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## Measure location solution providers

Magnetic & optical measurement solution service provider www.nbhopo.com



HOPO TECHNOLOGIES (NINGBO) CO.,LTD



**Company Profile** 

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**Corporate Culture** 

03

Professionalism Builds Strength **05** 

Product Selection Matrix 19

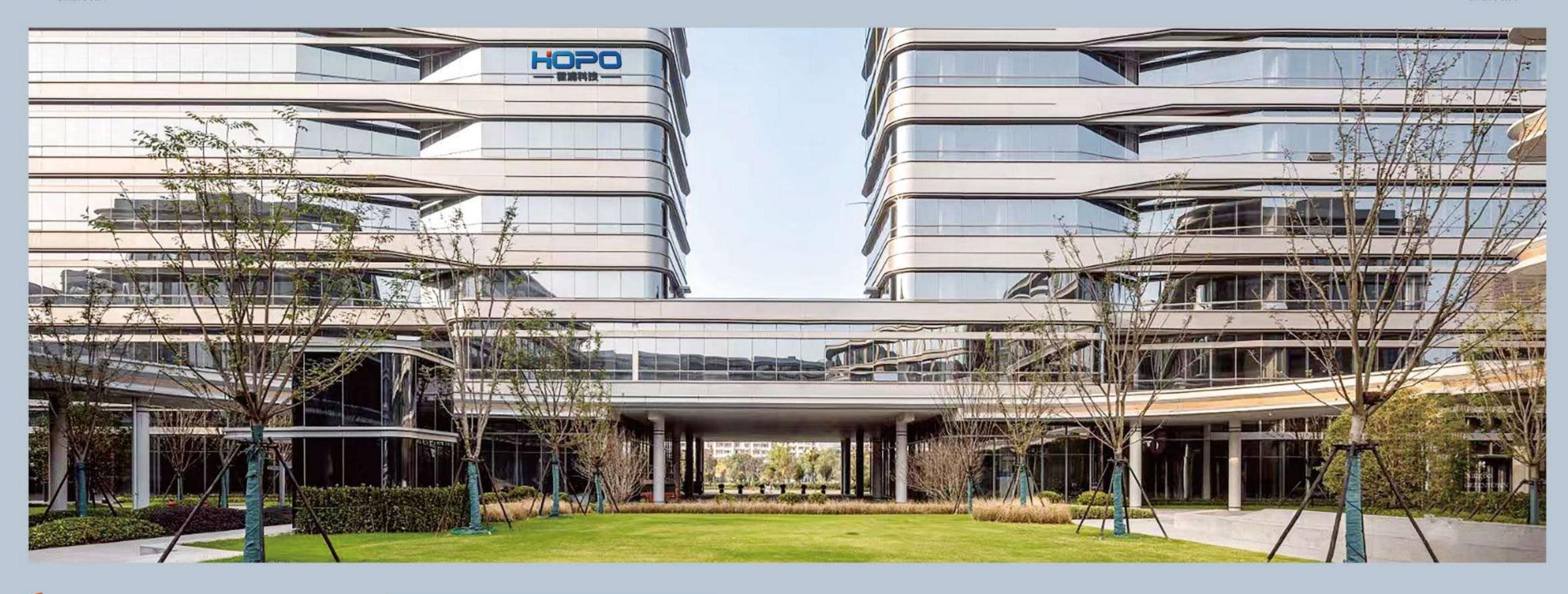












## (Company profile

Deeply involved in the magnetic scale industry for 12 years

Pioneer and technology leader in the magnetic encoder industry

Innovation, disruption, and continuous value creation for customers

Hopo Technology is a high-tech enterprise integrating R&D, production, sales and service of magnetic & optical scales, instruments and controllers.

The company focuses on the R&D and manufacturing of high-performance and high-reliability measurement, rotation and positioning intelligent sensors, combined with the market demand and feedback of customers in advanced manufacturing equipment, linear motors, semiconductors, lithium batteries, photovoltaics, industrial robots, medical and other professional fields, continuous innovation and accumulation, and has built a mature and diversified product line, including magnetic scale, magnetic reading head, circular magnetic, grating ruler, grating reading head, circular grating, digital display instrument, industrial intelligent controller and other physical sensors and other products. And it has leading advantages in terms of performance, stability and software algorithms!

It has obtained dozens of patents and certificates, and passed the quality management system certification and CE certification. As a high-tech enterprise, we will invest heavily in R&D for a long time in order to maintain a competitive advantage in the market competition! Insist on creating value for users for a long time!

The service is refined, and good service can create more value for customers, and build a professional pre-sale, in-sale and after-sales service team

customers and solve user pain

points with more mature solutions.

It is the selling point of the product

with differentiation.

serve 保 R&D quality 命 With more than 10 years of R&D products experience in the industry, we can provide customized R&D for

The production process is continuously optimized and upgraded to make the quality more stable. Keep improving and polishing the production process...

Excellent products are the core of the company's development, and the innovative understanding, iteration and update of products provide users with the best product solutions.

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Set sail

The company was founded

Since the establishment of the company, Hopo

Technology has been committed to providing

customers with excellent solutions with the core

goal of developing high-performance and

high-reliability intelligent sensors for measure-

In the early days, the company successfully

launched a series of competitive products with

its keen insight into the market and profound accumulation of technology, and gradually

established a good reputation in the industry.

ment, rotation and displacement.



## (Development course

# Steady growth The path to growth

In the process of development, Hopo Technology has always adhered to the market demand-oriented, and constantly introduced new products and solutions to meet the market demand. At the same time, the company pays attention to the provision of customized services, conducts targeted research and development according to the specific needs of customers, and provides customers with a full range of solutions.

Results

The road to development

The company has invested in self-purchased

plants, standardized production lines, 12 years

of experience in the field of magnetic grids,

always adhere to strict standards and require-

ments, through continuous polishing and

optimization, all products of the company have

been independently developed and designed

and continuously innovated and iterated on

the process, with the characteristics of stability,

anti-interference, short circuit and reverse

polarity protection, to ensure the excellent

performance and reliability of the products.

The service concept of customer demand as the center has enabled Huopu Technology to maintain a leading position in the market competition.

# Persistent pursuit

With the continuous expansion of business and continuous innovation of technology, Hopo Technology has gradually developed into a high-tech enterprise integrating R&D, production, sales and service of gratings, magnetic grid encoders, instruments and controllers.

The road to innovation

The company has not only established a complete R&D and innovation system, but also obtained dozens of patents and certificates, and its products have passed CE certification.

## Challenge yourself • Climb to the top

# Forge ahead The road to growth

With the rapid development of business and the continuous expansion of the market, Hopo Technology has set up four major offices in Shenzhen, Foshan, Nanjing, Jinan and Suzhou nationwide, in order to better serve customers and meet the market demand in different regions. The establishment of these offices not only improves the company's market coverage and service level, but also lays a solid foundation for the company's further development.

#### Looking to the future The road to branding

Looking forward to the future, Huopu Technology will continue to uphold the concept of innovation, quality and service, continuously promote technological innovation and product upgrading, and expand a broader market space. At the same time, the company will also strengthen cooperation and exchanges with international counterparts, introduce advanced technology and management experience, and continuously improve its comprehensive competitiveness.

It is believed that in the near future, Huopu Technology will become a leading provider of intelligent sensor and control system solutions in the world.

03 | pac





## (Talent strong enterprise

## Multi-dimensional leadership People-oriented, beneficial enterprise

#### **PEOPLE**

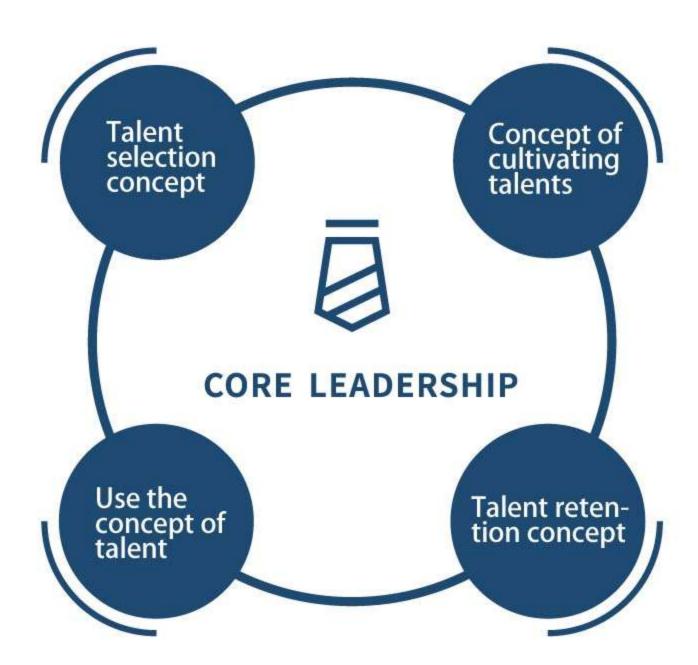
Have both ability and political integrity, pay equal attention to internal and external, appoint people on the basis of merit, and compete fairly

Combined with the company's strategic development needs, echelon cultivation is adopted to improve the overall quality of employees

Reasonable authorization in employing people; Make the best use of their talents and develop in a diversified way

Expand the growth space of employees, protect the effective rights and interests of employees, and pay attention to the inner development of employees

Should have both political integrity and ability, attach equal importance to both intermal and external afairs, appoint peopleon their merits and compete fairly to the needs of strategic development of the cultivation is adopted to improve the qualityof employees. We should make full use of our talents and develop in a diversified way, the growth space of employeesprotect the effective rights and interests of employees, and pay attention to the inner development of employees.



## Strong lineup Loyal to the enterprise

#### **TEAMWORK**







#### Cultural enterprise Cohesion

#### **CULTURE**

We pay more attention to the lives of our employees

While focusing on work efficiency and quality, we also pay attention to the spare time life of employees to ensure their living and working in peace and contentment. We care for our employees from the aspects of life, emotion and growth. The company's labor union has established a wealth of club activities, providing rich places and opportunities for the majority of employees to carry out healthy sports and entertainment activities according to their personal preferences.













## (R&D strength

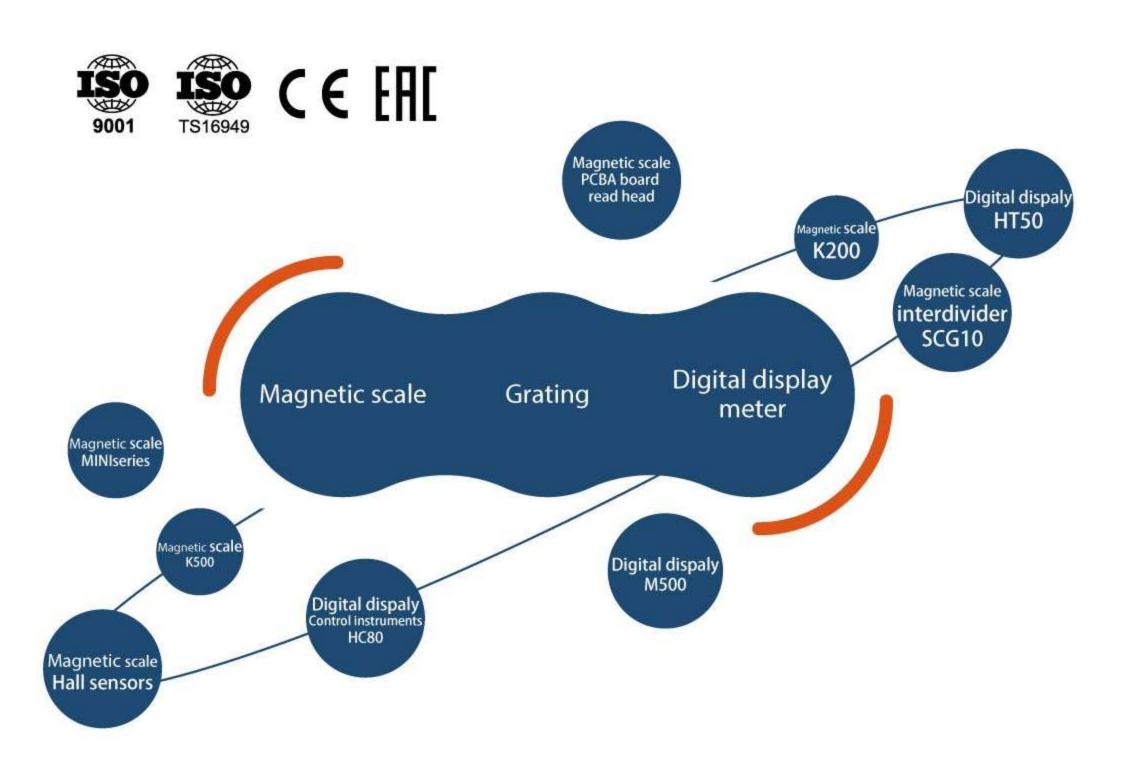


#### Nationally renowned patented technology

The patented technology enjoys national reputation

HoPo with R & D strength cast brilliant this is not only a slogan, but also always adhere to the belief and action criteria. Since its establishment, we know the importance of research and development strength for the development of enterprises, so we always take research and development as the core competitiveness of the company, and make every effort to invest in it.

The company has obtained dozens of patents and certificates. In the future, we will continue to adhere to the belief that R&D strength creates brilliance, constantly increase R&D investment, strengthen team building, promote technological innovation, and contribute more to the sustainable development of the company and the continuous improvement of user satisfaction.





## CResearch achievements









## (Professionalism builds strength

#### Master the core technology

Based on technology research and development, a complete R&D innovation system has been established, from the construction of R&D concepts, R&D processes and other systems, and cooperation with major scientific research institutions.

The company focuses on the R&D and manufacturing of high-performance and high-reliability measurement, rotation and displacement intelligent sensors, combined with the market demand and feedback of customers in advanced manufacturing, semiconductors, lithium batteries, photovoltaics, industrial robots and other professional fields, continuous innovation and accumulation, and has built a mature and diversified product line, including magnetic scale, magnetic grid reading head, circular magnetic grid, grating ruler, grating reading head, circular grating digital display instrument, industrial intelligent controller and other physical quantity sensors and other products. Leading edge in terms of stability and software algorithms!

As a high-tech enterprise, we will invest heavily in R&D for a long time in order to maintain a competitive advantage in the market competition! Insist on creating value for users in the long term!

#### Craftsmanship

12 years of deep cultivation in the field of magnetic grids, polishing high-quality, high-stability, high-precision products.

All products are constantly innovated and iterative, and high-precision integrated circuits are used to have the characteristics of stability, anti-interference, short circuit and reverse polarity protection.

#### Customization

According to the customer's needs, targeted research and development, a full range of solutions to meet the needs of the corresponding customers. Free sample test, free service, no risk commitment.

We can provide: OEM, ODM/OBM and other services.

















## (Authority system certification

certification systems; We not only attach importance to and pursue

product quality, but also show that Huopu takes certification as the

cornerstone, and constantly promotes its own development and growth

of confidence and determination to convey our firm commitment to

quality, reputation and sustainable development, but also provide a

reliable guarantee and trust for customers and partners.

## QUALITY—QUALITY SYSTEM AS THE CORNERSTONE

























## (Service network



#### Build a national service network

Build an efficient service system throughout the country to provide customers with comprehensive and convenient services. At present, it covers many regions and cities such as Shenzhen,Foshan,Nanjing,-Suzhou and Jinan. To better meet the diverse needs of customers, enhance brand influence, and achieve sustainable development.

Efficient service. National coverage

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# Sharing is evolving

There is no best, only better,

With years of experience in the industry, we know what our customers really need.

We continue to forge ahead in product innovation,

Continuously improve the quality and cost-effective product line

A HIGHLY SOUGHT-AFTER PRODUCT RANGE



Magnetic encoders
 Digital displays
 Optical sacles





#### **Product Selection Matrix**



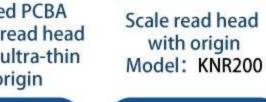
MINI scale magnetic grid read heads

Absolute linear encoders

Model: HCA2000



**Customized PCBA** bare board read head Ultra-small ultra-thin band origin





High-precision stainless steel

magnetic ring

Model: HDR系列



Closed rail scale

Model: HB20





Inductive stator encoders Model: LMS20/24/30/36



Absolute

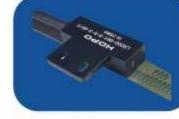
magnetic ring

encoders

Magnetic grid read head Model: LT200



Dual-limit read head with origin Model: LD200



Model: LM系列

Built-in origin with mounting bracket Model: LR200



External origin gate read head Model: LSR200

Magnetic levitation ring

absolute encoder

Model: HCLA5

Model: LMD系列



cost-effective Model: LS200



cost-effective Model: LH200



cost-effective Model: LHR200



Linear modules are Linear modules are Linear modules are Linear modules are cost-effective Model: LK200



cost-effective Model: K200



Automation 5-24V universal Magnetic tape Model: K500

( Magnetic scale series

## Optical scale series



**PCBA** rotary grating Model: LGMRB



PCBALinear gratings Model: LGMB



Miniature gratings Model: LGM64



Rotary raster discs Model: LGMR64

## ( Digital display series



Plastic case



2-axis 3-axis table



5-inch touch screen digital display Model: HT50



Aluminum alloy carved single-axis watch



Magnetic grid digital display Model: M320



Magnetic grid digital display Model: M500



Magnetic grid controllers Model: HC80



Magnetic grid digital display Model: M210



Wireless transmission of measuring rulers Model: M535

## Signal Processing module series of accessories



High-performance subdivision cassette Model: SCG10



Pulse signal switcher Model: ETX100



Absolute magnetic grid measurement module Model: RM10



Isolated sine wave subdivider Model: SCP10











## Ultra-small size magnetic reading head MINI200 series

Suitable for small installation spaces

High precision, high subdivision, high anti-interference, good waveform

The LED indicator is easy to install and troubleshooting

Wire: ultra-flexible more than 10 million times, drag chain

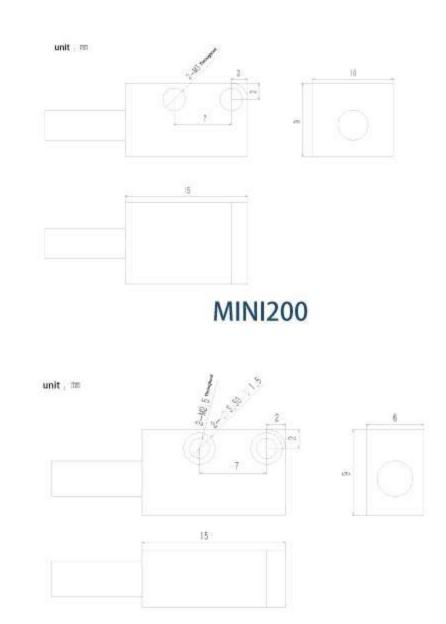
Outbound mode: DB15

Common resolution: 0.5um 1um

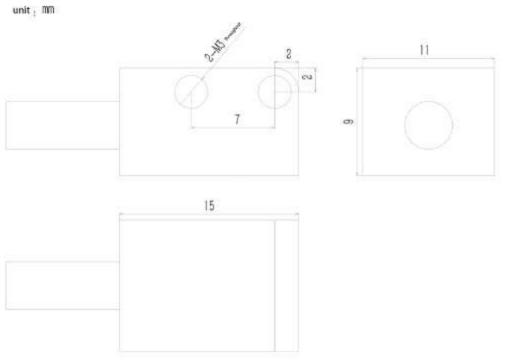


color	red	black	green	purple	white	blue	yellow	brown	shield
Differential outputs	5V	GND/0V	A+	Α-	B+	B-	Z+	Z-	enclosure
DB15 male	7	2	14	6	13	5	12	4	enclosure

