

MAXWELL Product Catalog

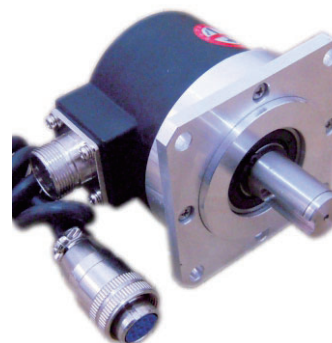
ISO9001:2008 CE



M50SA



M40SA



M68SA



SM60

- TEMPERATURE CONTROLLER
- SOLID STATE RELAY
- PROXIMITY SENSOR
- CAPACITIVE SENSOR
- **ROTARY ENCODER**
- TEMPERATURE SENSOR

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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
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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

360: 360 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: 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 10⁻³ N.m Maximum

Section 4: Output phase

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

Section 5: Output type

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

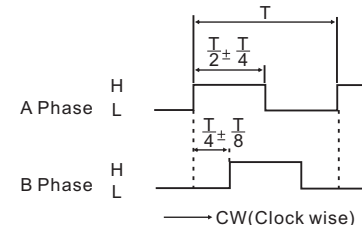
G: Side entry cable
E: Rear entry cable

▲Standard cable length is 2M

Output circuits and wave forms

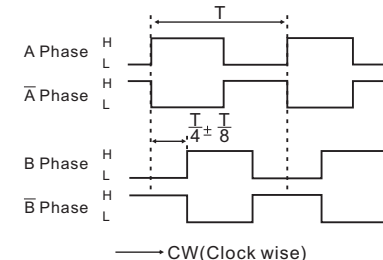
Wave forms

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

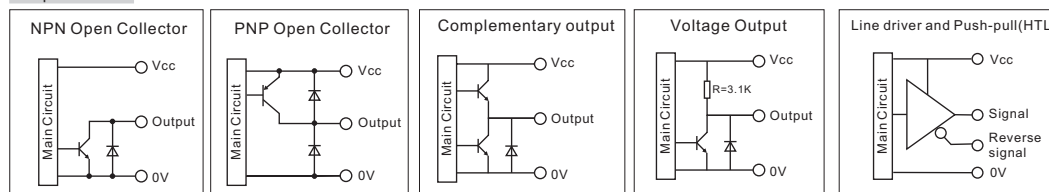


CW: As viewed from the shaft

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

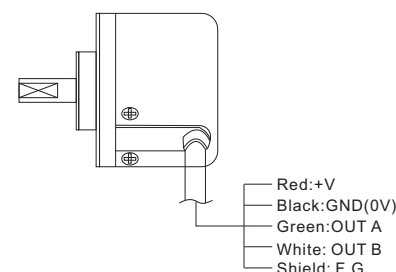


Output circuits

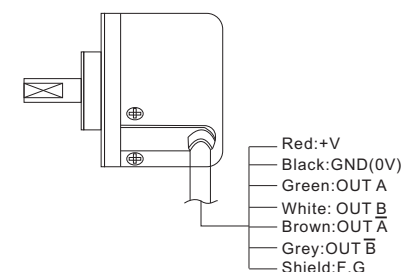


Wiring Details

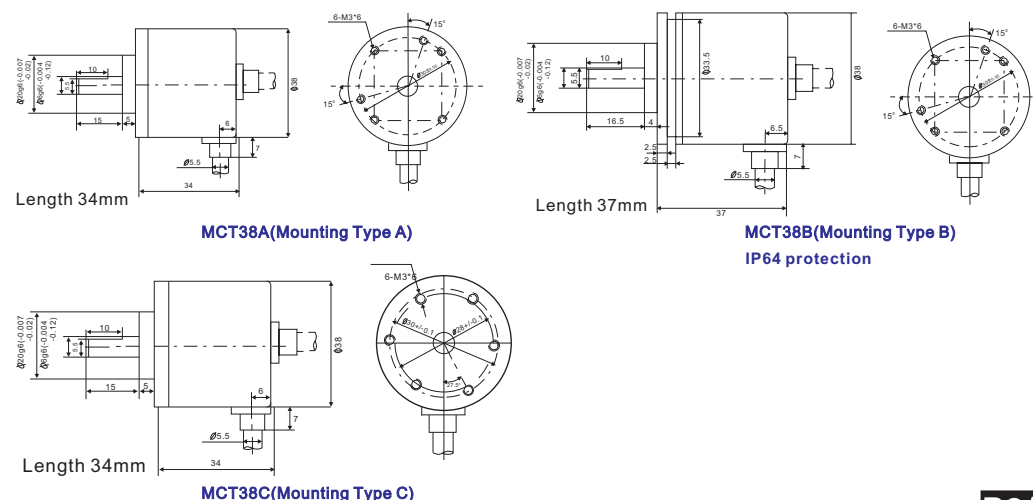
Complementary/Open collector(NPN/PNP)/Voltage output



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



Mounting and Dimensions



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-

1	2	3	4	5	6	7
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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

For 2 or 4 phase type, the option for resolution is limited as above listed 100/200/500/1000/1024. other pulse is not available

Section 4: Output phase

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

Section 5: Output type

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

G: Side entry cable
E: Rear entry cable

▲Standard cable length is 2M

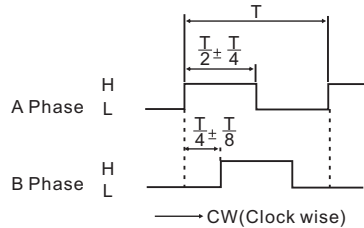
Ratings and Specifications

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 10⁻³ N.m Maximum

Output circuits and wave forms

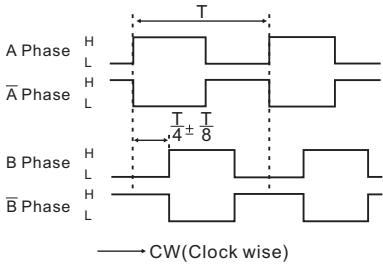
Wave forms

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

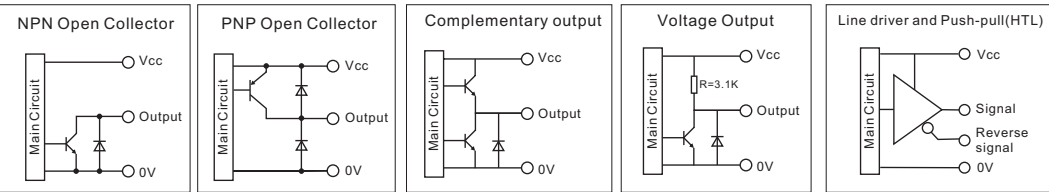


CW: As viewed from the shaft

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

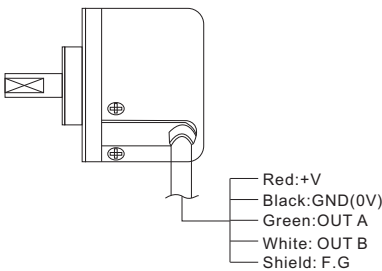


Output circuits

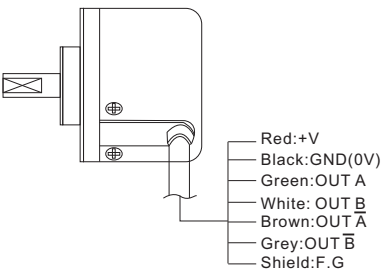


Wiring Details

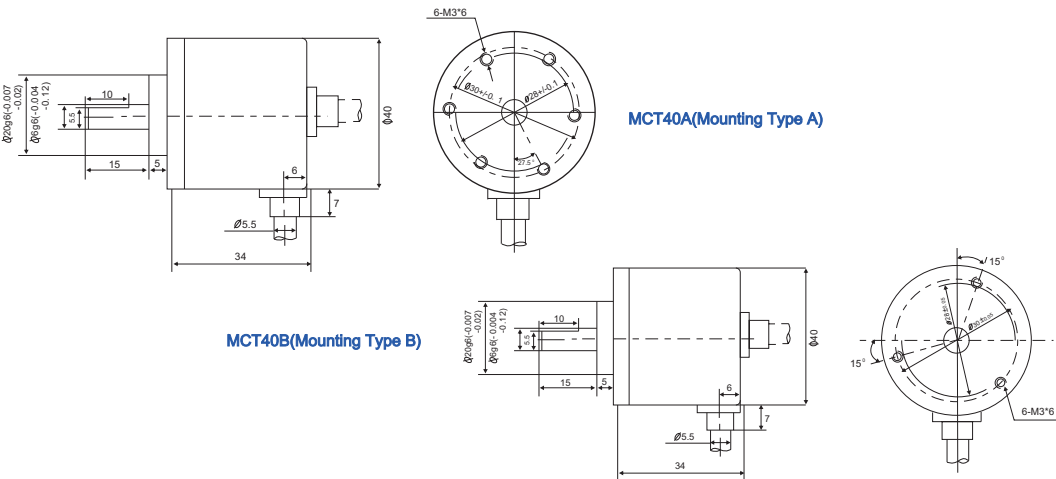
Complementary/Open collector(NPN/PNP)/Voltage output



