Features:

※ Multi-column structure for option, 38, 52, 62, solid shaft, hollow shaft, Semi-Hollow shaft

※ Multi-output mode: Voltage, Open-collector, Push-full, Driver output

※ Small volume, light weight, flexible connecting shaft, easy installation

※ Metal housing, high anti-interference

※ Pulse range: Form 10 to 5000pps. Widely applied to light industry machinery, textile, wire and length measuring.

1. Working principle & Description

Photoelectric rotary encoders are high precision devices which are consist of light, mechinery, electricity. Working by photo and electricity rotation, can convert the output shaft of the angular displacement, angular velocity and other mechanical quantity to electrical pulses which display with digital output. Generally Photoelectric rotary encoders have incremental rotary encoder and absolute encoder. According to design requirements, in this description is only to introduce incremental encoder. When the Incremental Encoder make rotation, there is a corresponding pulse output, to identify the direction of its rotation and pulse increase or decrease through the external direction-judgable circuit and counters to achieved. The counting point can be set freely and can be multi-circle accumulated and measuring, but also can be issued the Z signal produced by per revolution as a reference for machinery zero point.

When the rotary encoder shaft turning a circle it will produce a fixed amount of pulses. For the photoelectric rotary encoders, the amount of output pulses is the same with the amount of rotating grating engrave lines. If need to increase the resolution, we can use 90-degree phase-shift of A, B two signals to frequency doubling the original signal or use higher resolution encoder.

Output pulse calculation

Output pulses for per revolution (cpr) = (encoder corresponding displacement produced by per revolution: the length or angle)/ set resolution

Photoelectric rotary encoder is widely used in automatic control, automatic measurement and other automation fields, such as CNC machine tools, servo motors, high-speed elevators robotics, steel rolling machinery, textile machinery, printing machinery, light industry machinery, automotive, financial electronic, oiling machinery, flow machine, test machine and office automation instrumentation industry.

2. Ordering Code

IM □□-□□□□

Additional Function	Default	Standard cable output
	K	Aviation plug output
	B	Semi-Hollow shaft coupling
Numbers of pulses	600	180、200、300、360、400、500、600、800、900、1000、1024、1200、1500、1800、2000、2400、3000、3600、5000
Supply voltage	A	5V DC±5%
	B	12～24V DC ±5%
Output circuit	R	Voltage output
	K	Open Collector NPN output
	S	Push-pull output
	D	Line driver output
Diameter	40	Diameter ϕ38mm, shaft diameter ϕ 6mm (Axis hole ϕ 8mm)
	50	Diameter ϕ 50mm, shaft diameter ϕ 8mm (Axis hole ϕ 8mm)
	60	Diameter ϕ 66mm, shaft diameter ϕ 8mm
Series	S	S Solide shaft Series Rotary Encoder
	H	S Hollow shaft Series Rotary Encoder

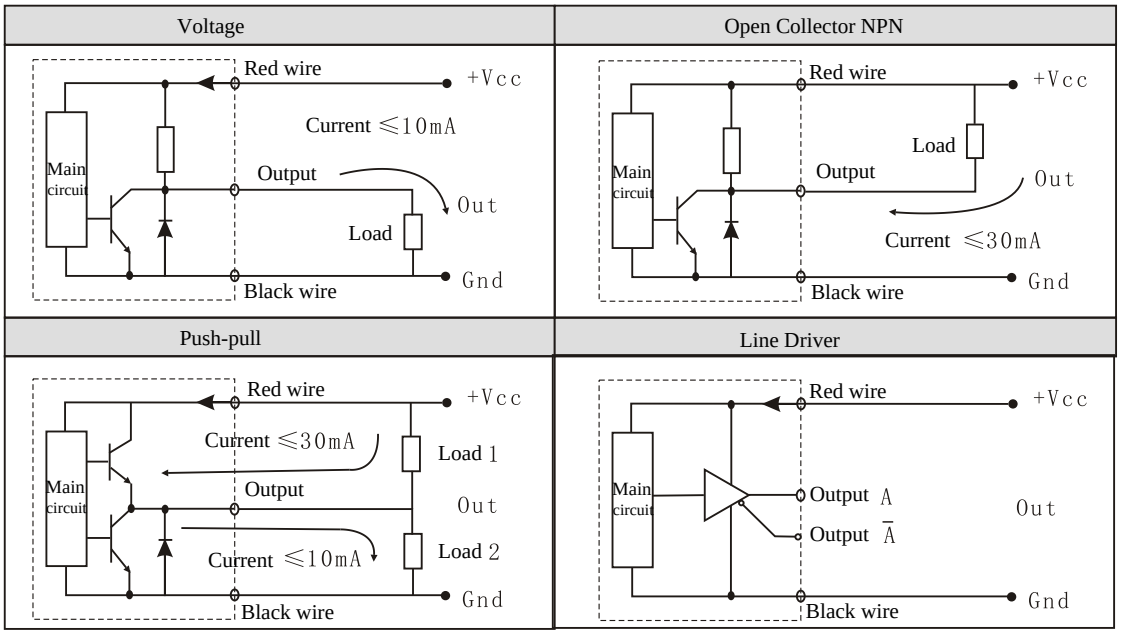
Example:S40-RB600, means that the product is Solide shaft series rotary encoder, and the Diameter is : Diameter ϕ38mm, shaft diameter ϕ 6mm (Axle hole ϕ 8mm), Voltage output circuit, the number of pulses is 600 P/R.

