

LGM64 series

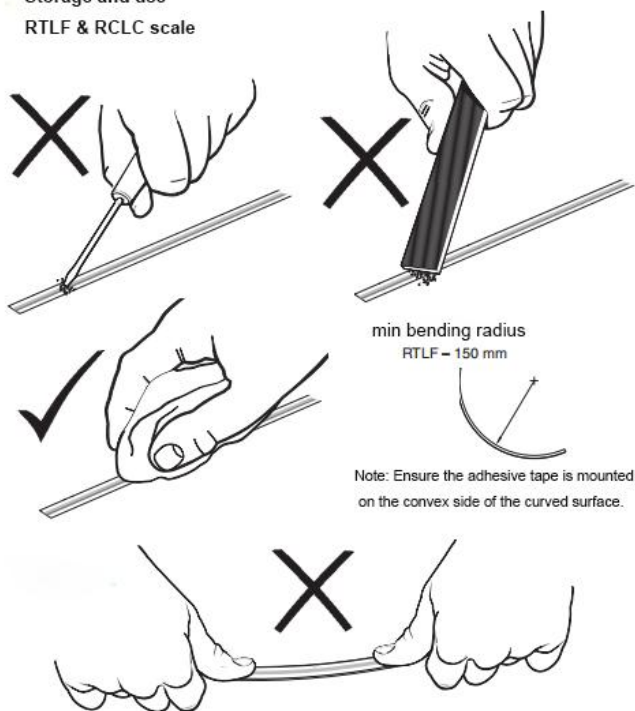
Micro Optical Grating Encoder

LGM64 Encoder:

- This encoder directly outputs **digital signals** from the reading head and integrates full position feedback, onboard interpolation, and optical filtering within its compact housing.
- The built-in LED indicator on the reading head assists in alignment and installation.
- A micro, all-in-one digital output grating with freely customizable resolution (64 μm /4 /INTX, max interpolation 1024x).
- The grating pitch is 64 μm , the scale length can be selected as required.
- Compact dimensions: 21.40 mm $\times$ 12.7 mm $\times$ 9.45 mm.

Storage and use

Storage and use RTLF & RCLC scale



Readhead & grating scale

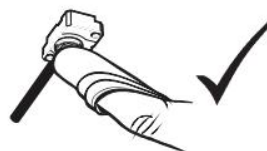
n-Heptane



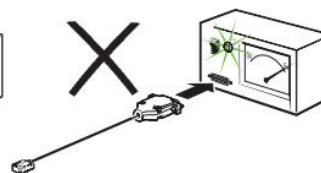
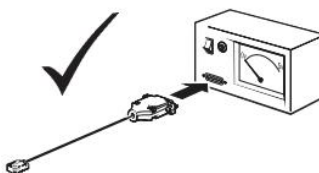
Isopropyl alcohol



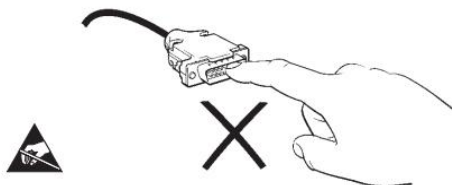
Note: Do not touch the sensing point with any object except finger cots.



Note: Live electrical work is prohibited.



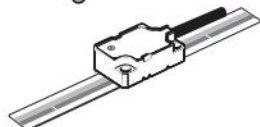
Note: Do not touch connection points directly.



