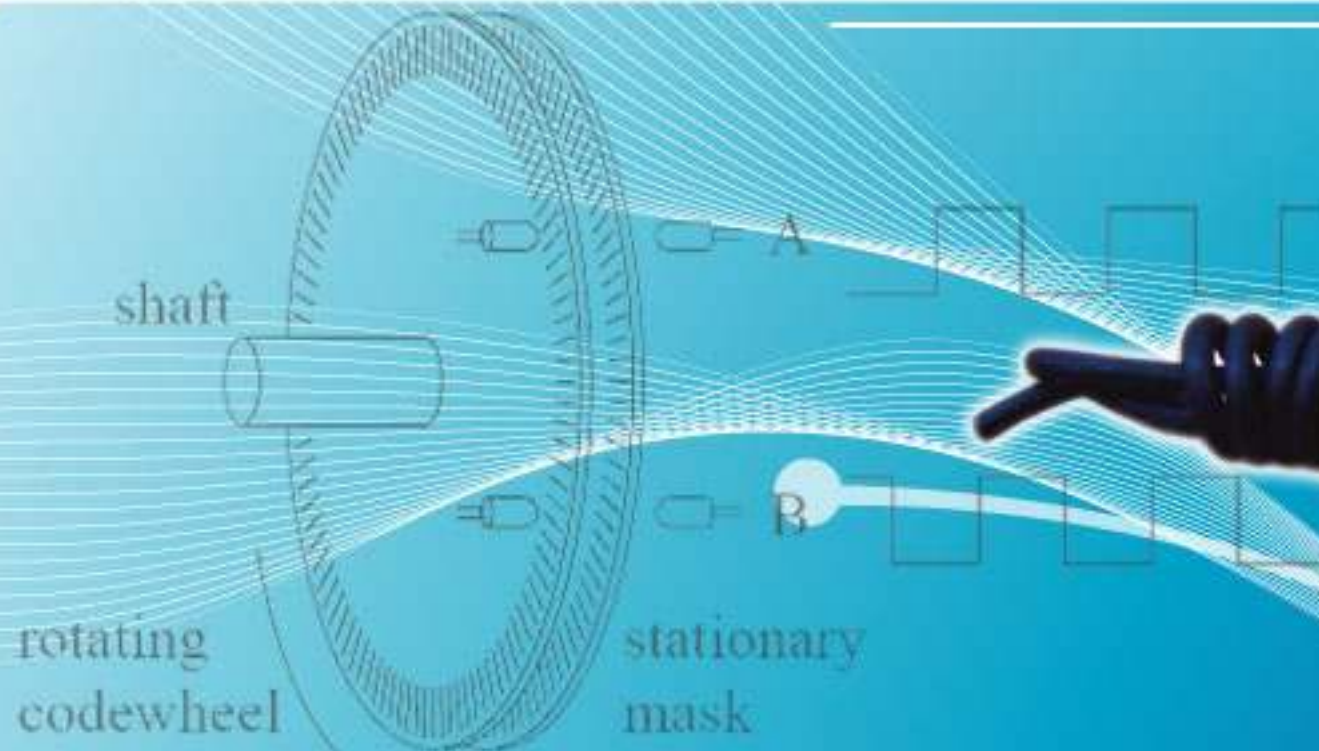


# Rotary Encoder



- Fox Controls Rand CC  
foxcon@hixnet.co.za  
+27-11-886-3466  
+27-11-787-5581  
www.foxcontrols.co.za

# Incremental 38-mm-Dia. Rotary Encoder

MCT38A/MCT38B/MCT38C

2 or 4 phase type

General purpose Encoder with External Diameter of 38mm

- Incremental model 2 or 4 phase type
- External diameter of 38mm
- Resolution available for 300/360/400/600.
- Various output type
- Solid shaft with Dia at 6 mm



## Ordering Information

MCT38A/MCT38B/MCT38C              

1                      2    3    4    5    6    7

### Section 1: Basic model name

- MCT38A:** 38mm Rotary Encoder(Mounting type A)  
**MCT38B:** 38mm Rotary Encoder(IP64)(Mounting type B)  
**MCT38C:** 38mm Rotary Encoder(Mounting type C)

Refer to drawings for the difference between MCT38A/MCT38B/MCT38C

### Section 2: Shaft Size

- 6:** Solid shaft with Dia at 6 mm

### Section 3: Resolution

- 300:** 300 ppr  
**360:** 360 ppr  
**400:** 400 ppr  
**600:** 600 ppr

**For 2 or 4 phase type, the option for resolution is limited to listed as above 300/360/400/600 PPR.other pulse is not available**

## Ratings and Specifications

- Power supply:** 8-30 VDC  
**Resolution:** 300/360/400/600 ppr  
**Current consumption:** 100mA(Load disconnected)  
**Load current:** 50mA maximum per channel  
**Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)  
**Frequency:** 100K HZ Frequency=RPM\*Resolution/60  
**Maximum permissible speed:** 4000 rpm  
**Shaft loading radial:** 10N  
**Shaft loading thrust:** 20N  
**Weight:** Approxi 0.2KG  
**Protection level:** IP50  
**Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)  
**Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions  
**Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions  
**Starting torque:** 1 x 10<sup>-3</sup> N.m Maximum

### Section 4: Output phase

- 2:** A B  
**4:** A  $\bar{A}$  B  $\bar{B}$

### Section 5: Output type

- C:** Complementary(also known as Totem Pole)  
**N:** NPN Open collector  
**P:** PNP Open collector  
**V:** Voltage output  
**L:** Line driver (**Power source 5VDC ONLY,Phase 4**)  
**T:** Push-Pull(**With inverted signal,Phase 4**)

### Section 6: Power Supply

- 8:** 8-30 VDC(+/- 5%)  
**5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

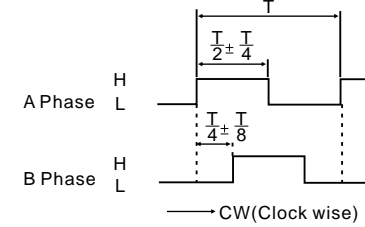
- G:** Side entry cable  
**E:** Rear entry cable

▲ Standard cable length is 2M

## Output circuits and wave forms

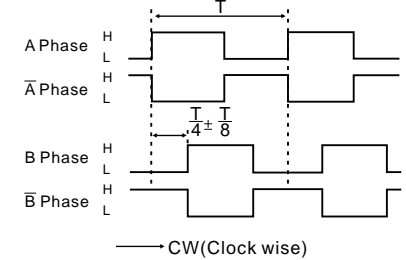
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

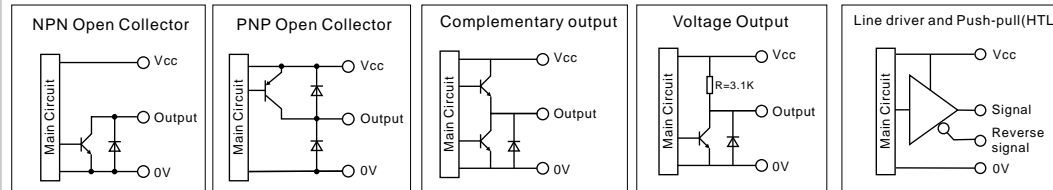


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

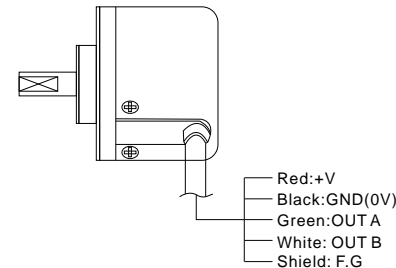


### Output circuits

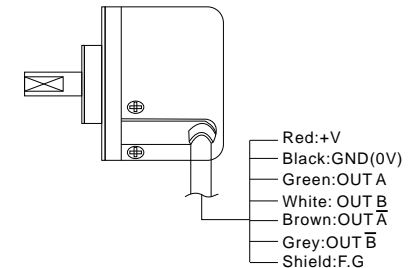


## Wiring Details

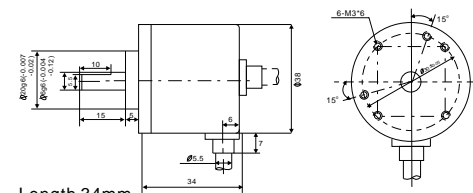
Complementary/Open collector(NPN/PNP)/Voltage output



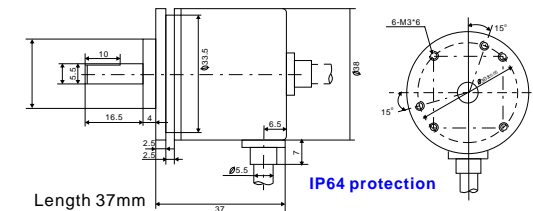
Line Driver/Push-pull(HTL with reverse signal)



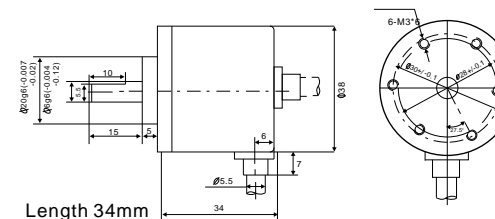
## Mounting and Dimensions



MCT38A(Mounting Type A)



MCT38B(Mounting Type B)



MCT38C(Mounting Type C)

# Incremental 40-mm-Dia. Rotary Encoder

MCT40A/MCT40B

2 or 4 phase type

General purpose Encoder with External Diameter of 40mm



- Incremental model 2 or 4 phase type
- External diameter of 40mm
- Resolution available for 100/200/500/1000/1024.
- Various output type
- Solid shaft with Dia at 6 mm

## Ordering Information

MCT40A/MCT40B-

--	--	--	--	--	--	--

### Section 1: Basic model name

**MCT40A:** 40mm Rotary Encoder(Mounting type A)  
**MCT40B:** 40mm Rotary Encoder(Mounting type B)

Refer to drawings for the difference between MCT40A/MCT40B

### Section 2: Shaft Size

**6:** Solid shaft with Dia at 6 mm

### Section 3: Resolution

**100:** 100 ppr  
**200:** 200 ppr  
**500:** 500 ppr  
**1000:** 1000 ppr  
**1024:** 1024 ppr

### Section 4: Output phase

**2:** A B  
**4:** A  $\bar{A}$  B  $\bar{B}$

### Section 5: Output type

**C:** Complementary(also known as Totem Pole)  
**N:** NPN Open collector  
**P:** PNP Open collector  
**V:** Voltage output  
**L:** Line driver (**Power source 5VDC ONLY, Phase 4**)  
**T:** Push-Pull (**With inverted signal, Phase 4**)

### Section 6: Power Supply

**8:** 8-30 VDC(+/- 5%)  
**5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

**G:** Side entry cable  
**E:** Rear entry cable

▲ Standard cable length is 2M

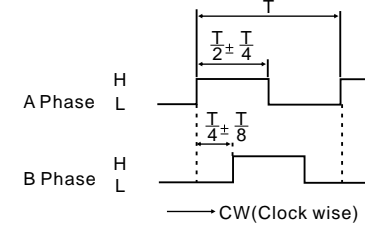
## Ratings and Specifications

- Power supply:** 8-30 VDC  
**Resolution:** 100/200/500/1000/1024 ppr  
**Current consumption:** 100mA(Load disconnected)  
**Load current:** 50mA maximum per channel  
**Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/ Push-Pull(HTL with reverse signal)  
**Frequency:** 100K HZ Frequency=RPM\*Resolution/60  
**Maximum permissible speed:** 4000 rpm  
**Shaft loading radial:** 10N  
**Shaft loading thrust:** 20N  
**Weight:** Approx 0.2KG  
**Protection level:** IP50  
**Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)  
**Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions  
**Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions  
**Starting torque:** 1 x 10<sup>-3</sup> N.m Maximum

## Output circuits and wave forms

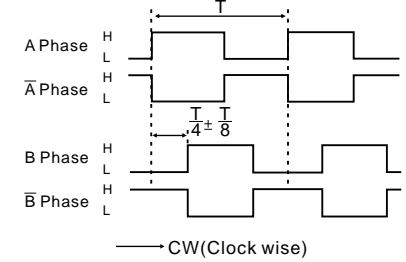
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

