

*INCREMENTAL SHAFT ENCODER* **ERB38S6** Series

Product selection guide

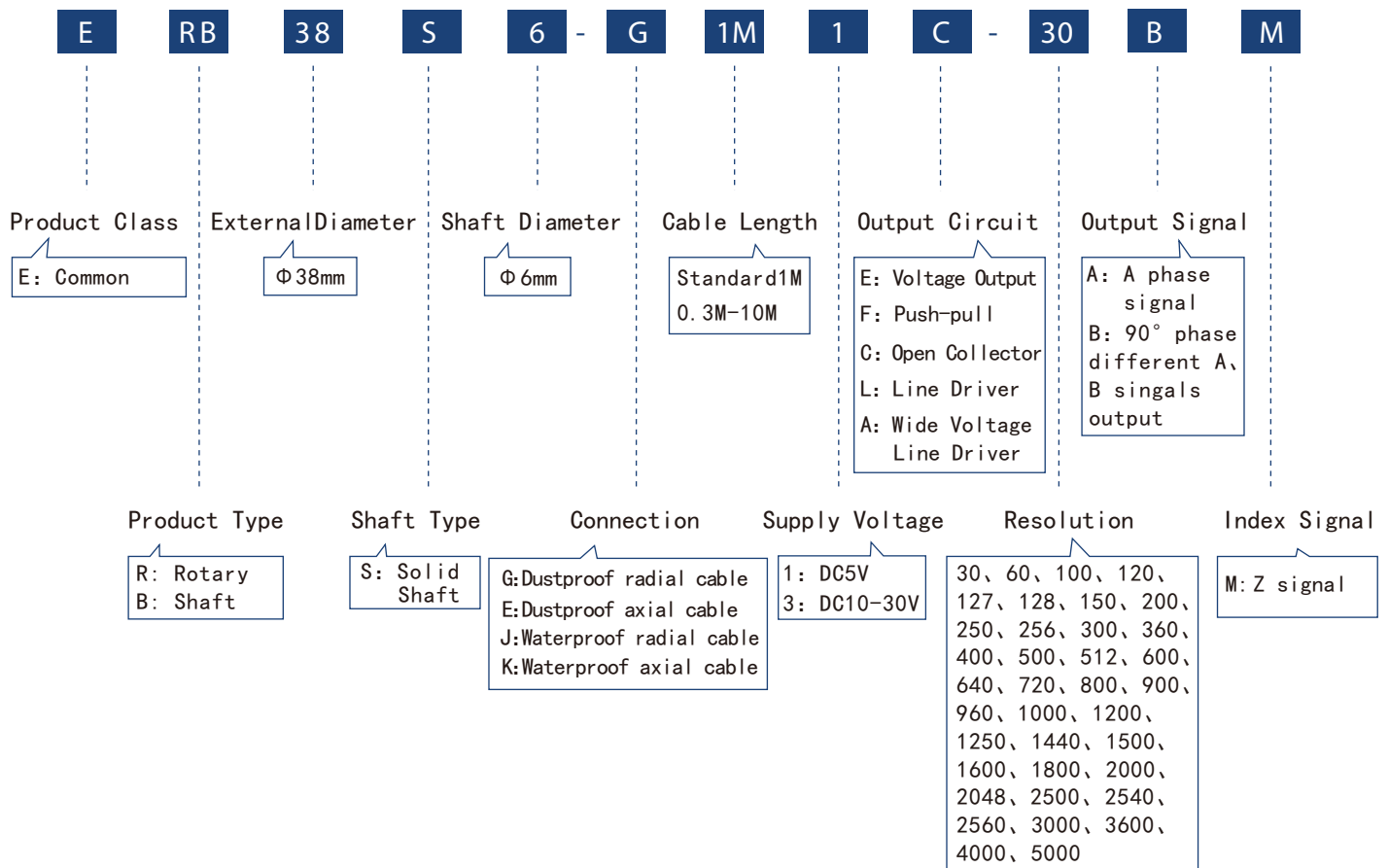


# Applications & Features



ERB38S is widely used in various mechanical industrial control, especially in the printing and packing industry. Resolution up to 5000 P/R. Small size, light weight and high precision. Through the axial length changes, the encoder can be adapted to the more different environment, is the preferred higher quality and low cost product.

## Part Number



## Electrical Specifications

Output Circuit	Supply Voltage DC (V)	Current Requirement (mA)	(Output Voltage V)		Rise Time (ns)	Fall Time (ns)	Frequency Response (kHz)
			V <sub>H</sub>	V <sub>L</sub>			
E (Voltage)	5±0.25	≤80	>3.5	≤0.7	≤500	≤100	0-300
	10-30	≤120	>VCC-2.5	≤0.7	≤500	≤100	0-300
F (Push-pull)	10-30	≤120	>VCC-2.5	≤0.7	≤500	≤100	0-300

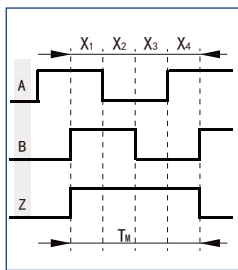
C (Open Collector)	$5 \pm 0.25$	$\leq 60$	$> V_{CC} - 2.5$	$\leq 0.7$	$\leq 500$	$\leq 100$	0-300
	10-30						
L (Line Driver)	$5 \pm 0.25$	$\leq 100$	$> 3.5$	$\leq 0.7$	$\leq 200$	$\leq 200$	0-300
A (Wide Voltage Line Driver)	10-30	$\leq 60$	$> V_{CC} - 2.5$	$\leq 0.7$	$\leq 500$	$\leq 100$	0-300

