

# Φ38 FAMILY

# Incremental Encoders

### Connector (Hirose Electric) 38S/38H

Output type	Parts Number
Open Collector	DF3-6S-2C
Complementary	DF3-6S-2C
Line Driver	DF3-9S-2C



### Electrical spec

Output Type	A, B, Z (index signal)	
Resolution	100, 200, 250, 300, 360, 500, 512, 600, 1000, 1024, 2000, 2048, 2500, 3600, 4000, 4096	200, 250, 300, 360, 500, 512, 1000, 1024, 2000, 2048, 2500, 3600, 4000, 4096
Supply voltage	Line driver	DC4.5~13.2V
	Open collector Complementary	DC4.5~30V
Current consumption	30mA, Complementary : 60mA (Max)	
Output current	Line driver	20mA (Max)
	Open collector	40mA (Max)
	Complementary	600mA (Max)
Operating frequency	240kHz (Max)	

### Mechanical spec

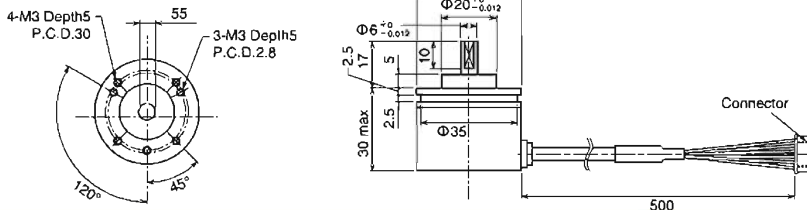
Shaft diameter	Φ6	Φ6, Φ8	Φ5, Φ6
Sealing	IP 50		—
Starting torque	9.8 × 10 <sup>-4</sup> N·m or Less		—
Allowable load to the shaft	Thrust : 19.6N / Radial : 29.4N	Thrust : 9.8N / Radial : 29.4N	—
Moment of inertia	8 × 10 <sup>-7</sup> kg·m <sup>2</sup> (Max)		9.3 × 10 <sup>-7</sup> kg·m <sup>2</sup> (Max)
Max Rotating speed	6000r/min. (Max)		10000r/min. (Max)

### 38S Series

■ Type **38S** - [ ] - [ ] - **6** - **50** - **B00 E**

Resolution: Refer to above  
Cable length 50 : 50cm  
Shaft diameter 6 : Φ6  
2MD : A, B, Z Line driver  
2MC : A, B, Z Open collector  
2MT : A, B, Z Complementary

### Dimensions (mm)

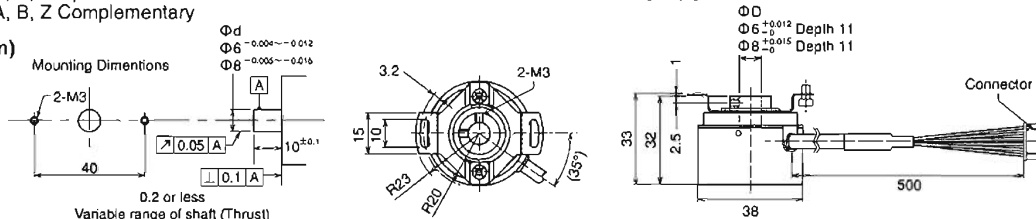


### 38H Series

■ Type **38H** - [ ] - [ ] - [ ] - **50** - **B00 E**

Resolution: Refer to above  
Cable length 50 : 50cm  
Inner diameter 6 : Φ6  
8 : Φ8  
2MD : A, B, Z Line driver  
2MC : A, B, Z Open collector  
2MT : A, B, Z Complementary

### Dimensions (mm)



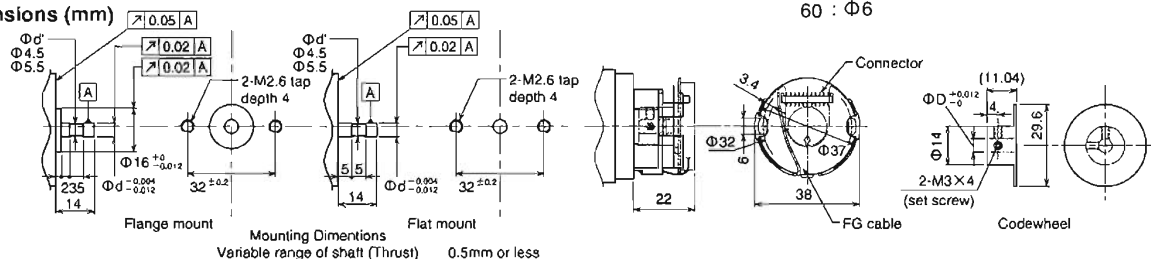
### 38M Series

■ Type **38M** - [ ] - [ ] - **A** [ ] - **00 E**

Resolution: Refer to above  
Motor Inner diameter 50 : Φ5  
60 : Φ6  
2MD : A, B, Z Line driver  
2MC : A, B, Z Open collector  
2MT : A, B, Z Complementary