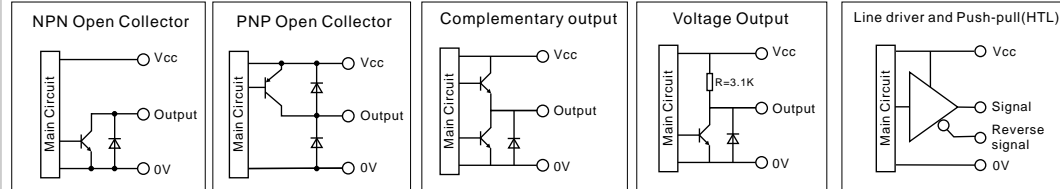


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

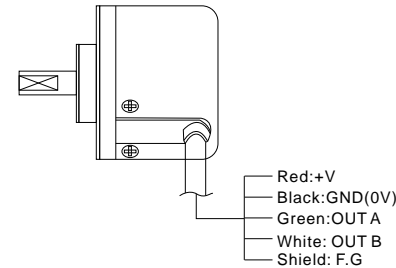


### Output circuits

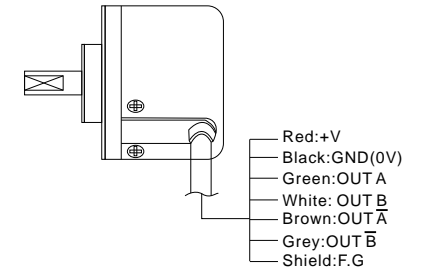


## Wiring Details

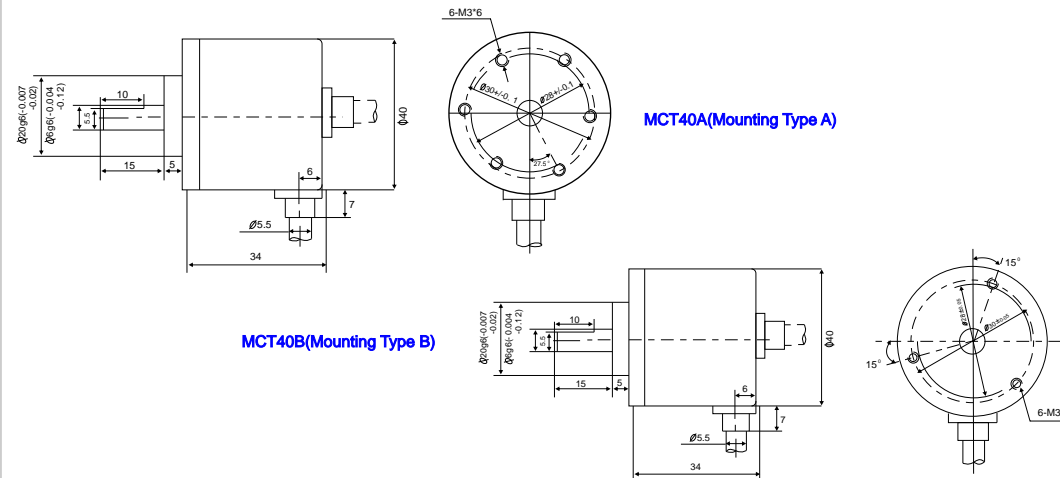
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)



## Mounting and Dimensions



# Incremental 30-mm-Dia. Rotary Encoder

M30SA

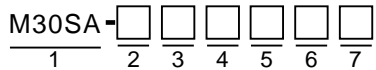
Ultra Small, Space saving

General purpose Encoder with External Diameter of 30mm



- Incremental model
- External diameter of 30mm
- Resolution up to 1200 ppr.
- Various output type
- Solid shaft with Dia at 4 mm

## Ordering Information



### Section 1: Basic model name

**M30SA:** 30mm Rotary Encoder(Mounting Type A)

### Section 2: Shaft Size

4: Solid shaft with Dia at 4 mm

### Section 3: Resolution

10: 10 ppr  
20: 20 ppr

40 50 60 80 100 120 125 150  
200 225 240 250 256 300 360 400 450  
480 500 512 600 625 720 750 800 900  
1000 1024 1080 ...up to 1200

Not indicated resolution is customizable

### Section 4: Output phase

3: A B Z  
6: A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

C: Complementary(also known as totem pole)  
N: NPN Open collector  
P: PNP Open collector  
V: Voltage output  
L: Line driver(**Power source 5VDC ONLY, Phase 6**)  
T: Push-Pull(**With inverted signal, Phase 6**)

### Section 6: Power Supply

8: 8-30 VDC(+/- 5%)  
5: 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

E: Rear entry cable  
**Cable can only entry from Rear part of encoder**  
**▲Standard cable length is 2M**

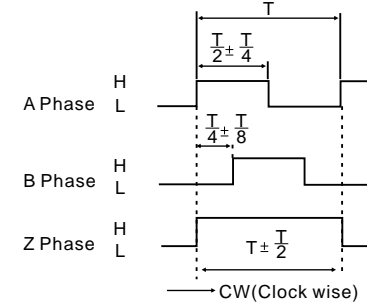
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-1200 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM\*Resolution/60
- Maximum permissible speed:** 4000 rpm
- Shaft loading radial:** 10N
- Shaft loading thrust:** 20N
- Weight:** Approx 0.16KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 1 x 10<sup>-3</sup> N.m Maximum

## Output circuits and wave forms

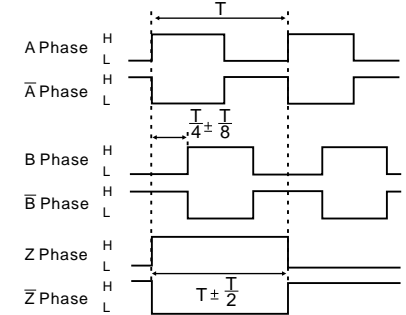
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



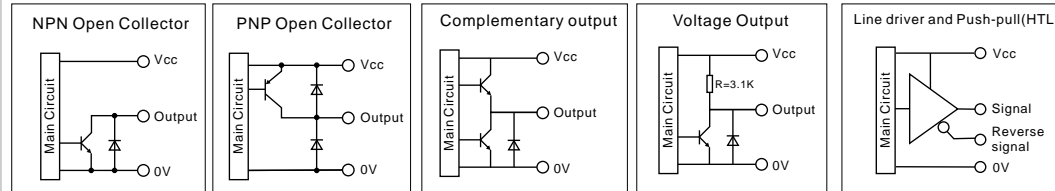
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



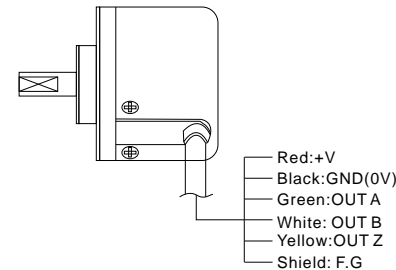
CW(Clock wise)

### Output circuits

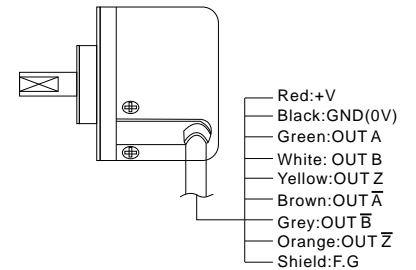


## Wiring Details

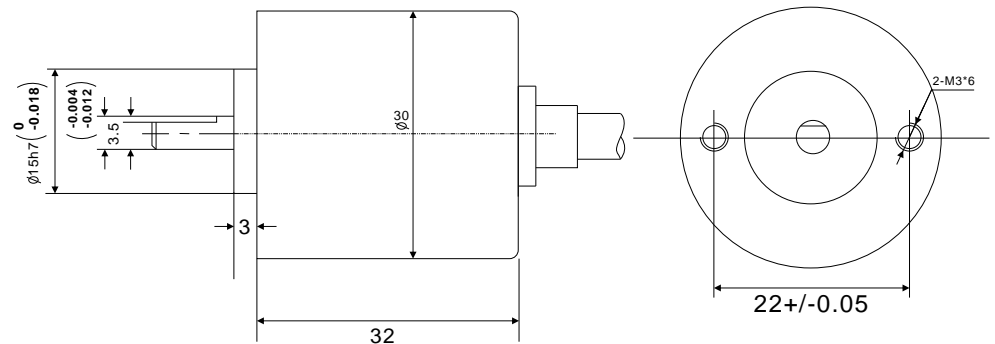
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



## Mounting and Dimensions



M30SA(Mounting Type A)

# Incremental 38-mm-Dia. Rotary Encoder

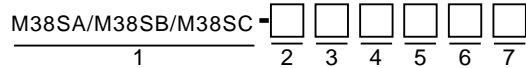
M38SA/M38SB/M38SC

General purpose Encoder with External Diameter of 38mm

- Incremental model
- External diameter of 38mm
- Resolution up to 3600 ppr.
- Various output type
- Solid shaft with Dia at 6 mm



## Ordering Information



### Section 1: Basic model name

- M38SA:** 38mm Rotary Encoder(Mounting Type A)
  - M38SB:** 38mm encoder(IP64)(Mounting Type B)
  - M38SC:** 38mm Rotary Encoder(Mounting Type C)
- Please refer to drawing for the difference between M38SA/M38SB/M38SC

### Section 2: Shaft Size

- 6:** Solid shaft with Dia at 6 mm

### Section 3: Resolution

- 10:** 10 ppr
- 20:** 20 ppr

- 40 50 60 80 100 120 125 150
- 200 225 240 250 256 300 360 400 450
- 480 500 512 600 625 720 750 800 900
- 1000 1024 1080 1200...up to 3600

Not indicated resolution is customizable

### Section 4: Output phase

- 3:** A B Z
- 6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

- C:** Complementary(also known as totem pole)
- N:** NPN Open collector
- P:** PNP Open collector
- V:** Voltage output
- L:** Line driver(**Power source 5VDC ONLY, Phase 6**)
- T:** Push-Pull(**With inverted signal, Phase 6**)

### Section 6: Power Supply

- 8:** 8-30 VDC(+/- 5%)
- 5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

- G:** Side entry cable
- E:** Rear entry cable

▲ Standard cable length is 2M

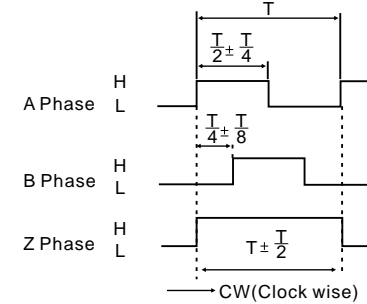
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-3600 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM\*Resolution/60
- Maximum permissible speed:** 6000 rpm
- Shaft loading radial:** 10N
- Shaft loading thrust:** 20N
- Weight:** Approxi 0.2KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 1.5 x 10<sup>-3</sup> N.m Maximum

## Output circuits and wave forms

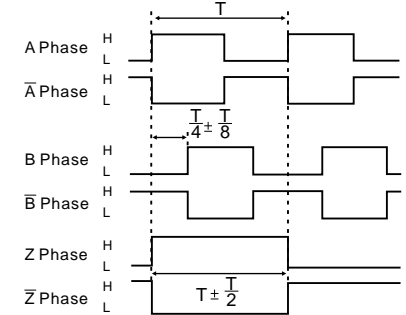
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



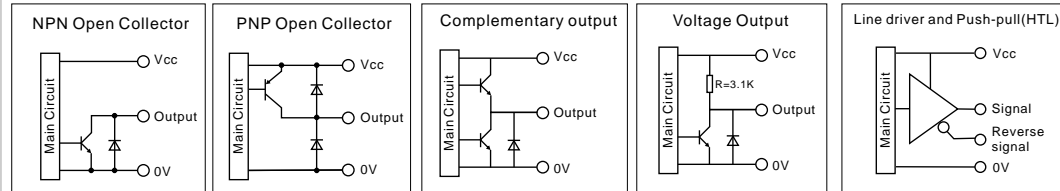
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



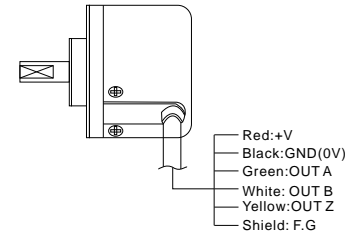
CW(Clock wise)