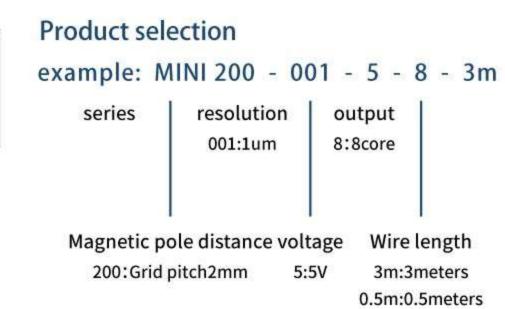
Features	Technical data	Supplement
Sensor material	Aluminum alloy	Vo.
Sensing distance	Mini200: Max.0.5mm,	0.3mm recommended
Dimensions	15*9*10mm	
Mounting hole spacing	7mm	
Matching magnetic tape	MS20	
Wire length	0.5M 3M 5M	Customizable
Weight	80g	Under the 3-meter line configuration
Measure the length	50 meters	The voltage attenuation is < 1V at 5V supply
Operating voltage	5V	±5%
No-load current	5V:≤20mA	
Operating current	5V:≤50mA	
Signal characteristics	90°Phase difference square wave	Phase±0.5°
Output mode	TTLSquare wave pul	lse differential output
Resolution	0.5um 1um	Other needs can be customized
Positioning accuracy	<30um	Laser interferometer determination
Repeatability	1-1.5um	Laser interferometer determination
Movement speed	Max.5m/s	Customizable
Ambient temperature	-5 60°C	
Storage temperature	-10 70°C	
Protection category	IP67 sensor	



#### MINIX200



MINIR200



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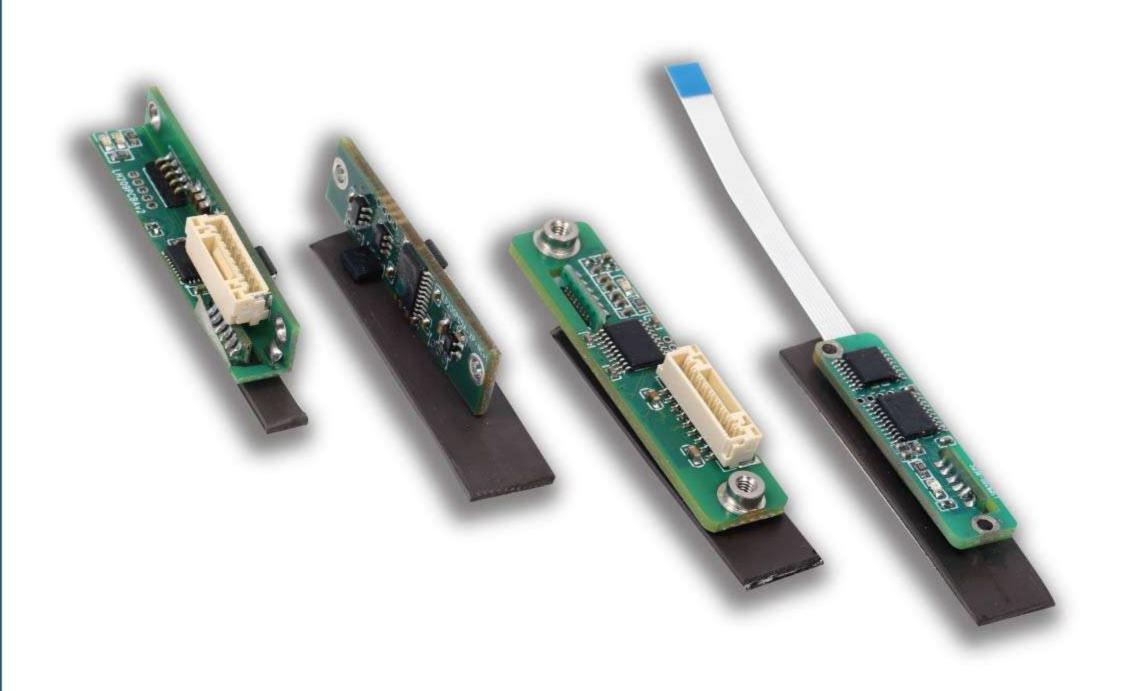


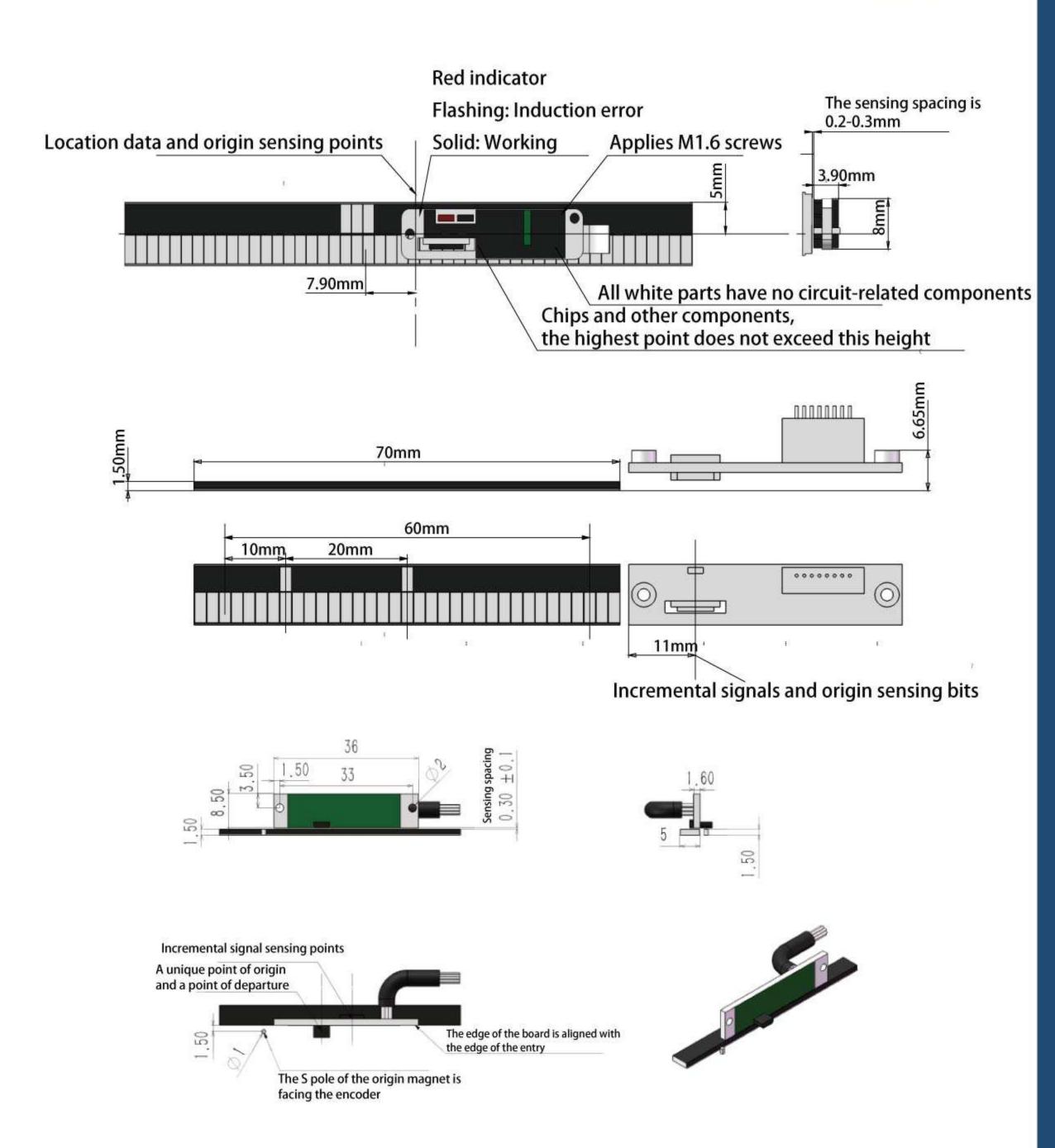


# PCBA board reading head super small and thin

There are dozens of bare board magnetic&optical scale reading head models

Other non-standard can be customized





The output line color corresponds to the signal

red:5v+, black: 0V, green: A+, white: B+, yellow: Z+, purple: A-, blue: B-, brown: Z+





# Incremental magnetic encoders KNR200 series

The KN series encoder is a magnetic encoder for incremental linear motors, DD motors, and direct drive motors.

The built-in unique origin sensing module can output a unique Z signal in the whole stroke.

Under the resolution of 0.5um, it can ensure the high-speed operation and normal output of 8 m/s. Industry standard RS422 signals,  $\pm$  ABZ incremental digital signals, quadrature AB signals, and Z signals.

It is easy to install, integrates LED alarm indicator, and has a large sensing distance from the magnetic stripe and magnetic ring.

Ultra-flexible drag chain line, resistant to more than 20 million bending times.

Non-contact, can be used in harsh environments. The operating temperature range is -30 $^{\circ}$  C to +80 $^{\circ}$  C.

It has good resistance to shock, vibration and pressure. Compact size, sealed and waterproof IP68 housing.



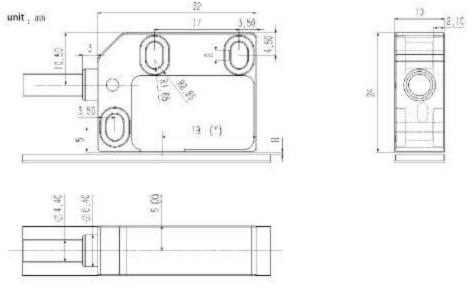
color	red	black	green	purple	white	blue	yellow	brown	shield
Differential outputs	5V	OV	A+	A-	B+	B-	Z+	Z-	enclosure
DB9male	5	9	4	8	3	7	2	6	enclosure
DB15male	7	2	14	6	13	5	12	4	enclosure

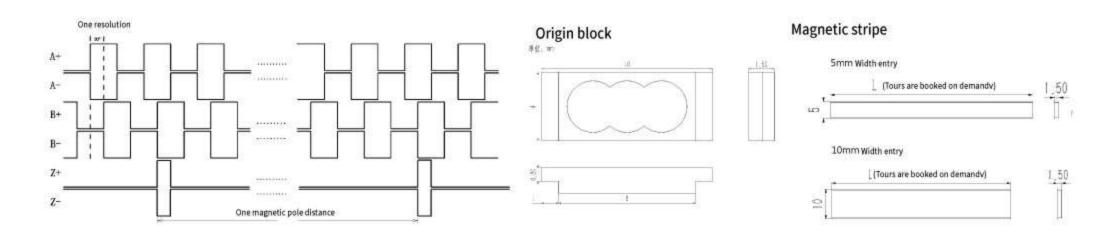
#### **Technical Specifications:**

Features	Technical data	Supplement
Operating voltage	5V	±5%
Current consumption	60mA (MAX)	25° room temperature
Resolution	0.5um (MAX)	Customizable
Output signal	±ABZ	Industrial RS422 standard
Positioning accuracy	≤50um	Laser interferometer determination
Repeatability	±1um	Laser interferometer determination
Maximum measurement length	50M	Depends on the magnetic stripe
Maximum speed	8m/s	0.5um resolution
Maximum cable length	30M	Laboratory voltage attenuation to:4.75V
Qualifying method	Direct outlet	Optional (DB9/DB15)
Sensor material	aluminium	CNCFinely carved
Sensing distance	<1mm	<0.5mmHighest precision
Dimensions	32*24*10MM	
Install the spacing between the empty spaces	17mm	
Matching magnetic tape	MS20、MSR20、MS20_5	
Wire length	default0.5M	Customizable
Operating temperature	-3080°C	
Storage life	-40105°C	
Ingress protection	IP67	

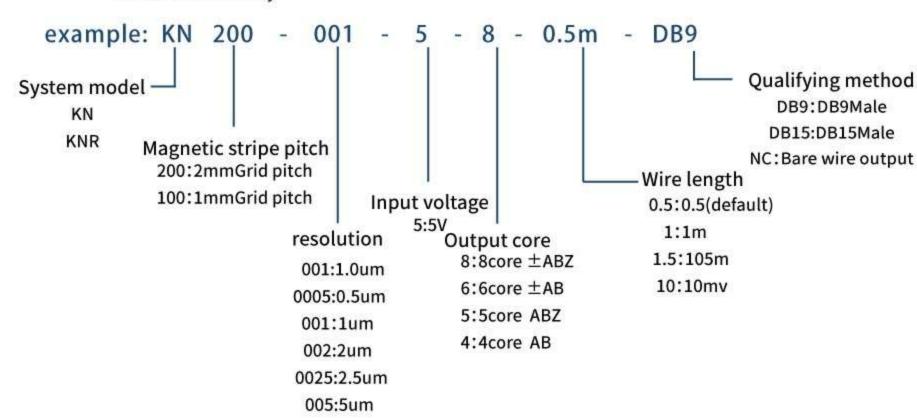
#### **Electrical connections**

	Cable specifications				
Cable type	TPU cable, energy chain-compatible, double-shielded, twisted-pai				
Number of wires	8				
Outside diameter	$5.3  \text{mm} \pm 0.15  \text{mm}$				
Sheath material	TPU				
Conducting wire	0.1 mm <sup>2</sup> , 28 AWG, 0.38 Ω/m				
Shielding rate	>98%				
Durability	30 million cycles with a bend radius of 37 mm				
Weight	34 g/m nominal				
Bending (internal) radi	us Dynamic 25 mm, static 10 mm				





#### Your order key







# With the origin guide enclosed magnetic encoder HB20

0.5um 1um 5um high resolution

Multiple high-precision origin signals

Excellent seismic mechanical structure

Non-contact sensing is wear-free

LED signal indicator

It supports a wide range of voltage input and output

Extremely high resistance to contamination

High-precision bearings run without granularity

The ultra-flexible drag chain wire is bent more than 10 million times

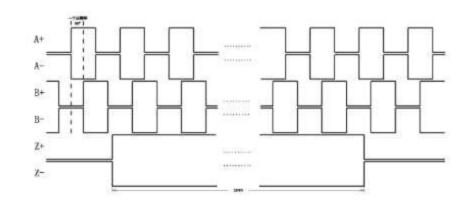
Outgoing NC bare wire, DB9, DB15 and other customizations



color	red	black	green	purple	white	blue	yellow	brown	shield
Single-ended output PLC	5/24V	0	A+	77.05	B+		Z+		earthing
Differential outputs	5/24V	0V	A+	A-	B+	B-	Z+	Z-	enclosure
DB9male	5	9	4	8	3	7	2	6	enclosure

#### **Technical Specifications:**

Features	Technical data	Supplement
Sensor material	Zinc alloy Aluminum alloy	
Valid itinerary	170,220,270,320,370,	Others can be customized
	420,470,520,570	up to 1850mm
Mounting hole spacing	effective+120mm	
Wire length	default0.5M	Customizable
The weight of the whole machine	1.3kgitinerary 220mm	0.5 m line configuration
Configure the wires	Max.30M	The voltage attenuation is < 1V at 5V supply
Magnetic tape	2mm	
Operating voltage	DC5-24V	±5%
No-load current	5V:≤30mA	
Operating current	5V:≤50mA	
Signal characteristics 9	0°Phase difference square wave	$_{ m e}$ The phase difference $\pm$ 0.5°
Output mode	RS232, RS422	
Resolution	1um、5um、10um、25um	Other needs can be customized
Positioning accuracy	±20um	
Repeatability	$\pm 1$ resolution	
Movement speed	Max.150m/min	Customizable
Acceleration	Max.29.4m/s <sup>2</sup>	
Ambient temperature	-5 60°C	
Storage temperature	-10 70°C	
Ingress protection	IP67 sensor	

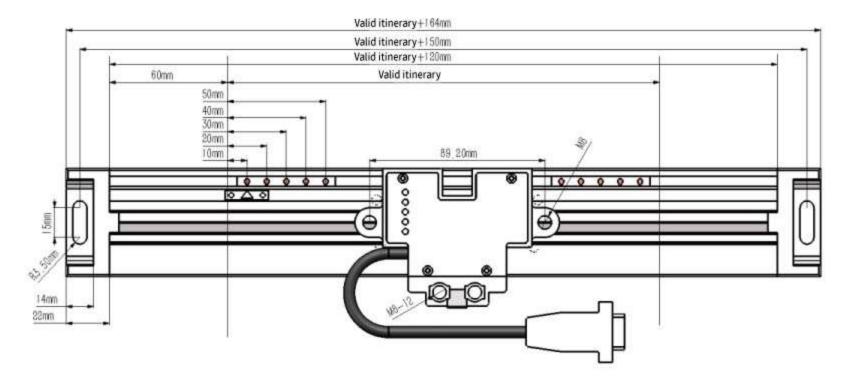


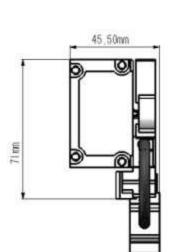
#### Magnetic scale ordering parameters

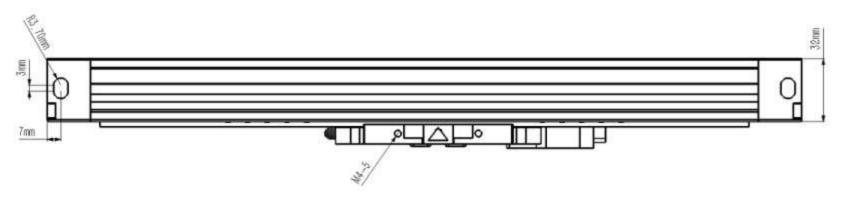
example: HB 20 - 005 - 5 - 8 - 220 - 0.5m - DB9

Model resolution	output	Wire length
001:1um	4:4core	0.5m:0.5m
005:5um	5: 5core	3m:3m
	8:8core	6m:6m

voltage	itinerary	Output type
5:5V	170:170mm	
24:24V	220:220mm	
	270:270mm	
	320:320mm	
	370:370mm	











# Magnetic levitation ring line absolute encoder HCLA5

A true absolute value system

It is suitable for magnetic levitation annular line and adapts to the complex working conditions of flexible line

High-speed, multi-mover slider operation

Resolution up to 1  $\mu$  m

The maximum trolley is up to 1 m

Measuring speed 5 m/s

The maximum crossing speed is 5 m/s

Maximum installation clearance 1.6 mm, 1.2 mm recommended,

SSI / BiSS-C / Tamagawa / Panasonic / MODBUS-RTU and other communi-

cation protocols

Ultra-slim form factor design

The ultra-flexible drag chain wire is bent more than 20 million times

Support No. 1 trolley marking



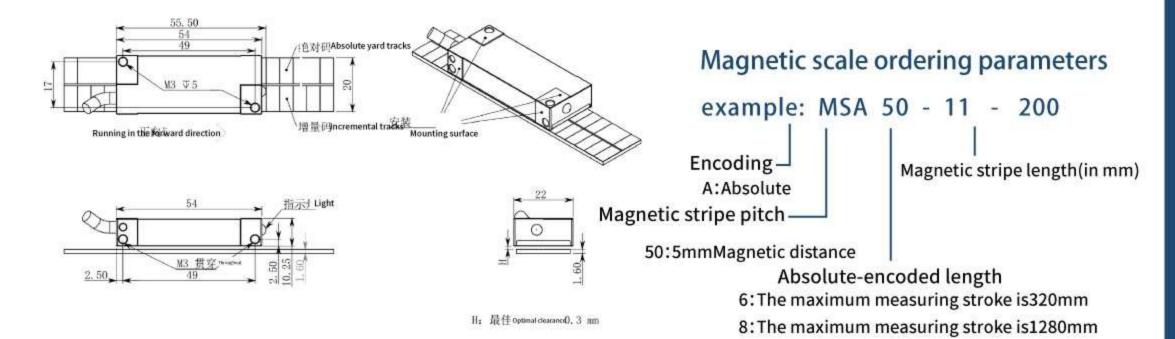
15-pin D-type	2/9	4	5	6	7/8	12	13	14	enclosure
Cable color	black	brown	blue	purple	red	yellow	white	green	Shielded wire PE
BISS	20	2	MA-	SLO-	<u> </u>	71 <u>6</u> 0	MA+	SLO+	
SSI	GND (0V)	485-A (For debugging)	CLK-	DATA-	+VIN (5V)	485-A (For debugging)	CLK+	SATA+	
Tamagawa	-	A/485_B	-	¥1	-	A/485_A	S#3	-	
9-pin D-type	2	3	4	.5	6	7	8	9	enclosure
Cable color	yellow	white	green	red	brown	blue	purple	black	Shielded wire PE
BISS	*	MA+	SLO+	#:	+:	MA-	SLO-	39	
SSI	485A (For debugging	CLK+	DATA+	+VIN (5V)	485-B (For debugging)	CLK-	DATA-	GND(0V)	
Tamagawa	A/485_B	-	-	5	A/485_A	454			

