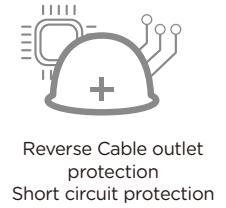
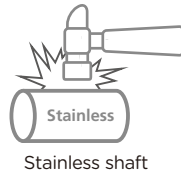


# Incremental ENCODER

## KR Series



### Part Number Description

KR	1	2	3	4	-	5
<b>1 Shape</b>	2 : Ø28 Shaft A : Ø38 Hollow Shaft			3 : Ø38 Shaft C : Ø50 Hollow Shaft		5 : Ø50 Shaft
<b>2 Shaft Size</b>	Ø28 Shaft	4 : Ø4, 5 : Ø5				Ø50 Shaft    8: Ø8
	Ø38 Shaft	6 : Ø6				Ø50 Hollow Shaft    8: Ø8
	Ø38 Hollow Shaft	8 : Ø8, 6 : Ø6				
<b>3 Output</b>	1 : Push-Pull			2 : NPN Open Collector		3 : Line Drive (RS422)
<b>4 Power</b>	1 : 5 ~ 30VDC			2 : 5VDC ( Line drive output only )		
<b>5 Resolution</b>	Ø28 :	50, 100, 200, 300, 360, 500, 600				
	Ø38 / Ø50 :	10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 200, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 2000, 2500				

# Incremental ENCODER

## KR Series

### General Specification

Shape	Ø28 Shaft	Ø38 Shaft/Hollow Shaft	Ø50 Shaft/Hollow Shaft
Maximum Operating Speed	6000 rpm	6000 rpm	6000 rpm
Maximum Load Capacity	5N (axial), 10N (radial)	25N (axial), 50N (radial)	30N (axial), 60N (radial)
Shock Resistance	30G/11ms	50G/11ms	50G/11ms
Vibration Resistance	6G 10 - 2000HZ	10G 10 - 2000HZ	10G 10 - 2000HZ
Life Time (bearing)	10 <sup>9</sup> revolution	10 <sup>9</sup> revolution	10 <sup>9</sup> revolution
Starting Torque	< 0.01 Nm	< 0.01 Nm	< 0.01 Nm
Body Material	AL-alloy UNI9002-5	AL-alloy UNI9002-5	AL-alloy UNI9002-5
Housing Material	AL-alloy UNI9002-5	AL-alloy UNI9002-5	AL-alloy UNI9002-5
Ambient Temperature	-20 - 80°C (with no icing)	-20 - 80°C (with no icing)	-20 - 80°C (with no icing)
Storage Temperature	-35 - 85°C (with no icing)	-35 - 85°C (with no icing)	-35 - 85°C (with no icing)
Cable Outlet	Axial 2m Cable	2m Cable (Radial / Axial)	2m Cable (Radial / Axial)
Weight	100g	135g	155g
Protection Degree	IP50	IP54	IP54

### Characteristics

Output	Push-Pull (Totem pole)	NPN Open Collector	RS422(Line Drive)
Supply Voltage (VDC)	5 - 30VDC	5 - 30VDC	5VDC
Power Consumption (no load)	125mA	80mA	80mA
Maximum Load Current	±80mA	± 50mA	± 50mA
Pulse Frequency	Max. 300kHz	Max. 300kHz	Max. 300kHz
Signal At High	Min. Ub-1.5V	Min. Ub- 70%*	Min. Ub-3.4V
Signal At Low	Max. 0.8V	Max. 0.4V	Max. 0.4V
Rise Timetr	Max. 1µs	Max. 1µs**	Max. 200ns
Fall Time Tf	Max. 1µs	Max. 1µs**	Max. 200ns

(\*) High signal level of NPN Open collector is depends on the pull up resistor. 4.7kΩ is recommended resistance.

(\*\*) Fall and Rise time of NPN Open collector is depends on pull up resistor and cable length.

## Terminal configuration

### Push-Pull / NPN Open Collector Output

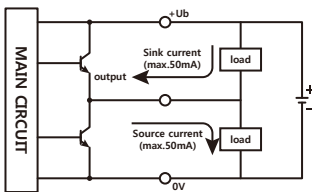
Signal	0V	+Ub	+A		+B		+Z		Shield
Color	White (WH)	Brown (BN)	Green(GN)		Gray (GY)		Blue (BU)		Sliver

### RS422(Line Drive) output

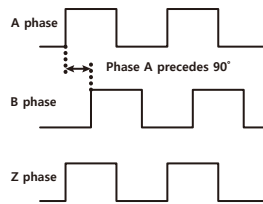
Signal	0V	+Ub	+A	-A	+B	-B	+Z	-Z	Shield
Color	White (WH)	Brown (BN)	Green(GN)	Yellow(YE)	Gray (GY)	Pink(PK)	Blue (BU)	Red (RD)	Sliver