storage



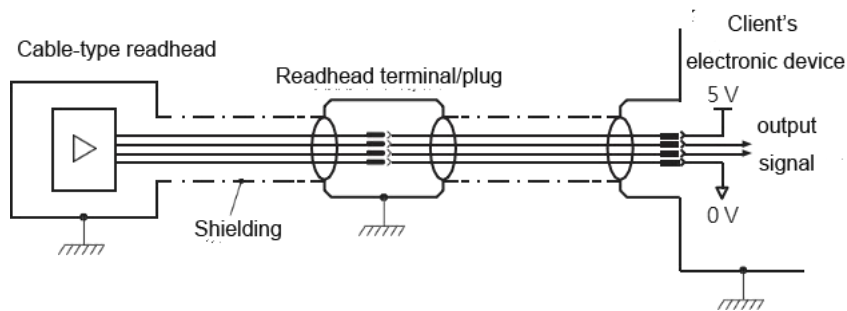
operating



Humidity



✧ Shielding and connection

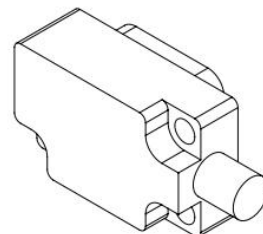
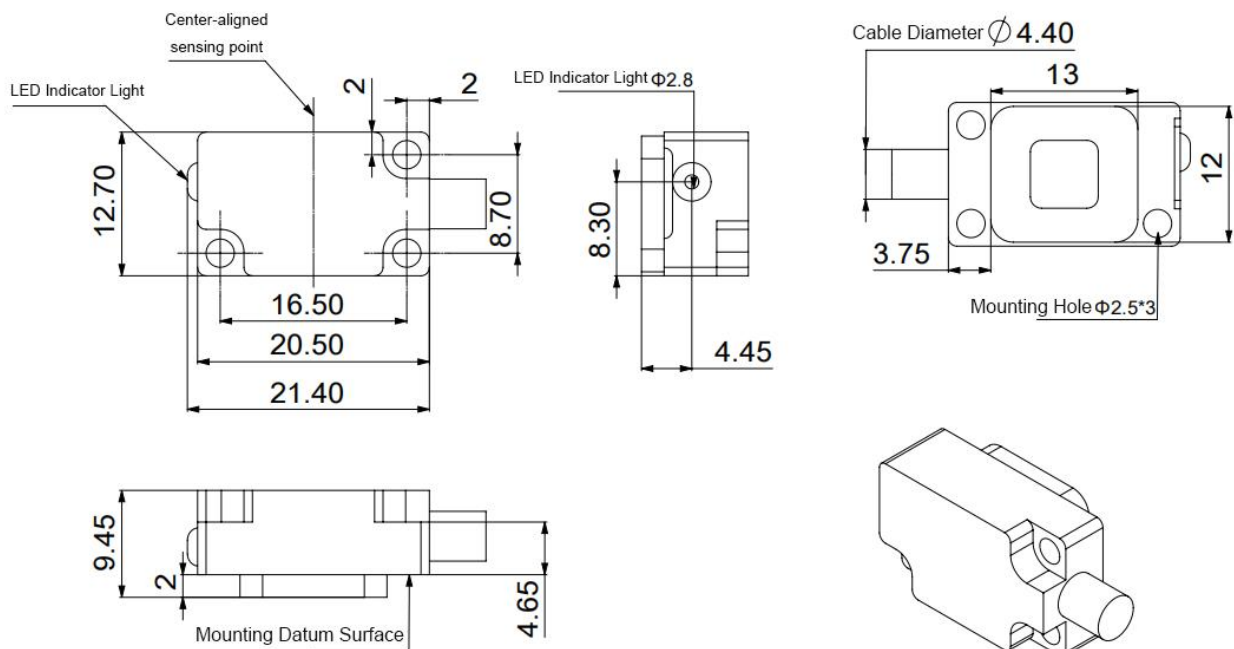


Important Note:

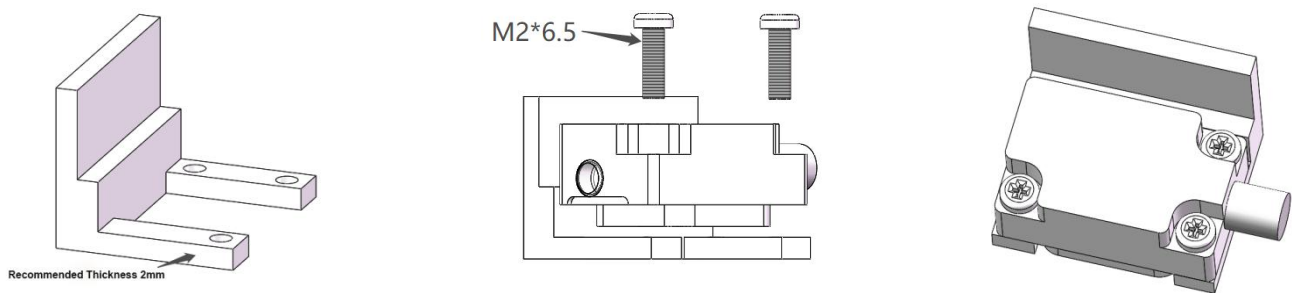
The shielding must be connected to the equipment ground line (excitation ground). For bare wires, the wire clamp must be connected to the equipment ground line.