## Output Circuit

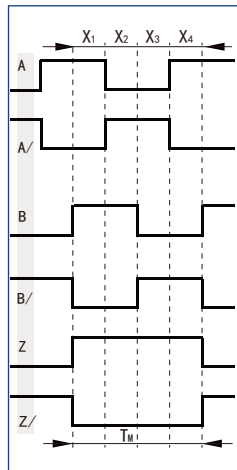
E (Voltage)		F (Push-pull)	C (Open Collector)	L, A (Line Driver)
5V	10-30 V	10-30 V		

Note: C, F output is shorted to ground protection diode.

## Output Waveform



Waveform for C, E, F output



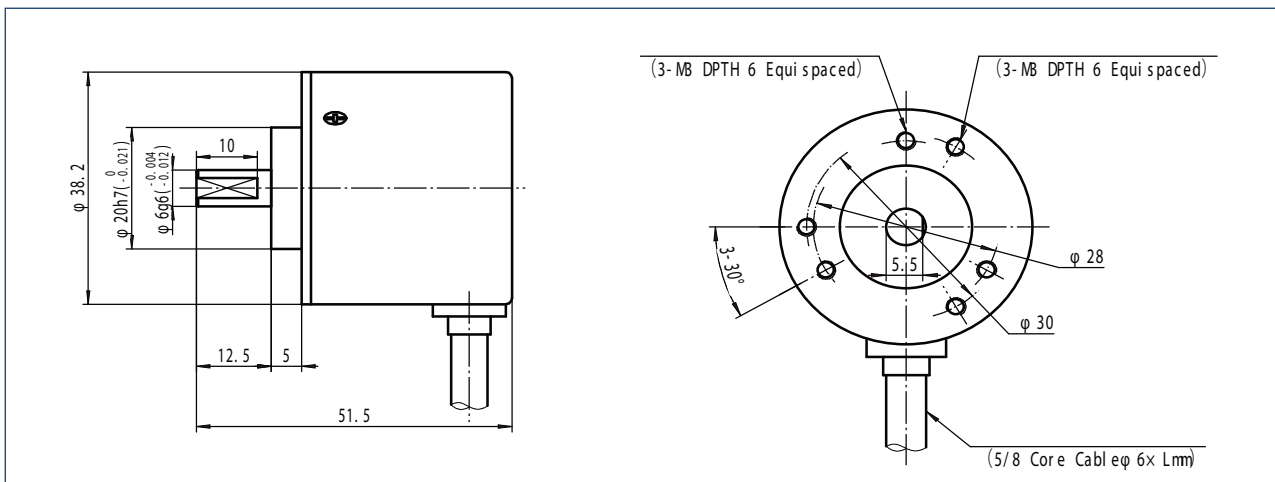
Waveform for L, A, F output

- Wave Ratio :  $X_1 + X_2 = 0.5T \pm 0.1T$   
 $X_2 + X_3 = 0.5T \pm 0.1T$
- Phase Different :  $X_n \geq 0.125T$  ( $n=1, 2, 3, 4$ )
- Absolute Angle Error:  $\leq 0.2T$
- Cycle Error :  $\leq 0.05T$
- $T = 360^\circ / N$  ( $N = \text{lines count per revolution}$ )
- Width of Z signal
- 1、 $T_m = 1T \pm 0.5T$   
 $T_m = nT \pm 0.1T$  ( $n \geq 2$ )
- The phase relationship of Z signal and A, B signal is not stipulated.
- 2、 $T_m = 0.5T \pm 0.25T$   
 $T_m = 0.25T \pm 0.125T$   
 $T_m = 0.25T \pm 0.125T$

The picture shows the clockwise (CW) waveform from the shaft side.

## Mechanical Specifications

Max Speed (r/min)	Starting Torque (N. M)	Max Load (N)		Rotary Inertia ( $\text{kgm}^2$ )	Weight (kg)
		Radial	Axial		
6000	$1 \times 10^{-3}$	30	20	$4 \times 10^{-6}$	$\approx 0.135$



## Environmental Specifications

Operating Temperature (°C)	-20 ~ +85	
Storage Temperature (°C)	-30 ~ +90	
Relative Humidity	35% ~ 85%RH no condensation	
Impact Resistance (m/s <sup>2</sup> )	50 (Three times each on x, y, z directions, each time lasts 6ms)	
Vibration Resistance (m/s <sup>2</sup> )	20 (10 ~ 200Hz, 2h on x, y, z directions)	
Protection Class	Common IP54	Reinforced IP65

## Connections

Cable Color	Red	Black	Green	Brown	White	Grey	Yellow	Orange	Shield
E (Voltage)	Vcc	0V	A	/	B	/	Z	/	G
F (Push Pull)	Vcc	0V	A	A/	B	B/	Z	Z/	G
C (Open Collector)	Vcc	0V	A	/	B	/	Z	/	G
L, A (Line Driver)	Vcc	0V	A	A/	B	B/	Z	Z/	G