## Output Circuit

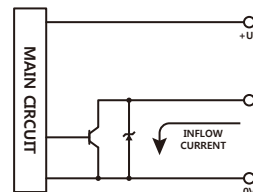
### (1) Push-Pull Output



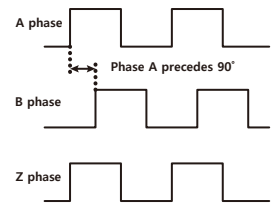
### Output Phase



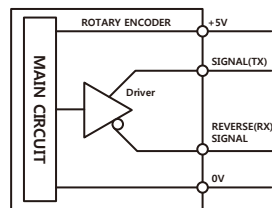
### (2) NPN Open Collector Output



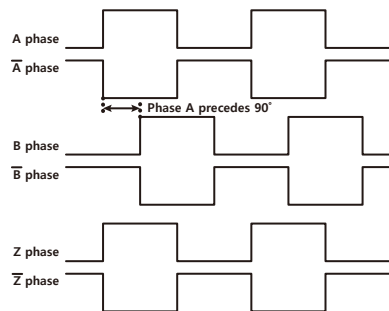
### Output Phase



### (3) Line-driver Output



### Output Phase



# Incremental ENCODER

## KR Series

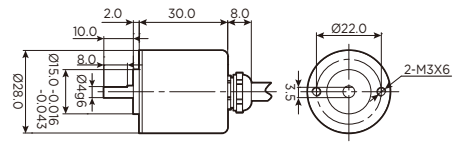
### Product Selection

Model	Shape	Shaft	Resolution (P/R)	Output	Power	Part Number
	Shaft 2 : Ø28	5 : Ø5	100	1 : Push-Pull	1 : 5-30VDC	KR 2511-100
			200			KR 2511-200
			300			KR 2511-300
			360			KR 2511-360
			500			KR 2511-500
			600			KR 2511-600
	Shaft 3 : Ø38	6 : Ø6	100	1 : Push-Pull	1 : 5-30VDC	KR 3611-100
			200			KR 3611-200
			300			KR 3611-300
			360			KR 3611-360
			500			KR 3611-500
			600			KR 3611-600
			1000			KR 3611-1000
			1024			KR 3611-1024
	Hollow Shaft A : Ø38	6 : Ø6	100	1 : Push-Pull	1 : 5-30VDC	KR A611-100
			200			KR A611-200
			300			KR A611-300
			360			KR A611-360
			500			KR A611-500
			600			KR A611-600
			1000			KR A611-1000
			1024			KR A611-1024
	Shaft 5 : Ø50	8 : Ø8	100	1 : Push-Pull	1 : 5-30VDC	KR 5811-100
			200			KR 5811-200
			300			KR 5811-300
			360			KR 5811-360
			500			KR 5811-500
			600			KR 5811-600
			1000			KR 5811-1000
			1024			KR 5811-1024
	Hollow Shaft C : Ø50	8 : Ø8	100	1 : Push-Pull	1 : 5-30VDC	KR C811-100
			200			KR C811-200
			300			KR C811-300
			360			KR C811-360
			500			KR C811-500
			600			KR C811-600
			1000			KR C811-1000
			1024			KR C811-1024

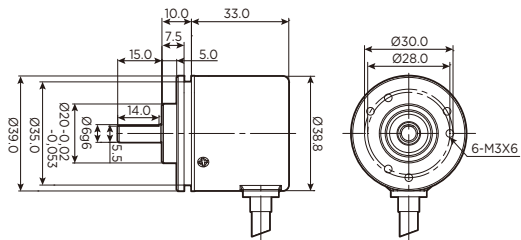
**Dimension**

(mm)

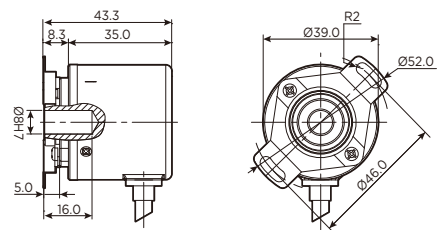
**KR Ø28 Shaft**



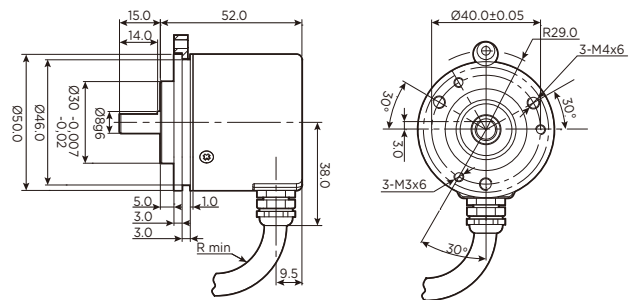
**KR Ø38 Shaft**



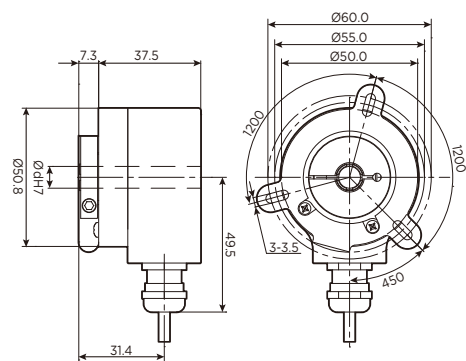
**KR Ø38 Hollow Shaft**



**KR Ø50 Shaft**



**KR Ø50 Hollow Shaft**



Detection