3. Terminal assignment

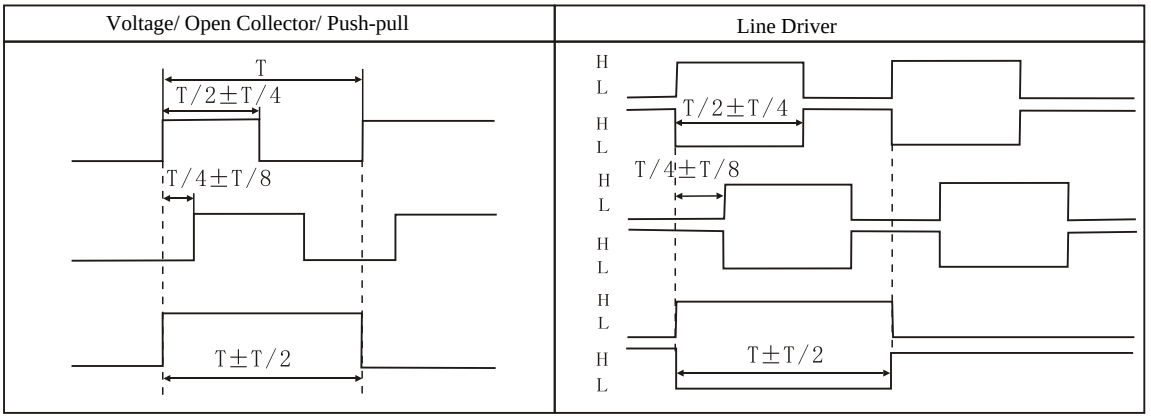
Signal	Power+	Power-	SIGA	SIGB	SIGZ	Shield
Cable color	Red	Black	Green	White	Yellow	Copper mesh
7 pin plug	1	4	3	5	2	6
9 pin plug	1	4	5	3	2	9

Non-A	Non-B	Non-Z
Brown	Grey	Orange
7	6	8

4. Output circuit



5. Output Waveform



6. Caution

It may cause malfunction if below instructions are not followed.

1. Photoelectric Rotary Encoders are high precision devices. Therefore please treat this product carefully. Do not put strong. It is prohibited to knock or hit or hammer. Inappropriate or wrong installation can influence the capability and operating life of the rotary encoder.
2. Encoder Solid axes and the user axis should be avoided rigid connections, please use elasticjunction panel or flexible coupling to avoid user axis jumping or bounding. Otherwise the encoder axes and the encoding board damage may result.
3. Hollow shaft and electrical machinery should be mounted clearance fit, can not be too tight or too loose, also the locating key cannot be too tight. Beating to install is strictly prohibited.
4. Make sure that the difference between encoder axis and users axes must less than 0.02mm, the angle of both axes must less than 1.5°.
5. Make sure do not exceed the limited rotate speed specified, if exceed the specified rotate speed, the electrical signals might lose. The limited rotate speed under normal operation of rotary encoder is:
   Nmax=(60F× 102/L)× r/min (F is the frequency response ,L is the reticle number of raster)
6. Be sure if the connection and wiring is correct, wrong connection may cause damage to the internal circuit of the rotary encoder. Please connect the wires according to the diagram given out in the product.