### Output circuits

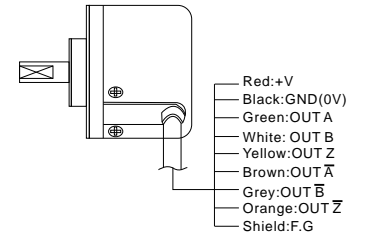


## Wiring Details

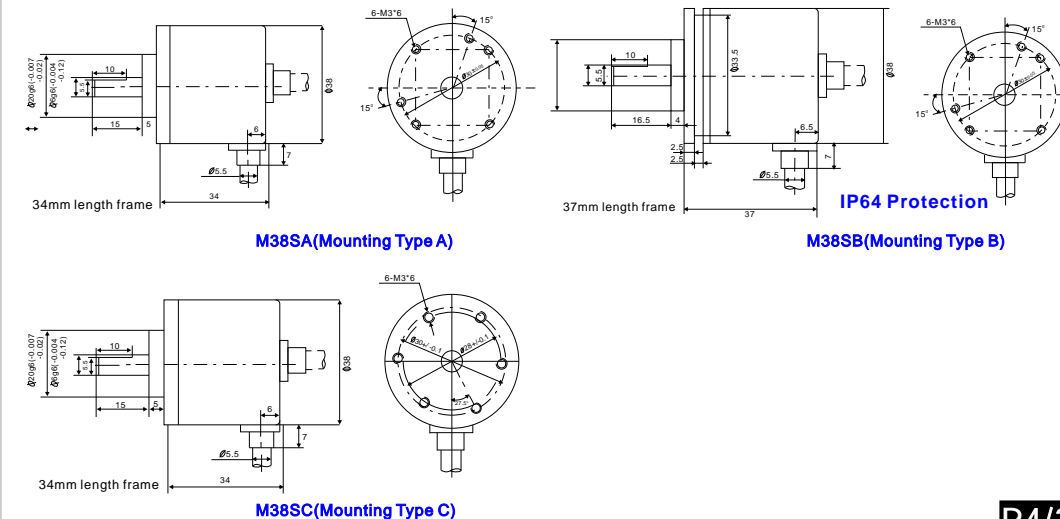
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)



## Mounting and Dimensions



# Incremental 40-mm-Dia. Rotary Encoder

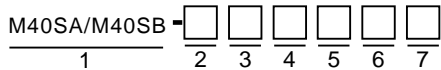
## M40SA/M40SB

General purpose Encoder with External Diameter of 40mm

- Incremental model
- External diameter of 40mm
- Resolution up to 3600 ppr.
- Various output type
- Solid shaft with Dia at 6 mm



## Ordering Information



### Section 1: Basic model name

- M40SA:** 40mm Rotary Encoder(Mounting Type A)
- M40SB:** 40mm Rotary Encoder(Mounting Type B)

Refer to drawings for the difference between M40SA/M40SB

### Section 2: Shaft Size

- 6:** Solid shaft with Dia at 6 mm

### Section 3: Resolution

- 10:** 10 ppr
- 20:** 20 ppr

40	50	60	80	100	120	125	150	
200	225	240	250	256	300	360	400	450
480	500	512	600	625	720	750	800	900
1000	1024	1080	1200	...up to 3600				

Not indicated resolution is customizable

### Section 4: Output phase

- 3:** A B Z
- 6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

- C:** Complementary(also known as totem pole)
- N:** NPN Open collector
- P:** PNP Open collector
- V:** Voltage output
- L:** Line driver(**Power source 5VDC ONLY, Phase 6**)
- T:** Push-Pull(**With inverted signal, Phase 6**)

### Section 6: Power Supply

- 8:** 8-30 VDC(+/- 5%)
- 5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

- G:** Side entry cable
- E:** Rear entry cable

▲Standard cable length is 2M

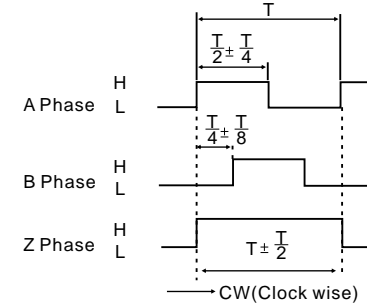
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-3600 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM\*Resolution/60
- Maximum permissible speed:** 6000 rpm
- Shaft loading radial:** 10N
- Shaft loading thrust:** 20N
- Weight:** Approx 0.2KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 1.5 x 10<sup>-3</sup> N.m Maximum

## Output circuits and wave forms

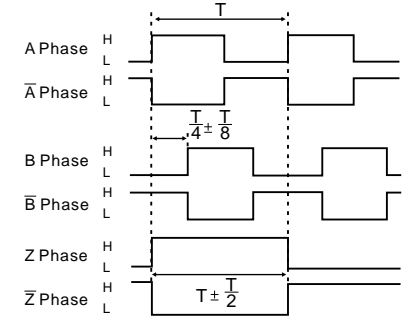
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

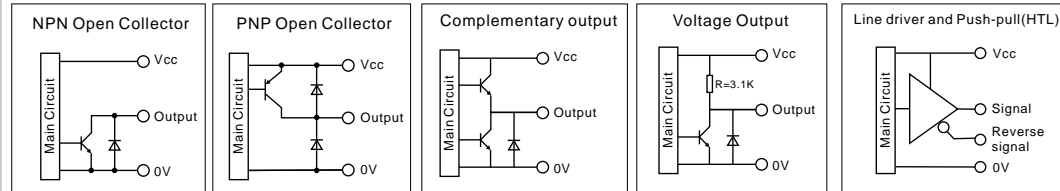


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

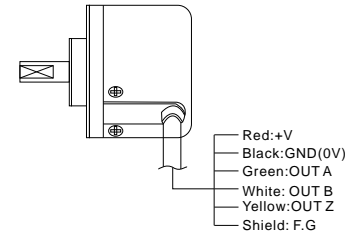


### Output circuits

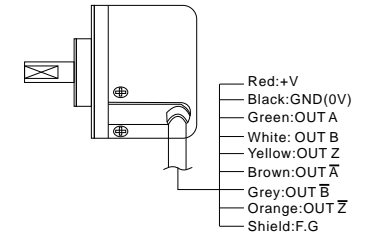


## Wiring Details

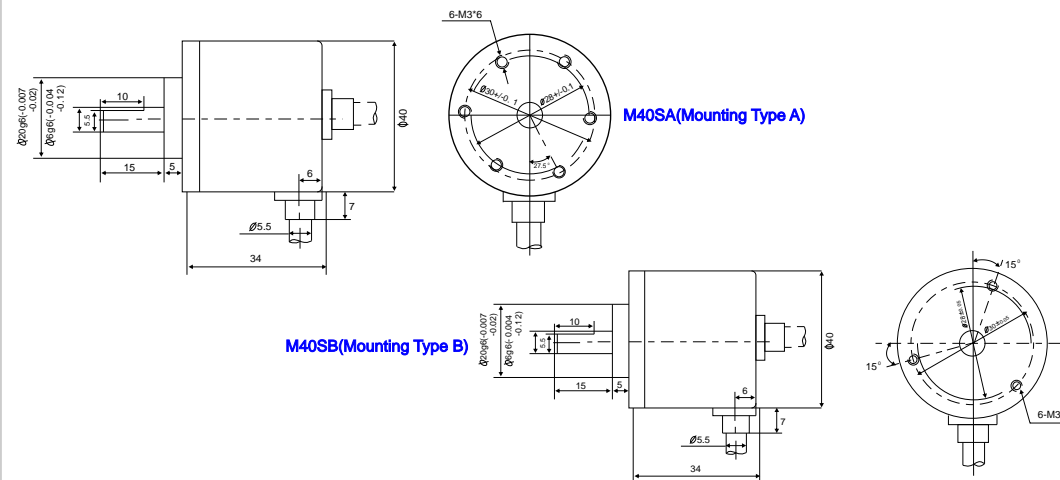
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



## Mounting and Dimensions



# Incremental 50-mm-Dia. Rotary Encoder

M50SA

General purpose Encoder with External Diameter of 50mm

- Incremental model
- External diameter of 50mm
- Resolution up to 5000 ppr.
- Various output type
- Solid shaft with Dia at 8 mm



## Ordering Information

M50SA                     

1    2    3    4    5    6    7

### Section 1: Basic model name

**M50SA:** 50mm Rotary Encoder(Mounting Type A)

### Section 2: Shaft Size

**8:** Solid shaft with Dia at 8 mm

### Section 3: Resolution

**10:** 10 ppr  
**20:** 20 ppr

40 50 60 80 100 120 125 150  
200 225 240 250 256 300 360 400 450  
480 500 512 600 625 720 750 800 900  
1000 1024 1080 1200...up to 5000

Not indicated resolution is customizable

### Section 4: Output phase

**3:** A B Z  
**6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

**C:** Complementary(also known as totem pole)  
**N:** NPN Open collector  
**P:** PNP Open collector  
**V:** Voltage output  
**L:** Line driver(**Power source 5VDC ONLY, Phase 6**)  
**T:** Push-Pull(**With inverted signal, Phase 6**)

### Section 6: Power Supply

**8:** 8-30 VDC(+/- 5%)  
**5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

**G:** Side entry cable  
**E:** Rear entry cable

**▲ Standard cable length is 2M**

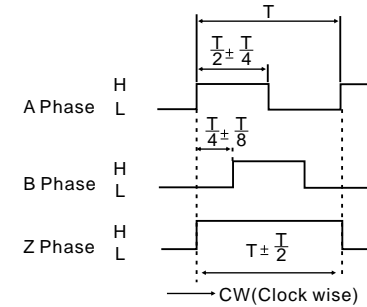
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-5400 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM\*Resolution/60
- Maximum permissible speed:** 6000 rpm
- Shaft loading radial:** 10N
- Shaft loading thrust:** 20N
- Weight:** Approx 0.25KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:**  $1.5 \times 10^{-3}$  N.m Maximum

## Output circuits and wave forms

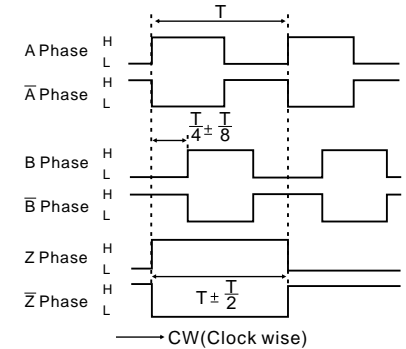
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

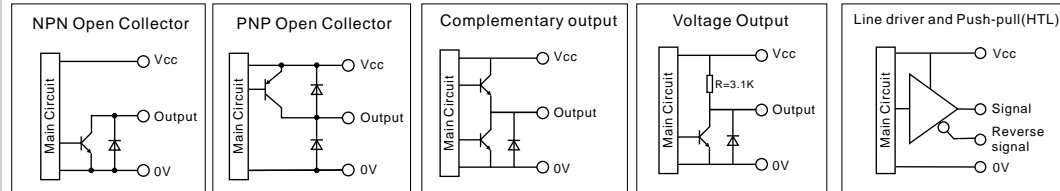


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

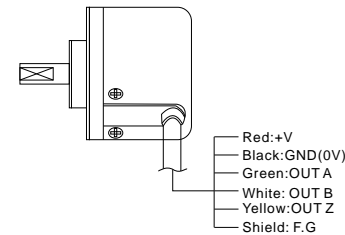


### Output circuits

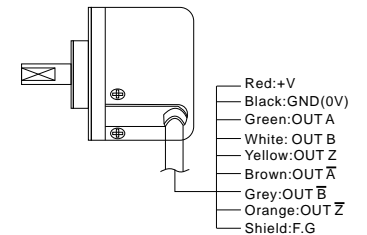


## Wiring Details

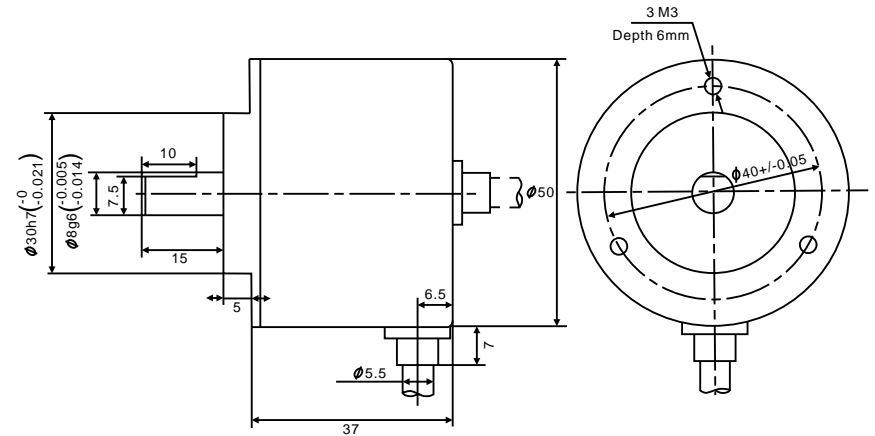
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)