✧ Dimensions

LGM64 Housing Dimensions



✧ Mounting Bracket

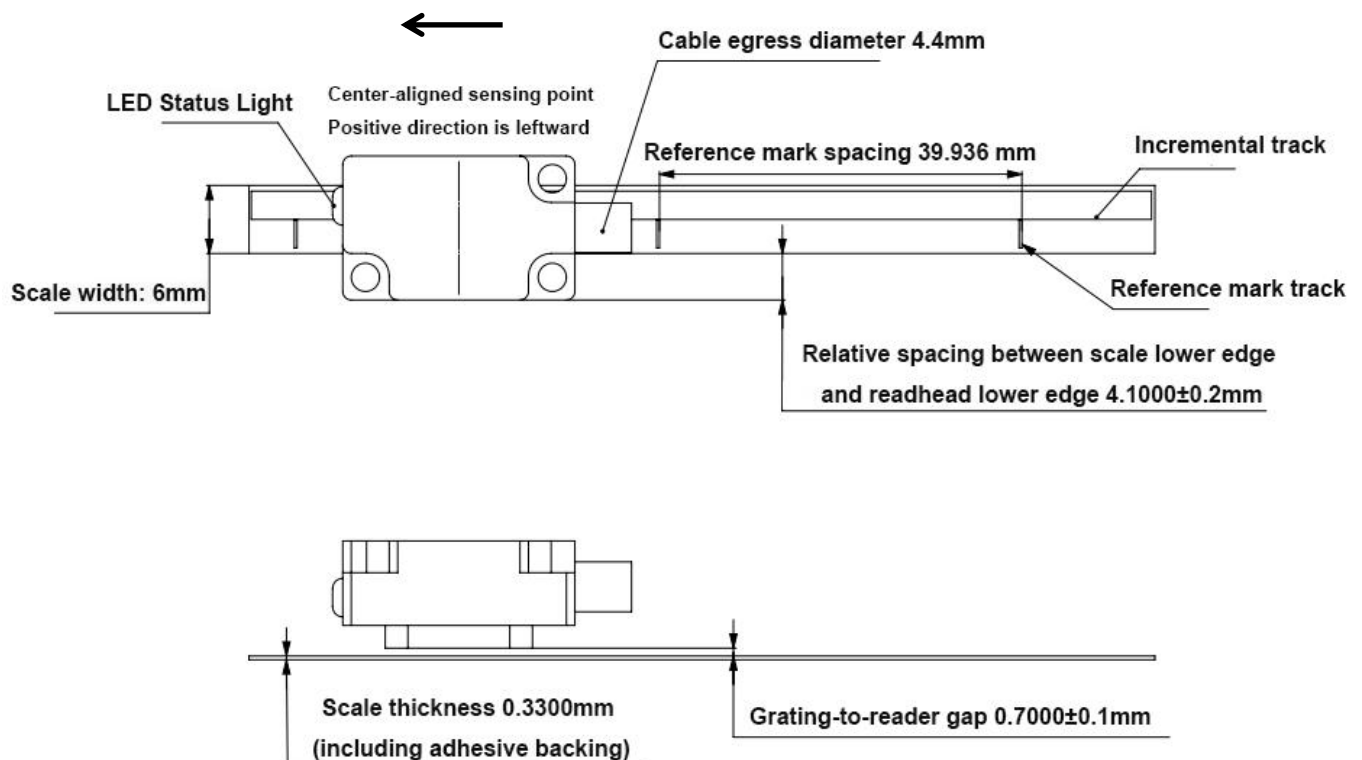


Note: Included accessories - **M2×6.5 screws**, 4 pcs (The mounting bracket needs to be custom-made)

✧ Readhead and Scale Installation Requirements

Linear : LGM64---GS64 grating scale (width 6mm)