#### **Technical Specifications**

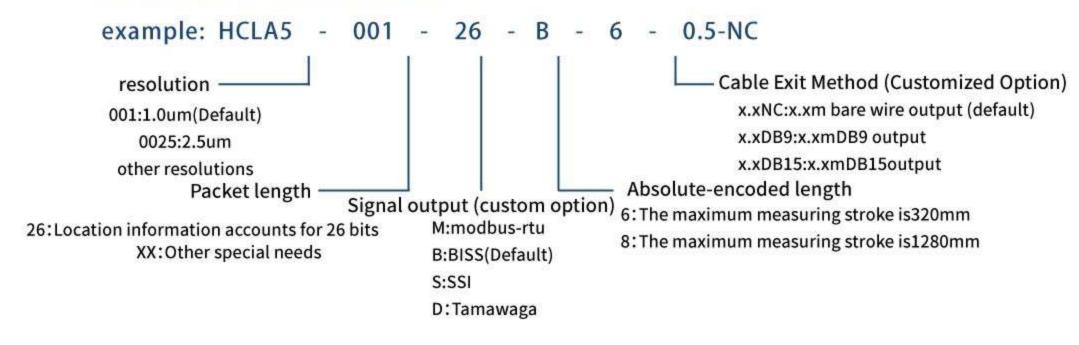
Features	Technical data	Supplement
Operating voltage	5v	±5%
Current consumption	150mA (MAX)	25° room temperature
Resolution	1um	
Repeatability	<2um	
Maximum Measurement length	1m	
Maximum speed	5m/s	
Crossing speed	5m/s	
Power-up Initialization time	< 350ms	After initialization, the encoder will start responding according to the communication protocol
Maximum cable length	10M	and do not have a second
Qualifying method	Direct outlet	Optional (DB9/DB15)
Sensing distance	< 1.6 mm	1.2 mm optimum
Dimensions	44*37*7.66mm	
Matching magnetic tape	MSA50 series	Absolute dual track stripe width 20mm
Wire length	Default 0.5 meters	Customizable
Operating temperature	-5 70°C	oustonnization .
Storage temperature	-25 105°C	
Ingress protection	IP67	Epoxy resin potting process

#### **Electrical connections**

	Cable specifications
Cable type	TPU cable,energy chain-compatible,double-shield ed,twisted-pair
Number of wires	8
Communication interface	s DC,SC,SP
Outside diameter	4.4 mm ±0.15 mm
Sheath material	TPU
Conducting wire	0.08 mm2, 28 AWG, 0.38 Ω/m
Shielding rate	90%
Durability	30 million cycles with a bending radius of 35 mm
Weight	34 g/m nominal
Bending (internal) radius	Dynamic 25 mm, static 10 mm



#### **Encoder ordering parameters**







# Absolute value magnetic reading head HCA2000

Absolute position dual track measurement

Excellent resistance to contamination

External LED installation indicator

High resolution, high precision

Intelligent error message prompt

The ultra-flexible drag chain wire is bent more than 20

million times

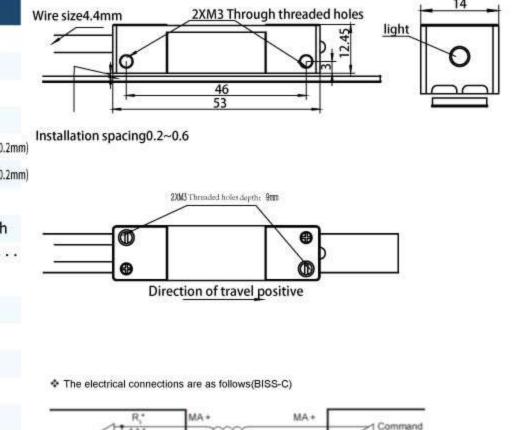
Outgoing NC bare wire, DB9, DB15, and others can be customized



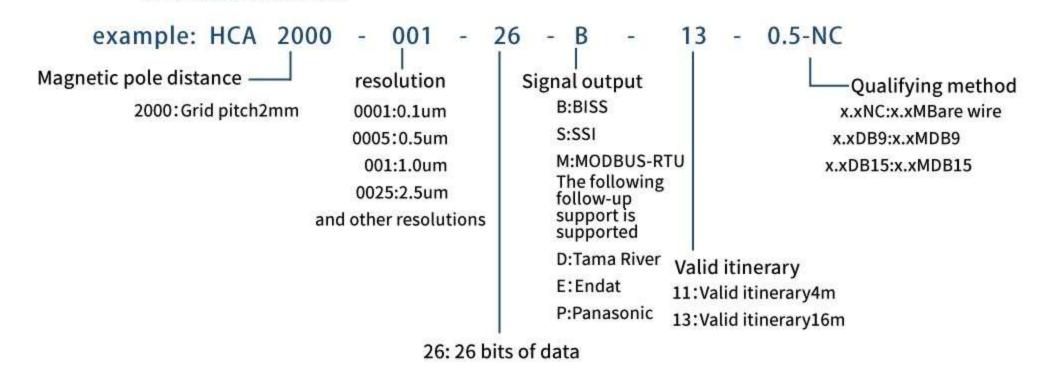
color	red	black	green	purple	white	blue	yellow	brown	PE
BISS-C	Vcc	GND	SLO+	SLO-	MA+	MA-	485-A	485-B	Shielded wires
SSI	Vcc	GND	DATA+	DATA-	CLK+	CLK-	485-A	485-B	Shielded wires
DB9	5	9	4	8	3	7	2	6	enclosure
DB15	7,8	2,9	14	6	13	5	12	4	enclosure

#### **Technical Specifications**

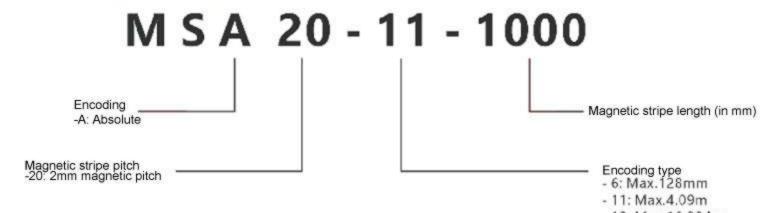
Features	Technical data	Supplement	Wire size4.4n
Operating voltage	5v	±5%	/
Current consumption	150mA (MAX)		
Resolution	0.1-100um	Optional	X
Location data interface	BISS-C / (SSI)		į.
Positioning accuracy	<60um	Laser interferometer measurement (sensing distance 0.2mm)	Installation s
Repeatability	±2resolution	Laser interferometer measurement (sensing distance 0.2mm)	
Output interface	BISS-C;SSI	Optional (Default BISS-C)	
SSI clock frequency input	≤750KHz	Depends on the cable length	
Maximum measurement	16m	Other lengths (e.g. 0.5m; 1m···	22
length		can be customized 16.3m)	15
Maximum speed	6.5m/s		
Maximum cable length	10m	Optional (DB9/DB15)	
Qualifying method	Direct outlet		
Sensor material	aluminium		The elect
Sensing distance (	).3+/-0.1mm(Max0.6)		9
Dimensions	53*14*12.5mm		
Mounting hole spacing	46mm		Encode
Matching magnetic tape	MSA20	Customizable	
Wire length	default0.5M		GN
Operating temperature	-5 70°C		Ŧ
Storage temperature	-25 125°C		ск
Ingress protection	IP67 sensor		



#### **Product selection**



#### Magnetic tape selection



- 13: Max.16.384m page | 34



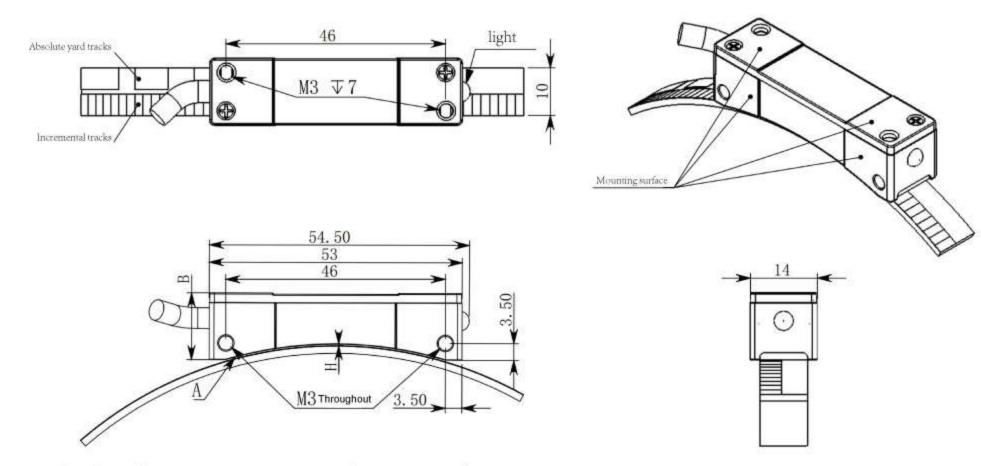


# Absolute magnetic ring encoders HRA2000

Extra-large medium holes
Lap absolute value
Super stain resistant



color	red	black	green	purple	white	blue	yellow	brown	PE
BISS-C	Vcc	GND	SLO+	SLO-	MA+	MA-	485-A	485-B	Shielded wires
SSI	Vcc	GND	DATA+	DATA-	CLK+	CLK-	485-A	485-B	Shielded wires
DB9	5	9	4	8	3	7	2	6	enclosure
DB15	7,8	2,9	14	6	13	5	12	4	enclosure



H: Induction distance 0.1mm~0.6mm, best 0.3mm±0.1mm Note: Specific sizes vary depending on the outer diameter, as detailed in the table below:

#### **Technical Specifications**

Features	Technical data	Supplement
Operating voltage	5v	±5%
Current consumption	150mA (MAX)	
Resolution	0.1-100um	Optional
Location data interface	BISS-C / (SSI)	
Positioning accuracy	<60um	Laser interferometer measurement (sensing distance 0.2m
Repeatability	$\pm 2$ resolution	Laser interferometer measurement (sensing distance 0.2m
Output interface	BISS-C;SSI	Optional (Default BISS-C)
SSI clock frequency input	≤750KHz	Depends on the cable length
Maximum measurement length	16m	Other lengths (e.g. 0.5m; 1m··· can be customized 16.3m)
Maximum linear speed	6.5m/s	
Maximum cable length	10m	Optional (DB9/DB15)
Qualifying method	Direct outlet	
Sensor material	aluminium	
Sensing distance	0.3+/-0.1mmMax0.6)	
Dimensions	53*14*12.5mm	
Mounting hole spacing	46mm	
Wire length	default0.5M	
Operating temperature	-5 70°C	
Storage temperature	-25 125°C	
Ingress protection	IP67 sensor	

Model	Outside diameter	Inner diameter	Number of poles	width	Grid pitch
HDA61-45-96	61.15	45	96	10	2
HDA72-54-114	72.61	54	114	10	2
HDA82-68-128	81.53	68	128	10	2
HDA122-106-192	122.29	106	192	10	2
HDA163-140-256	163	140	256	10	2
HDA204-187-320	203.82	187	320	10	2
HDA327-307-512	327	307	512	10	2





# With the origin and high precision magnetic ring HDR series

The mounting hole is fixed, with a unique zero position, and the zero return accuracy is high

It is used for high-precision angle feedback, such as DD motors, etc The repeatability is between  $\pm 3$ -10 arc seconds, and the larger the diameter, the higher the accuracy

- Equipped with a reading head with an origin: MINIR200,LHR200
- With a reading head without origin: LH200,MINI200



#### Parameter model and number of lines are selected (Any number of lines can be output)

Model	HD5180	HD6196	HD72114	HD82128	HD122192	HD150236	HD204320	HD229360	HD344540
Outside diameter	50.96	61.15	72.61	81.53	122.29	150	203.82	229	344
nner Diameter Tolerance H7)	30	45	54	68	106	130	187	209	310
Width	7.5	10	10	10	10	10	10	10	10
Number of poles	80	96	114	128	192	236	320	360	540
Pole width	2	2	2	2	2	2	2	2	2
Maximum number of lines	80000	96000	114000	128000	192000	236000	320000	360000	540000
Minimum number of threads	80	96	114	128	192	236	320	360	540

The number of lines is the number of pulses before the 4 octave, and the total value (pulse) of one revolution is the number of lines X4

Repeatability  $< \frac{2592000}{\text{Number of threads} \times 4}$  Position When

Positioning accuracy is linked to resolution. < 500 arcsee at high resolution

When the resolution > 250 arcsee, the positioning accuracy  $\approx \pm~1$  resolution

Positioning accuracy (arcsee)  $\approx \frac{125000}{\text{The number of poles} \times \text{the}}$ 

width of the poles ÷ 0.04

resolution (um) =  $\frac{\text{Ingth of poles} \times \text{total}}{\text{Number of threads} \times 4}$  resolution (arcsee) =  $\frac{1926000}{\text{Number of threads} \times 4}$ 





# Direct drive motor hall sensor LM-N series

The LM-N is a dedicated encoder for direct drive motors.

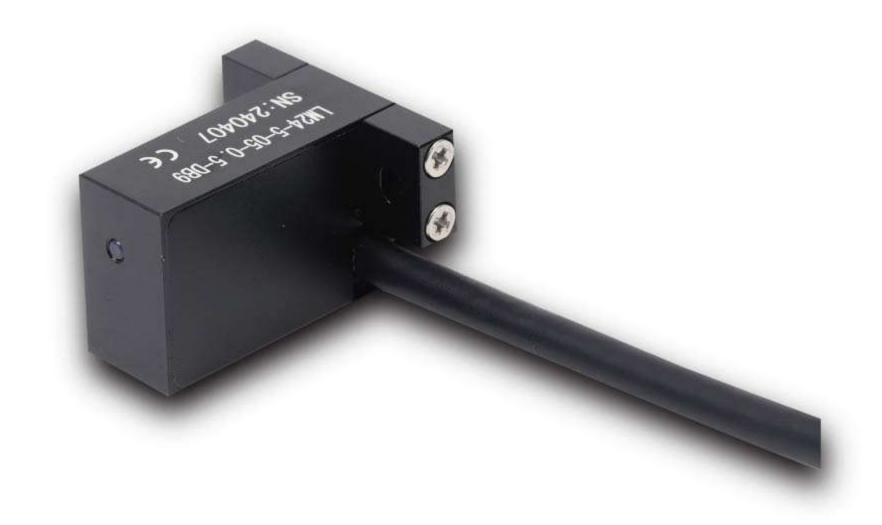
It can ensure the normal output under high-speed operation of 5 m/s. Industry standard RS422 signal.

Easy to install, with LED power indicator, sensing spacing up to 2mm.

Ultra-flexible drag chain line, resistant to more than 20 million bending times.

Non-contact, can be used in harsh environments. The operating temperature range is -10 $^{\circ}$  C to +80 $^{\circ}$  C.

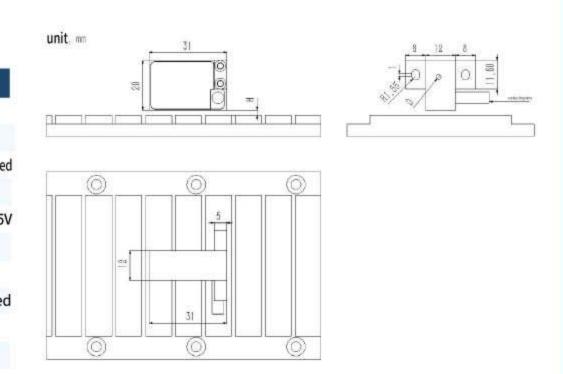
It has good resistance to shock, vibration and pressure. Compact size, sealed and waterproof IP68 housing.



Double-row DB9	1	2	3	4	6	7	8	9	enclosure
Cable color	red	green	white	yellow	black	purple	blue	brown	shield
Differential interfaces	5V+	U+	V+	W+	OV	W-	V-	W-	
Single-ended interface	5V+	U	٧	W	0V	8576			

#### **Technical Specifications**

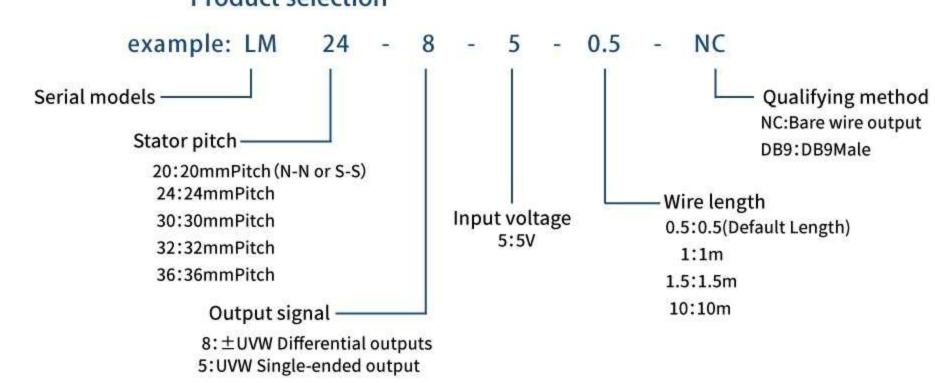
Features	Technical data	Supplement
Operating voltage	5V	±5%
Current consumption	3mA	25° room temperature
Applicable pole distance	20、24、30、32	Pole distance N-N or S-S others can be customize
Output signal	±uvw	Industrial RS422 standard
Maximum cable length	30M	Laboratory voltage attenuation to 4.75
Qualifying method	Direct outlet	Optional (DB9/DB15)
Sensor material	aluminium	CNCFinely carved
Sensing distance	2mm ±0.5mm	Protective steel belts are not include
Dimensions	33*15*10MM	
Mounting hole spacing	26mm	
Wire length	default0.5M	Customizable
Operating temperature	-5 70°C	
Storage life	-20 105°C	
Ingress protection	IP67	



#### **Electrical connections**

	Cable specification
Cable type	TPU cable, energy chain-compatible double-shielded, twisted-pair
Number of wires	8
Outside diameter	5.3 mm $\pm$ 0.15 mm
Sheath material	TPU
Conducting wire	$0.1  \text{mm}^2$ , 28 AWG, $0.38  \Omega/\text{m}$
Shielding rate	>98%
Durability	30 million cycles with a bend radius of 37 mi
Weight	34 g/m nominal
Bending (internal) radius	Dynamic 25 mm, static 10 mm

#### **Product selection**







# Encoder for incremental rod motors LMD series

The LMD series is an encoder for incremental rod motors with stator rods as position feedback.

Adapt to any stator pitch, up to 1um resolution

Industry standard RS422 signal,  $\pm$  ABZ incremental digital signal.

Easy to install with integrated LED indicators.

Ultra-flexible drag chain line, resistant to more than 20 million bending times.

Non-contact, can be used in harsh environments. The operating temperature range is -10  $^{\circ}$  C to +80  $^{\circ}$  C.

It has good resistance to shock, vibration and pressure. Compact size, sealed and waterproof IP68 housing.