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



Mounting and Dimensions



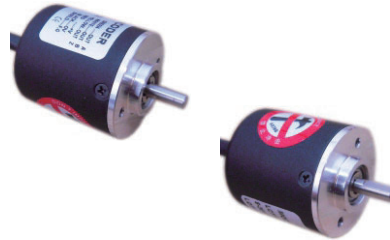
Incremental 30-mm-Dia. Rotary Encoder

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

M30SA-

1	2	3	4	5	6	7
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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

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

E: Rear Entry Cable
Cable Can Only Entry From the Rear
▲Standard cable length is 2M

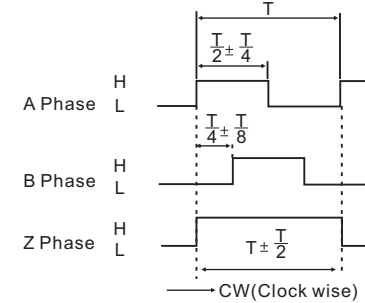
Ratings and Specifications

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 10⁻³ N.m Maximum

Output circuits and wave forms

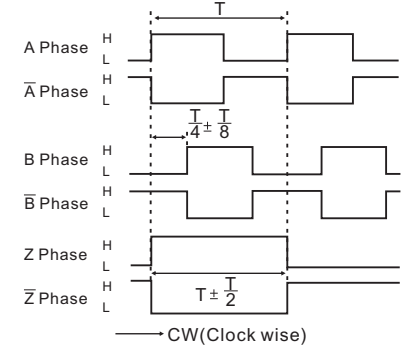
Wave forms

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



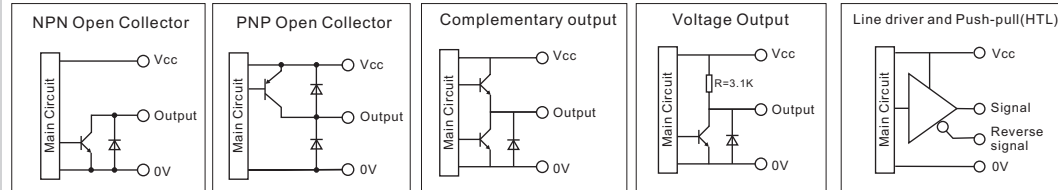
CW: As viewed from the shaft

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



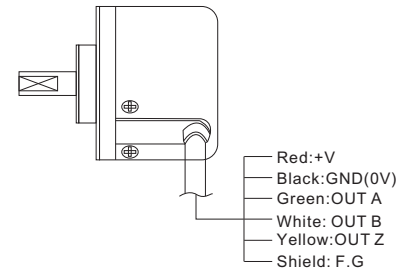
→ CW(Clock wise)

Output circuits

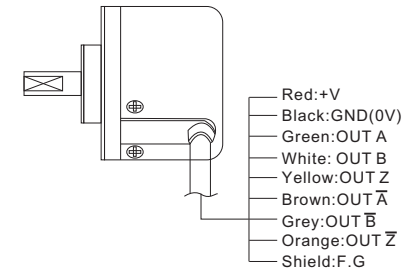


Wiring Details

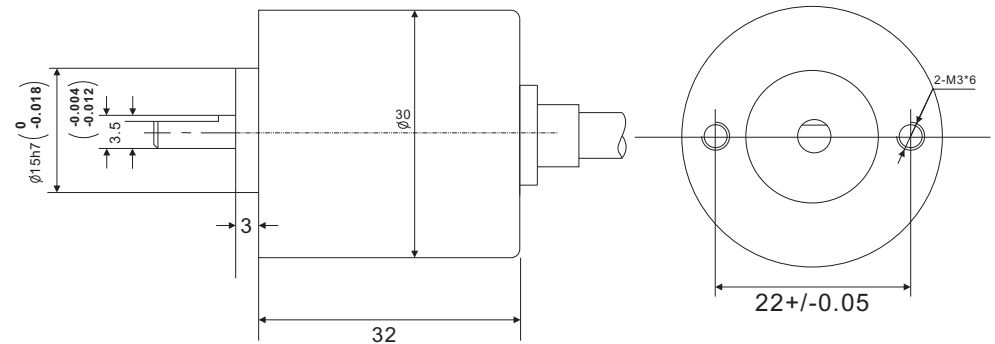
Complementary/Open collector(NPN/PNP)/Voltage output



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

M38SA/M38SB/M38SC

1	2	3	4	5	6	7
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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

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

G: Side entry cable
E: Rear entry cable

▲ **Standard cable length is 2M**

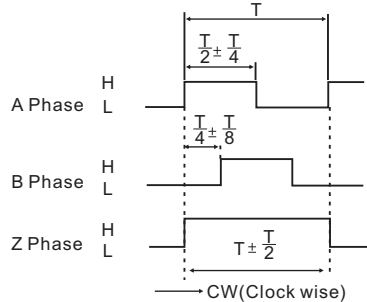
Ratings and Specifications

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: 1.5×10^{-3} N.m Maximum

Output circuits and wave forms

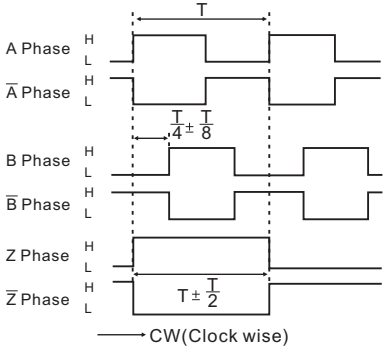
Wave forms

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



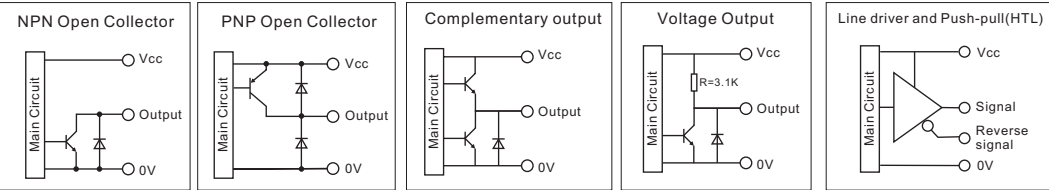
CW: As viewed from the shaft

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



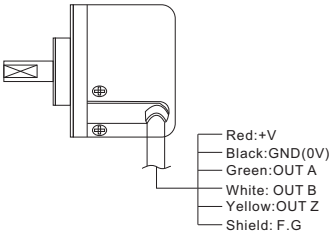
→ CW(Clock wise)