## Mounting and Dimensions



**M50SA(Mounting Type A)**

# Incremental 58-mm-Dia. Rotary Encoder

M58SA/M58SB/M58SC/M58SD

General purpose encoder with external Diameter of 58mm

- Incremental model
- External diameter of 58mm
- Resolution up to 5400 ppr.
- Various output type
- Solid shaft with Dia at 5/6/10 mm



## Ordering Information

M58SA/M58SB/M58SC/M58SD -

1                      2    3    4    5    6    7

### Section 1: Basic model name

- M58SA:** 58mm Rotary encoder (Mounting type A)
- M58SB:** 58mm Rotary encoder (Mounting type B)
- M58SC:** 58mm Rotary encoder (Mounting type C)
- M58SD:** 58mm Rotary encoder (Mounting type D)

Refer to drawings for the difference between M58SA/M58SB/M58SC/M58SD

### Section 2: Shaft Size

- 5:** Solid shaft with Dia at 5 mm
- 6:** Solid shaft with Dia at 6 mm
- 10:** Solid shaft with Dia at 10 mm

### Section 3: Resolution

- 10:** 10 ppr
- 20:** 20 ppr

40 50 60 80 100 120 125 150  
200 225 240 250 256 300 360 400 450  
480 500 512 600 625 720 750 800 900  
1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

### Section 4: Output phase

- 3:** A B Z
- 6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

- C:** Complementary (also known as totem pole)
- N:** NPN Open collector
- P:** PNP Open collector
- V:** Voltage output
- L:** Line driver (Power source 5VDC ONLY, Phase 6)
- T:** Push-Pull (With inverted signal, Phase 6)

### Section 6: Power Supply

- 8:** 8-30 VDC (+/- 5%)
- 5:** 5 VDC (+/- 5%)

### Section 7: Cable outgoing type

- G:** Side entry cable
- X:** Side entry plug

▲ Standard cable length is 2M

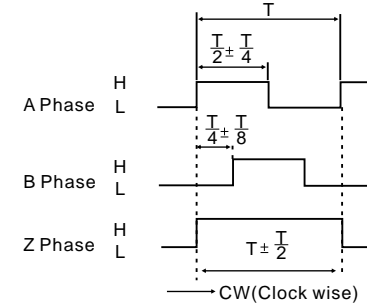
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-5400 ppr
- Current consumption:** 100mA (Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull (HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM\*Resolution/60
- Maximum permissible speed:** 6000 rpm
- Shaft loading radial:** 30N
- Shaft loading thrust:** 40N
- Weight:** Approx 0.3KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 6 x 10<sup>-3</sup> N.m Maximum

## Output circuits and wave forms

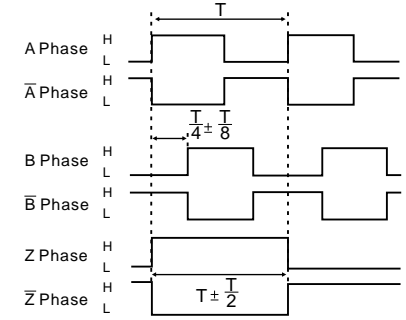
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



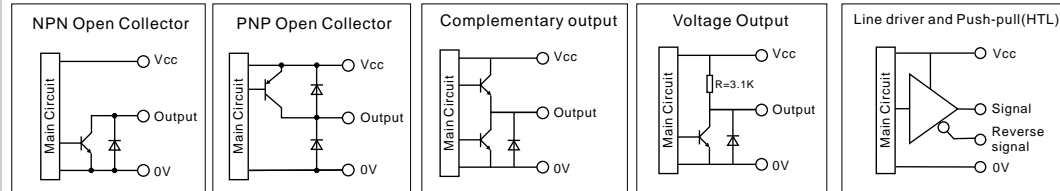
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



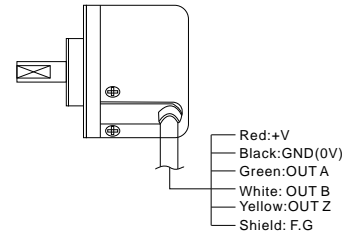
→ CW (Clock wise)

### Output circuits

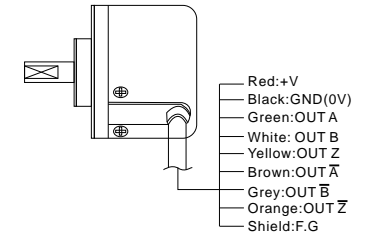


## Wiring Details

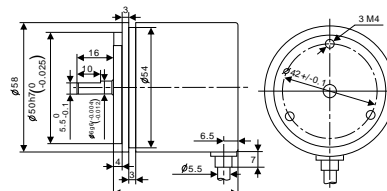
Complementary/Open collector(NPN/PNP)/Voltage output



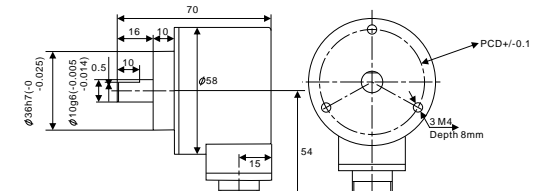
Line Driver/ Push-pull(HTL with reverse signal)



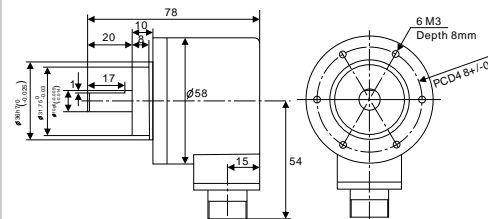
## Mounting and Dimensions



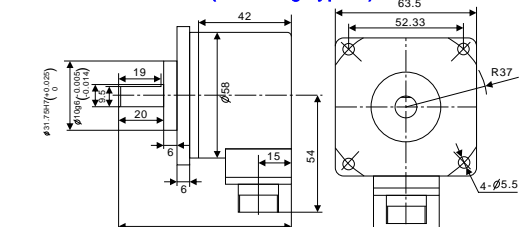
M58SA (Mounting Type A) IP64 Protection degree



M58SB (Mounting Type B)



M58SC (Mounting Type C)



M58SD (Mounting Type D, with Flange)



# Incremental 68-mm-Dia. Rotary Encoder

M68SA/M68SB

with mounting flange

General purpose encoder with external Diameter of 68mm



- Incremental model
- External diameter of 68mm
- Resolution up to 5400 ppr.
- Various output type
- Solid shaft with Dia at 15 mm
- **With mounting flange**

## Ordering Information

M68SA/M68SB-

□	□	□	□	□	□	□
1	2	3	4	5	6	7

### Section 1: Basic model name

- M68SA:** 68mm Rotary Encoder(Shape A)
- M68SB:** 68mm Rotary Encoder(Shape B)

Refer to drawings for the difference between M68SA/M68SB

### Section 2: Shaft Size

- 15:** Solid shaft with Dia at 15 mm

### Section 3: Resolution

- 10:** 10 ppr
- 20:** 20 ppr

40 50 60 80 100 120 125 150  
200 225 240 250 256 300 360 400 450  
480 500 512 600 625 720 750 800 900  
1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

### Section 4: Output phase

- 3:** A B Z
- 6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

- C:** Complementary(also known as totem pole)
- N:** NPN Open collector
- P:** PNP Open collector
- V:** Voltage output
- L:** Line driver(**Power source 5VDC ONLY, Phase 6**)
- T:** Push-Pull(**With inverted signal, Phase 6**)

### Section 6: Power Supply

- 8:** 8-30 VDC(+/- 5%)
- 5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

- G:** Side entry cable
- X:** Side entry plug

▲Standard cable length is 2M

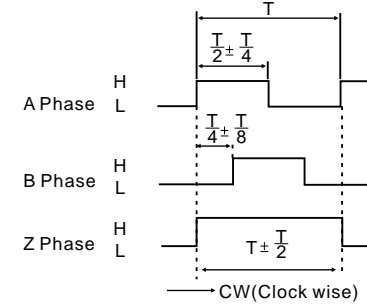
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-5400 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM\*Resolution/60
- Maximum permissible speed:** 6000 rpm
- Shaft loading radial:** 50N
- Shaft loading thrust:** 85N
- Weight:** Approx 0.6KG
- Protection level:** IP54(IP64 available on request)
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-200 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 5 x 10<sup>-2</sup> N.m Maximum

## Output circuits and wave forms

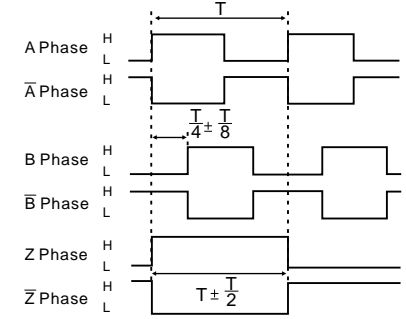
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



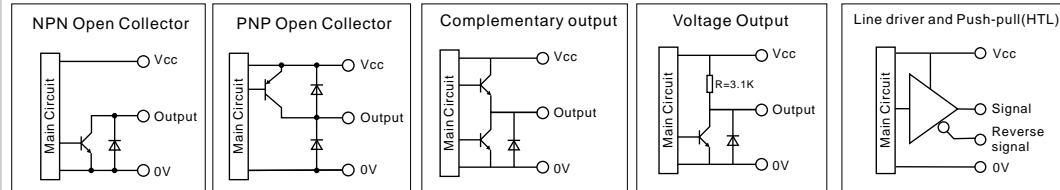
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



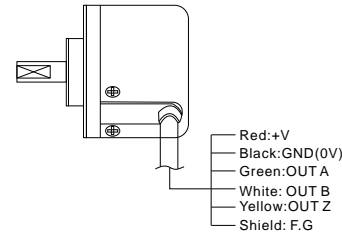
CW(Clock wise)

### Output circuits

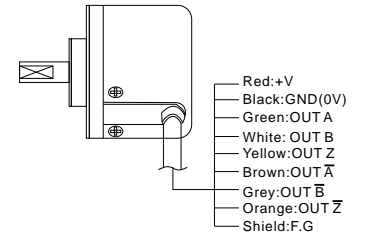


## Wiring Details

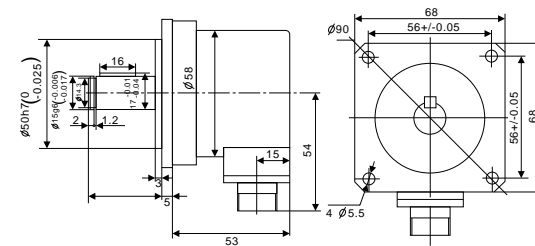
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)

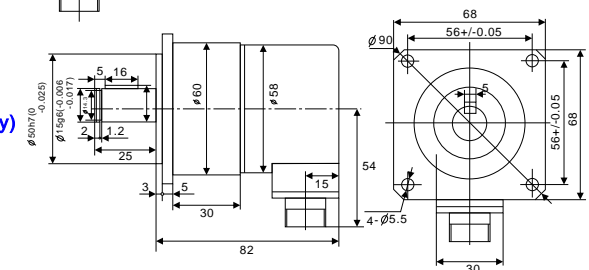


## Mounting and Dimensions



M68SA(Shape A, Shorter encoder Body, popular)

M68SB(Shape B, Longer encoder body)



# Incremental 70-mm-Dia. Rotary Encoder

M70SA

General purpose encoder with external Diameter of 70mm

- Incremental model
- External diameter of 70mm
- Resolution up to 5400 ppr.
- Various output type
- Solid shaft with Dia at 8 mm