DB15	2	4	5	6	7	12	13	14	enclosure
Line color	black	brown	blue	purple	red	yellow	white	green	shield
Signal	0V	Z-	B-	Α-	5V	Z+	B+	A+	
DB9	2	3	4	5	6	7	8	9	enclosure
Line color	yellow	white	green	red	brown	blue	purple	black	shield
Signal	Z+	B-	A+	5V	Z-	B-	A-	0V	

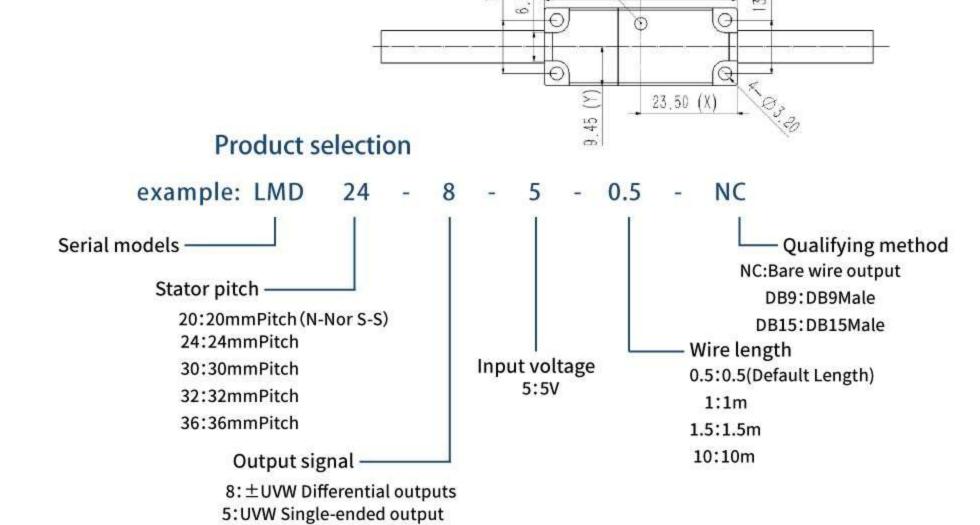
#### **Technical Specifications**

Features	Technical da	ta Supplement
Operating voltage	5V	±5%
Current consumption	60mA (MAX)	25° room temperature
Resolution	1um (MAX)	The default is 1um
Output signal	±ABZ	Industrial RS422 standard
Positioning accuracy	≤500um	determined by the magnet placement accuracy of the stator bar
Repeatability	±3um	
Maximum speed	5m/s	
Maximum cable length	30M l	aboratory voltage attenuation to 4.75
Qualifying method	Direct outlet	Optional (DB9/DB15)
Sensor material	aluminium	CNC carving
Sensing distance	1/4Pitch widt	h
Dimensions	47*18.9*13mr	n
Mounting hole spacing	41*13mm	
Applicable pitch	20,24,30,32.	N-N or S-S width
Wire length	default0.5m	Customizable
Operating tempera-	-5 70°C	
ture	-20 105°C	
Storage life	IP67	
Ingress protection		unit; mm

#### **Electrical connections**

	Cable specification
Cable type	TPU cable, energy chain-compatible double-shielded, twisted-pair
Number of wires	8
Outside diameter	5.3 mm ±0.15 mm
Sheath material	TPU
Conducting wire	0.1 mm <sup>2</sup> , 28 AWG, 0.38 Ω/m
Shielding rate	>98%
Durability	30 million cycles with a bend radius of 37 mm
Weight	34 g/m nominal
Bending (internal) radius	Dynamic 25 mm, static 10 mm

18.90







# Induction stator magnetic encoder LMS20/24/30/32/36

1um High Resolution Direct Sensing Stator NC: Bare wire output

Support stator pitch 20, 24, 30, 32, 36, etc

Other sizes can be customized

Ultra-high operating speed of up to 5m/s

Excellent anti-contamination capability with external LED mounting calibration

indicator

Standard RS422 output

Differential ABZ and single-ended UVW commutation signals are output

The repeatability can reach 3um

The ultra-flexible drag chain wire is bent more than 20 million times

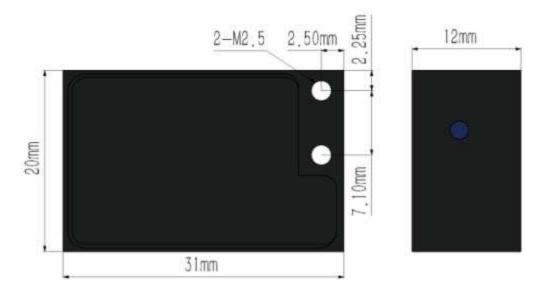
Outgoing NC bare wire, DB15, and others can be customized

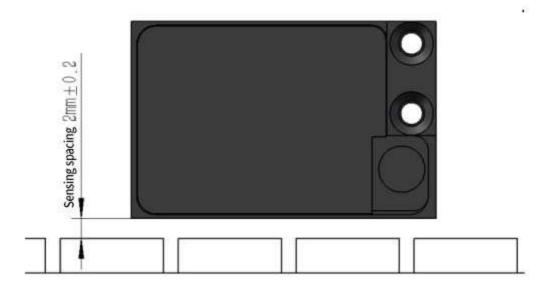


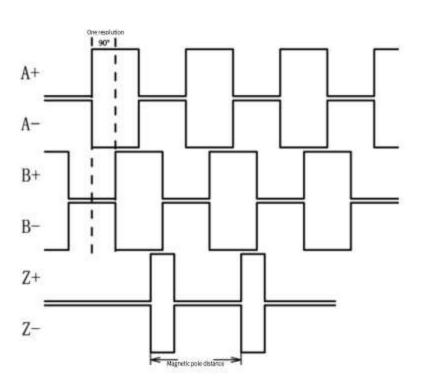
color	red	black	green	purple	white	blue	yellow	brown	pink	grey	Transparent	PE
Differential outputs	5V	GND	A+	Α-	B+	B-	Z+	Z-	U	٧	W	shield
Three-row DB15 male	1	11	2	12	3	13	4	14	8	9	10	enclosure

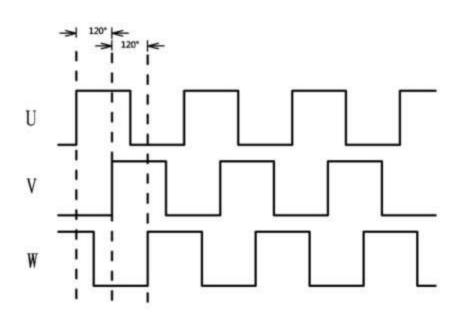
#### **Technical Specifications**

Features	Technical data	Supplement
Sensor material	aluminium	
Sensing distance	2mm	Protective plate is not included
Dimensions	31*20*12mm	Mounting plate not included
Induction pitch	20mm,24mm	Please refer to the detailed explanation for the pitch description
Wire length	default3M	Customizable
Weight	150g	3-meter line configuration
Measure the length	50m	The voltage attenuation is < 1V at 5V supply
Operating voltage	5V	±5%
No-load current	5V:≤30mA	
Operating current	5V:≤120mA	
Position signals	$\pm A, \pm B$	
Commutation signals	uvw	
Output mode	RS422	
Resolution	1um	Other needs can be customized
Positioning accuracy	<300um	Laser interferometer determination
Repeatability	±2um	Laser interferometer determination
Movement speed	Max.5m/s	Customizable
Ambient temperature	-5 70°C	
Storage temperature	-25 125°C	
Ingress protection	IP67 sensor	

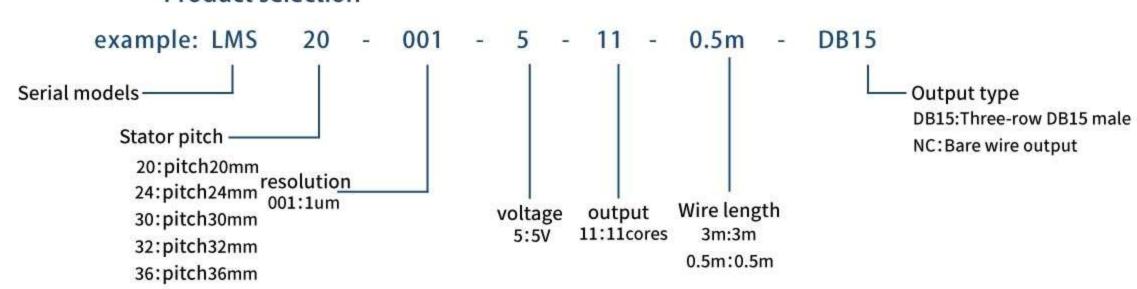








#### **Product selection**







# Magnetic encoder for incremental linear motors LT200

The LT200 is an incremental linear motor, DD motor, magnetic grid encoder for direct drive motors.

Under the resolution of 0.5um, it can ensure the high-speed operation and normal output of 8 m/s.

Industry standard RS422 signal,  $\pm$  ABZ incremental digital signal. Quadrature AB signal as well as a periodic Z signal of 2 mm.

It is easy to install, integrates LED alarm indicator, and has a large sensing distance from the magnetic stripe and magnetic ring.

Ultra-flexible drag chain line, resistant to more than 20 million bending times.

Non-contact, can be used in harsh environments. The operating temperature range is -30 $^{\circ}$  C to +80 $^{\circ}$  C.

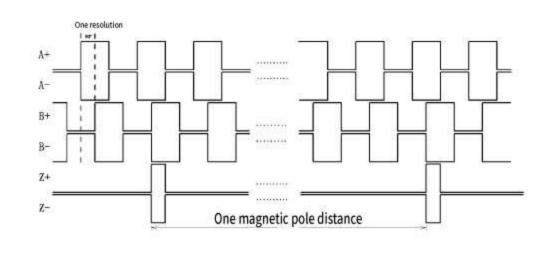
It has good resistance to shock, vibration and pressure. Compact size, sealed and waterproof IP68 housing.



DB15	2	4	5	6	7	12	13	14	enclosure
Line color	black	brown	blue	purple	red	yellow	white	green	shield
Signal	0V	Z-	B-	Α-	5V	Z+	B+	A+	
DB9	2	3	4	5	6	7	8	9	enclosure
Line color	yellow	white	green	red	brown	blue	purple	black	shield
Signal	Z+	B-	A+	5V	Z-	B-	A-	0V	

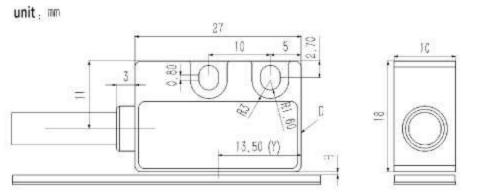
#### **Technical Specifications**

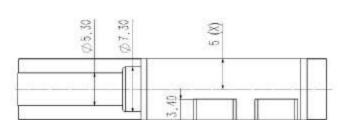
Features	Technical data	Supplement
Operating voltage	5V	±5%
Current consumption	60mA (MAX)	25° room temperature
Resolution	0.5um (MAX)	Customizable
Output signal	$\pm ABZ$	Industrial RS422 standard
Positioning accuracy	≤50um	Laser interferometer measurement
Repeatability	±1um	Laser interferometer measurement
Maximum measurement length	50M	Depends on the magnetic stripe
Maximum speed	8m/s	0.5um resolution
Maximum cable length	30M	Laboratory voltage attenuation to 4.75V
Qualifying method	Direct outlet	Optional (DB9/DB15)
Sensor material	aluminium	CNCFinely carved
Sensing distance	<1mm	<0.5mm is the most accurate
Dimensions	30*18*10mm	
Mounting hole spacing	10mm	
Matching magnetic tape	MR20	
Wire length	default0.5m	Customizable
Operating temperature	-30 80°C	
Storage life	-40 105°C	
Ingress protection	IP67	



#### **Electrical connections**

	Cable specifications
Cable type	TPU cable, energy chain-compatible, double-shielded, twisted-pair
Number of wires	8
Outside diameter	5.3 mm ±0.15 mm
Sheath material	TPU
Conducting wire	0.1 mm2, 28 AWG, 0.38 Ω/m
Shielding rate	>98%
Durability	30 million cycles with a bend radius of 37 mm
Weight	34 g/m nominal
Bending (internal)	Dynamic 25 mm, static 10 mm





#### Magnetic stripe model

MS 20 - 10 - 3000

B:Magnetic stripe pitch

20: 2mm magnetic pole distance 10: 1mm magnetic pole distance

C:Magnetic stripe type
10: 10mm width

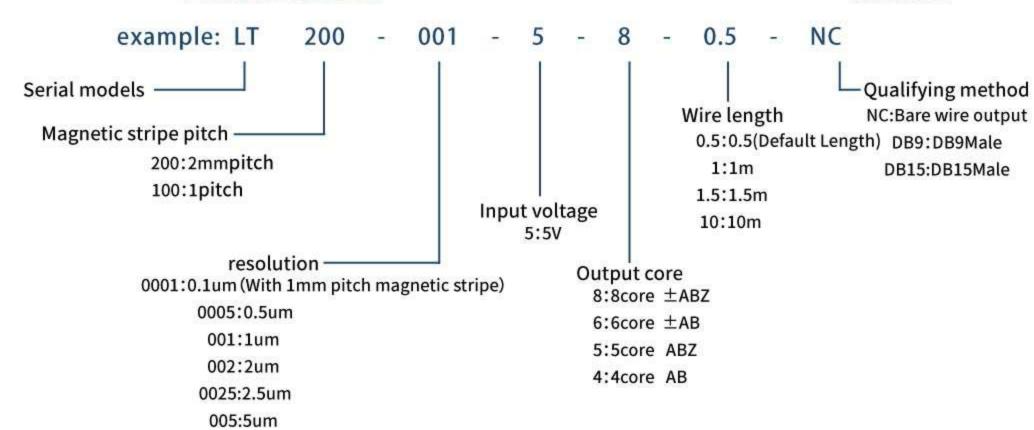
A:System model

MS:Incremental magnetic stripe

D:The total length of the magnetic stripe

10:10mm 200:200mm 3000:3000mm

#### **Product selection**







# With origin and limit function LD200 series

Housing: Aluminum alloy black oxide
Read head with displacement origin and 2-end limit
Save 3 photoelectric switches to make the structure more stable
High precision, high subdivision, high anti-interference, good waveform
The LED indicator is easy to install and troubleshooting
Wire: ultra-flexible more than 10 million times, drag chain line.
Cable outgoing mode: NC bare wire, DB15, others can be customized
Common resolution: 1um

Repeat positioning accuracy: ±1um

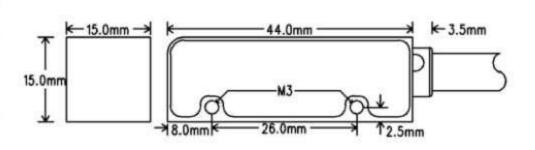


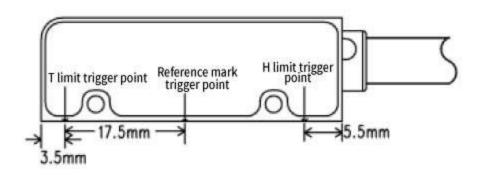
color	red	black	green	purple	white	blue	yellow	brown	Blue	Aqua	orange	gray	pink	PE
Differential outputs	DVCC	DGND	A+	A-	B+	B-	Z+	Z-	AVCC	AGND	R	Н	Т	shield
DB15 male	7	2	14	6	13	5	12	4	8	1	3	10	11	Housing

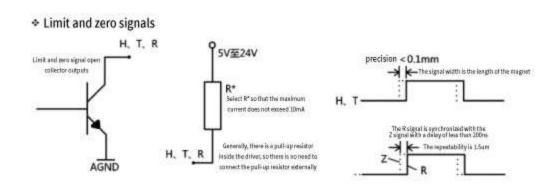
DVCC and DGND are 5V for the encoder side, and AVCC and AGND are 5-24V for I0. T, H: limit signal. R: The IO of the synchronous Z-term signal identifies the zero signal

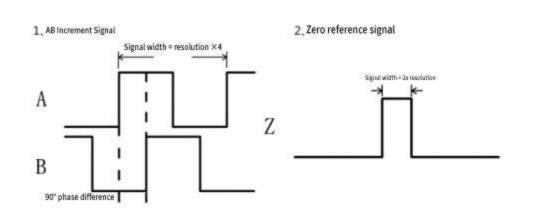
#### **Technical Specifications**

Features	Technical data	Supplement
Sensor material A	Aluminum alloy carvin	ng
Sensing distance	0.3mm±0.2	
Dimensions	42*15*15mm	25*22*10 (LK200)
Mounting hole spacing	26mm	10mm (LK200)
Zero magnet size	2mm diameter 1.5	mm thickness cylindrical
Limit magnets	1*2*5mm cuboid	
Matching magnetic tape	MS20、MS10	
Wire length	Default 3M	Customizable
Weight	180g	3-meter line configuration
Measure the length	50M	The voltage attenuation is < 1V at 5V supply
Operating voltage	5V	±5%
No-load current	5V:≤35mA	
Operating current	5V:≤65mA	
Signal characteristics 90°	phase difference square v	vave Phase±0.5°
ABZ signal output mode	TTL	
Left and right limit signal	Open collector	
Output mode	output	
Resolution	1um	Other needs can be customized
Positioning accuracy	<30um	Laser interferometer determination
Repeatability	1-1.5um	Laser interferometer determination
Movement speed	Max.5m/s	Customizable
Ambient temperature	-5 60°C	
Storage temperature	-10 70°C	
Ingress protection	IP67 sensor	

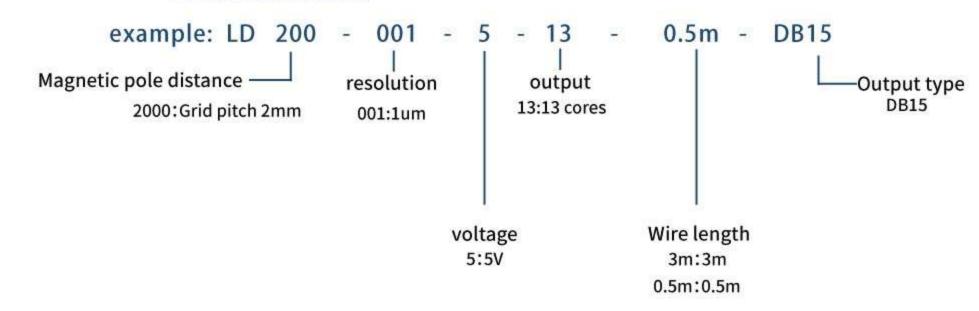








#### **Product selection**

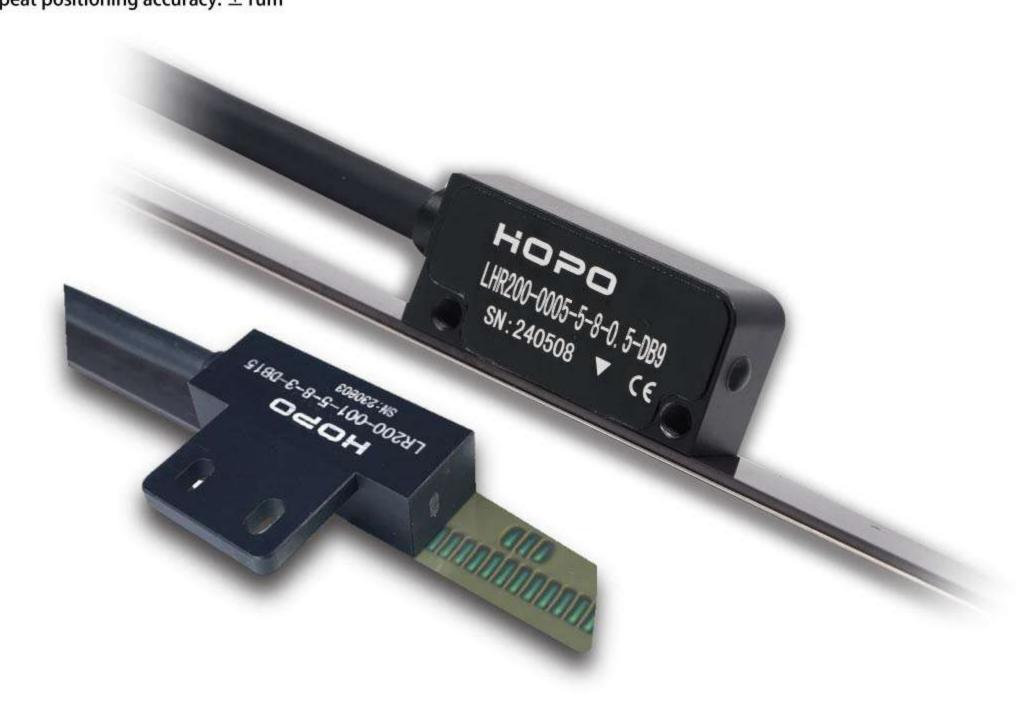






## With unique origin LSR200/LR200 series

Shell: Aluminum alloy black oxide High precision, high subdivision, high anti-interference, good waveform The LED indicator is easy to install and troubleshooting Wire: ultra-flexible more than 20 million times, drag chain line Cable outgoing mode: NC bare wire, DB9, DB15 Common resolution: 0.5um 1um Repeat positioning accuracy: ±1um



color	red	black	green	purple	white	blue	yellow	brown	shield
Differential outputs	5V	GND/0V	A+	Α-	B+	B-	Z+	Z-	enclosure
DB9male	5	9	4	8	3	7	2	6	enclosure
DB15male	7	2	14	6	13	5	12	4	enclosure