Output circuits

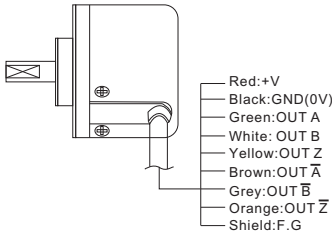


Wiring Details

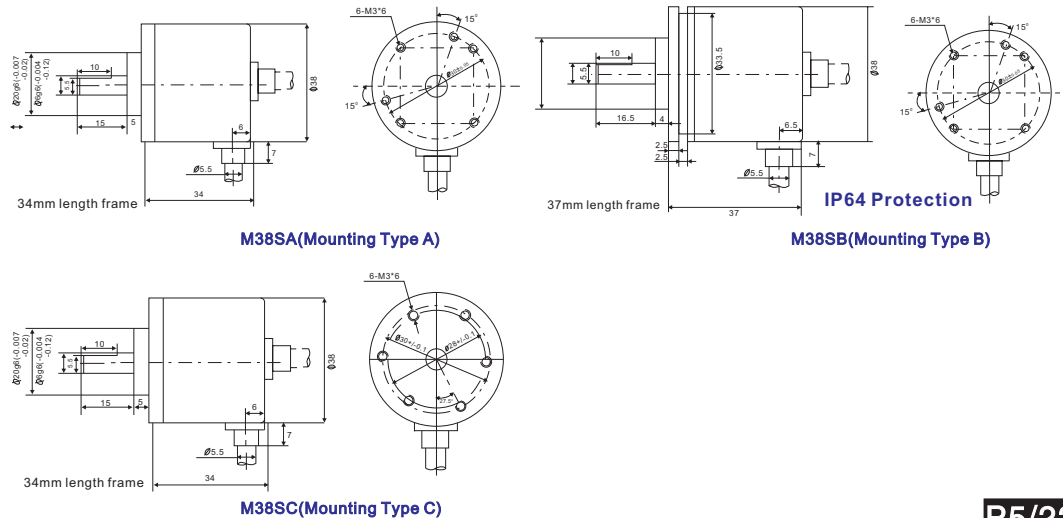
Complementary/Open collector(NPN/PNP)/Voltage output



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

M40SA/M40SB

1	2	3	4	5	6	7
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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

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

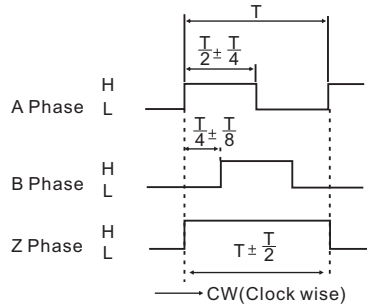
G: Side entry cable
E: Rear entry cable

▲Standard cable length is 2M

Output circuits and wave forms

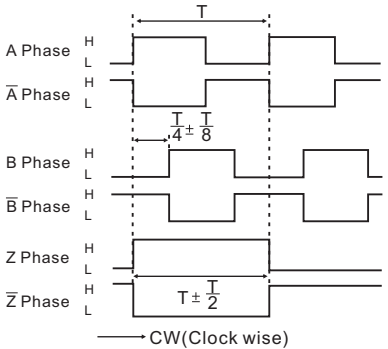
Wave forms

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

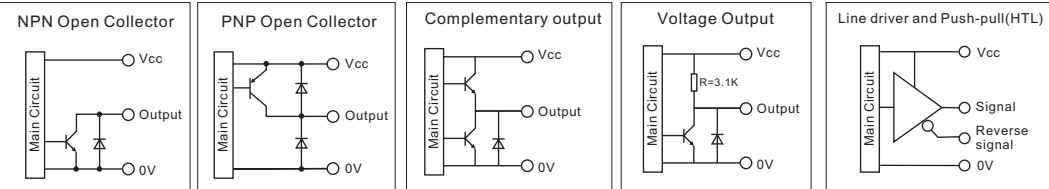


CW: As viewed from the shaft

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

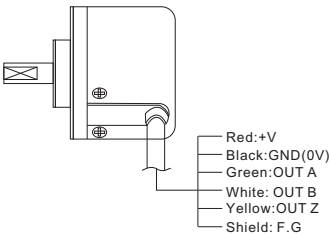


Output circuits

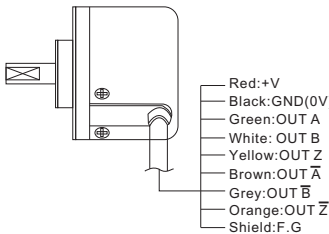


Wiring Details

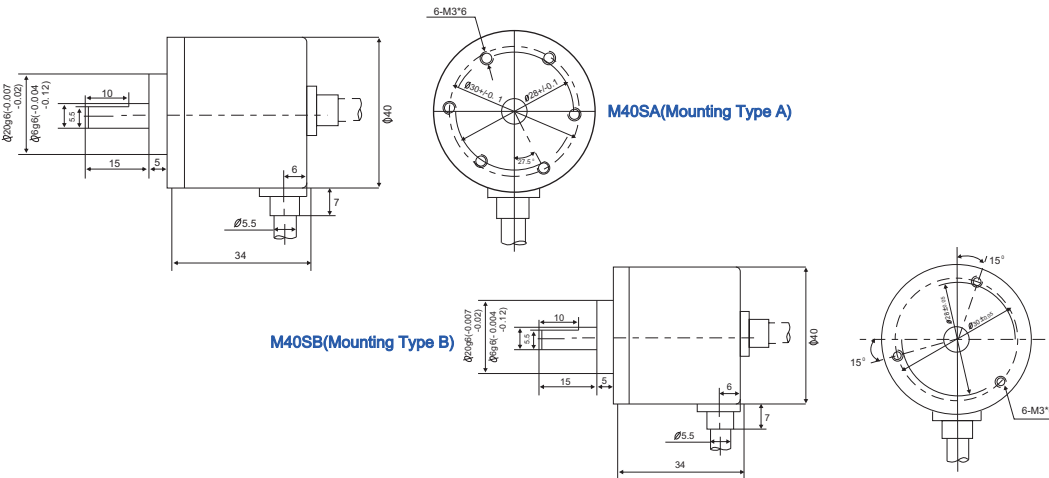
Complementary/Open collector(NPN/PNP)/Voltage output



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



Mounting and Dimensions



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 10⁻³ N.m Maximum

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
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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

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

G: Side entry cable
E: Rear entry cable

▲Standard cable length is 2M

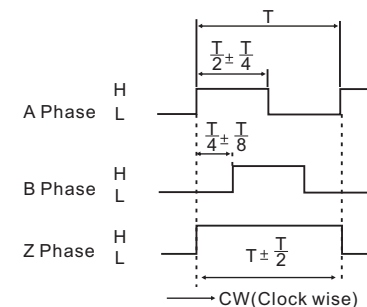
Ratings and Specifications

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 x 10⁻³ N.m Maximum

Output circuits and wave forms

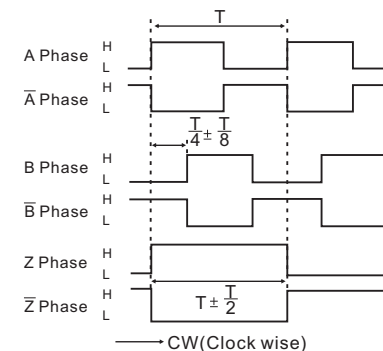
Wave forms

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

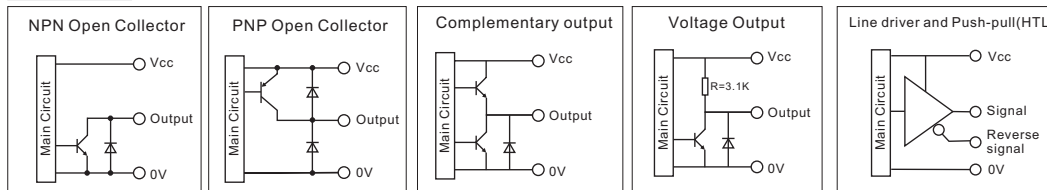


CW: As viewed from the shaft

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

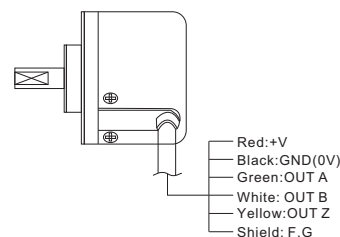


Output circuits

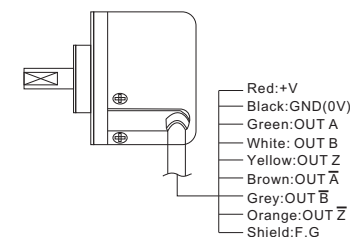


Wiring Details

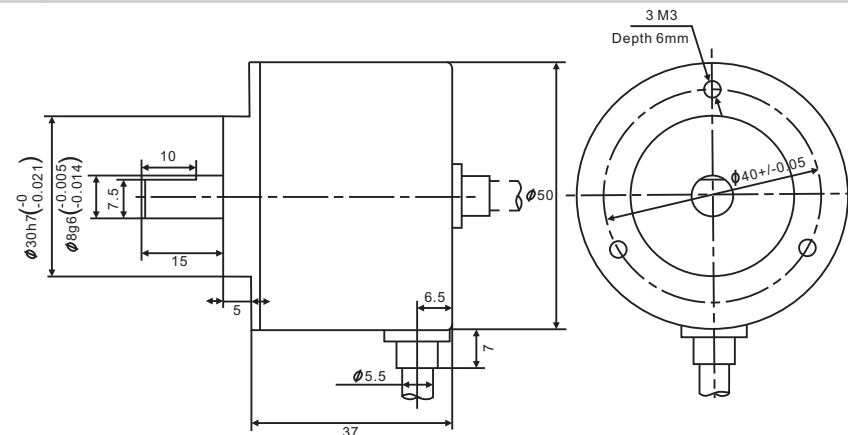
Complementary/Open collector(NPN/PNP)/Voltage output



