNC applications and includes the most required functions of machine tool control.

## LIR-581



The input of control programs can take place either from operator panel or from external PC via RS-232. RS-232 also lets to renew the program version.



LIR-581 controls:

- digitally and not digitally the motor drive speed using a defined program;
- one or several axis of the machine tool with one motor drive for all axis or each axis with its own drive;
- up to 7 axis.



Has the possibility of 2 axis movements at the same time.  
Can be used with incremental or absolute linear and rotary encoders.  
Can display linear position in millimeters or microns.  
Rotary – in degrees (00°00'00").

## Why control system from SKBIS?

- easy operator interface;
- can replace systems like: ILJUMO, K524, K525, TNC121, Razmer 2M;
- uses just simplified required functions thus making the process more user friendly. Other functions could be found in more complicated cnc machines;
- high quality technical service.

# INTERFACES AND SIGNAL CONVERTERS

SKBIS' interface devices: for encoder connection to PC for signal conversion (one type to another). Such versatility helps to resolve different problems at customer side.

## INTERFACES (MODULES AND PCBOARDS)



Can be embedded inside of a PC or serve as a separate block with connection to RS-232 or USB ports. Works also with ISA and PCI buses. Up to 4 encoders can be connected at the same time. SKBIS offer interfaces for absolute and incremental encoders.

## SIGNAL CONVERTERS



SKBIS' converters permit:

- to convert SIN/COS signals 1 Vpp and 11  $\mu$ a to TTL with different resolutions;
- to convert TTL signals to HTL;
- to convert SSI to CAN;
- to connect encoder to USB port;
- to provide signal frequency conversion (double multiplication), for example, to get from 18000 pulses per revolution – from 9000.

## Why interfaces and signal converters from SKBIS?

- SKBIS has knowledge and experience in encoders and accessories
- wide range of models;
- fit main requirements;
- some models have no analogs and serve special needs.



# SALES STORY



SKBIS has big knowledge and experience in encoders and accessories. One of our benefit – we can design and produce encoders as per customer' unique requirements.

We produce encoders for wide range of applications:

- machine tools manufacture companies (for new machine tools and for modernization of old models) – Russia, Belarus, Ukraine, Kazakhstan, Europe, China;
- medicine robots – USA, Russia;
- radar stations – Far East, Russia;
- rotary mechanism of Big Dramatic Theater and other theater' scenes - Saint-Petersburg, Moscow, etc.;
- linear and rotary drive motors – Switzerland, Russia, Belarus;
- aerospace companies (application in space) – Russia;
- aerographic photo devices – USA, Ukraine, Russia;
- nuclear stations (application in radiation) – Russia;
- marine ships (application in saline fog, non magnetic construction);
- unique radio telescope with mirror diameter 64 meters (THA-1500) – Moscow area, Russia;
- universal measuring microscopes;
- elevators and conveyer lines.

## OUR CUSTOMERS:

Philips  
Hewlett Packard  
Boeing  
General Electric  
KAMAZ  
AvtoVAZ  
UAZ  
MAZ  
Severstal  
etc.



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