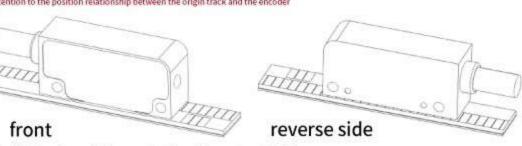
#### Tachnical Chacifications

Features	Technical data	Supplement
Sensor material	Aluminum alloy	
Sensing distance	Recomme	ended within 0.5 mm
	(0.3 mm ac	ccuracy is the highest)
Dimensions	34*15*10mm	
Mounting hole spacing	26mm	
Matching magnetic tap	e MS20	
Wire length T	he default is 0.5M	Customizable
Weight	150g	3-meter line configuration
Measure the length	50M	The voltage attenuation is < 1V at 5V supply
Operating voltage	5V	±5%
No-load current	5V:≤20mA	
Operating current	5V:≤50mA	
Signal characteristics	90° phase	Phase±0.5°
	difference square w	ave
Output mode	TTL	
Resolution	0.5um 1um	LS200 can only do more than 1un
Positioning accuracy	<40um	Laser interferometer determination
Repeatability	1-1.5um	Laser interferometer determination
Movement speed	Max.5m/s	Customizable
Ambient temperature	-5 60°C	
Storage temperature	-10 70°C	
Ingress protection	IP67 sensor	

LHR unique origin series sensing mode

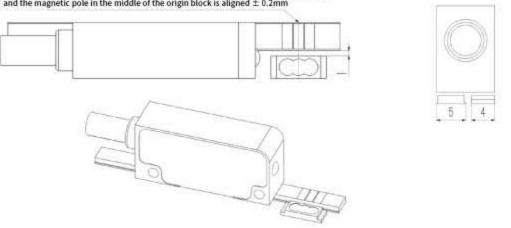
LHR unique origin series sensing methods, providing customers with a variety of methods Method 1: The origin magnetic pole is integrated into the magnetic stripe.

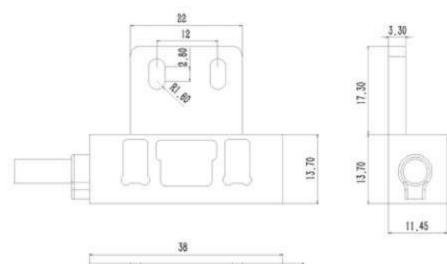
Pay attention to the position relationship between the origin track and the encoder

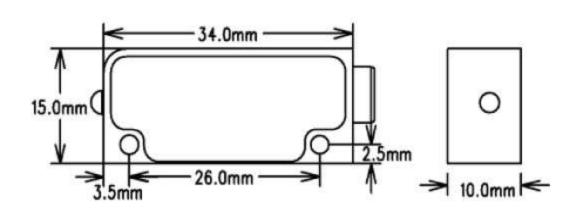


Method 2: Use a 5mm width magnetic stripe with an external origin Note the position relationship between the origin block and the encoder, and the distance between the origin block and the magnetic stripe is 1mm

One of the magnetic poles of the magnetic stripe is in the center of the magnetic stripe and the magnetic pole in the middle of the origin block is aligned  $\pm$  0.2mm







example: LHR 200 - 001 - 5 - 8 - 0.5m - DB9t

series resolution output Output type LHR DB9:DB9Male 001:1um 8:8core LR LHR200 DB15:DB15Male NC:Bare wire output

The LH series encoder is a magnetic grid encoder for incremental linear motors, DD motors, and direct
drive motors.
The built-in unique origin sensing module can output only -7 signals in the entire stroke.

Under the resolution of 0.5um, it can ensure the high-speed operation and normal output of 8 m/s. Industry standard RS422 signals,  $\pm$  ABZ incremental digital signals, quadrature AB signals, and Z signals

The installation is simple, the integrated LED alarm indicator light, and the induction distance from the magnetic stripe and magnetic ring is large.

Ultra-flexible drag chain line, resistant to more than 20 million bending times.

Non-contact, can be used in harsh environments. THE OPERATING TEMPERATURE RANGE IS -30°CC TO +80°CC

It has good resistance to shock, vibration and pressure. Compact size, bright body sealed waterproof

Magnetic pole distance voltage Wire length 200: Grid pitch2mm 3m:3M 0.5m:0.5M

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# Linear module cost-effective model, LS200/LH200 series

Shell: Black oxidized aluminum alloy

High precision, high subdivision, and good anti-interference waveform

Easy installation and troubleshooting of LED indicator lights

Wire: Super flexible for over 10 million times, drag chain wire.

1Vpp sine and cosine are optional

Outgoing methods: NC bare wire, DB9, DB15, other customizable

Common resolution: 0.5um 1um

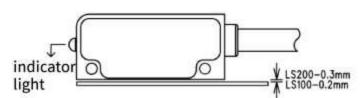
Repetitive positioning accuracy: ± 1um

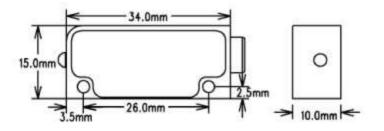


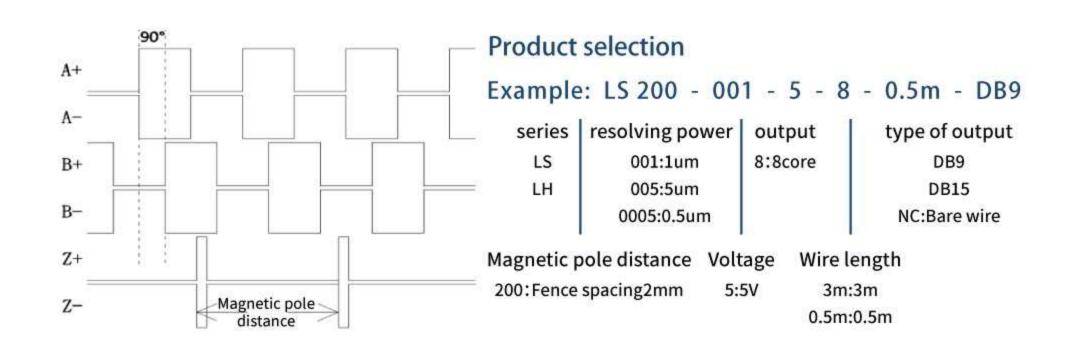
color	red	black	green	purple	white	blue	yellow	Brown	shield
Differential output	5V	GND/0V	A+	Α-	B+	B-	Z+	Z-	Shell
DB9 male head	5	9	4	8	3	7	2	6	Shell
DB15 male head	7	2	14	6	13	5	12	4	Shell

#### **Technical specifications**

Features	Technical data	Supplement
Sensor material	aluminium alloy	
Sensing distance	Recommended within 0.5n	nm (0.3mm has the highest accuracy)
External dimensions	34*15*10mm	
Installation hole spacing	26mm	
Supporting magnetic ruler	MS20	
Wire length	Default 0.5M	Customizable
Weight	150g	Under the 3-meter configuration
Measure length	50 meters	Voltage attenuation<1V under 5V
Working voltage	5V	power supply
No load current	5V:≤20mA	±5%
Working current	5V:≤50mA	
Signal characteristics	90 ° phase difference squa	are wave
Output method	TTL	Phase difference $\pm$ 0.5 $^{\circ}$
Resolving power	0.5um 1um	
Positioning accuracy	<40um	
Repetitive accuracy	1-1.5um	Laser interferometer measurement
Moving speed	Max.5m/s	Laser interferometer measurement
Ambient temperature	-5 60°C	Customizable
Storage temperature	-10 70°C	
Protection level	IP67 sensor	











# Precision linear motion gratings, K200/LK200 series

Shell: Black oxidized aluminum alloy
High precision, high subdivision, and good anti-interference waveform
Easy installation and troubleshooting of LED indicator lights
Wire: Super flexible with over 10 million cycles, drag chain cable
Outgoing methods: NC installation line, DB9, DB15, other customizable
Common resolution: 0.5 microns and 1 micron
Repetitive positioning accuracy: ± 1um



color	red	black	green	purple	white	blue	yellow	Brown	shield
Differential output	5V	GND/0V	A+	Α-	B+	B-	Z+	Z-	Shell
DB9 male head	5	9	4	8	3	7	2	6	Shell
DB15 public head	7	2	14	6	13	5	12	4	Shell

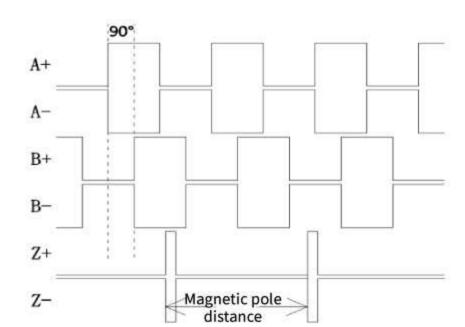
#### **Technical specifications**

Features	Technical data	Supplement
Sensor material	aluminium alloy	
Sensing distance	Recommended within 0.5mm (0.	3mm has the highest accuracy)
External dimensions	33*15*10 (K200)	25*22*10 (LK200)
Installation hole spacing	17mm (K200)	10mm (LK200)
Supporting magnetic ruler	MS20	
Wire length	Default 3M	Customizable
Weight	160g	Under the 3-meter configuration
Measure length	50 meters	Voltage attenuation<1V under 5V
Working voltage	5V	power supply
No load current	5V:≤20mA	±5%
Working current	5V:≤50mA	
Signal characteristics	90 ° phase difference square wav	e
Output method	TTL	Phase difference $\pm$ 0.5 $^{\circ}$
Resolving power	0.5um 1um	
Positioning accuracy	<30um	Other requirements can be
Repetitive accuracy	1-1.5um	customized
Moving speed	Max.5m/s	Laser interferometer measurement
Ambient temperature	-5 60°C	Laser interferometer measurement
Storage temperature	-10 70°C	Customizable
Protection level	IP67 sensor	



K200

0.5m:0.5m



#### **Product selection**

example: K 200 - 001 - 5 - 8 - 0.5m - DB9

series	resolving power	output	type of output
K	001:1um	8:8core	DB9
LK			DB15
Magnetic p	l ole distance Volt	age Wire l	ength
200:Fence	spacing2mm 5:	5V 3m:	:3m





# Machine tool and automation field anti-interference, high protection, K500/C500 series

Non contact open adaptation to various environments

High pollution resistance of metal pipes suitable for metal cutting and processing

Installation convenience and troubleshooting of dual LED indicator lights

Super strong anti-interference and anti pollution ability

Wire: Super flexible drag chain wire with a bending resistance of over 20 million times

Voltage: 5V 24A for general use

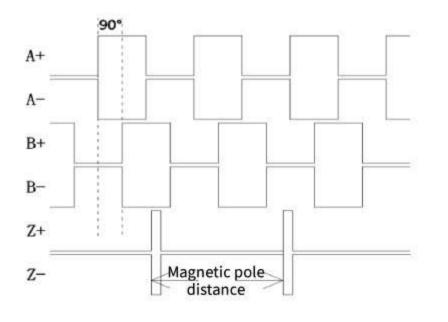
Outgoing wire type: NC bare wire, DB9, DB15, other customizable



color	red	black	green	purple	white	blue	yellow	Brown	shield
Single ended output PLC	5/24V	GND/0V	A+		B+		Z+		Grounding
Differential output	5/24V	GND/0V	A+	A-	B+	B-	Z+	Z-	Shell

#### **Technical specifications**

Features	Technical data	Supplement
Sensor material	aluminium alloy	
Sensing distance	C500/K 500:M ax. 2m	m, Recommended 1.5mm
	C200/K 200:M ax. 0.7n	nm, Recommended 0.3mm
External dimensions	35*25*10mm	
Installation hole spacing	17mm	
Supporting magnetic ruler	MS50/MS20	
Wire length	Default 3M	Customizable
Weight	170g	Under the 3-meter configuration
Measure length	50 meters/100 meters	Voltage attenuation<1V under 5V power supply
Working voltage	5V-24V	±5%
No load current	5V:≤20mA	24V:≤10mA
Working current	5V:≤50mA	24V:≤25mA
Signal characteristics	90° phase difference square wave	Phase difference $\pm$ 0.5 $^{\circ}$
Output method	RS422、TTL、Single ende	ed output, differential output, black wave
Resolving power	K500:625,312.5,200,	125、100、62.5、50、40、20、12.5、10、5、2.5
	K200:250,125,80,62,5	,50,40,25,20,16,12.5,10,8,5,4,2.5,2,1
Positioning accuracy	<30um	Laser interferometer measurement
Repetitive accuracy	$\pm$ 1 resolution	Laser interferometer measurement
Moving speed	Max.9m/s	Customizable
Ambient temperature	-5 60°C	
Storage temperature	-10 70°C	
Protection level	IP67 sensor	



#### **Product selection**

Example: K500 - 005 - 5 - 8 - 3m - 200k - B

model	resolving power	output	frequency
K500	001:1um	4:4core	200K:200KHZ
C500	005:5um	5:5core	40K:40KHZ
C200		8:8core	4M:4MHZ

Wire length Wire material
3m:3m B:Metal tube
0.5m:0.5m nothing:rubber

The selection frequency must be lower than the dual phase counting acquisition frequency of the receiving end

K500 C500 can only produce 2.5um or more, C200 can produce 1um





## Robot specific encoder

# Miniature linear encoder LS40

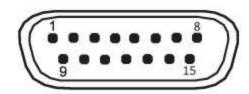
Ultra small volume PCBA incremental encoder
Humanoid robot finger joint ultra small high-precision encoder
Medical instrument ultra small linear encoder
Can output dark wave or ABZ pulse square wave TTL
Support non-standard customization



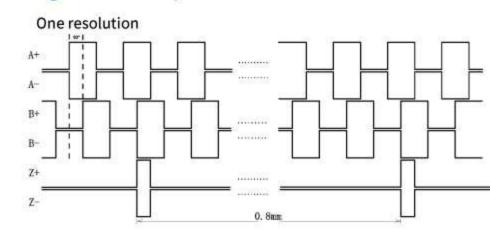
#### **Electrical parameters**

Features	Technical data	Supplement
Working voltage	5V	±5%
Current consumption	60mA (MAX)	At room temperature of 25 ° C
Resolving power	1um	Customizable
Output signal	±ABZ	Industrial RS422 standard
Maximum measurement length	30mm	Depends on the magnetic stripe
Maximum speed	1.6m/s	At a resolution of 0.1um
Sensing distance	$0.15$ mm $\pm 0.05$	0.15mm has the highest accuracy
External dimensions	7.6*7.4*0.8MM	
Installation hole spacing	4.6mm	
Supporting magnetic ruler	MS04	
Working temperature	-20 60°C	
Storage temperature	-40 105°C	
Protection level	IP67	

#### Interface definition



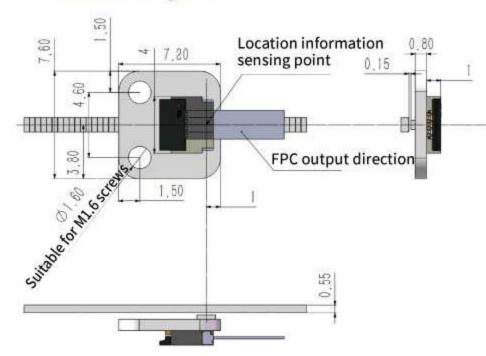
#### Signal Description



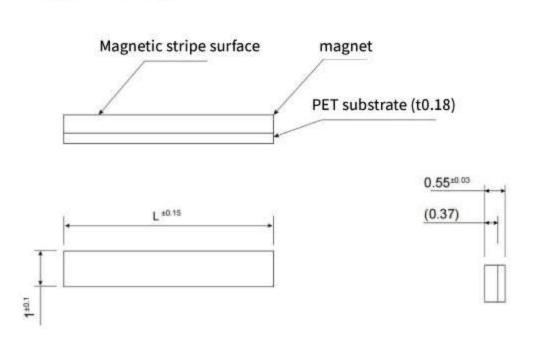
#### Double row DB15 male head

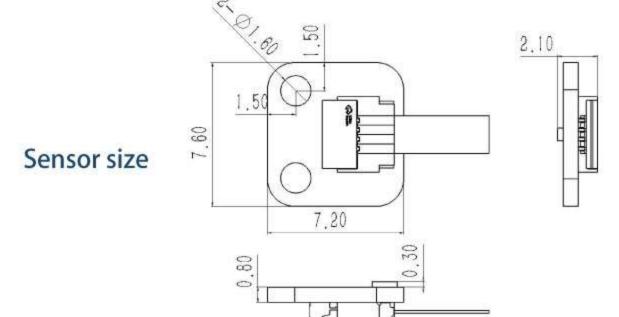
Foot position	Line color	Dual Drive
1		
2	black	OV
3		
4	Brown	Z-
5	blue	B-
6	purple	A-
7	red	5V
8		
9		
10		
11		
12	yellow	Z+
13	white	B+
14	green	A-
15		
Shell		shield

#### Induction diagram



#### Magnetic tape size









# Ultra-thin linear absolute encoder HU15/LU15/HU15X

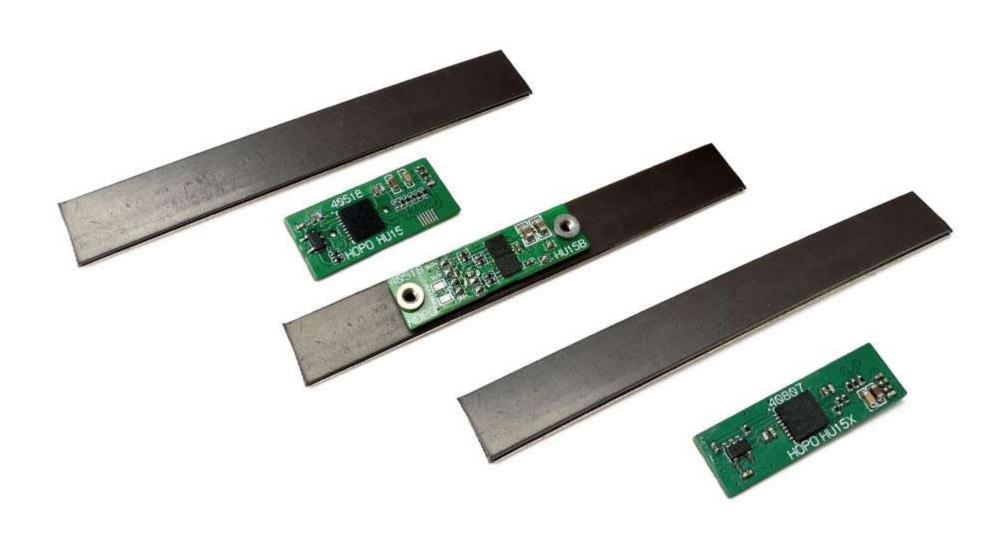
Feedback of absolute values of finger joints and other joints in humanoid robots