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



Mounting and Dimensions



M50SA(Mounting Type A)

M58SA/M58SB/M58SC/M58SD

- 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 -

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**

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

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

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

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

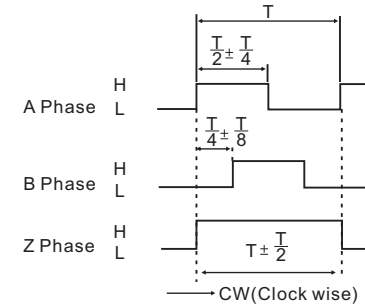
30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

G: Side entry cable
X: Side entry plug

▲ Standard cable length is 2M

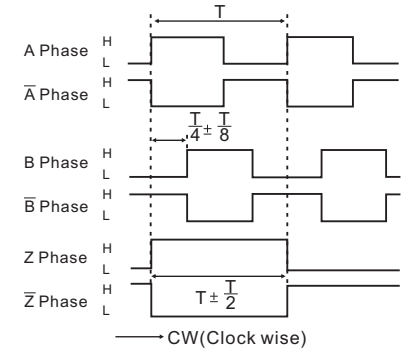
Wave forms

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

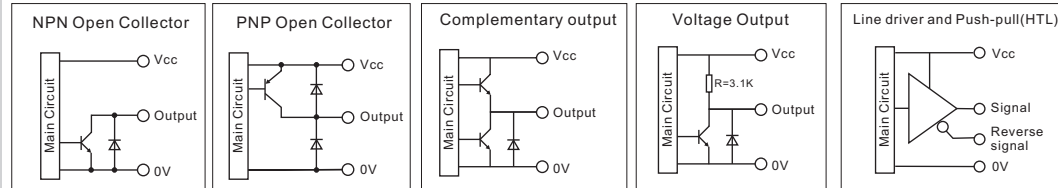


CW: As viewed from the shaft

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

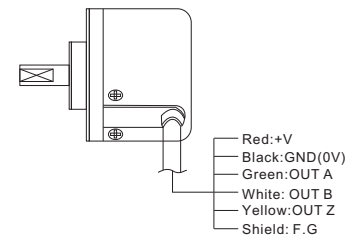


Output circuits

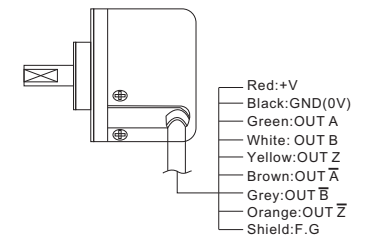


Wiring Details

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



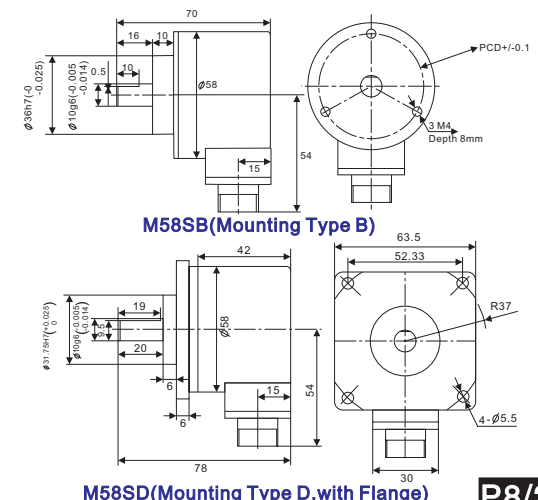
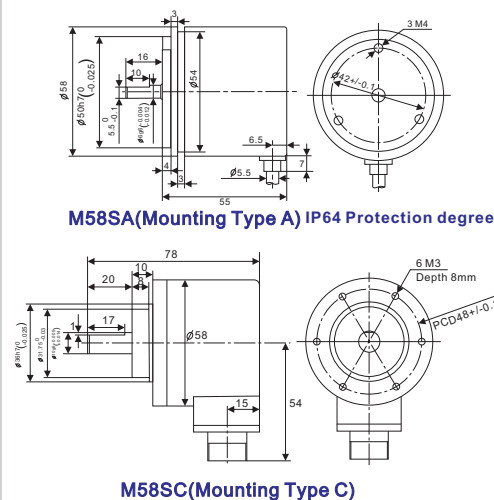
Line Driver/Push-pull(HTL with reverse signal)



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: 6×10^{-3} N.m Maximum

Mounting and Dimensions



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

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

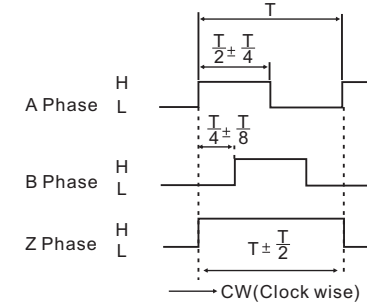
G: Side entry cable
X: Side entry plug

▲Standard cable length is 2M

Output circuits and wave forms

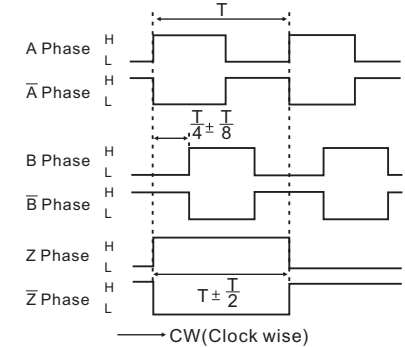
Wave forms

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

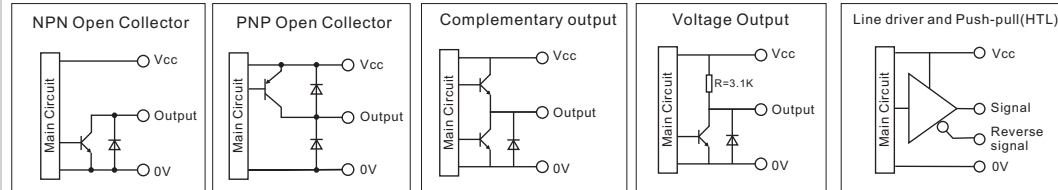


CW: As viewed from the shaft

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

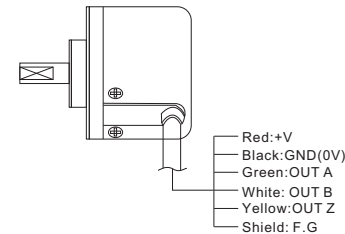


Output circuits

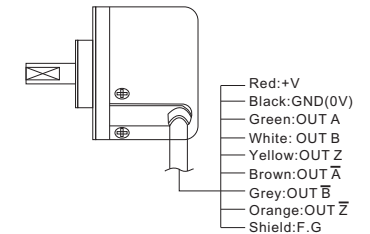


Wiring Details

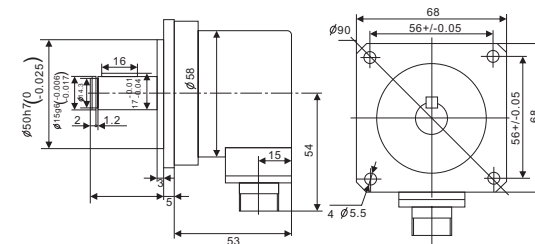
Complementary/Open collector(NPN/PNP)/Voltage output



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

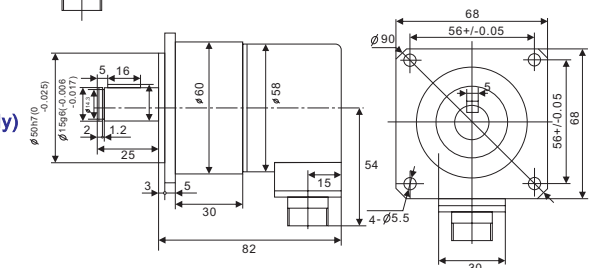


Mounting and Dimensions



M68SA(Shape A, Shorter encoder Body, popular)