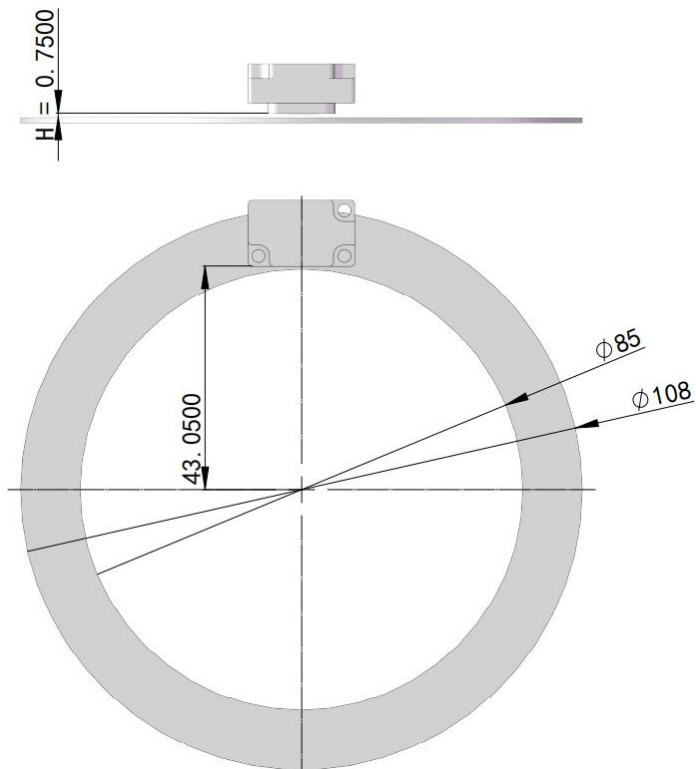
Important: Ensure correct orientation of both scale and readhead before installation.



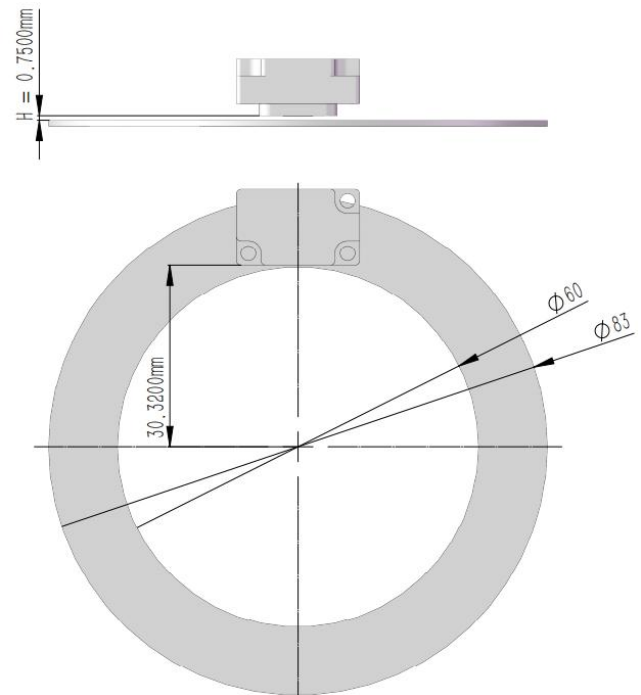
Circular Grating Disk : LGM64----GSR64 grating disk (s/s)

---(grating disk thickness:0.3mm、0.5mm)