Medical instrument linear absolute value feedback

Semiconductor equipment precision feedback linear absolute value

Robot dog linear absolute feedback

Support non-standard customization



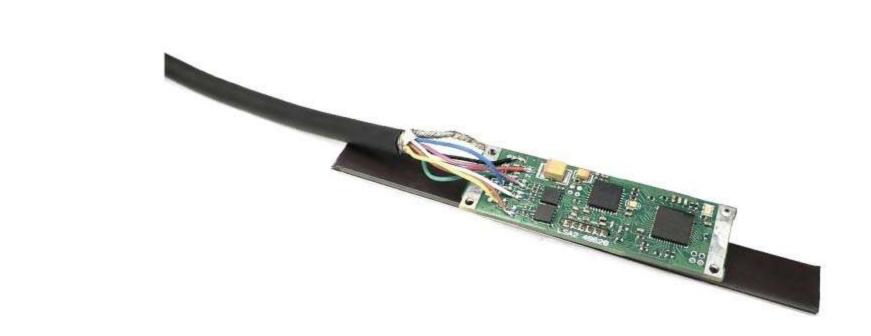
#### Electrical parameters

Name	Parameter
Trip	200mm
Voltage	5V
Maximum speed	20m/s
Resolution	≈0.2um

#### Signal Description

Name	Output signal
HU15	SPI
HU15X	SPI
LU15	BISS-C and SSI

# Ultra-thin linear absolute encoder ultra-long stroke LSA2



#### **Electrical parameters**

Name	Parameter
Maximum travel distance	High precision measurement of 16 meter straight line
Resolution	0.um-10um

#### Signal type

Name	Parameter
Tamagawa Absolute Value	BISS-C and SSI

Robot wheel motor encoder RSN-1024

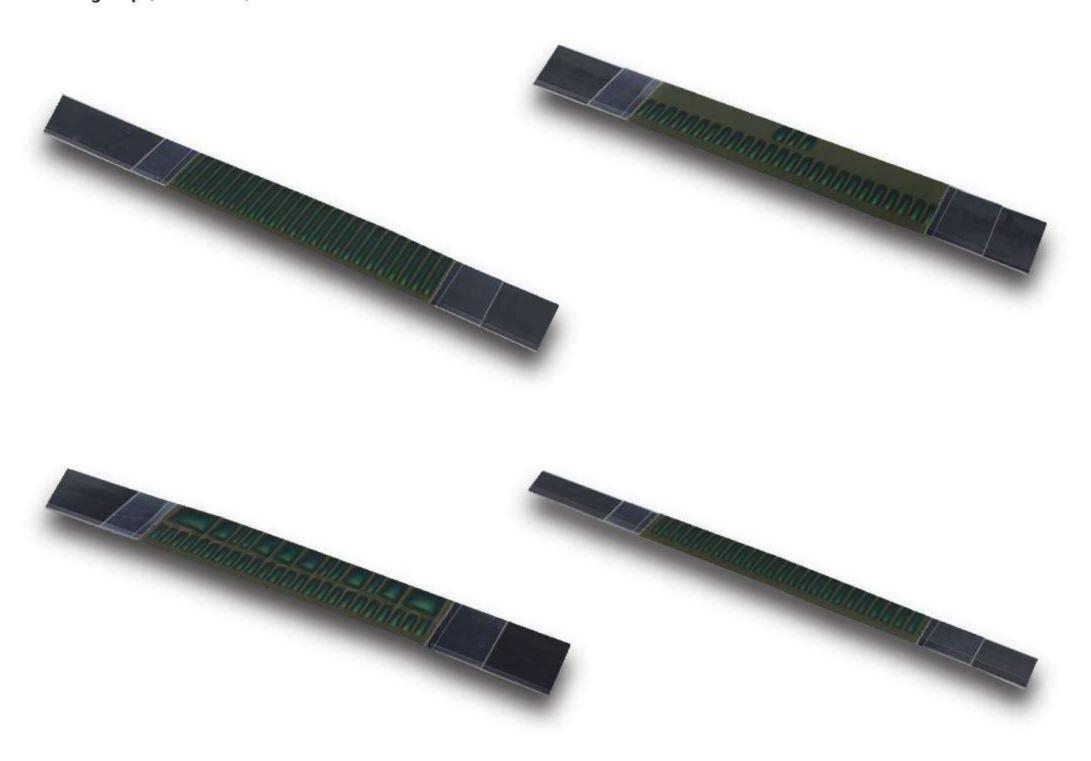
Ultra large medium hole high-precision rotary encoder
Support non-standard customization





## Magnetic tape, MS20/MS10/MS50

A sensor made using the principle of magnetic poles. The base ruler is a steel strip with uniformly magnetized S and N poles arranged at uniform intervals on the strip, and counting is done by reading the changes in the S and N poles with a reading head. Magnetic grid ruler is economical and efficient, suitable for long-distance measurement. Especially suitable for harsh environments such as oil stains, cutting chips, vibrations, etc.



Model	MS50	MS20	MS10	MS20-5	MSR20-10	MSR20-60
Magnetic pole distance	5mm	2mm	1mm	2mm	2mm	2mm
Size (mm)	10*1.5	10*1.5	10*1.5	5*1.5	10*1.5	10*1.5
Reference point	N/A	N/A	N/A	N/A	per 10mm	per 60mm

#### **Technical specifications**

Content	Parameter			
Code	Incremental, absolute value, single code channel, dual code channel			
Polar distance	1,2,5(mm)			
Operating temperature	0°C +50°C			
	Short term: -10 °C+60 °C			
Storage temperature (untreated)	Mid term: 0 °C 40 °C			
	Long term:+18 °C			
Relative air humidity	Maximum 95%, when not condensed			
Accuracy in millimeters at 20 °C	+/-(0.025+0.02 $\times$ L [m]) (L=measured length in meters)			
Length expansion caused by heat	$L[m]=L[m]\times\alpha[1/K]\times\boxtimes[K]$			
	(L=length of magnetic ruler in meters, N=relative temperature change)			
Coefficient of length expansion	$\alpha \approx 16 \times 10\text{-}6 \text{ 1/K}$			
Bending radius	Minimum 100mm			
Available length	50m (to 100m, please consult in advance)			
Magnetic ruler weight	Ca.62g/m (including adhesive tape and cover film)			
Weight of covering tape	Ca.19g/m (including adhesive tape and cover film)			
External magnetic influence	The distance between the external magnetic field and the surface of the magnetic ruler cannot exceed 64mT (640 Oe; 52kA/m), otherw it may damage or destroy the magnetic ruler code			
Protection level	IP67			

#### Installation steps

- ◆ Thoroughly clean the bottom surface
- Remove the protective film from the tape attached to the magnetic ruler
- Apply force to stick the magnetic ruler
- ◆ Thoroughly clean the surface of the magnetic ruler
- Remove the protective film pasted on the cover tape
- Apply force to the cover tape
- Cover the terminal with anti detachment treatment and install a terminal cap.

#### Matters needing attention

- Attention! The position ruler is made of magnetic material, and special attention should be paid to not coming into contact with strong magnetic substances or being placed in a strong magnetic field during use and installation to ensure its functionality.
- Please keep a distance of at least 5 centimeters from a strong magnetic field with a strength of 5000 Gauss to avoid interference with the position measurement system.

#### Hint

The magnetic ruler that has been pasted is completely damaged after removal and cannot be used again.

#### Hint - handle the pasted surface

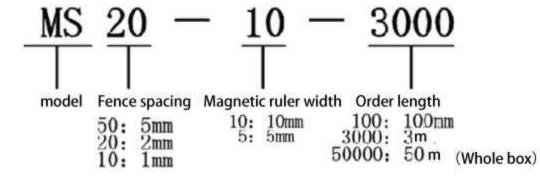
To ensure optimal adhesion, it is necessary to thoroughly remove all wear-resistant dirt (such as oil, grease, dust, separation agents, etc.) using evaporative solvents.

Ketones (acetone) or alcohol are more suitable in this area. A typical cleaning solvent is a 50/50 isopropyl alcohol/water mixture or heptane. Similarly, there are basic cleaning agents such as LOCTITE or 3M. When using solvents, please be sure to pay attention to the warning instructions in production! Anti oxidation sealing should be applied to the adhesive surface of copper, brass and other materials.

#### **Hint - Paste Temperature**

The optimal pasting temperature is between+18 degrees and+30 degrees. If the surface temperature to be pasted is below+10 degrees, it is not suitable for pasting because in this case, the adhesive material is too hard and weakens its immediate adhesion. After pasting according to the specifications, there is still connection strength even at zero degrees. According to experience, the final adhesive strength will be reached after approximately 72 hours (+21 degrees).

Selection of magnetic encoder without origin



(A magnetic tape with a width of 5mm and only supports a grid spacing of 2mm)

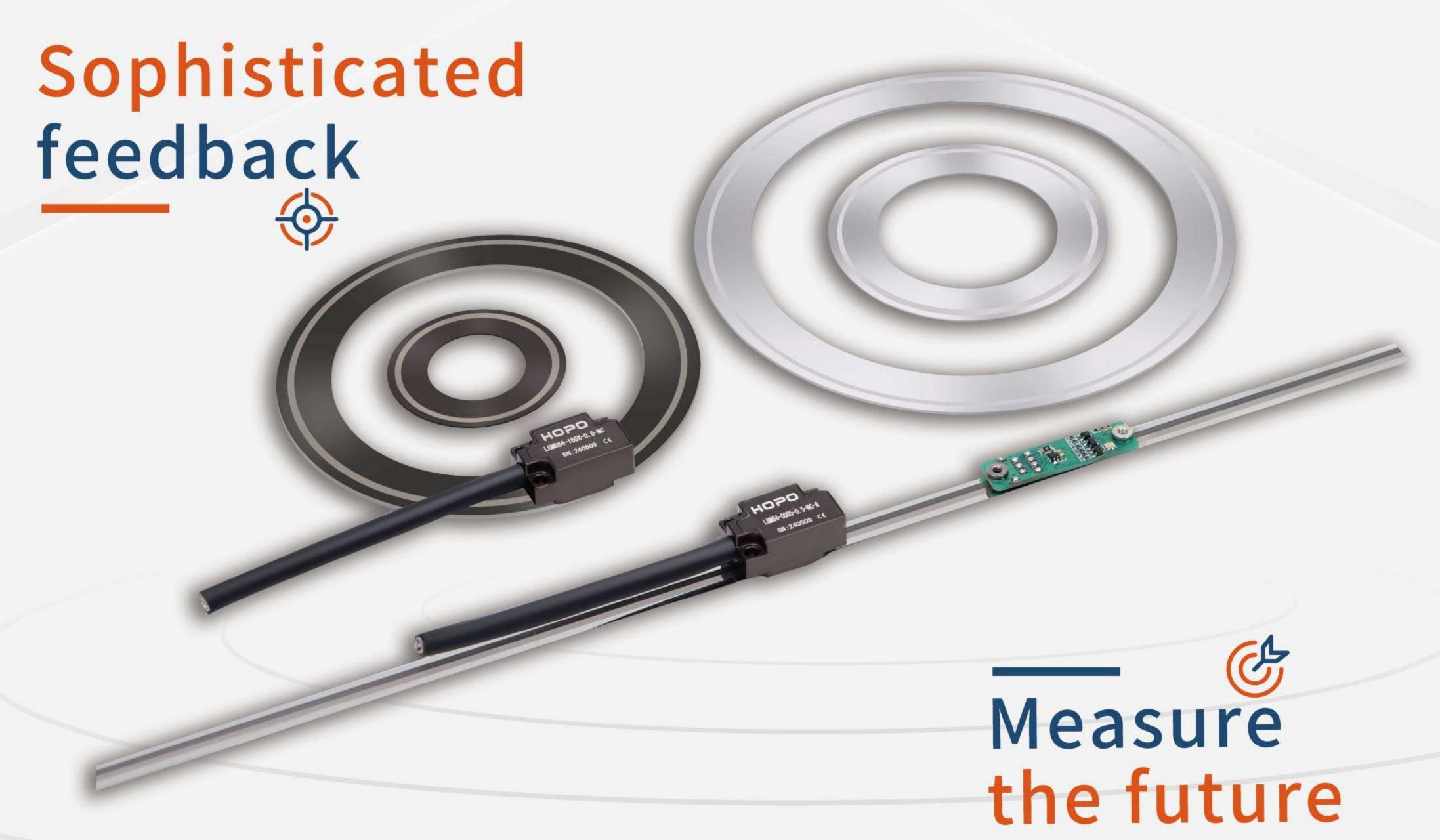
MSR 20 — 10 — 3000

model Fence spacing Origin spacing Order length
20: 2mm 10: 10mm 100: 100mm 3000: 3 m 50000: 50 m (Whole box)





Optical scales series







# Micro Optical scale LGM64 series

The LGM64 encoder outputs a digital signal directly from the readhead and integrates full position feedback, on-board interpolation, and optical filtering in a tiny package. Position mounting can be carried out with the help of an LED indicator inside the readhead.

Miniature all-in-one digital output grating, the resolution can be freely customized (64um/4/INTX (interpolation up to 1024)).

Only one ruler with a pitch of 64um is provided (the length of the ruler can be selected by yourself).

Small package size  $(21.4 \text{mm} \times 12.7 \text{mm} \times 9.45 \text{mm}))$ 



#### Wiring definition

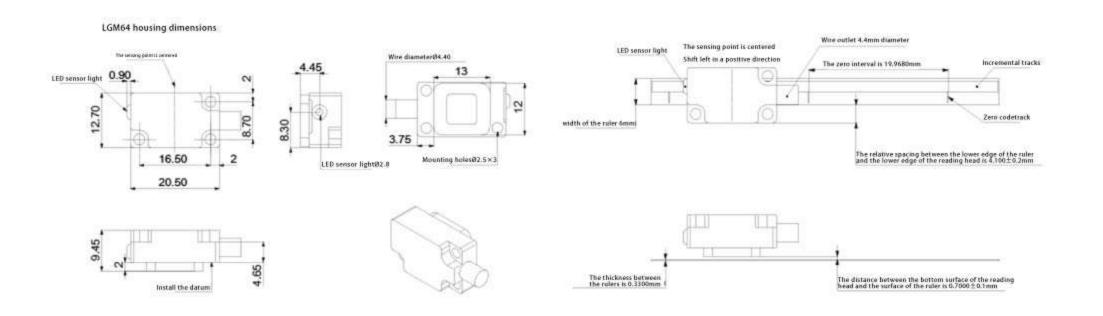
Output signal				Cable type		
				(1 5 6 5	1 8	
Function Sig		nal	color	9-pin D-type (A)	15-pin D-type (D)	
		, and the second se		Ordinary		
Dower supply	5V		red	5	7,8	
	0	V	black	9	2,9	
Increment	Α	+	green	4	14	
		+	purple	8	6	
В	+	white	3	13		
	2	blue	7	5		
Reference	Z	+	yellow	2	12	
Mark		-	brown	6	4	
Shield			shield	Housing	Housing	

#### **Technical Specifications:**

Features	Technical parameters	Supplement
Operating voltage	5V	±5%
Current consumption	Normal < 100mA: 120mA error alarm	25° room temperatur
Grid pitch	64um	
Maximum speed	0.1um-1.6m/s 0.5um-8m/s 1um-12.8m/s	
Qualifying method	Direct outlet	Optional(DB9/DB15)
Sensor material	aluminium	
Weight	23g	0.5 m read head
Dimensions	20.80*12.7*9.45MM	
Wire length	default0.5M	Customizable
Operating temperature	-5 70°C	
Storage temperature	-20 70°C	

#### **Electrical connections**

	Cable specifications			
Cable type	TPU cable, energy chain-compatible, double-shielded, twisted-pair			
Number of wires	8			
Outside diameter	4.4 mm ±0.15 mm			
Sheath material	TPU			
Conducting wire	0.08 mm2, 28 AWG, 0.38 Ω/m			
Shielding rate	90%			
Durability	40 million cycles with a bend radius of 35 mm			
weight	34 g/m nominal			
Bending (internal) radius	Dynamic 25 mm, static 10 mm			



## Ordering parameters of the optical scale

example: GS64 - 100 - Z

Grid pitch origin

64:64um Z:With zero position
The pitch is 64mm

length

100:100mm

## Ordering parameters for the optical read head

example: LGM64 - 001 - 0.5 - DB9

Model resolution

001:1um

0005:0.5um

0001:0.1um

Output type

DB9:DB9plug

NC:Bare wire

DB15:DB15plug

Wire length 0.5:0.5M 3:3M 5:5M



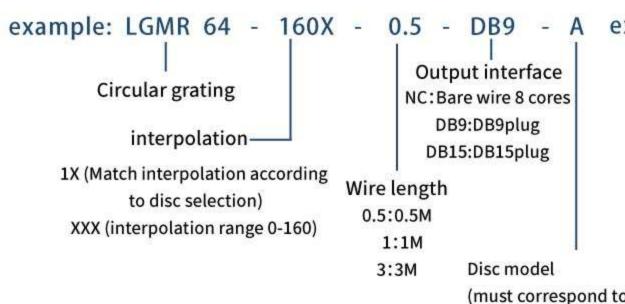


### Round grating Rotary scales increment: LGMR64 series

The LGMR64 rotary encoder readhead outputs a digital signal directly from the readhead and integrates full position feedback, on-board interpolation and optical filtering in a tiny package It can be used with different discs to output different number of lines The models are relatively complete It can achieve large hollow and high line count Each lap has a unique origin



#### Product selection: LGMR64 series reading head



#### Product selection: rotary scale

example: GSR64 -126100

Raster discs Disc type

(must correspond to the encoder): A:GSR64-10885 B:GSR64-8360 C:GSR64-5636 D:GSR64-3618 E:GSR64-126100 F:GSR64-6846 G:GSR64-4630 H:GSR64-2612

L:GSR64-1606

(must correspond to the disc disc): A:GSR64-10885 B:GSR64-8360

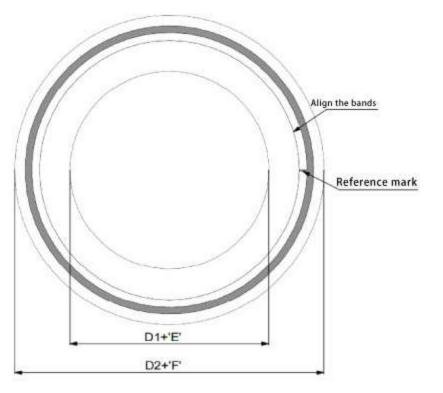
C:GSR64-5636 D:GSR64-3618 E:GSR64-126100 F:GSR64-6846 G:GSR64-4630

#### **LGMR64** - Optical Rotary Scales Specifications

Model	Code name (selection)	D2 (outer diameter mm)	D1 (inner diameter mm)	E (Inner Diameter Error)	F (Outer Diameter Error)
GSR64-126100	Е	126	100	-	-0.1/+0.05
GSR64-10885	Α	108	85		
GSR64-8360	В	83	60		
GSR64-6846	E	68	46	-0.05/+0.1 -0.1/+0	
GSR64-5636	С	56	36		
GSR64-4630	G	46	30		
GSR64-3618	D	36	18		
GSR64-2612	н	26	12		
GSR64-1606	L	16	06		

Number of threads is selected
(The number of wires other than the corresponding model can be provided

Model	Interpolation (1X)	Interpolation (16X)	Interpolation (32X)	Interpolation (160X)	
GSR64-126100	6000	96000	192000	960000	
GSR64-10885	5000	80000	160000	800000	
GSR64-8360	3750	60000	120000	600000	
GSR64-6846	3125	50000	100000	500000	Count 4 octaves
GSR64-5636	2500	40000	80000	400000	
GSR64-4630	2000	32000	64000	320000	
GSR64-3618	1500	24000	48000	240000	
GSR64-2612	1125	18000	36000	180000	
GSR64-1606	625	10000	20000	100000	



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## **PCBA Linear Optical Scales** LGM64 series

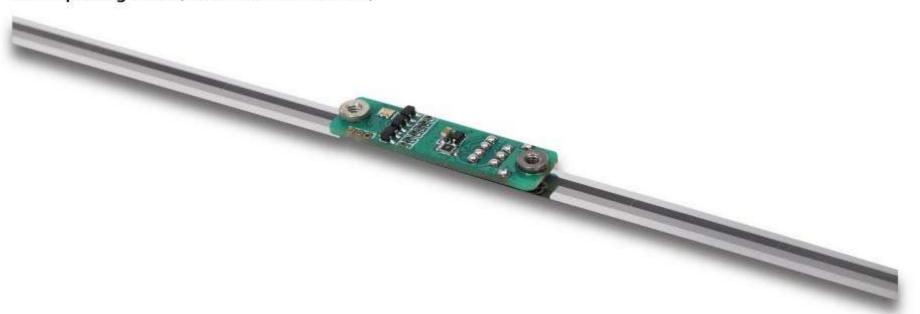
The LGMB64 encoder outputs a digital signal directly from the readhead and integrates full position feedback, on-board interpolation, and optical filtering in a tiny package.