## Ordering Information

M70SA -

1 2 3 4 5 6 7

### Section 1: Basic model name

**M70SA:** 70mm Rotary Encoder(Mounting Type A)

### Section 2: Shaft Size

**8:** Solid shaft with Dia at 8 mm

### Section 3: Resolution

**10:** 10 ppr  
**20:** 20 ppr

40 50 60 80 100 120 125 150  
200 225 240 250 256 300 360 400 450  
480 500 512 600 625 720 750 800 900  
1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

### Section 4: Output phase

**3:** A B Z  
**6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

**C:** Complementary(also known as totem pole)  
**N:** NPN Open collector  
**P:** PNP Open collector  
**V:** Voltage output  
**L:** Line driver(**Power source 5VDC ONLY, Phase 6**)  
**T:** Push-Pull(**With inverted signal, Phase 6**)

### Section 6: Power Supply

**8:** 8-30 VDC(+/- 5%)  
**5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

**G:** Side entry cable  
**X:** Side entry plug

▲ **Standard cable length is 2M**

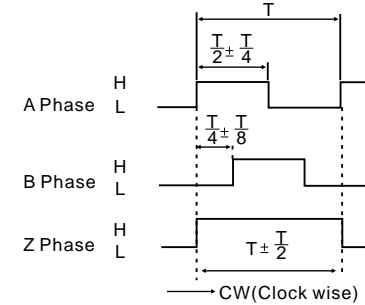
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC  
**Resolution:** 5-5400 ppr  
**Current consumption:** 100mA(Load disconnected)  
**Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)  
**Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)  
**Frequency:** 100K HZ Frequency=RPM\*Resolution/60  
**Maximum permissible speed:** 6000 rpm  
**Shaft loading radial:** 25N  
**Shaft loading thrust:** 35N  
**Weight:** Approx 0.38KG  
**Protection level:** IP50  
**Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)  
**Vibration resistance:** 50m/s, 10-200 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions  
**Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions  
**Starting torque:** 5 x 10<sup>-3</sup> N.m Maximum

## Output circuits and wave forms

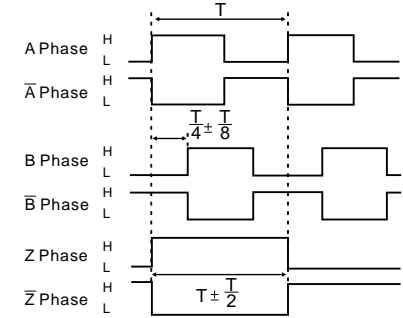
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

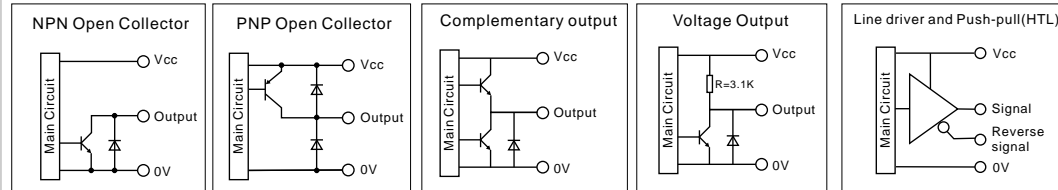


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

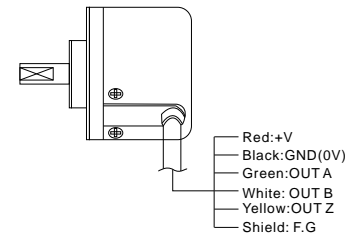


### Output circuits

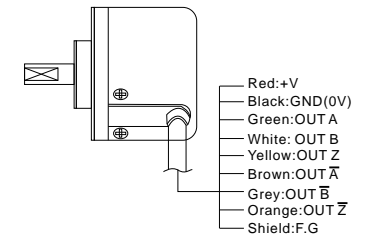


## Wiring Details

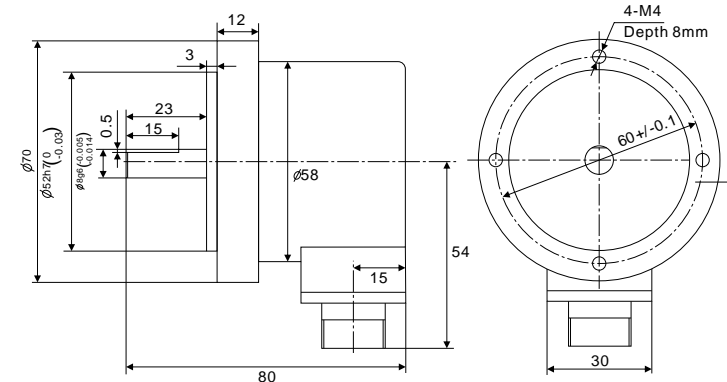
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



## Mounting and Dimensions



**M70SA(Mounting Type A)**



# Incremental 115-mm-Dia. Rotary Encoder

M115SA

General purpose encoder with external Diameter of 115mm



- Incremental model
- External diameter of 115mm
- Resolution up to 5400 ppr.
- Various output type
- Solid shaft with Dia at 11 mm

## Ordering Information

M115SA-

1 2 3 4 5 6 7

### Section 1: Basic model name

**M115SA:** 115mm Rotary Encoder(Mounting Type A)

### Section 2: Shaft Size

**11:** Solid shaft with Dia at 11 mm

### Section 3: Resolution

**10:** 10 ppr  
**20:** 20 ppr

40 50 60 80 100 120 125 150  
200 225 240 250 256 300 360 400 450  
480 500 512 600 625 720 750 800 900  
1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

### Section 4: Output phase

**3:** A B Z  
**6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

**C:** Complementary(also known as totem pole)  
**N:** NPN Open collector  
**P:** PNP Open collector  
**V:** Voltage output  
**L:** Line driver(**Power source 5VDC ONLY, Phase 6**)  
**T:** Push-Pull(**With inverted signal, Phase 6**)

### Section 6: Power Supply

**8:** 8-30 VDC(+/- 5%)  
**5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

**G:** Side entry cable  
**X:** Side entry plug

▲Standard cable length is 2M

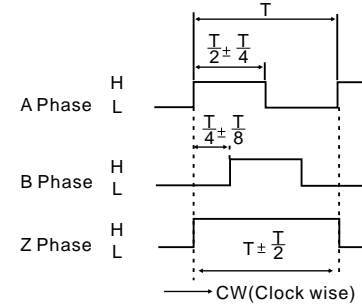
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC  
**Resolution:** 5-5400 ppr  
**Current consumption:** 100mA(Load disconnected)  
**Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)  
**Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)  
**Frequency:** 100K HZ Frequency=RPM\*Resolution/60  
**Maximum permissible speed:** 6000 rpm  
**Shaft loading radial:** 25N  
**Shaft loading thrust:** 35N  
**Weight:** Approx 0.65KG  
**Protection level:** IP50  
**Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)  
**Vibration resistance:** 50m/s, 10-200 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions  
**Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions  
**Starting torque:** 5 x 10<sup>-3</sup> N.m Maximum

## Output circuits and wave forms

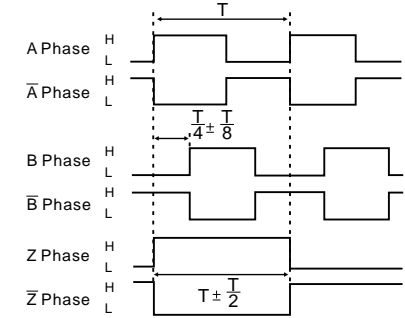
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

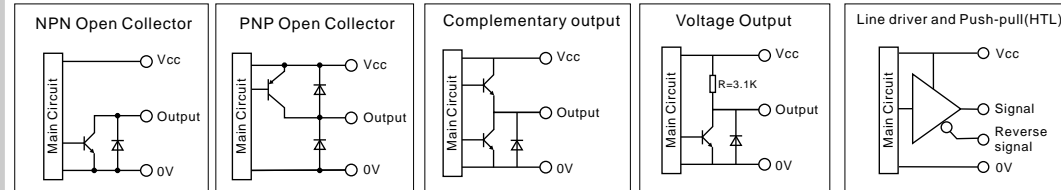


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

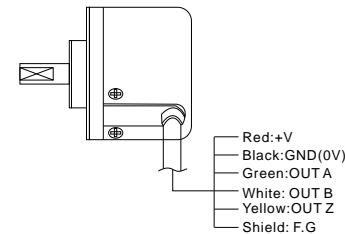


### Output circuits

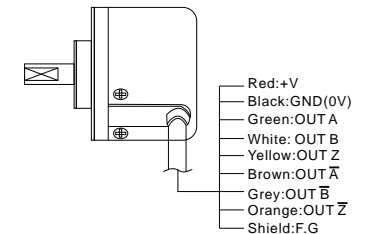


## Wiring Details

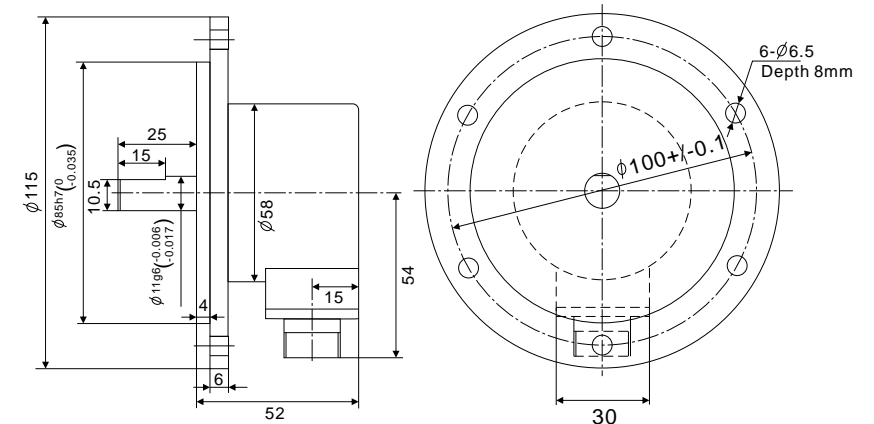
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



## Mounting and Dimensions



M115SA(Mounting Type A)

# Incremental 38 mm Dia. Rotary Encoder

M38H/M38HB

Hollow shaft type/Built-in type

General purpose Encoder with External Diameter of 38mm

- Incremental model
- External diameter of 38mm
- Resolution up to 3600 ppr.
- Various output type
- Hollow type and built-in type



## Ordering Information

M38H/M38HB-

### Section 1: Basic model name

- M38H:** 38mm Rotary Encoder(Hollow Shaft)  
**M38HB:** 38mm Rotary Encoder(Semi-Hollow Shaft)  
 Refer to drawings for the difference between M38H/M38HB

### Section 2: Inner shaft size

- 5:** 5mm  
**6:** 6mm  
**6.35:** 6.35mm Standard bore size is 8mm  
**8:** 8mm  
**10:** 10mm  
**12:** 12mm

### Section 3: Resolution

- 10:** 10 ppr  
**20:** 20 ppr
- 40 50 60 80 100 120 125 150  
 200 225 240 250 256 300 360 400 450  
 480 500 512 600 625 720 750 800 900  
 1000 1024 1080 1200...up to 3600

Not indicated resolution is customizable

### Section 4: Output phase

- 3:** A B Z  
**6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

- C:** Complementary(also known as totem pole)  
**N:** NPN Open collector  
**P:** PNP Open collector  
**V:** Voltage output  
**L:** Line driver(**Power source 5VDC ONLY, Phase 6**)  
**T:** Push-Pull(**With inverted signal, Phase 6**)

### Section 6: Power Supply

- 8:** 8-30 VDC(+/- 5%)  
**5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

- G:** Side entry cable  
 ▲Standard cable length is 2M

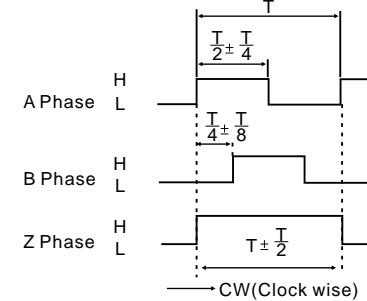
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC  
**Resolution:** 1-3600 ppr  
**Current consumption:** 100mA(Load disconnected)  
**Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)  
**Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)  
**Frequency:** 100K HZ Frequency=RPM\*Resolution/60  
**Maximum permissible speed:** 4000 rpm  
**Shaft loading radial:** 10N  
**Shaft loading thrust:** 20N  
**Weight:** Approx 0.2KG  
**Protection level:** IP50  
**Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)  
**Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions  
**Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions  
**Starting torque:** 1.5 x 10<sup>-3</sup> N.m Maximum