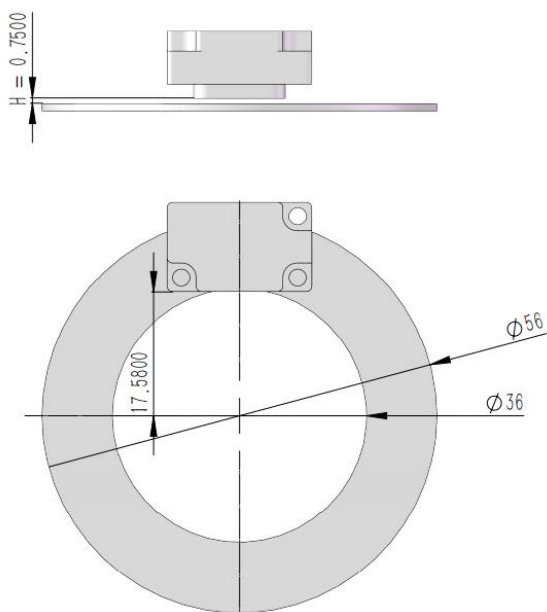
GSR64-10885



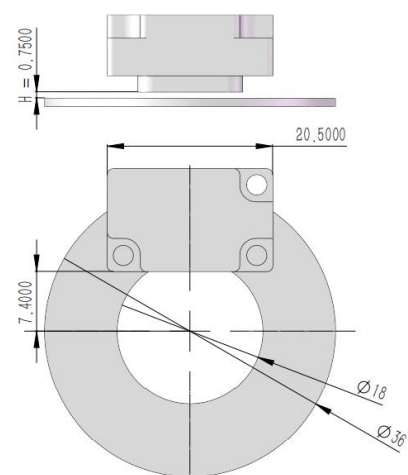
GSR64-8360



GSR64-5636

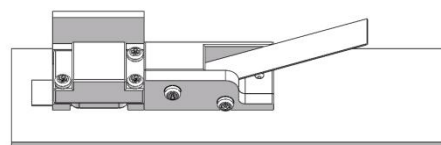
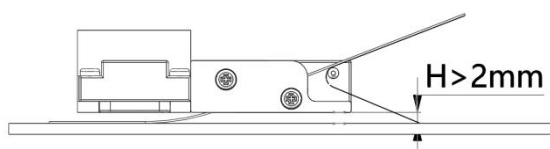
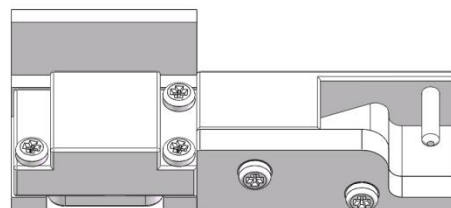
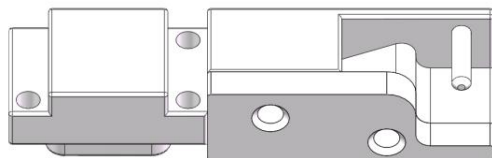


GSR64-3618



✧ GS64 Grating Scale Mounting Fixture

GS64 Grating Scale Mounting Fixture

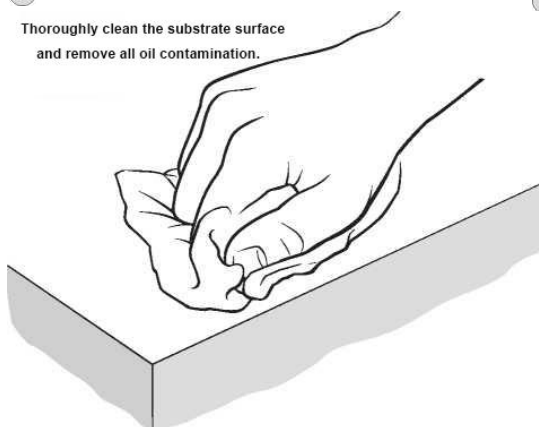


When using the mounting fixture, the recommended gap between the fixture and the installation surface is $H > 2\text{mm}$

✧ GS64 grating scale installation-stainless steel scale (Length<200mm)

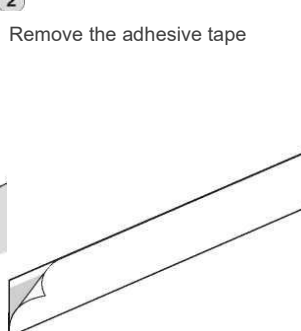
①

Thoroughly clean the substrate surface and remove all oil contamination.



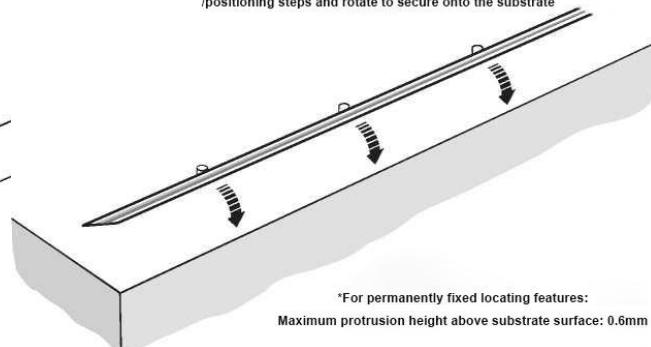
②

Remove the adhesive tape



③

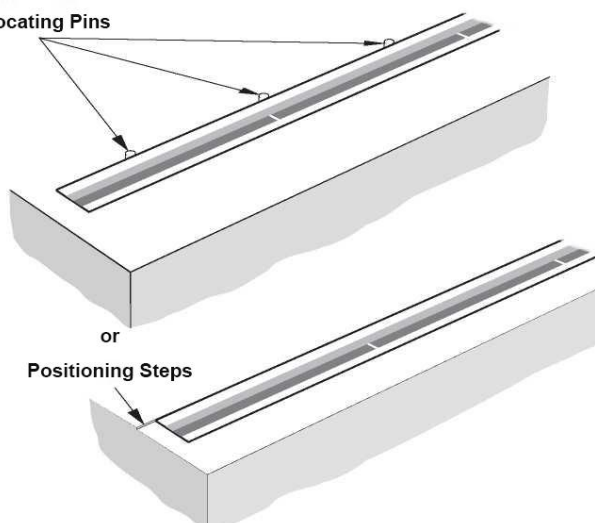
Press the grating scale firmly against the locating pins /positioning steps and rotate to secure onto the substrate



*For permanently fixed locating features:
Maximum protrusion height above substrate surface: 0.6mm

④

Locating Pins



⑤

Clean the scale using a clean, dry, lint-free cloth.