Position mounting can be carried out with the help of an LED indicator inside the readhead.

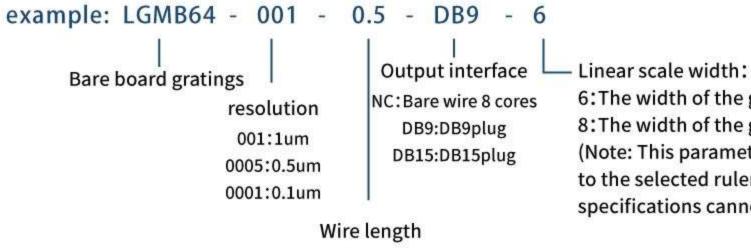
Miniature all-in-one digital output grating, the resolution can be freely customized (64um/4/INTX (interpolation up to 1024)).

Only one ruler with a pitch of 64um is provided (the length of the ruler can be selected by yourself).

Small package size (30mm×8mm×3mm)



### Product selection: LGMB series reading heads



0.5:0.5M

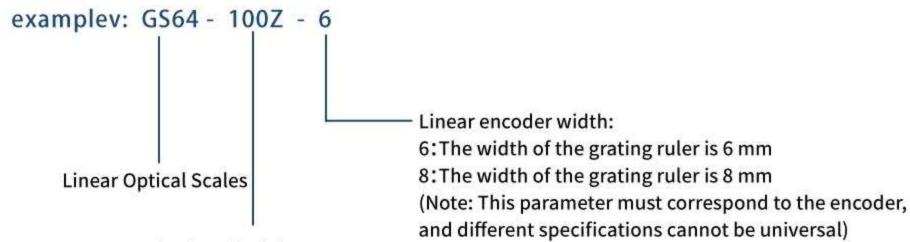
1:1M

3:3M

6: The width of the grating ruler is 6 mm

8: The width of the grating ruler is 8 mm (Note: This parameter must correspond to the selected ruler, and different specifications cannot be universal)

### **Product selection: linear Optiacl Scales**



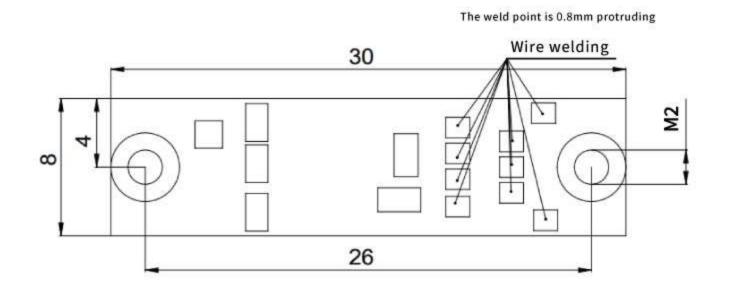
#### The length of the tape:

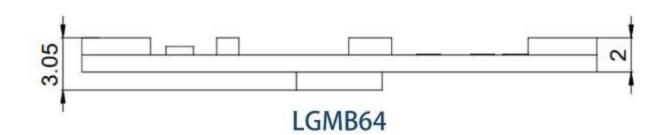
100:100mm (Length can be customized)

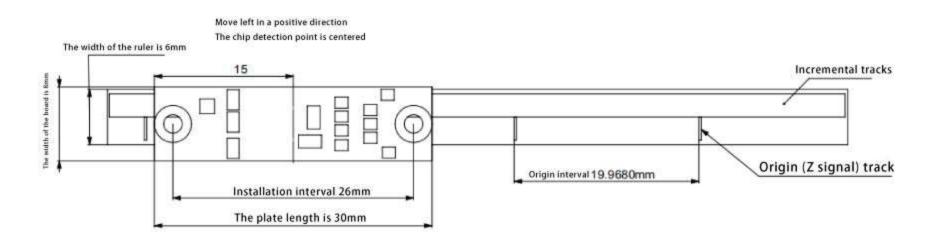
Z:With zero position

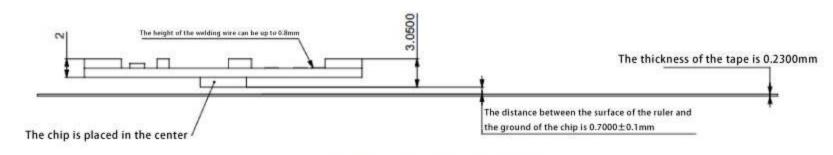
(8mm width ruler: zero interval 64mm)

(6mm in width ruler: zero interval 19.968mm)









LGMB64-Installation

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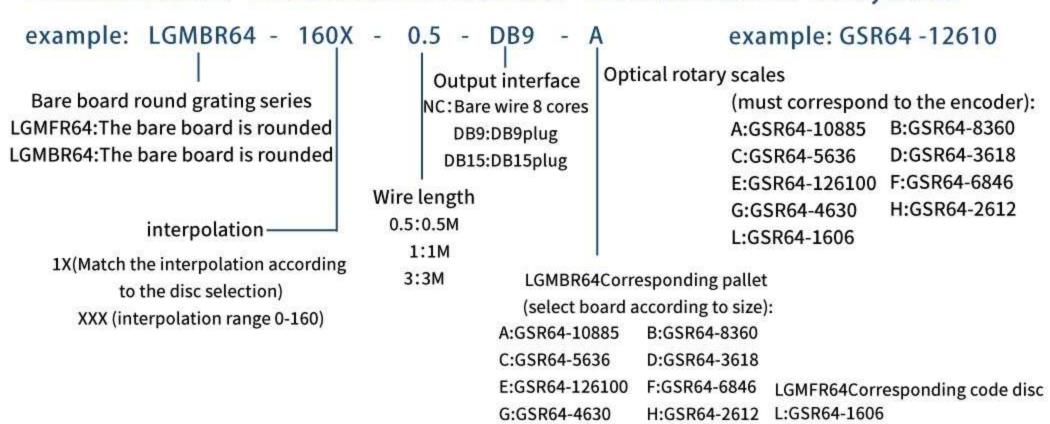


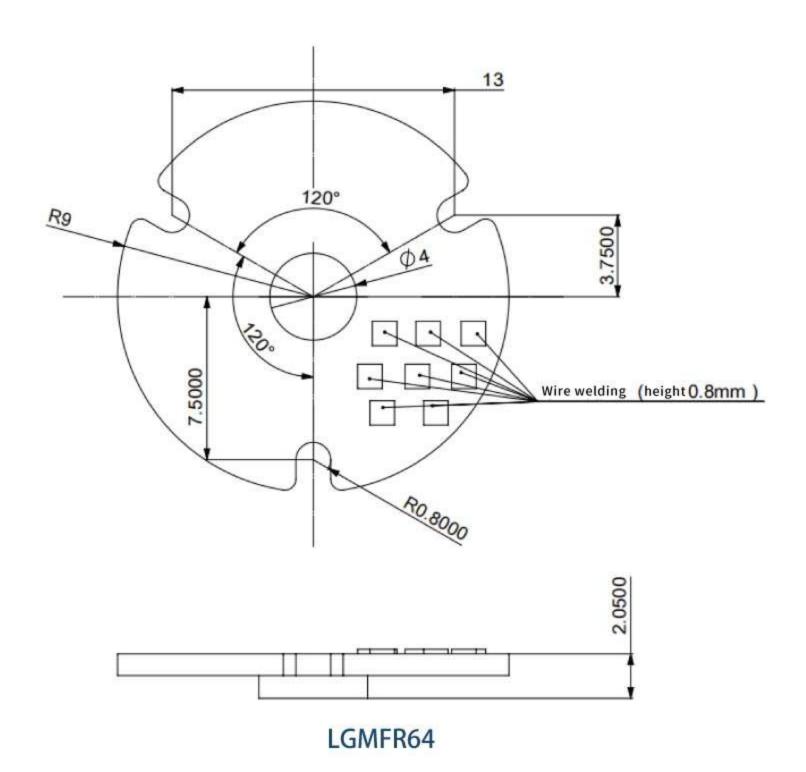
# PCBA Rotary Scales LGMBR64/LGMFR64 series

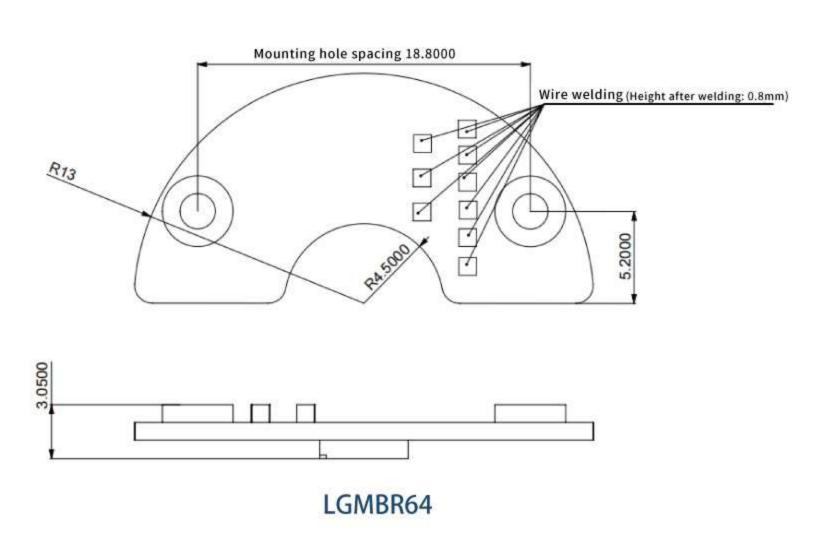
4 discs 16 26 36 46



Product selection: LGMBR64 series read heads Product selection: Rotary scales











# **(Digital Display Series**







Quality





# Digital display, single axis/two axis SNS-2V/ three axis SNS-3V

Adopting a single touch button with a lifespan of over 10 years

High brightness digital tube displays clearly

Adopting high-frequency switching power supply with short circuit, overload, and overvoltage protection

No need for battery to remember current position

Full position rotating bracket, easy and intuitive operation

Work indicator status light displays





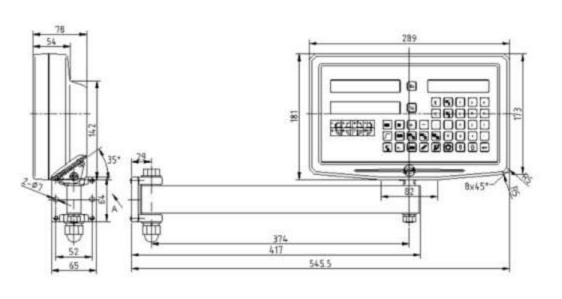


## 16 major functions

Coordinate reset to zero	500 sets of user memories	Arc machining	Zero position automatic counting
Automatic scoring	Calculator	Slope processing	In place control output
Set number	Circular perforation	Digital filtering	Control mode setting
ABS.INC coordinates	Diagonal perforation	RS232 interface	Rise height setting

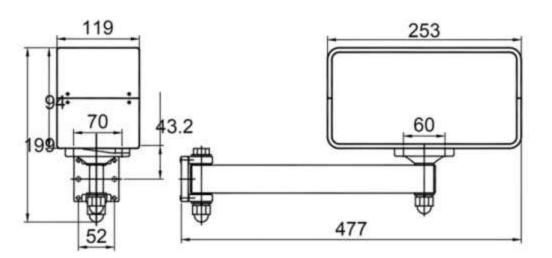
## **Electrical parameters**

Name	Parameter
Power Supply	AC 85∼ 240V 50Hz∼ 60Hz
Power	5VA
Working temperature	0°C ~ 60°C
Storage temperature	-10°C ∼ 85°C
Relative humidity of the environment	80%(20±5°C)
Input signal	TTL square wave
Coordinate number	Single coordinate system
Octave number	4X
Allow input signal frequency	≤ 1000 kHz
Resolving power	0.01um to 500um

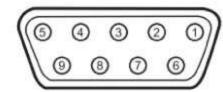


## RS-232 wiring definition

Foot position	Single drive (default)
1	NC
2	TXD
3	RXD
4	NC
5	GND
6	NC
7	NC
August 9th	NC



## **Interface Description**



## **Definition of Sensor Wiring**

Foot position	Single drive (default)	Dual Drive
1	empty	A-
2	ov	ov
3		B-
4		NC
5		R-
6	A+	A+
7	5V	5V
8	B+	B+
9	R+	R+



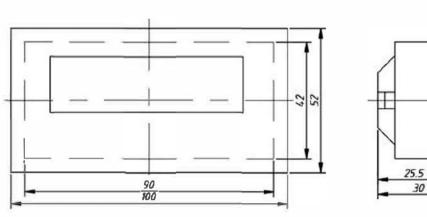


# Magnetic digital display meter -M500 (Length, Angle measurement)



#### Characteristic

- lacktriangle The maximum display accuracy is 10  $\mu$  m or 0.001 inches
- lacktriangle The maximum repeatability accuracy is  $\pm$  0.01 mm
- ◆ 7-bit low-power LCD display with multiple icons
- ◆ The maximum reading distance of the sensor/magnetic grating ruler is 2mm
- Millimeter, millimeter, and millimeter modes
   Multi segment compensation and proportion coefficient
- ◆ The battery operates without the need for an external power source
- Analog output can be customized according to customer requirements



Instrument dimension diagram

Features	Technical data	Supplement
Outer frame structure	Embedded kit	
Reading distance of sensor/magnetic grating	Max.2.5mm, Recommended 1.3mm	
Ruler	100×52mm	
Exterior dimensions	92×43mm	
Cut out length	Ms50	
Supporting magnetic ruler	0.15 6m	Default 1 meter
Sensor degree	DC 2 3.3 V	Two AA 5 units do not require external power
Working voltage	≤600μA	supply
Current consumption	-1999999~1999999	3V direct current; Display operation
Display range	0.01, 0.05, 0.1, 1mm	
Resolving power	$\pm$ (0.03+0.01 * L) mm L Unit: m	
System accuracy	$Max. \pm 0.01$ mm	Under the condition of TU=20 °C
Repetitive accuracy	2m/s , 3m/s	
Moving speed	-10°C ~+70°C	It can be set in menu F04
Ambient temperature	0°C ~60°C	
Storage temperature	Ip40 instrument	
Protection level	lp67 sensor	





# Magnetic digital display meter M210

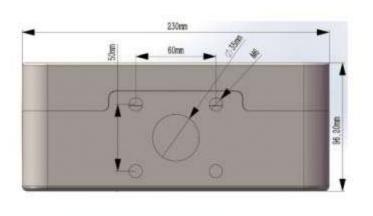
Four windows display independently at 90 °, 45 °, material height, and counting Easy installation and replacement of aviation plugs
Nine grid full keyboard operation is fast and simple
Self charging lithium batteries are ultimately replaceable
Optional millimeter/inch

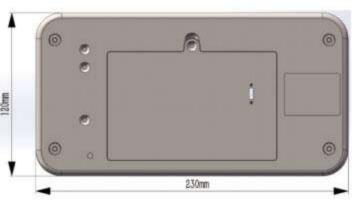
Comparison coefficient multi-stage compensation 45 ° individual compensation

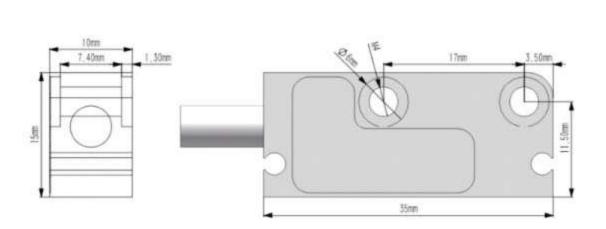


#### Characteristic

- ◆ Newly upgraded appearance with high-end intelligent digital display
- Reader head upgrade: High precision, no need for multi-stage compensation within 3mm installation spacing
- ◆ Ultra wear-resistant brush design to remove debris affecting accuracy
- ◆ Modular functions: height measurement, lifting control, saw head swing sensing, printer auxiliary functions
- ◆ Switch the dedicated mode of the internal swing saw with one key, only displaying the degree and counting







Reading head size diagram

Ele	ectronic performance	Mechanical performance				
System accuracy	± (0.03+0.01 * L) mm L Unit: meter	External dimensions	120*230*96.2mm			
Repetitive accuracy	Max.±0.01mm	Cut out length	None			
Resolving power	0.01, 0.05, 0.1, 1	Reading head line length	Default 3m			
Display range	-1999999 ~1999999	Reading head gap	Max.2.5mm,Recommended 1.2mm			
Current consumption	Max.650uA	Moving speed	Max.1.6m/s			
Power Supply	External: AC110~220V, built-in 3.7V battery	Supporting magnetic ruler	Ms50			
Operating temperature	0°C~+60°C	Waterproof level	Digital display meter IP40, reading head IP65			
Storage temperature	-10°C ~+70°C	Weight	Max.1300g; Min.1100g			
Output contact	MAX.250VAC/5A; MAX.30VDC/5A					



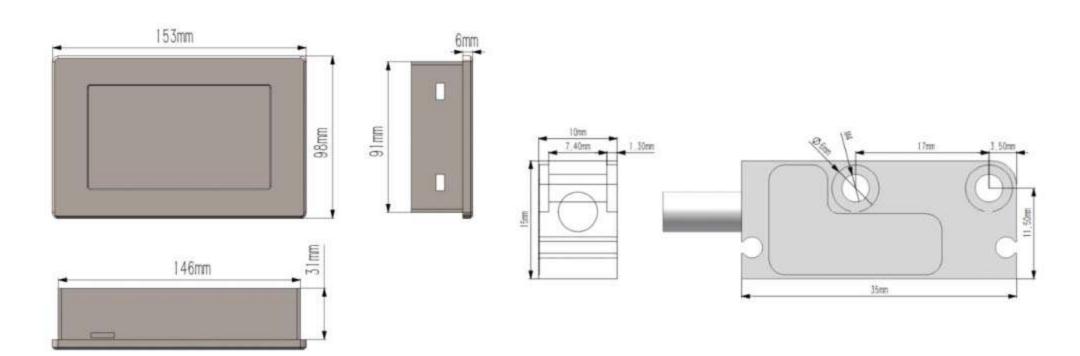


# 5 inch touch color digital display HT50

### Characteristic

- ◆ One click measurement of material height, convenient and fast storage of material height
- Lithium battery power-off memory
- Material rack function with adjustable material height mode
- Swing mode swing compensation multi-stage compensation
- Printer function supports intermediate input and output
- Printing customer information and order number