## Output circuits and wave forms

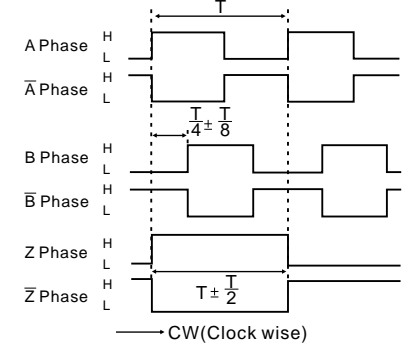
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

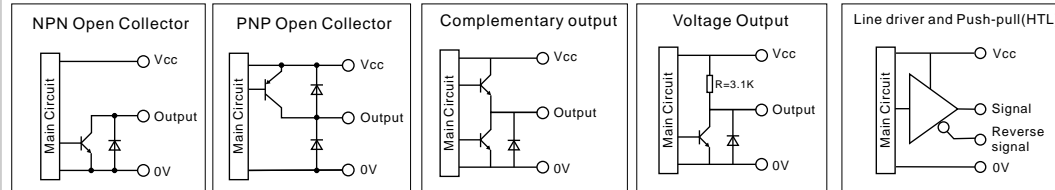


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

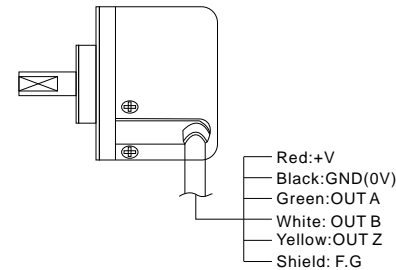


### Output circuits

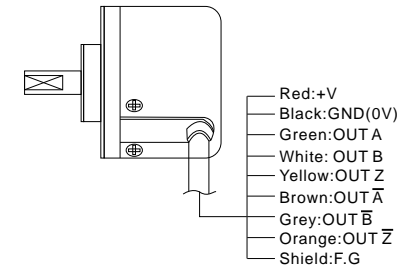


## Wiring Details

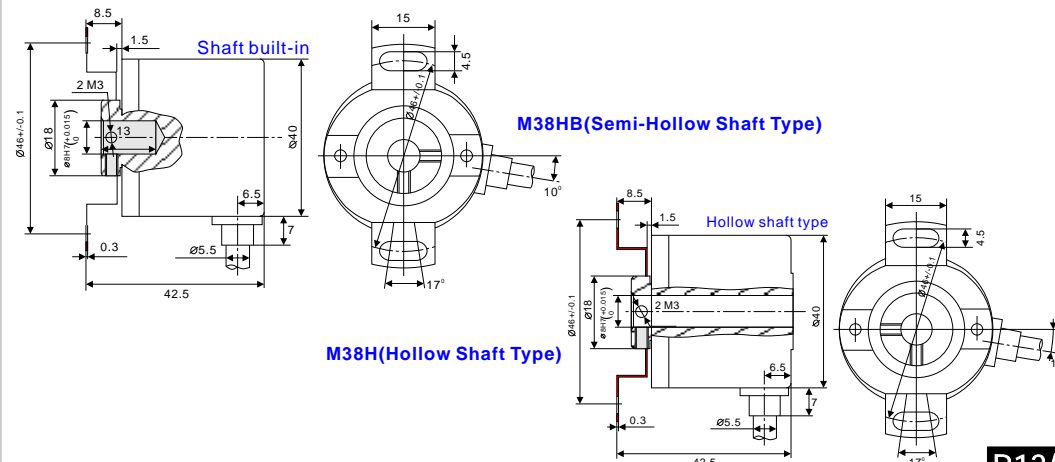
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)



## Mounting and Dimensions



# Incremental 40 mm Dia. Rotary Encoder

M40H

Hollow shaft type

General purpose Encoder with External Diameter of 40mm

- Incremental model
- External diameter of 40mm
- Resolution up to 3600 ppr.
- Various output type
- Hollow type



## Ordering Information

M40H-

1 2 3 4 5 6 7

### Section 1: Basic model name

**M40H:** 40mm Rotary Encoder(Hollow Shaft)

### Section 2: Inner shaft size

- 5:** 5mm
- 6:** 6mm
- 6.35:** 6.35mm Standard size is 12mm
- 8:** 8mm
- 10:** 10mm
- 12:** 12mm

### Section 3: Resolution

- 10:** 10 ppr
- 20:** 20 ppr

40 50 60 80 100 120 125 150  
200 225 240 250 256 300 360 400 450  
480 500 512 600 625 720 750 800 900  
1000 1024 1080 1200...up to 3600

Not indicated resolution is customizable

### Section 4: Output phase

- 3:** A B Z
- 6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

- C:** Complementary(also known as totem pole)
- N:** NPN Open collector
- P:** PNP Open collector
- V:** Voltage output
- L:** Line driver (**Power source 5VDC ONLY, Phase 6**)
- T:** Push-Pull (**With inverted signal, Phase 6**)

### Section 6: Power Supply

- 8:** 8-30 VDC(+/- 5%)
- 5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

- G:** Side entry cable
- ▲ Standard cable length is 2M

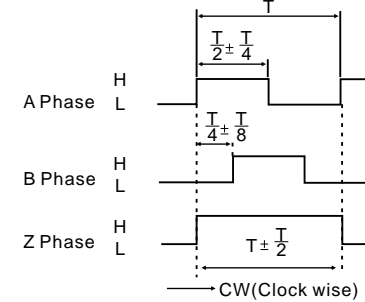
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 1-3600 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM\*Resolution/60
- Maximum permissible speed:** 4000 rpm
- Shaft loading radial:** 10N
- Shaft loading thrust:** 20N
- Weight:** Approx 0.2KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 1.5 x 10<sup>-3</sup> N.m Maximum

## Output circuits and wave forms

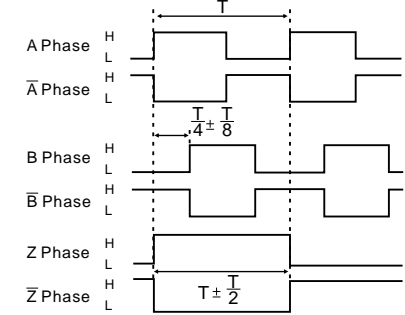
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



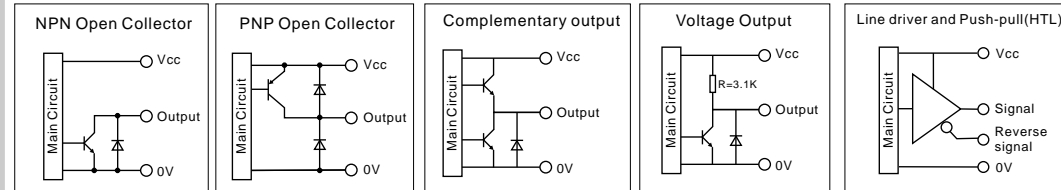
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



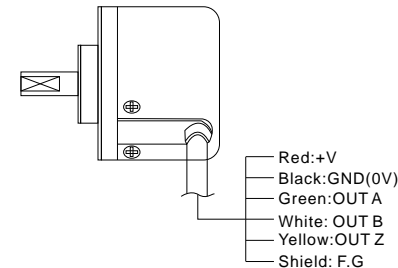
CW(Clock wise)

### Output circuits

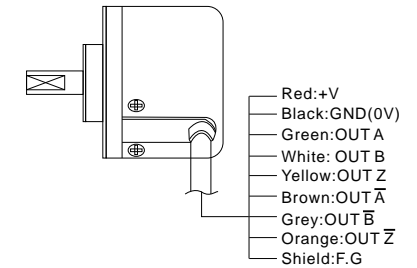


## Wiring Details

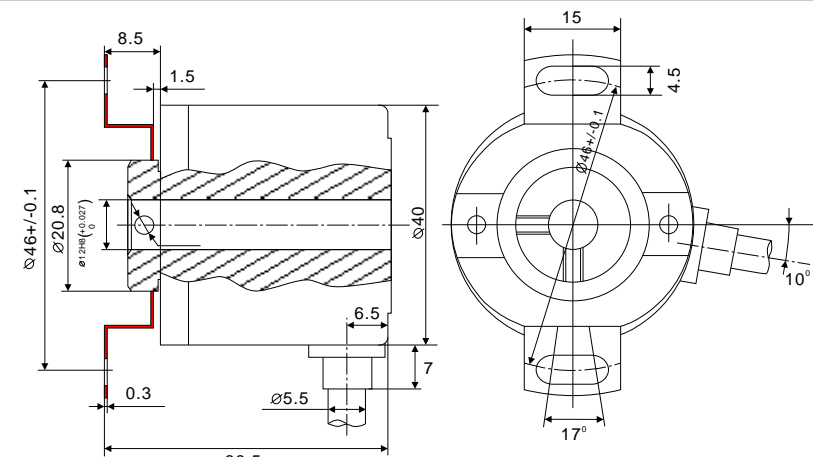
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



## Mounting and Dimensions



M40H(Hollow Shaft Type)

# Incremental 50 mm Dia. Rotary Encoder

M50H/M50HB

Hollow shaft type/Built-in type

General purpose Encoder with External Diameter of 50mm



- Incremental model
- External diameter of 50mm
- Resolution up to 5400 ppr.
- Various output type
- Hollow type and built-in type

## Ordering Information

M50H/M50HB-

1      2      3      4      5      6      7

### Section 1: Basic model name

**M50H:** 50mm Rotary Encoder(Hollow Shaft)  
**M50HB:** 50mm Rotary Encoder(Semi-Hollow Shaft)

### Section 2: Inner shaft size

**12:** 12mm  
**8:** 8mm  
**9.52:** 9.52mm  
**10:** 10mm

### Section 3: Resolution

**10:** 10 ppr  
**20:** 20 ppr

40 50 60 80 100 120 125 150  
 200 225 240 250 256 300 360 400 450  
 480 500 512 600 625 720 750 800 900  
 1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

### Section 4: Output phase

**3:** A B Z  
**6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

**C:** Complementary(also known as totem pole)  
**N:** NPN Open collector  
**P:** PNP Open collector  
**V:** Voltage output  
**L:** Line driver(**Power source 5VDC ONLY, Phase 6**)  
**T:** Push-Pull(**With inverted signal, Phase 6**)

### Section 6: Power Supply

**8:** 8-30 VDC(+/- 5%)  
**5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

**G:** Side entry cable

▲Standard cable length is 2M

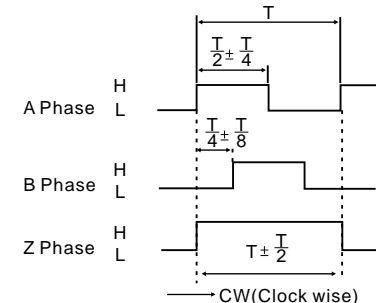
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC  
**Resolution:** 5-5400 ppr  
**Current consumption:** 100mA(Load disconnected)  
**Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)  
**Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)  
**Frequency:** 100K HZ Frequency=RPM\*Resolution/60  
**Maximum permissible speed:** 6000 rpm  
**Shaft loading radial:** 25N  
**Shaft loading thrust:** 35N  
**Weight:** Approx 0.25KG  
**Protection level:** IP50  
**Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)  
**Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions  
**Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions  
**Starting torque:** 5x 10<sup>-2</sup> N.m Maximum

## Output circuits and wave forms

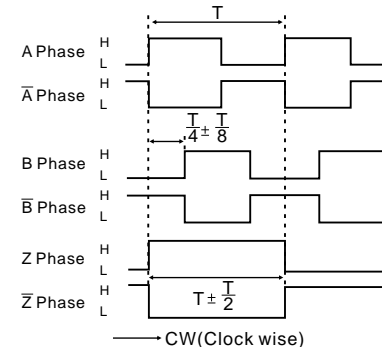
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