Features:
1. Housing diameter 38mm, to be use in light industry;
2. Coupling mode: semi-hollow shaft
3. Direct cable output or different kinds of socket to be optional connection
4. Multi-output modes for option, more flexibility.
5. Oput terminal with water proof protedction, more safety.

1. Ordering Code

IM H40 -□ □ □ □

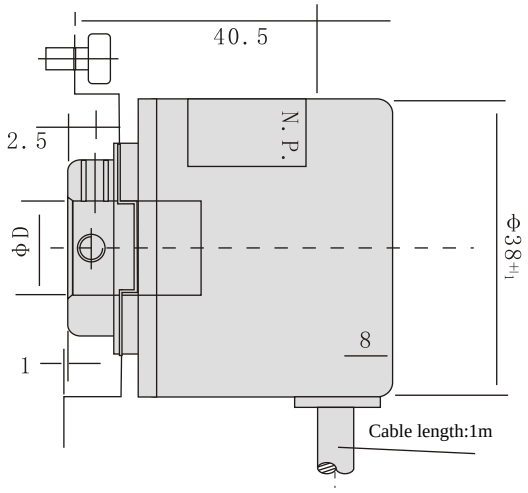
Additional Function	Default	Standard cable output
	B	Semi-Hollow shaft coupling
Numbers of pulses	600	60、100、120、180、200、300、360、400、500、600、720、800、900、960、1000、1024、1200、1500、1800、2000、2400、2500
Supply voltage	A	5V DC ±5%
	B	12～24V DC ±5%
Output circuit	R	Voltage output
	K	Open Collector NPN output
	S	Push-pull output
	D	Line driver output
Diameter	40	Diameter ϕ38mm
Series	H	H Series hollow-shaft rotary encoder

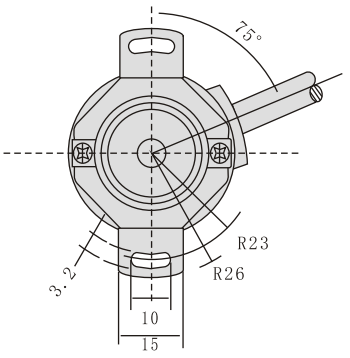
Example:IM H40-RB1024, means that the product is IM H Hollow shaft series rotary encoder, and the housing diameter is 38mm, Voltage output circuit, 12V or 24 V power supply; the number of pulses is 1024P/R.

2. Technical Parameters

Power supply	5V DC ±5%、12～24V DC±5%	Max. rotating speed	6000rpm
Output voltage	Vh ≥85%Vcc Vl≤0.3V	Vibration resistance	50m/s^2, 10-200Hz, 2 times each in X,Y,Z directions
Current Consumption	≤150 mA	Shock resistance	980m/s^2, 6ms, 2 times each in X,Y,Z directions
Response frequency	0～100K Hz	IP rating	IP54, dustproof
Output wave	Square wave	Operating life	MTBF ≥ 10000h
Duty ratio	0.5T±.1T	Working temperature	-10～70℃
Starting torque	5×10^{-3}N.m	Storage temperature	-30～85℃
Loading radial	Radial ≤20N	Ambient humidity	30-85% (with no condensation)
Loading axial	Axial ≤10N	Weight (appr)	180g

3. Appearance & Dimension





Features:
1. Housing diameter 58mm, to be use in light industry;
2. Coupling mode: semi-hollow shaft
3. Direct cable output or different kinds of socket to be optional connection
4. Multi-output modes for option, more flexibility.
5. Oput terminal with water proof protedction, more safety.