✧ Status Indicator Light

	Status	Remark
Green LED solid (steady on)	System functioning normally, valid data output	Working under normal status light conditions
Blue LED blinking	Calibration mode, invalid data	Power cycle required - Do not continue movement
Blue LED solid (steady on)	Calibration mode, invalid data	
Red LED blinking	Over current detected	Reduce mounting gap and observe operation
Red LED solid (steady on)	Scale not detected	

1. The encoder must be powered ON within the valid travel range of the scale.
2. If the encoder leaves the scale, the status LED light will turn RED.
This alarm can be cleared by power-cycling the encoder.

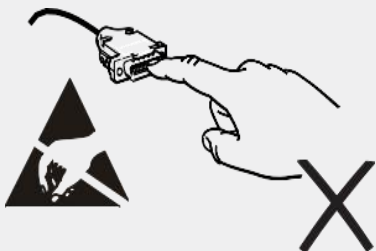
✧ Technical Specifications

Description	Parameter	Remark
Working Voltage	5V	±5%
Operating Current	Normal Operating <80mA:error alarm>120mA	25° Room Temperature
Grating Pitch	64um	
Maximum speed	1um 12.8m/s 0.5um 8m/s 0.1um 1.6m/s	
Cable outlet method	Direct outlet	optional (DB9/DB15)
Sensor Material	Aluminum	
Cable Length	Default 0.5 meters	Customizable
Weight	23g	0.5 meters Read Head
Overall Dimensions	20.80*12.7*9.45MM	
Operating Temperature	-5 ... 70°C	
Storage Temperature	-20 ... 70°C	

✧ Electrical Connection

Cable Specification

Cable Type	TPU high-flex cable, drag chain compatible, double shielding, twisted pair
Number of Wires	8
Outer Diameter	4.4 mm ±0.15 mm
Jacket Material	TPU
Wire specs	0.08 mm ² , 28 AWG, 0.38 Ω/m
Shielding Effectiveness	90%
Durability	40 million cycles at 35 mm bending radius
Weight	nominal 34 g/m
Bending Radius(inner)	Dynamic: 25 mm / Static: 10 mm



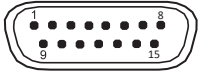
Warning!

Electrostatic Discharge (ESD) Protection

The read head is ESD-sensitive – handle with caution. Do not touch the wires or connector pins without proper ESD protection or outside an ESD-controlled environment.

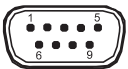
✧ Wiring Definition ----- (Customizable)

15-pin D-sub connector



Pin	Wire color	Signal
1	-	-
2	black	GND(0V)
3	-	-
4	brown	Z-
5	blue	B-
6	purple	A-
7	red	+VIN (5V)
8	-	-
9	-	-
10	-	-
11	-	-
12	yellow	Z+
13	white	B+
14	green	A+
15	-	-
Shell	shielding	PE

9-pin D-sub connector



Pin	Wire color	Signal
1	-	-
2	yellow	Z+
3	white	B+
4	green	A+
5	red	+VIN (5V)
6	brown	Z-
7	blue	B-
8	purple	A-
9	black	GND(0V)
Shell	shielding	PE

✧ GSR64 Encoder Disk Specs (Refer to the encoder disc model selection for details)

Technical Specifications

Model	GSR64-3618	GSR64-5636	GSR64-8360	GSR64-10885
Outer Diameter(mm)	36	56	83	108
Inner Diameter(mm)	18	36	60	85
Grating pitch(um)	64	64	64	64
CRP (Counts per Revolution Pulse)	1500	2500	3750	5000