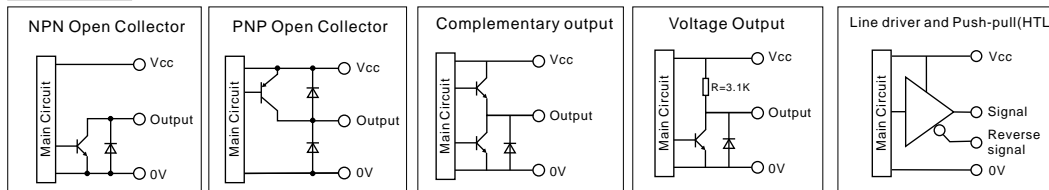


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

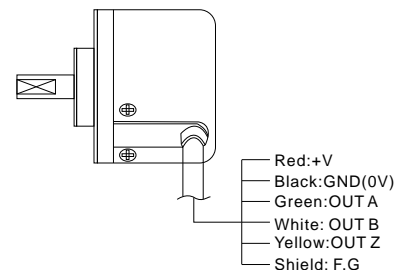


### Output circuits

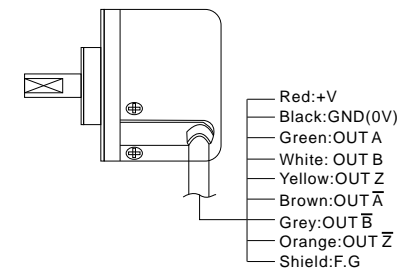


## Wiring Details

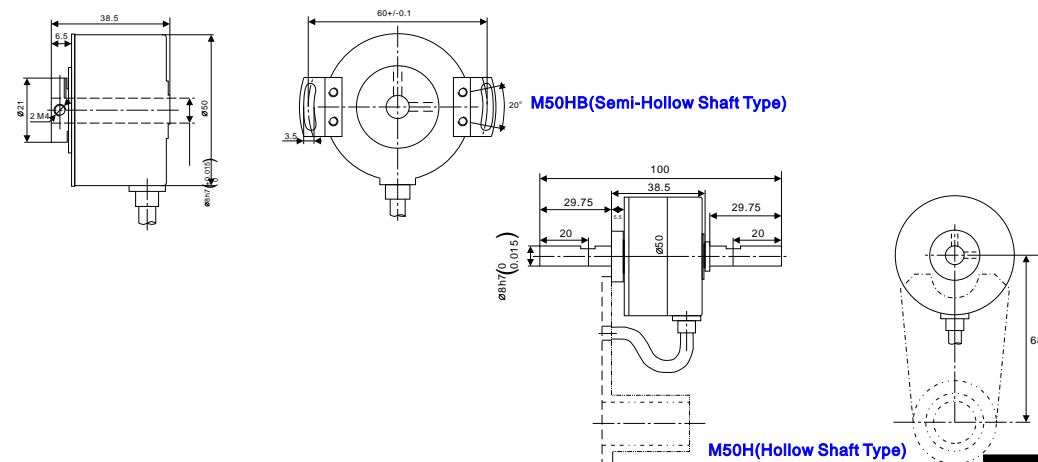
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)



## Mounting and Dimensions







# Incremental 80-mm-Dia. Rotary Encoder

M80H

Hollow shaft type

General purpose Encoder with External Diameter of 80mm

- Incremental model
- External diameter of 80mm
- Resolution up to 2500 ppr.
- Various output type
- Hollow shaft type



## Ordering Information

M80H                     

1      2      3      4      5      6      7

### Section 1: Basic model name

**M80H:** 80mm Rotary Encoder(Hollow Shaft)

### Section 2: Inner shaft size

**25:** 25mm  
**28:** 28mm  
**30:** 30mm  
**32:** 32mm  
**35:** 35mm

### Section 3: Resolution

**10:** 10 ppr  
**20:** 20 ppr

40 50 60 80 100 120 125 150  
 200 225 240 250 256 300 360 400 450  
 480 500 512 600 625 720 750 800 900  
 1000 1024 1080 1200...up to 2500

Not indicated resolution is customizable

### Section 4: Output phase

**3:** A B Z  
**6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

**C:** Complementary(also known as totem pole)  
**N:** NPN Open collector  
**P:** PNP Open collector  
**V:** Voltage output  
**L:** Line driver (**Power source 5VDC ONLY, Phase 6**)  
**T:** Push-Pull (**With inverted signal, Phase 6**)

### Section 6: Power Supply

**8:** 8-30 VDC(+/- 5%)  
**5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

**G:** Side entry cable

**▲Standard cable length is 2M**

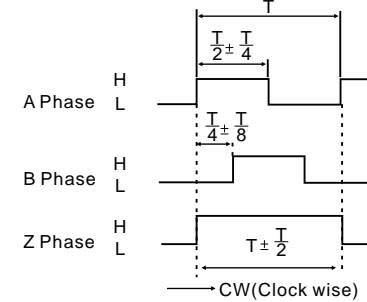
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC  
**Resolution:** 5-2500 ppr  
**Current consumption:** 100mA(Load disconnected)  
**Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)  
**Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)  
**Frequency:** 100K HZ Frequency=RPM\*Resolution/60  
**Maximum permissible speed:** 2500 rpm  
**Shaft loading radial:** 20N  
**Shaft loading thrust:** 40N  
**Weight:** Approxi 0.5KG  
**Protection level:** IP50  
**Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)  
**Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions  
**Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions  
**Starting torque:** 5x 10<sup>-2</sup> N.m Maximum

## Output circuits and wave forms

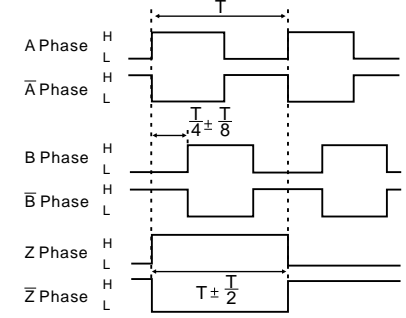
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

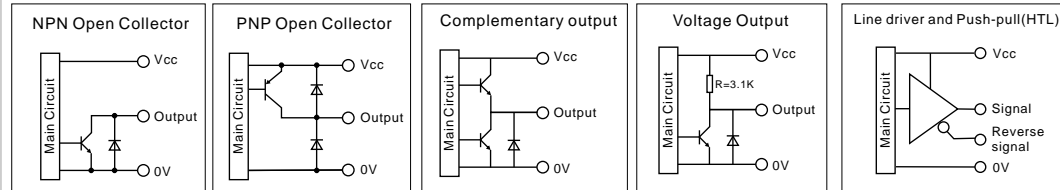


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

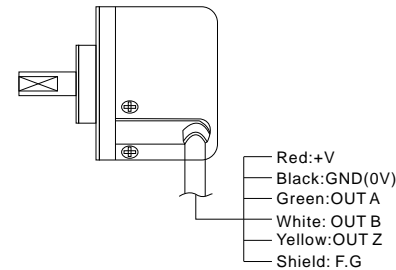


### Output circuits

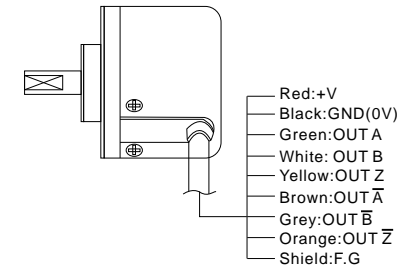


## Wiring Details

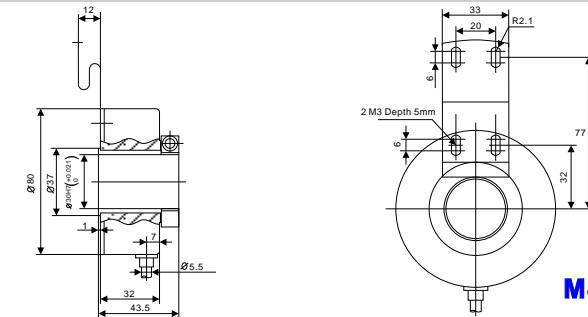
Complementary/Open collector(NPN/PNP)/Voltage output



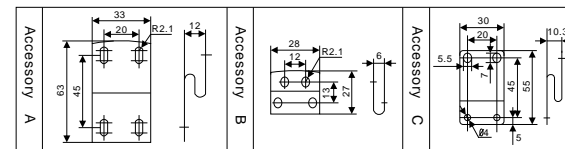
Line Driver/Push-pull(HTL with reverse signal)



## Mounting and Dimensions



**M80H(Hollow Shaft Type)**



# Incremental 100-mm-Dia. Rotary Encoder

M100H

Hollow shaft type

Encoder for elevators  
External Diameter of 100mm

- Incremental model
- External diameter of 100mm
- Resolution up to 2500 ppr.
- Various output type
- Hollow shaft type
- D-Sub Connector available



## Ordering Information

M100H-

--	--	--	--	--	--	--

### Section 1: Basic model name

**M100H:** 100mm Rotary Encoder(Hollow Shaft Type)

### Section 2: Inner shaft size

**35:** 35mm  
**38:** 38mm  
**40:** 40mm  
**42:** 42mm  
**45:** 45mm

### Section 3: Resolution

**10:** 10 ppr  
**20:** 20 ppr

40 50 60 80 100 120 125 150  
200 225 240 250 256 300 360 400 450  
480 500 512 600 625 720 750 800 900  
1000 1024 1080 1200...up to 2500

Not indicated resolution is customizable

### Section 4: Output phase

**3:** A B Z  
**6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

**C:** Complementary(also known as totem pole)  
**N:** NPN Open collector  
**P:** PNP Open collector  
**V:** Voltage output  
**L:** Line driver (**Power source 5VDC ONLY, Phase 6**)  
**T:** Push-Pull (**With inverted signal, Phase 6**)

### Section 6: Power Supply

**8:** 8-30 VDC(+/- 5%)  
**5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

**G:** Side entry cable  
**X:** Side entry D-Sub Connector

▲ **Standard cable length is 2M**

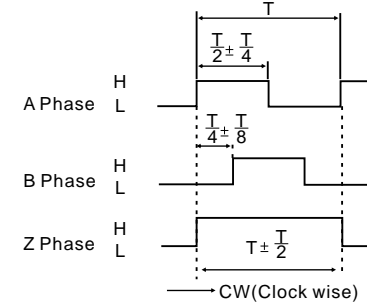
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC  
**Resolution:** 5-2500 ppr  
**Current consumption:** 100mA(Load disconnected)  
**Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)  
**Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)  
**Frequency:** 100K HZ Frequency=RPM\*Resolution/60  
**Maximum permissible speed:** 2500 rpm  
**Shaft loading radial:** 20N  
**Shaft loading thrust:** 40N  
**Weight:** Approx 0.5KG  
**Protection level:** IP50  
**Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)  
**Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions  
**Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions  
**Starting torque:** 5x 10<sup>-2</sup> N.m Maximum

## Output circuits and wave forms

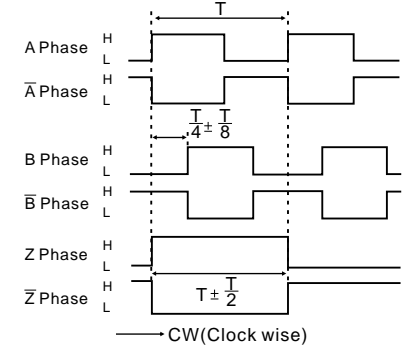
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