M68SB(Shape B, Longer encoder body)



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 10⁻² N.m Maximum

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

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

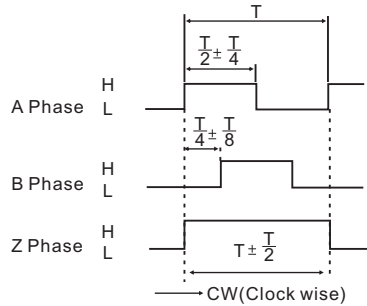
G: Side entry cable
X: Side entry plug

▲ Standard cable length is 2M

Output circuits and wave forms

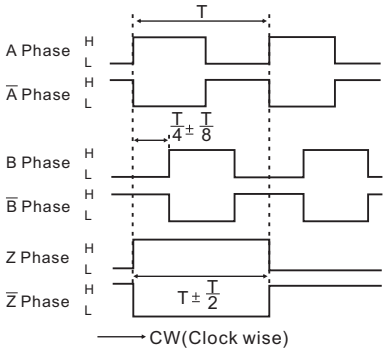
Wave forms

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



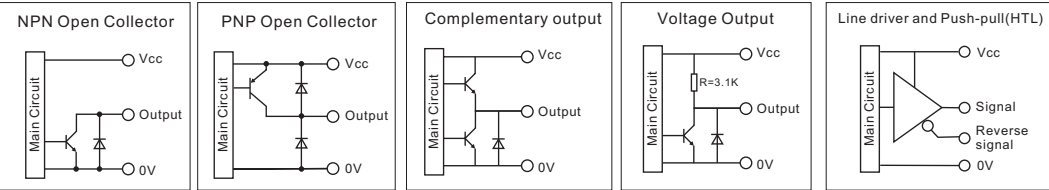
CW: As viewed from the shaft

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



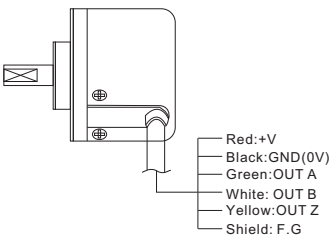
→ CW(Clock wise)

Output circuits

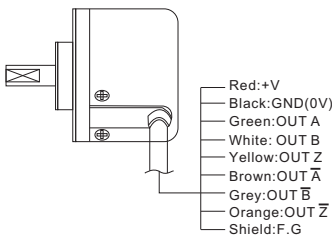


Wiring Details

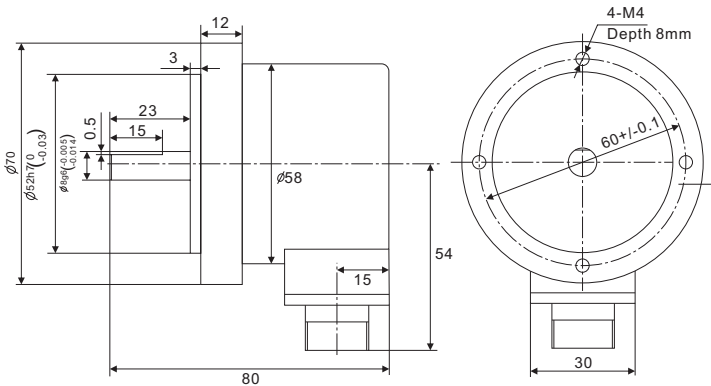
Complementary/Open collector(NPN/PNP)/Voltage output



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



Mounting and Dimensions



M70SA(Mounting Type A)

Ratings and Specifications

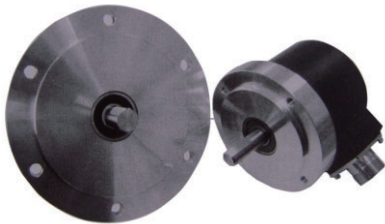
- Power supply:** 5 VDC / 8-30 VDC
Resolution: 5-5400 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 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 10⁻³ N.m Maximum

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

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

G: Side entry cable
X: Side entry plug

▲Standard cable length is 2M

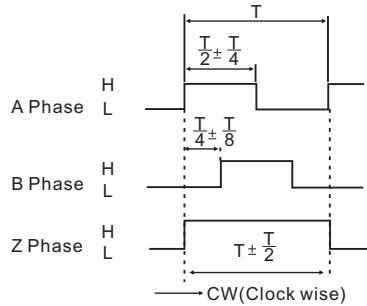
Ratings and Specifications

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 10⁻³ N.m Maximum

Output circuits and wave forms

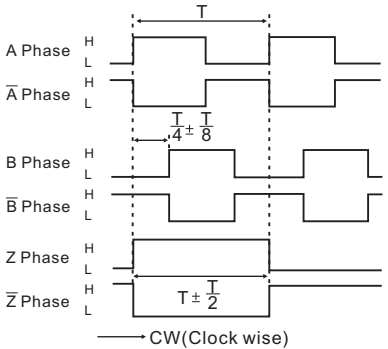
Wave forms

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

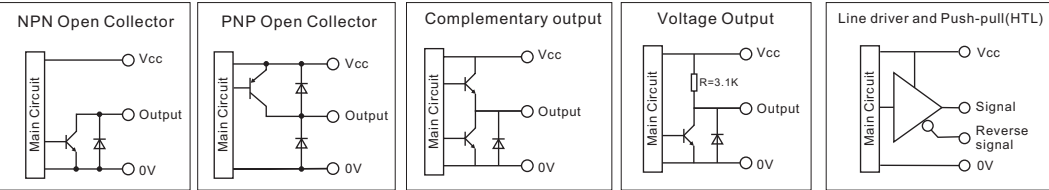


CW: As viewed from the shaft

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

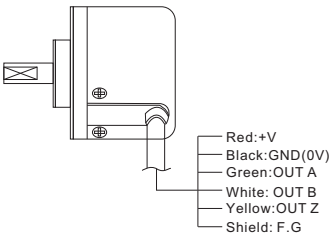


Output circuits

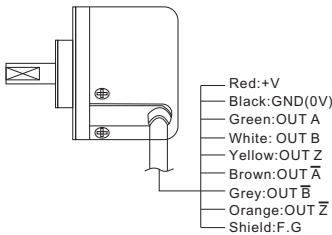


Wiring Details

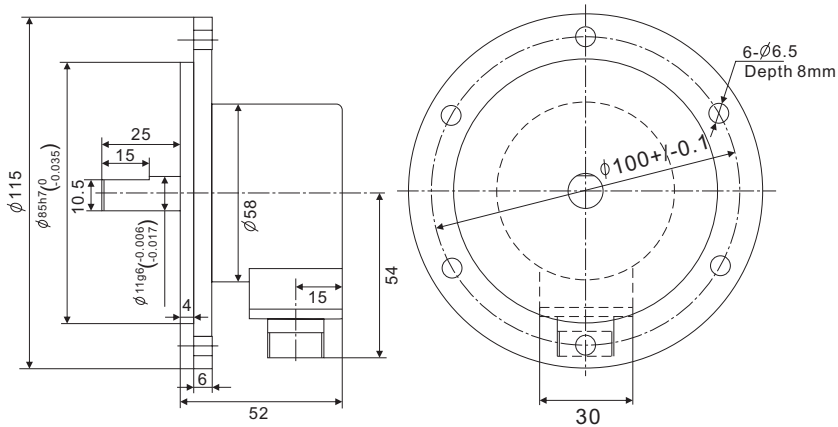
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/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-

1	2	3	4	5	6	7
---	---	---	---	---	---	---

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
8: 8mm
10: 10mm
12: 12mm
- Standard bore size is 8mm