1. Ordering Code

IM H 60-□ □ □ □

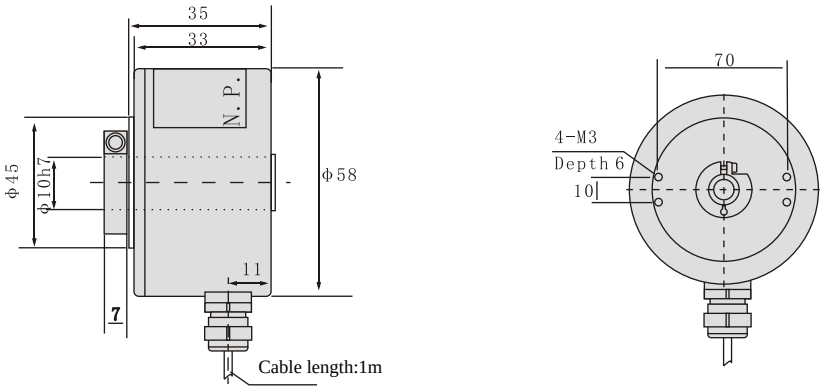
Additional function	Default	Standard cable output
Numbers of pulses	600	60、100、120、180、200、300、360、400、500、600、720、800、900、960、1000、1024、1200、1500、1800、2000、2400、2500
Supply voltage	A	5V DC ±5%
	B	12～24V DC ±5%
Output circuit	R	Voltage output
	K	Open Collector NPN output
	S	Push-pull output
	D	Line driver output
Diameter	60	Diameter ϕ58 mm
Series	H	H Series hollow-shaft rotary encoder

Example:IM H60-RB1024, means that the product is IM H Hollow shaft series rotary encoder, and the housing diameter is 58mm, Voltage output circuit, 12V or 24V power supply; the number of pulses is 1024P/R.

2. Technical Parameters

Power supply	5V DC ±5%、12～24V DC±5%	Max. rotating speed	6000rpm
Output voltage	Vh≥85%Vcc、 Vl≤0.3V	Vibration resistance	50m/s^2, 10-200Hz, 2 times each in X,Y,Z directions
Current Consumption	≤150 mA	Shock resistance	980m/s^2, 6ms, 2 times each in X,Y,Z directions
Response frequency	0～100K Hz	IP rating	IP54, dustproof
Output wave	Square wave	Operating life	MTBF≥10000h
Duty ratio	0.5T±.1T	Working temperature	-10～70℃
Starting torque	4×10^{-3}N.m	Storage temperature	-30～85℃
Rotor moment of inertia	Appr. 7.5×10^{-6}Kgm^2	Ambient humidity	30-85%RH (with no condensation)
Max. load	Radial ≤40N、 Axial≤25N	Weight (appr)	250g

3. Appearance & Dimension



Features:
1. Diameter 58mm, shaft diameter 6mm. To be use in light industry;
2. Small volume, light weight;
3. D-shaped incision, easy installation;
4. Multi-output modes for option, more flexibility;
5. Output cable Side Entry

1. Ordering Code

IM S 40 −□ □ □ □

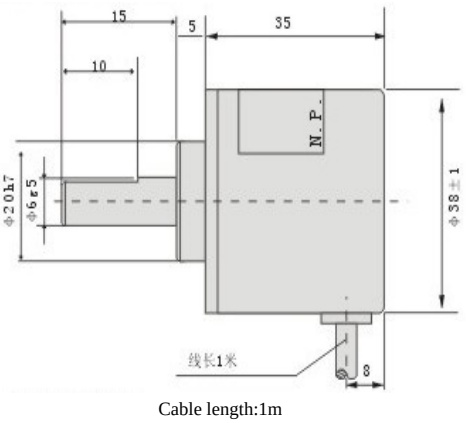
Additional function	Default	Standard cable output
Numbers of pulses	600	60、100、120、180、200、300、360、400、500、600、720、800、900、960、1000、1024、1200、1500、1800、2000、2400、2500
Supply voltage	A	5V DC ±5%
	B	12～24V DC ±5%
Output circuit	R	Voltage output
	K	Open Collector NPN output
	S	Push-pull output
	D	Line driver output
Diameter	40	Diameter 38mm, shaft diameter 6mm
Series	IM S	ES Series Solid-shaft rotary encoder

Example:IM S40-RB600, means that the product is IM S Solid shaft series rotary encoder, and the housing diameter is 38mm, shaft diameter 6mm; Voltage output circuit, 12V or 24V power supply; the number of pulses is 600P/R.