■ Connector  
JST SM10B-GHS-GB-TB

### Dimensions (mm)



# Φ18 / Φ38 Other Spec

## ■ Φ18 Cable assign

Open collector

Pin No.	Color	Connection
1	Brown	Vcc
2	Red	0V
3	Orange	Sig A
4	Yellow	Sig B
5	Green	Sig Z

Line driver

Pin No.	Color	Connection
1	Brown	Vcc
2	Red	0V
3	Orange	Sig A
4	Yellow	Sig $\bar{A}$
5	Green	Sig B
6	Blue	Sig $\bar{B}$
7	Purple	Sig Z
8	Gray	Sig $\bar{Z}$
9	Black	—

## ■ 38S / 38H Cable assign

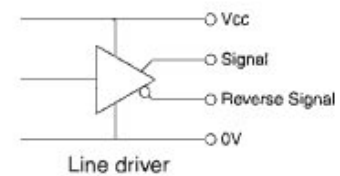
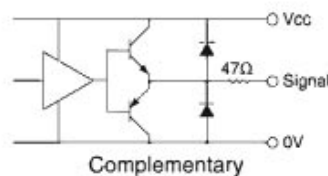
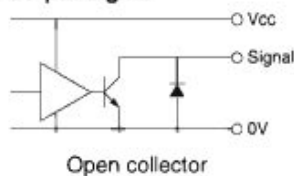
Open collector / Complementary

Pin No.	Color	Connection
1	Red	Vcc
2	Black	0V
3	Blue	Sig A
4	White	Sig B
5	Yellow	Sig Z
6	Black	Shield

Line driver

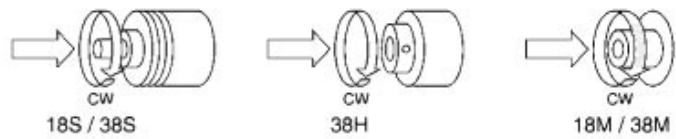
Pin No.	Color	Connection
1	Red	Vcc
2	Black	0V
3	Green	Sig A
4	Blue	Sig $\bar{A}$
5	White	Sig B
6	Gray	Sig $\bar{B}$
7	Yellow	Sig Z
8	Orange	Sig $\bar{Z}$
9	Black	Shield

## ■ Circuit of Output Signal



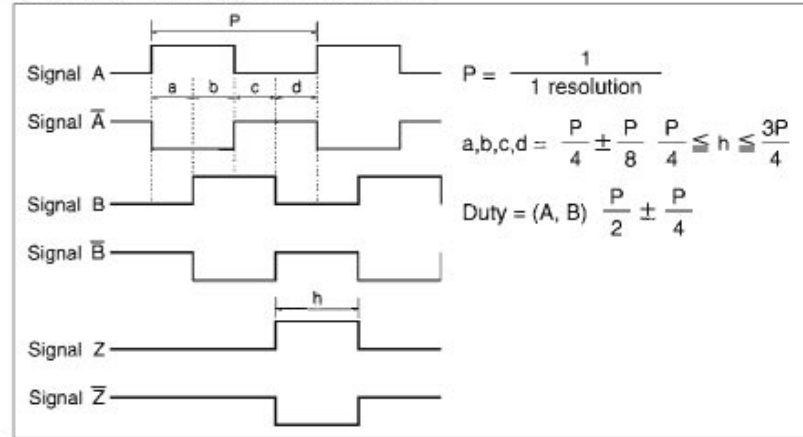
## ■ Output style

Rotation direction



Open collector output / Complementary output : Signal A, B, Z

Line driver output : Signal A, B, Z, /A, /B, /Z



## ■ 38M Connector assign

Open collector / Complementary

Pin No.	Connection
1	Vcc
2	0V
3	Sig A
4	—
5	Sig B
6	—
7	Sig Z
8	—
9	—
10	Shield
11	—

Line driver

Pin No.	Connection
1	Vcc
2	0V
3	Sig A
4	Sig $\bar{A}$
5	Sig B
6	Sig $\bar{B}$
7	Sig Z
8	Sig $\bar{Z}$
9	—
10	Shield
10	—

## ■ Environmental spec

Operating temperature	-10°C ~ +85°C
Humidity	RH 85% Max*
Vibration	10~55Hz/1.5mm X, Y, Z direction each 2h
Shock	490m/s <sup>2</sup> , 11ms X, Y, Z direction each for 3 times

\*No Condensation

This content on this sheet is subject to change without advance notice due to the technical development and progress etc.  
When using this product, please refer to the latest specifications.

PS11004

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