Instrument dimension diagram

Reading head size diagram

El	ectronic performance	Mechanical performance			
System accuracy	± (0.03+0.01 * L) mm L Unit: meter	External dimensions	153*98*37mm		
Repetitive accuracy	Max.±0.01mm	Cut out length	147*92mm		
Resolving power	0.01, 0.05, 0.1, 1	Reading head line length	Default 3m		
Display range	-1999999 ~1999999	Reading head gap	Max.2.5mm,Recommended 1.5mm		
Current consumption	Max.650uA	Moving speed	Max.1.6m/s		
Power Supply	External: DC12~24, built-in 3.7V battery	Supporting magnetic ruler	Ms50		
Operating temperature	0°C~+60°C	Waterproof level	Digital display meter IP40, reading head IP65		
Storage temperature	-10°C ~+70°C	Weight	Max.777g		





# Magnetic digital display meter M320

Four windows display independently at 90  $^\circ\,$  , 45  $^\circ\,$  , material height, and counting

Easy installation and replacement of aviation plugs

Nine grid full keyboard operation is fast and simple

Self charging lithium batteries are ultimately replaceable

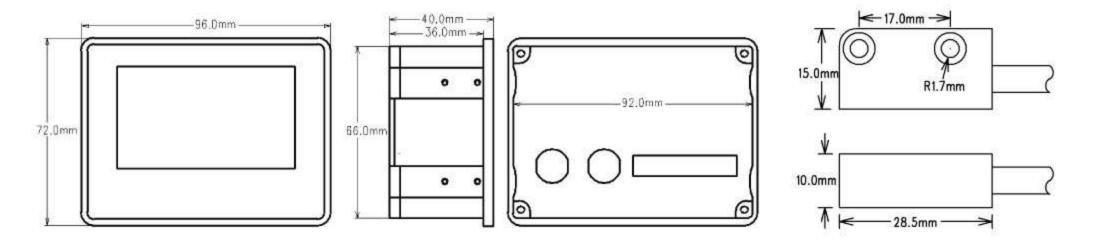
Optional millimeter/inch

Comparison coefficient multi-stage compensation 45 ° individual compensation



### Characteristic

- ♦ High brightness LCD screen
- Dual axis independent display
- Quasi absolute value formula
- ◆ Built in lithium battery with no replacement for the entire body
- ◆ Convenient disassembly and assembly of aviation plugs
- ◆ Multi segment compensation for comparison coefficients
- Optional printer function
- ◆ Optional 485 communication



Instrument dimension diagram

Reading head size diagram

Ele	ectronic performance	Mechanical performance				
System accuracy	$\pm$ (0.03+0.01 * L) mm L Unit: meter	External dimensions	96*72*40mm			
Repetitive accuracy	Max.±0.01mm	Cut out length	94*68mm			
Resolving power	0.01, 0.05, 0.1, 1	Reading head line length	Default 3m			
Display range	-1999999 ~1999999	Reading head gap	Max.2.5mm,Recommended 1.5mm			
Current consumption	Max.650uA	Moving speed	Max.1.6m/s			
Power Supply	External: DC: 12-24V, built-in 3.7V battery	Supporting magnetic ruler	Ms50			
Operating temperature	0°C~+60°C	Waterproof level	Digital display meter IP40, reading head IP65			
Storage temperature	-10°C ~+70°C	Weight	Max.500g			

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Explanation

220\*170\*37mm

212\*160mm

Default 5m

Max.2.5m/s

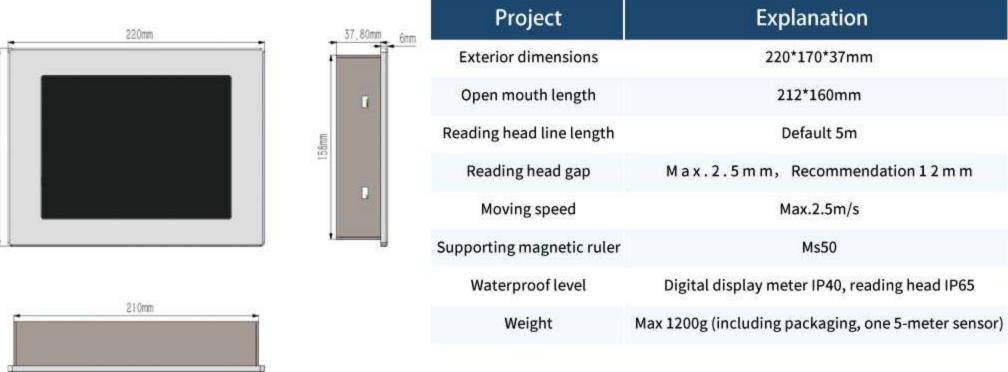
Ms50

# Magnetic Controller **HC80**

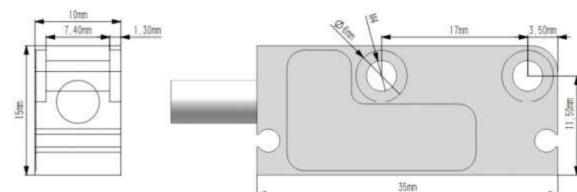
### Characteristic

- ◆ One click measurement of material height, convenient and fast storage of material height
- Lithium battery power-off memory
- ◆ Material rack function with adjustable material height mode
- Swing mode swing compensation multi-stage compensation
- ◆ Printer function supports intermediate input and output
- Printing customer information and order number





Instrument dimension diagram



Features	Technical data
System accuracy	± (0.03+0.01 * L) mm L Unit: m
Repetitive accuracy	Max.±0.01mm
Resolving power	zero point zero one
Display range	-9999.99~9999.99
Current consumption	Max.800uA
Power Supply	External: DC24V/2A or above, built-in 3.7V battery
Operating temperature	0°C~+60°C
Storage temperature	-10°C ~+70°C
Output performance	MAX.24VDC/0.5A (source open circuit output has a certain load capacity)
Input performance	Holding DC5~24V signal

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# Wireless transmission measuring tape M550

The maximum display accuracy is 10  $\mu$  m or 0.001 inches

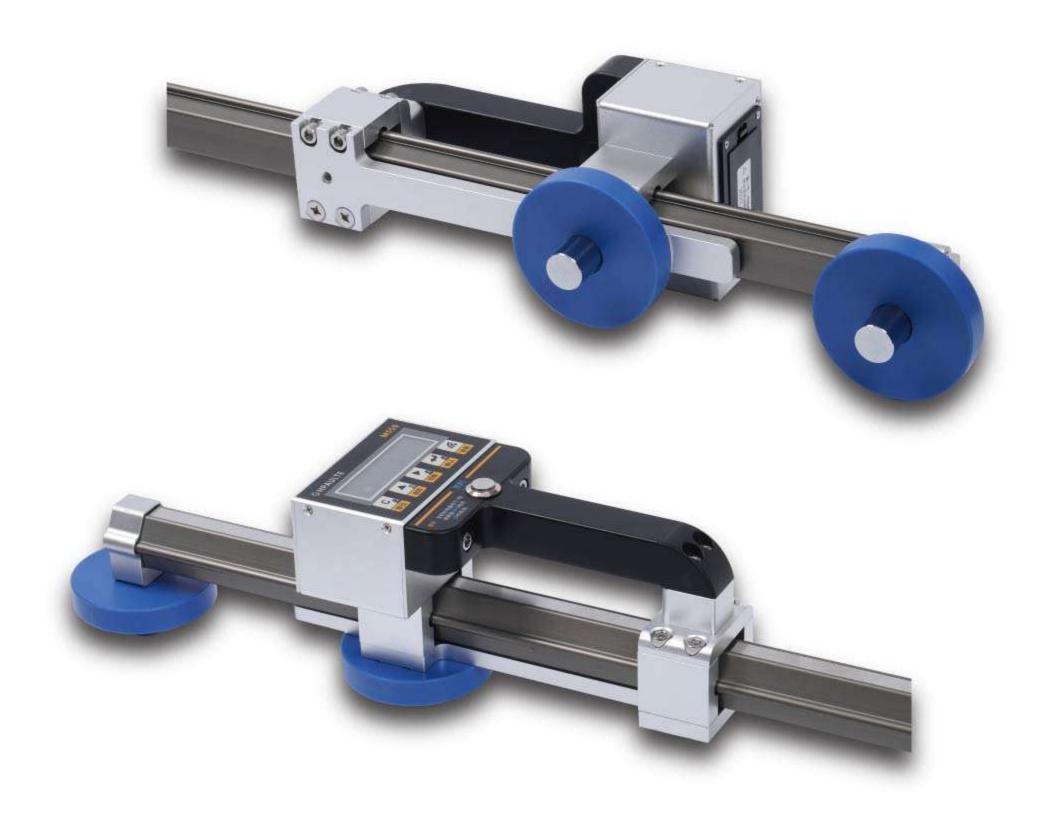
The maximum repeatability accuracy is  $\pm$  0.01 mm

7-bit low-power LCD display with multiple icons

The maximum reading distance of the sensor/magnetic grating ruler is 2.5mm

**Battery operation** 

Used in conjunction with RTX550 receiver module



### Characteristic

- Wireless power supply 434Mhz, stable signal without leakage
- ♦ Built in transmitting antenna
- ◆ Customized chip, low power consumption
- ◆ The external button has a long service life and is convenient and fast
- External battery box, easy to replace.
- ♦ Wireless transmission status reminder
- ◆ One receiver can be equipped with multiple calipers
- Unique hexagonal ergonomic design of profiles
- ◆ Lightweight grip with excellent grip
- Unique anti bending design

- ◆ Without bending, the accuracy will be high
- ◆ 2.5 meters only weighs 2.4kg
- ◆ Other customized orders

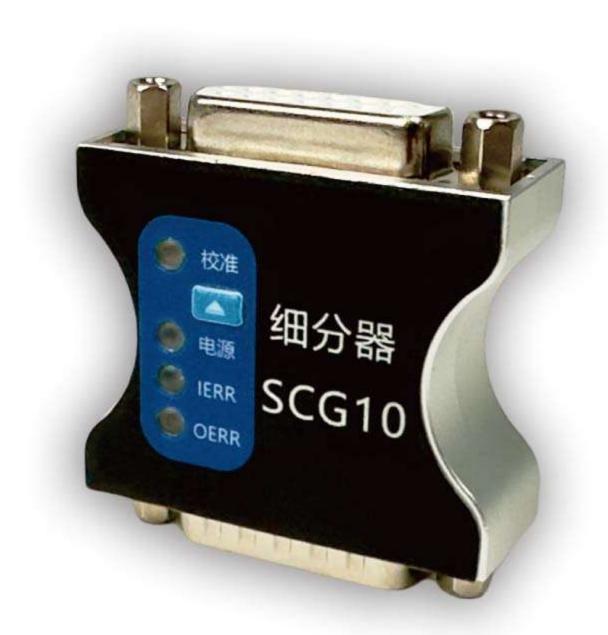
Model	Display instructions
MM	The current unit is millimeter
INCH	The current unit is inch
<b>~</b>	The current unit is degrees
	Display battery level
[♠RF]	It appears that data is currently being sent wirelessly
444	The current display is in relative mode
1	The current content is the first engineering dimension
2	The current content is the second project dimension



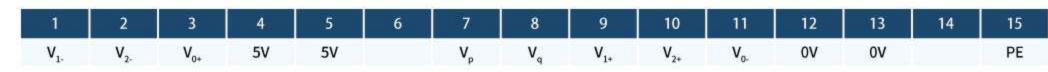


# High-performance subdivision box, SCG10

20mVpp-1.4Vpp wide amplitude signal input
AB output can reach up to 10MHz
The input signal can reach 125KHz
Calibration button one click automatic calibration
Both differential and single ended signals can be analyzed
Programmable arbitrary subdivision output
Integrated P and Q limit signal output
The output cable can reach up to 50 meters
Standard RS422 output signal



### Input interface: Differential input dual row female head DB15



## Single ended input dual row female head DB15



## Output interface: Double row male DB15

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
25	0V	70	Z-		â 'A		÷	7.		33				á

## Mechanical parameters

Features	Technical data	Supplement
Sensor material	Aluminium	CNC precision carving
External dimensions	42*45*15MM	
Weight	32g	
Input interface	Double row DB15 female head	With nuts and gold-plated pins
Output interface	Double row DB15 male head	With nuts and gold-plated pins
Plug pins	Gold plated pins	

### **Electrical parameters**

Features	Technical data	Supplement
Input voltage	5V	±5%
Output voltage	5V	Depends on the input voltage
Working current	25mA	Empty load
Output current	300mA	Max.
Peak to peak value of input signal	20mVpp-1.4Vpp	
Input signal midpoint voltage	1.75V-3.15V	
Output position signal	AB orthogonal difference	RS422
Input and output P, Q	Open collector output	The signal parameters depend on the input termina
Input frequency Max	125KHz	
Output frequency Max	7MHz	Customizable 10MHz
Subdivision parameters	20.40.80.100.200.500.1000	Can be subdivided arbitrarily
Positioning accuracy	<20um	Most factors depend on the input signal
Repetitive accuracy	<±1um	Most factors depend on the input signal
Zero position accuracy	<±1um	Most factors depend on the input signal





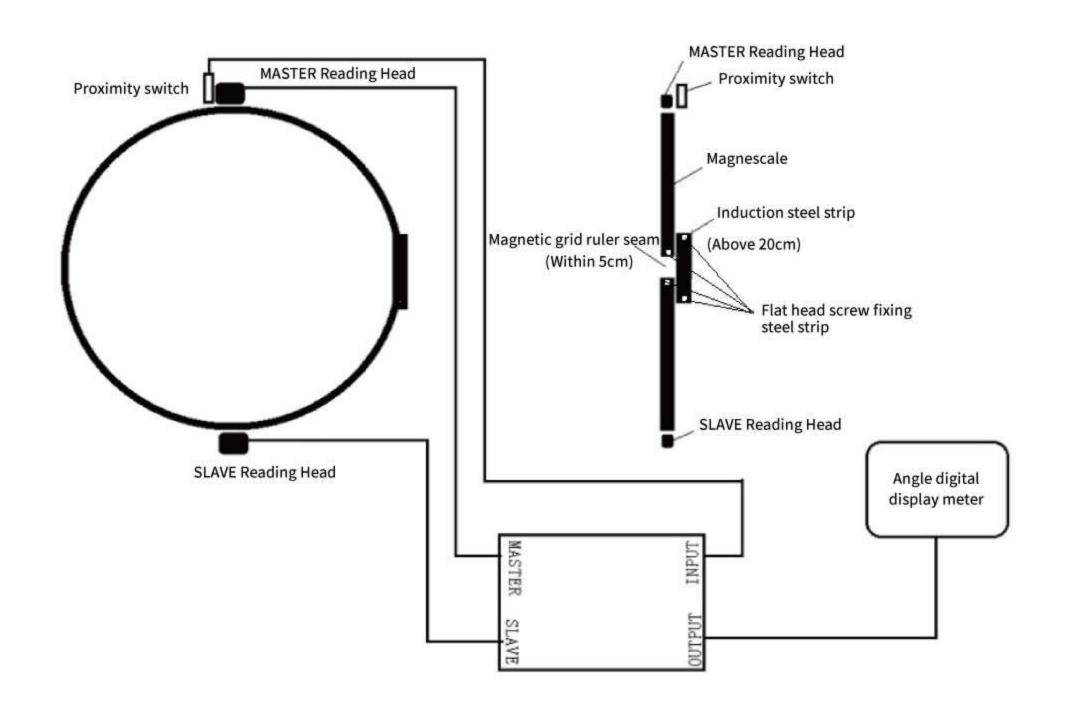
# Pulse signal switcher ETX100



### **Function Description**

Suitable for high-precision measurement of large diameters with a magnetic strip surrounding a circle, it can achieve seamless 360 degree measurement

- 2-channel magnetic grid encoder signal input
- ◆ 1 output to digital display or PC board
- The proximity switch senses the owner to achieve signal switching
- Automatic switching of dual reading heads, seamless connection during rotation
- Use high-precision reading heads to ensure the accuracy of angle measurement
- No external power supply required, powered uniformly by a digital display meter
- ♦ Easy installation, plug-in connection, DB9 signal and dual drive, 1: A 2:0V 3: B 6: A 7:5V 8:B
- Fully enclosed sealing design, waterproof and oil resistant
- Simple system debugging, adjustable pulse count





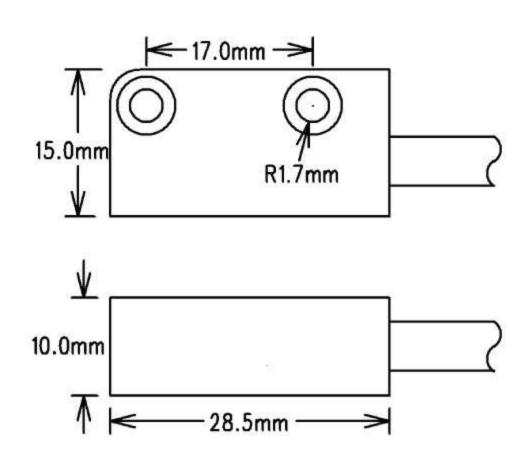


# Absolute magnetic measurement module RM-10



### Characteristic

- ◆ Absolute position feedback
- ♦ Built in lithium battery for automatic charging
- Fast single axis and dual axis movement speed
- ♦ RS232/RS485 output



Reading head size diagram

## Electrical performance

Sign	Data	Supplement
Working voltage	12 24 V DC	
System accuracy	±(0.03+0.01*L)mm	L unit: meter
Standby power	Max.700uA	
Repetitive accuracy	Max.±0.01mm	
Port	Rs485	MODBUS-RTU protocol
Port	Rs232	Fixed protocol transparent transmission
Installation method	Rail type buckle	



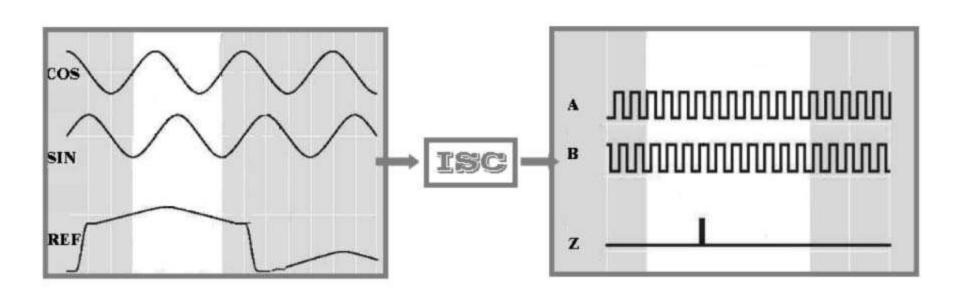


# Isolated string wave divider SCP10



### Characteristic

- ◆ 20mVpp~1.4Vpp differential sine wave can handle multiple subdivision magnifications for selection
- ◆ Standard RS422 differential output
- ◆ ISC technology input/output signal isolation
- ◆ Isolated power supply provides clean power output
- ◆ One key calibration provides the highest precision position signal ABZ signal output indicator light
- ◆ Install the buckle and easily match it with any electrical control cabinet



Features	Technical data	Supplement
Input voltage	5V	±5%
Output voltage	5V	±5%
No load current	100mA	Excluding load
Working current	Max.160mA	Excluding load
Input signal	20mVpp~1.4Vpp	Differential sine wave
Input phase	90°	Deviation ± 3 °
Output signal	Differential AB orthogonal wave	
Output phase difference	90°	Deviation± 0.02 °
Signal type	RS422	
Subdivision ratio	Modes: 4, 8, 16, 32, 65 Modes: 5, 10, 20, 40, 50	Customization for other higher demand customers
Maximum output frequency	500KHz	The scanning frequency of the receiving end must be ≥ 500KF (Customization for other frequencies)
Maximum input frequency	500KHz/fine fraction	Example: Subdivision of 20 Maximum frequency: 500/20=25KH
Repetitive accuracy	1-1.5 resolutions	Resolution=(Chord wave width ÷ Fineness fraction)/4 Example: Input a complete sine wave width For 5mm, select 20 resolutions for subdivision: (5÷20) /4=0.0625mm