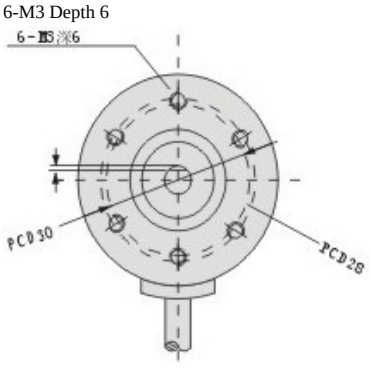
2. Technical Parameters

Power supply	5V DC ±5%、12～24V DC±5%	Max. rotating speed	6000rpm
Output voltage	Vh≥85%Vcc、 Vl≤0.3V	Vibration resistance	50m/s², 10-200Hz, 2 times each in X,Y,Z directions
Current Consumption	≤120mA	Shock resistance	980m/s², 6ms, 2 times each in X,Y,Z directions
Response frequency	0～100K Hz	IP rating	IP54, dustproof, waterproof, oilproof
Output wave	Square wave	Operating life	MTBF≥10000h
Duty ratio	0.5T±.1T	Working temperature	-10～70℃
Starting torque	1.5×10^{-3} N.m	Storage temperature	-30～85℃
Rotor moment of inertia	Appr. 3.5×10^{-6}Kgm²	Ambient humidity	30-85%RH (with no condensation)
Max. load	Radial ≤ 20N Axial ≤ 10N	Weight (appr)	100g

3. Appearance & Dimension



Cable length:1m



Features:
1. Diameter 50mm, shaft diameter 8mm. To be use in light industry;
2. Small volume, light weight;
3. With cable output;
4. Multi-output modes for option, more flexibility;
5. Max. ratating speed up to 6000rpm

1. Ordering Code

IM S 50 -□ □ □ □

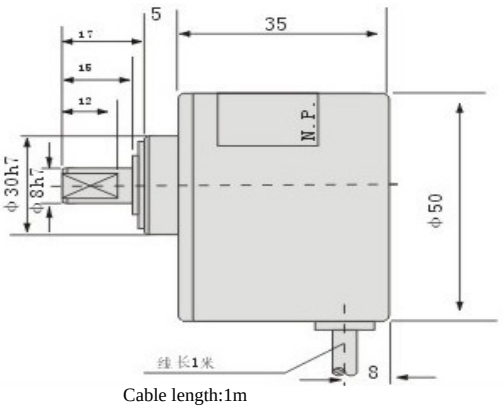
Additional function	Default	Standard cable output
Numbers of pulses	600	60、100、120、180、200、300、360、400、500、600、720、800、900、960、1000、1024、1200、1500、1800、2000、2400、2500
Supply voltage	A	5V DC ±5%
	B	12～24V DC ±5%
Output circuit	R	Voltage output
	K	Open Collector NPN output
	S	Push-pull output
	D	Line driver output
Diameter	50	Diameter 50mm, shaft diameter 8mm
Series	IM S	IM S Series Solid-shaft rotary encoder

Example: IM S50-RB360, means that the product is IM S Solid shaft series rotary encoder, and the housing diameter is 50mm, shaft diameter 8mm; Voltage output circuit, 12V or 24V power supply; the number of pulses is 360P/R.

2. Technical Parameters

Power supply	5V DC ±5%、12～24V DC±5%	Max. rotating speed	6000rpm
Output voltage	Vh≥85%Vcc、 Vl≤0.3V	Vibration resistance	50m/s², 10-200Hz, 2 times each in X,Y,Z directions
Current Consumption	≤180mA	Shock resistance	980m/s², 6ms, 2 times each in X,Y,Z directions
Response frequency	0～100K Hz	IP rating	IP54, dustproof, waterproof, oilproof
Output wave	Square wave	Operating life	MTBF≥10000h
Duty ratio	0.5T±.1T	Working temperature	-10～70℃
Starting torque	5×10^{-3} N.m	Storage temperature	-30～85℃
Rotor moment of inertia	Appr. 6×10^{-6}Kgm²	Ambient humidity	30-85%RH (with no condensation)
Max. load	Radial≤35N Axial≤25N	Weight (appr)	100g

3. Appearance & Dimension



Cable length:1m