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

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

- G:** Side entry cable

▲Standard cable length is 2M

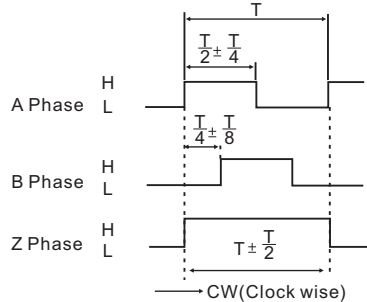
Ratings and Specifications

- 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 10⁻³ N.m Maximum

Output circuits and wave forms

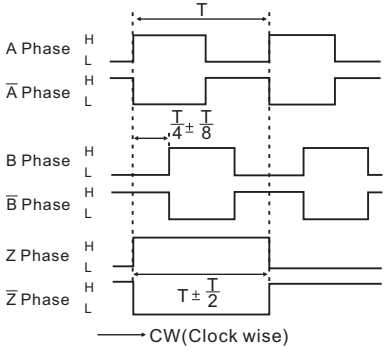
Wave forms

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

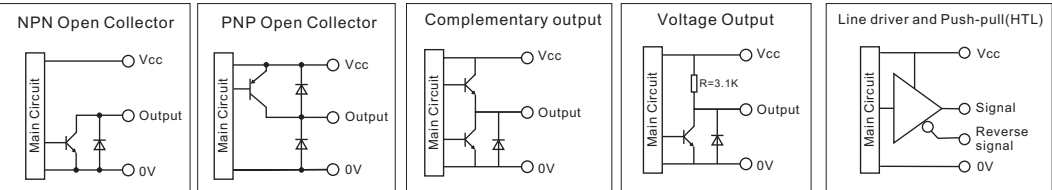


CW: As viewed from the shaft

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

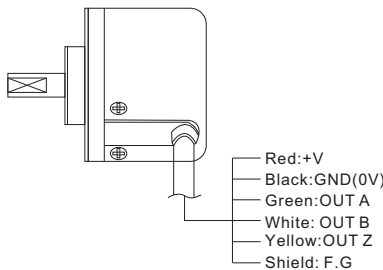


Output circuits

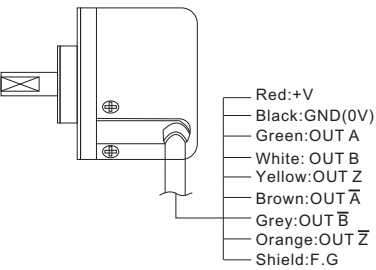


Wiring Details

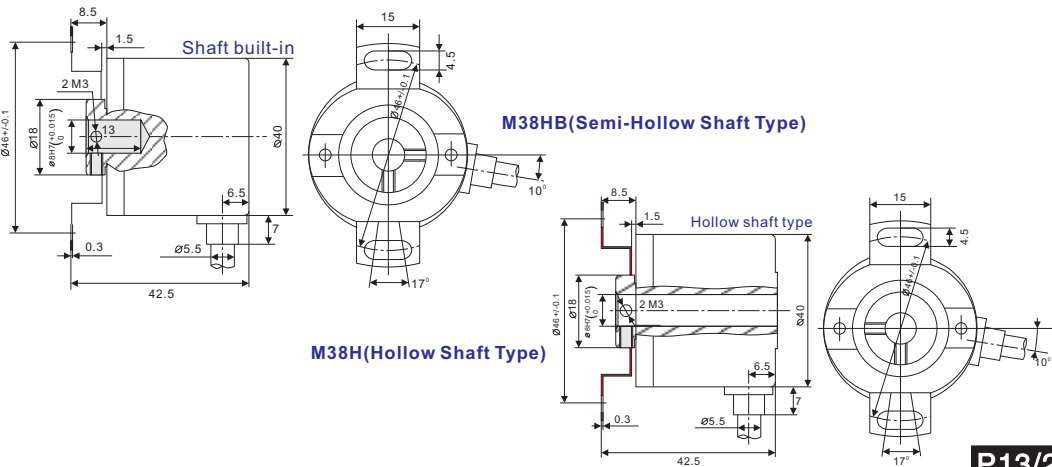
Complementary/Open collector(NPN/PNP)/Voltage output



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



Mounting and Dimensions



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

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

G: Side entry cable

▲Standard cable length is 2M

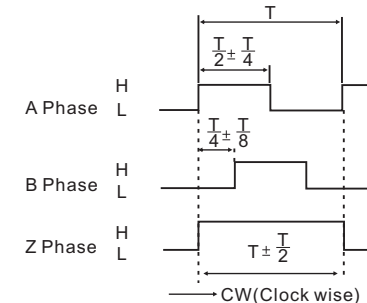
Ratings and Specifications

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: 1.5×10^{-3} N.m Maximum

Output circuits and wave forms

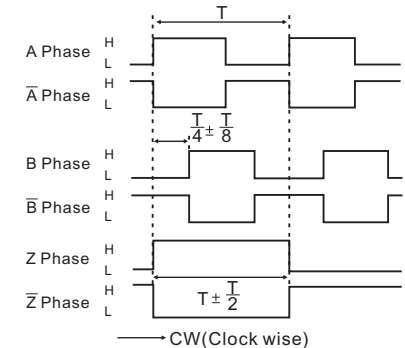
Wave forms

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



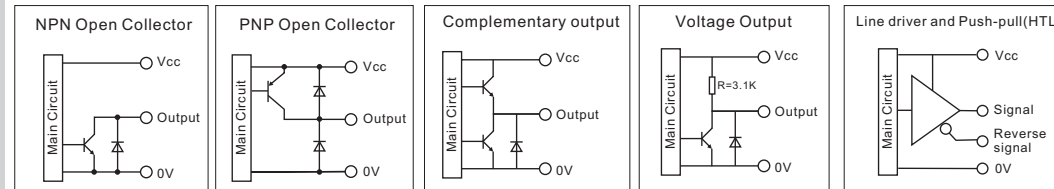
CW: As viewed from the shaft

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



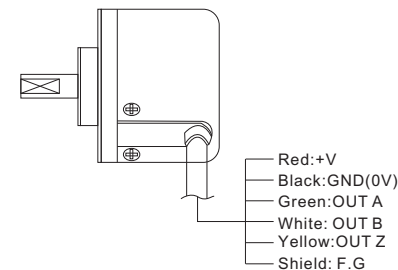
→ CW(Clock wise)

Output circuits

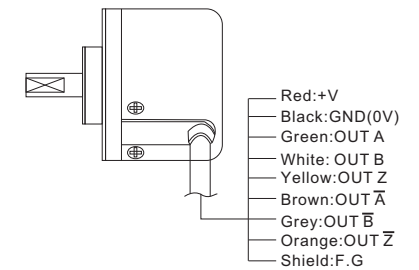


Wiring Details

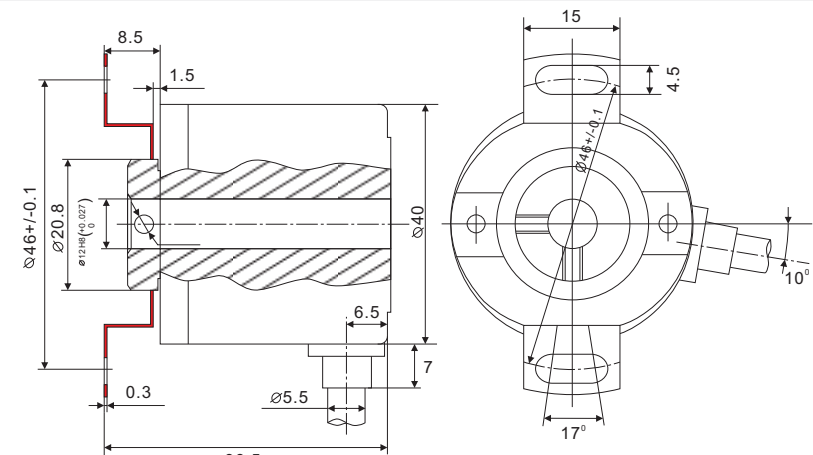
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/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

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

Section 6: Power Supply

30: 5-30 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

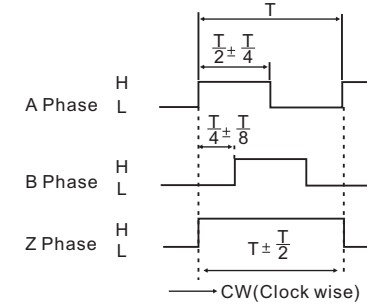
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions

Starting torque: 5×10^{-2} N.m Maximum

Output circuits and wave forms

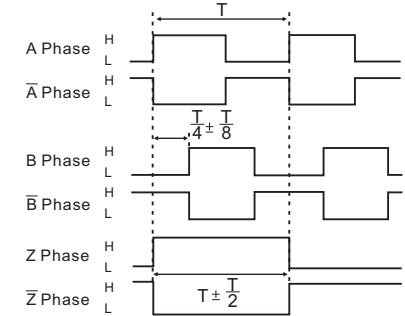
Wave forms

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

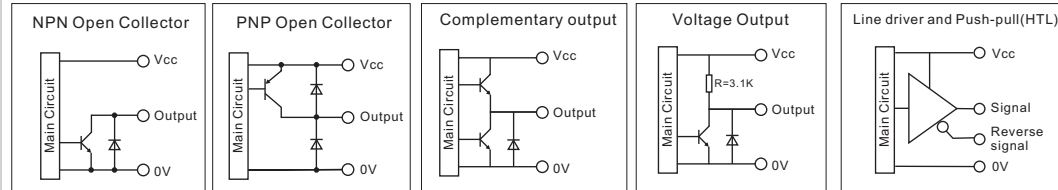


CW: As viewed from the shaft

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

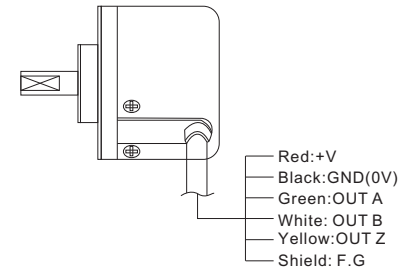


Output circuits

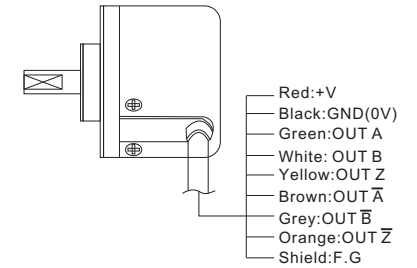


Wiring Details

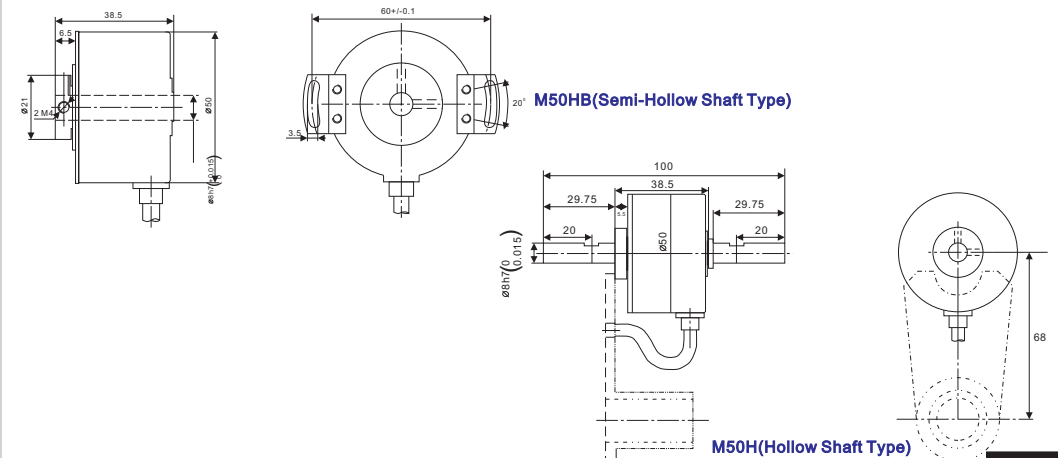
Complementary/Open collector(NPN/PNP)/Voltage output



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



Mounting and Dimensions



Incremental 58-mm-Dia. Rotary Encoder

M58H/M58HB

Hollow shaft type/Built-in Type

General purpose Encoder with
External Diameter of 58mm

- Incremental model
- External diameter of 58mm
- Resolution up to 5400 ppr.
- Various output type
- Hollow shaft type and built-in type



Ordering Information

M58H/M58HB-

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Section 1: Basic model name

M58H: 58mm Rotary Encoder(Hollow Shaft Type)
M58HB: 58mm Rotary Encoder(Semi-Hollow Shaft Type)

Section 2: Inner shaft size

6:	6mm	12:	12mm
8:	8mm	14:	14mm
9.52:	9.52mm	15:	15mm
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

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

Section 6: Power Supply

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

Section 7: Cable outgoing type

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

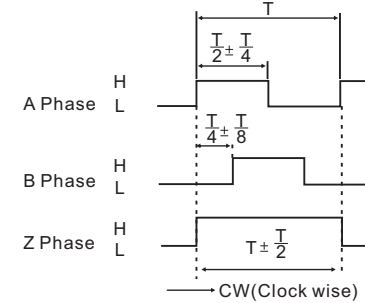
Ratings and Specifications

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: 50N
Weight: Approx 0.36KG
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 10⁻² N.m Maximum

Output circuits and wave forms

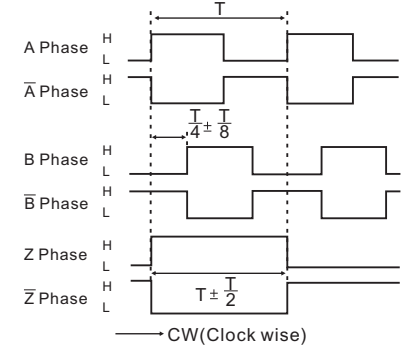
Wave forms

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

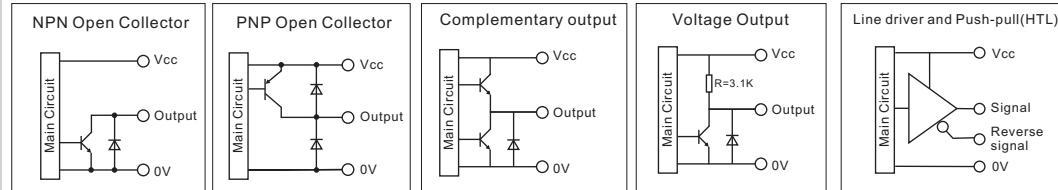


CW: As viewed from the shaft

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

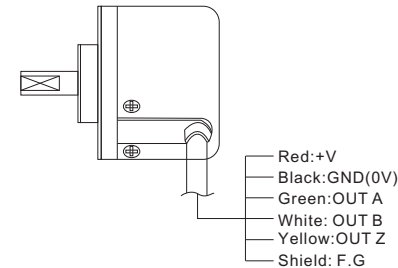


Output circuits

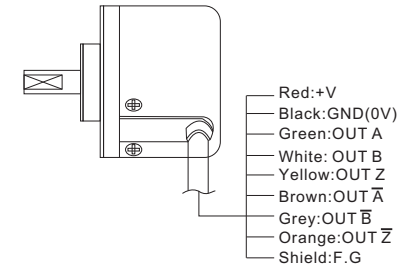


Wiring Details

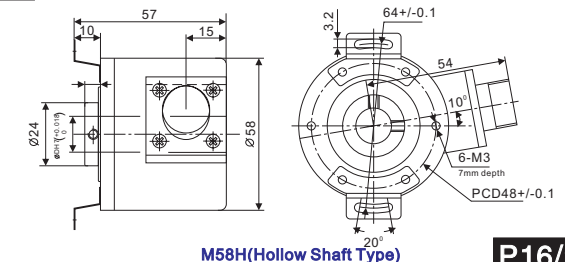
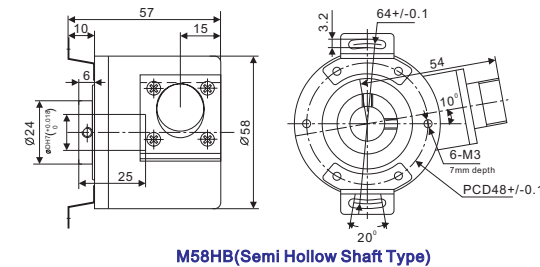
Complementary/Open collector(NPN/PNP)/Voltage output



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



Mounting and Dimensions



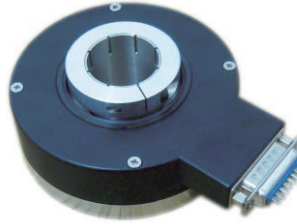
Incremental 100-mm-Dia. Rotary Encoder

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-

1	2	3	4	5	6	7
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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 Z $\bar{Z}$