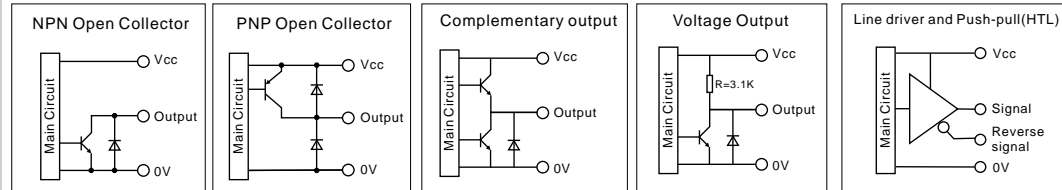


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

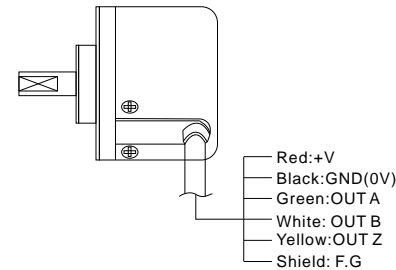


### Output circuits

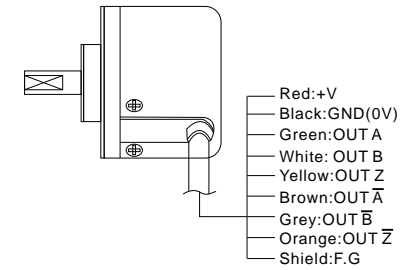


## Wiring Details

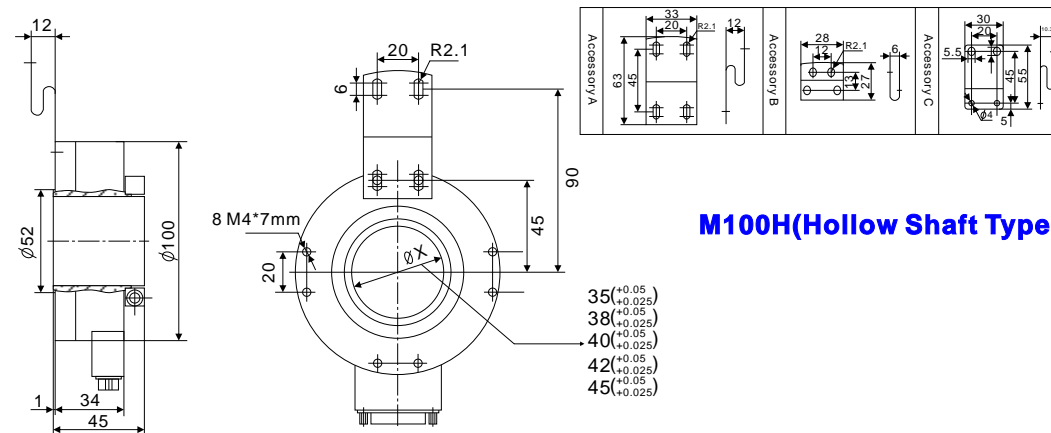
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



## Mounting and Dimensions



**M100H(Hollow Shaft Type)**

# Incremental 120-mm-Dia. Rotary Encoder

M120H

Hollow shaft type

External Diameter of 120mm

- Incremental model
- External diameter of 120mm
- Resolution up to 4096 ppr.
- Various output type
- Hollow shaft type
- D-Sub Connector available



## Ordering Information

M120H-

1	2	3	4	5	6	7

### Section 1: Basic model name

**M120H:** 120mm Rotary Encoder(Hollow Shaft)

### Section 2: Inner shaft size

**50:** 50mm  
**55:** 55mm  
**60:** 60mm  
**65:** 65mm

### Section 3: Resolution

**10:** 10 ppr  
**20:** 20 ppr

40 50 60 80 100 120 125 150  
 200 225 240 250 256 300 360 400 450  
 480 500 512 600 625 720 750 800 900  
 1000 1024 1080 1200...up to 4096

Not indicated resolution is customizable

### Section 4: Output phase

**3:** A B Z  
**6:** A  $\bar{A}$  B  $\bar{B}$  Z  $\bar{Z}$

### Section 5: Output type

**C:** Complementary(also known as totem pole)  
**N:** NPN Open collector  
**P:** PNP Open collector  
**V:** Voltage output  
**L:** Line driver (**Power source 5VDC ONLY, Phase 6**)  
**T:** Push-Pull (**With inverted signal, Phase 6**)

### Section 6: Power Supply

**8:** 8-30 VDC(+/- 5%)  
**5:** 5 VDC(+/- 5%)

### Section 7: Cable outgoing type

**G:** Side entry cable  
**X:** Side entry D-Sub Connector

▲ **Standard cable length is 2M**

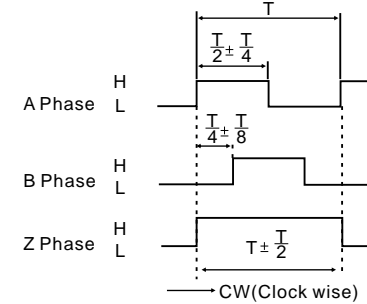
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC  
**Resolution:** 5-4096 ppr  
**Current consumption:** 100mA(Load disconnected)  
**Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)  
**Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)  
**Frequency:** 100K HZ Frequency=RPM\*Resolution/60  
**Maximum permissible speed:** 3000 rpm  
**Shaft loading radial:** 20N  
**Shaft loading thrust:** 40N  
**Weight:** Approx 0.65KG  
**Protection level:** IP50  
**Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)  
**Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions  
**Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions  
**Starting torque:** 5x 10<sup>-2</sup> N.m Maximum

## Output circuits and wave forms

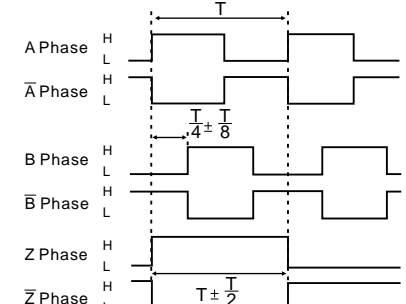
### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



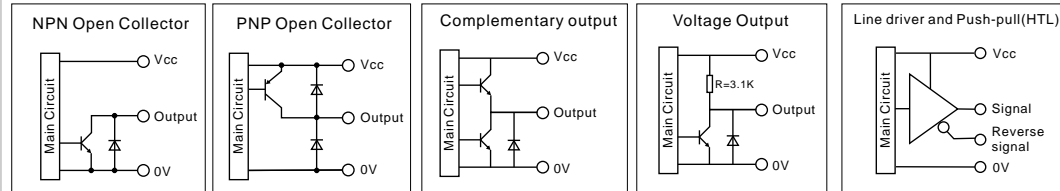
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



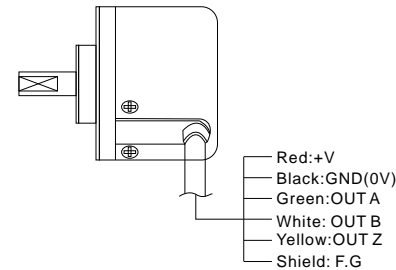
CW(Clock wise)

### Output circuits

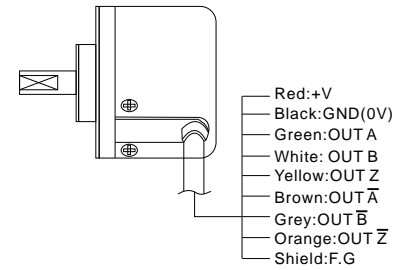


## Wiring Details

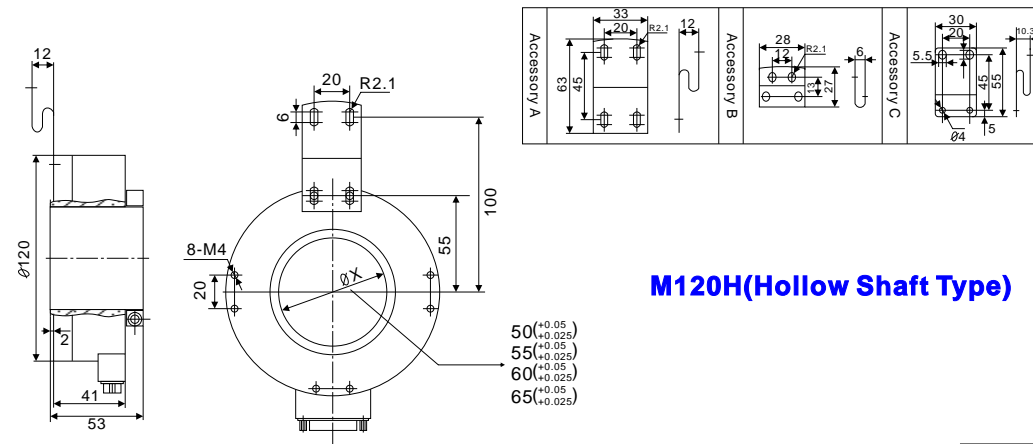
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)



## Mounting and Dimensions



**M120H(Hollow Shaft Type)**





# Measuring Wheel

## MNC

## Hollow shaft type



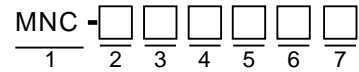
### Features:

Suitable for measuring the length or speed of target moving successively by wheel type  
The output waveform is proportional to the limit of the international measurement type (meter or inch)  
Power supply: 5VDC, 12-24VDC +/- 5%

### Application:

Packing machine, sheet manufacturing, textile machinery, and general industrial plants

## Ordering Information



### Section 1: Basic model name

**MNC:** MNC series measuring wheel

### Section 2: Output Phase

**2:** Phase A and B

### Section 3: Minimum Measuring Unit

- 1: 1mm
- 2: 1cm
- 3: 1M
- 4: 0.01 yd
- 5: 0.1 yd
- 6: 1 yd

### Section 4: Output

- C:** Complementary (also known as totem pole)
- N:** NPN Open collector
- V:** Voltage output

### Section 5: Power Supply

- 8:** 8-30 VDC (+/- 5%)
- 5:** 5 VDC (+/- 5%)

### Section 6: Cable

- G:** Side entry cable
- X:** Side entry D-Sub Connector

### Section 7: Pulse per round

- 100:** 100 ppr
  - 500:** 500 ppr
- to be specified by customers

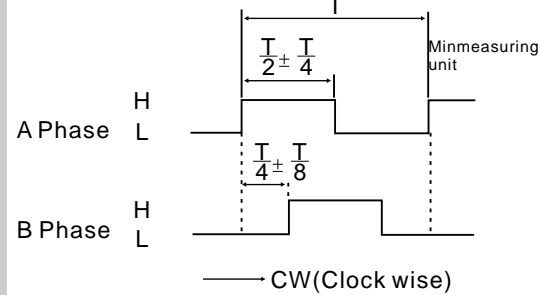
## Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
  - Resolution:** 5-5400 ppr
  - Current consumption:** 100mA (Load disconnected)
  - Load current:** 50mA maximum per channel
  - Output type:** NPN open collector/Complementary/Voltage
  - Frequency:** 100K HZ Frequency=RPM\*Resolution/60
  - Maximum permissible speed:** 6000 rpm
  - Shaft loading radial:** 25N
  - Shaft loading thrust:** 35N
  - Weight:** Approx 0.25KG
  - Protection level:** IP50
  - Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
  - Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
  - Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
  - Starting torque:** 5x 10<sup>-2</sup> N.m Maximum
- ▲ Cable with connector are available on request

## Output circuits and wave forms

### Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

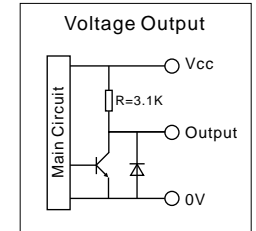
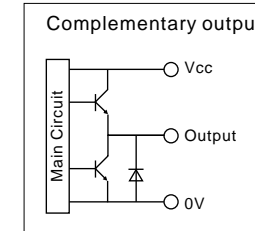
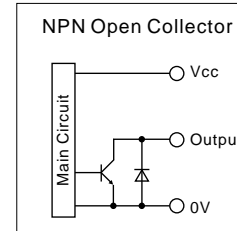


CW: As viewed from the shaft

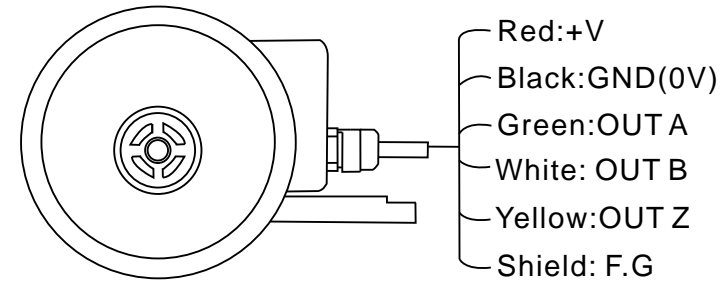
### Resolution

NO	Minimum measuring unit	Moving distance per 1 pulse	Gear rotation	Wheel circumference	Slit(P/R)
1	1mm	1mm/pulse	1:1	250mm	
2	1cm	1cm/pulse	4:1	250mm	
3	1m	1m/pulse	4:1	250mm	
4	0.01yd	0.01yd/pulse	4:1	228.6mm (0.25yd)	
5	0.1yd	0.1yd/pulse	4:1	228.6mm (0.25yd)	
6	1yd	1yd/pulse	4:1	228.6mm (0.25yd)	

### Output circuits



## Wiring Details



### Counter clockwise(CCW)

Unused wires must be insulated

The metal case and shield wire of encoder should be grounded(F.G)