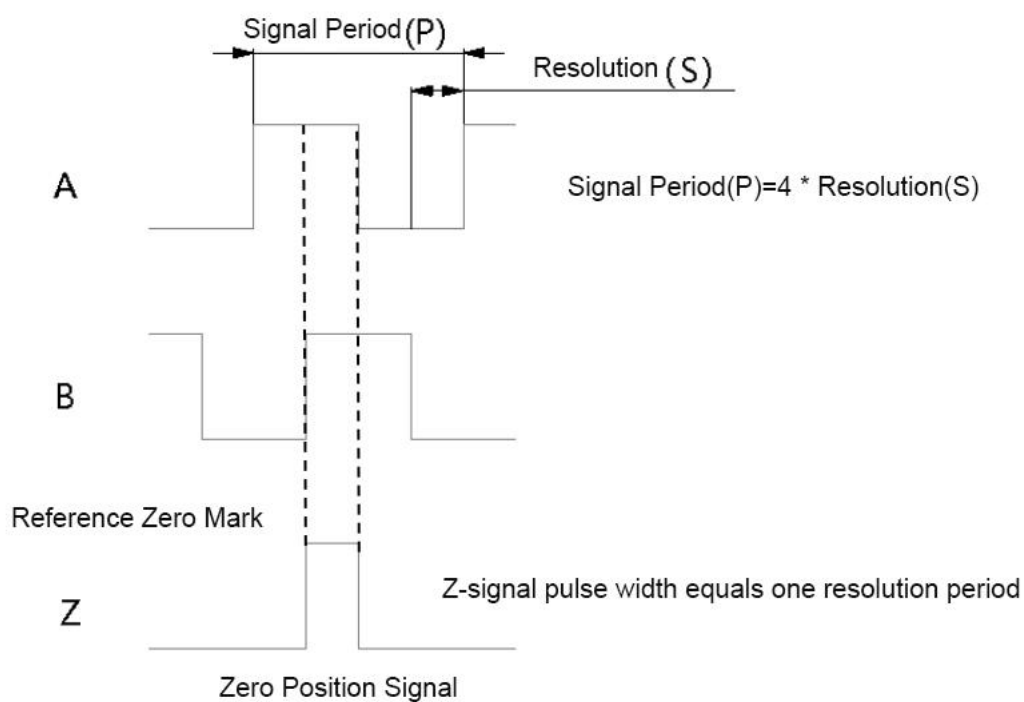
Count Selection (Other counts beyond standard models can be provided, counts=CRP*X(X range:1-1024))

Model	Interpolation	GSR64-3618	GSR64-5636	GSR64-8360	GSR64-10885
Counts (4× quadrature counting applied)	1	1500	2500	3750	5000
	2	3000	5000	7500	10000
	3	4500	7500	11250	15000
	4	6000	10000	15000	20000
	5	7500	12500	18750	25000
	6	9000	15000	22500	30000
	7	10500	17500	26250	35000
	8	12000	20000	30000	40000
	9	13500	22500	33750	45000
	10	15000	25000	37500	50000
	16	24000	40000	60000	80000
	32	48000	80000	120000	160000
	160	240000	400000	600000	800000

✧ Output specifications

Digital Output Signal ---Waveform--- Square wave differential line driver compliant with EIA RS422A standard

Incremental* Dual-channel A and B quadrature square waves (90° phase-shifted)



✧ Model selection --- LGM series read head

LGMR64 - 160X - A - 0.5 - DB9

LGM: Linear
LGMR: Rotation
LGMB: Bare board
64: Grating Pitch 64 um

Resolution (X-Rotation)
16: 16X
32: 32X
160: 160X

Resolution (Linear)
001: 1um
0005:0.5um
0001:0.1um

Encoder disc part No. -- (Refer to encoder disc selection manual for details) --(Rotation)
A: No. 10885 encoder disc
B: No. 8360 encoder disc

Scale width(Linear)
8 : 8mm (glass grating scale--max 520mm)
6 : 6mm (stainless steel grating scale--max 1030mm)

Cable length (units: m)

0.5 : 0.5m

Outlet Interface
NC: Bare board
DB9: DB9 plug
DB15: DB15 plug

✧ **Model selection --- Linear scale, Encoder disk**

GS64 - L - G - 520

GS : grating scale
64 : grating pitch64um
20 : grating pitch20um

Motion Type
L : Linear
R : Rotation

Scale material
G : glass (max 520 mm)
S : stainless steel (max1030 mm)

Linear grating scale length:
520: 520mm

Rotation encoder disk

8360: encoder disk Model No.
Others model refer to the encoder disc
model selection manual for details.