Section 5: Output type

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

Section 6: Power Supply

30: 5-30 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

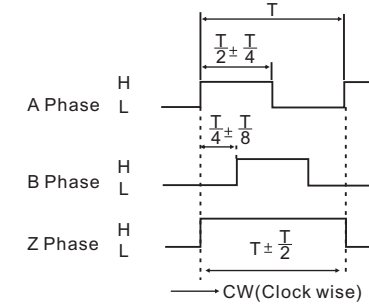
Ratings and Specifications

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 10⁻² N.m Maximum

Output circuits and wave forms

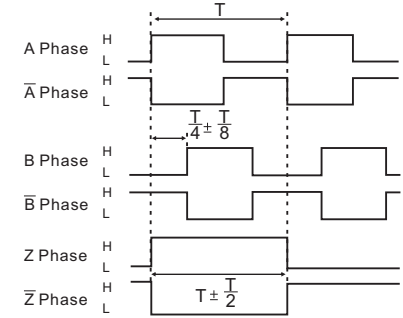
Wave forms

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



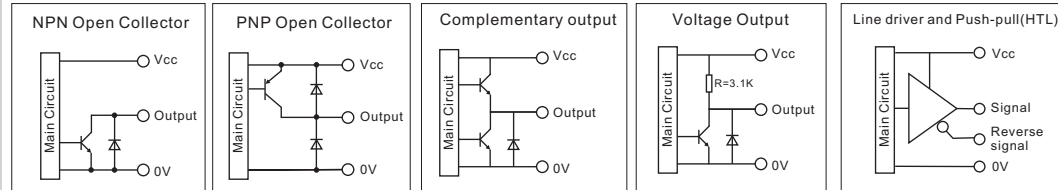
CW: As viewed from the shaft

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



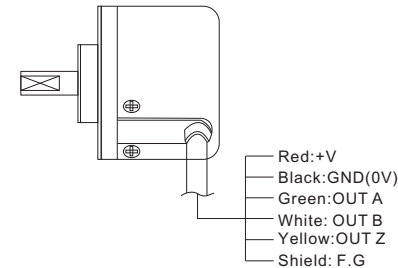
→ CW(Clock wise)

Output circuits

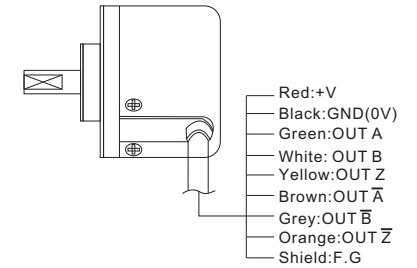


Wiring Details

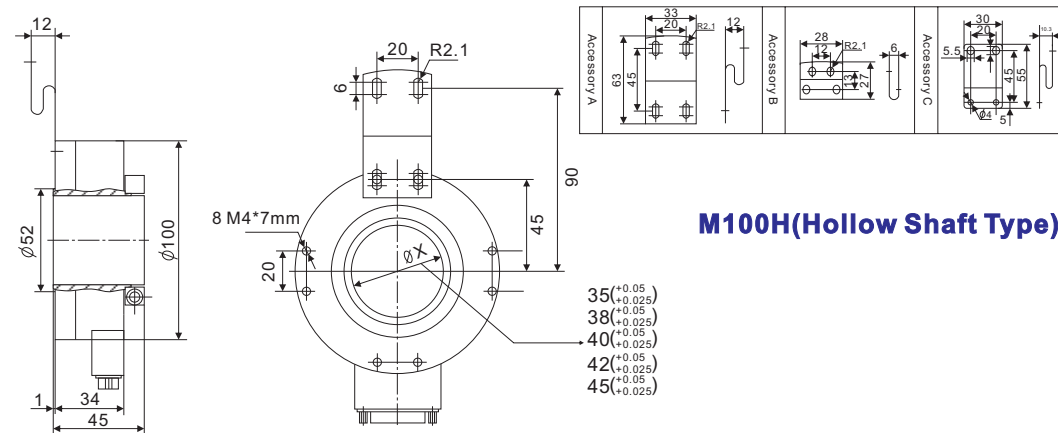
Complementary/Open collector(NPN/PNP)/Voltage output



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



Mounting and Dimensions



M100H(Hollow Shaft Type)

Incremental 60&80-mm-Dia.Mannual Rotary Encoder

SM60/SM80

Manual handled type

External Diameter of 60mm&80mm

- Incremental model
- External diameter of 60mm&80mm, 25mm&28mm length
- Resolution available with 25/50/100 ppr.
- Various output type
- Connection terminal at the back
- Output phase A B



Ordering Information

SM60

1	2	3	4	5	6	7
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Section 1: Basic model name

- SM60:** Manual handle encoder(60mm external Dia)
SM80: Manual handle encoder(60mm external Dia)

Section 2: Resolution

- 25:** 25 ppr
50: 50 ppr
100: 100 ppr

Section 3: Output phase

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

Section 4: Output type

- T:** Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY,6 phase**)

Section 5: Power Supply

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

Section 7: Cable outgoing type

- G:** Connector at the back

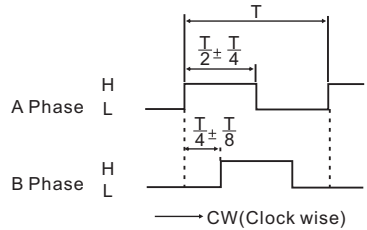
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
Resolution: 25/50/100 ppr
Current consumption: 100mA(Load disconnected)
Load current: 30mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver
Frequency: 20K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 600 rpm
Weight: Approxi 0.3KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-20°C~+70°C)
Vibration resistance: 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 100m/s, 6m/s 2 times each in X, Y, and Z directions

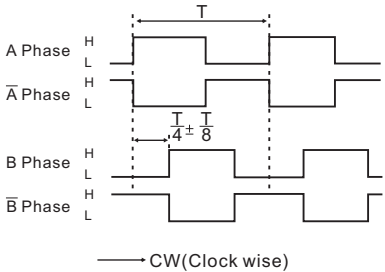
Output circuits and wave forms

Wave forms

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

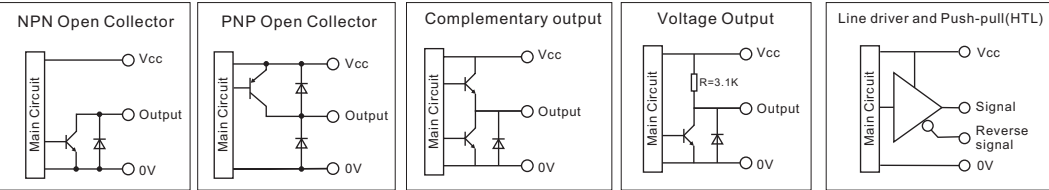


Line Driver(RS422)/Push-pull(HTL with reverse signal)



CW: As viewed from the shaft

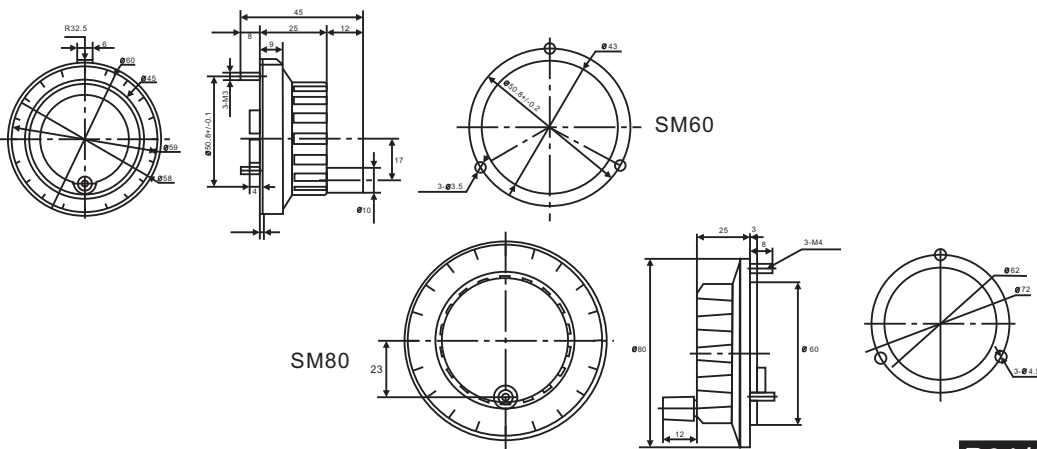
Output circuits



Wiring Details



Mounting and Dimensions



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Thank you very much