



HS20A

Encoder modules



● Application

- Stepping motor
- Automated equipment
- Robot arm

● Feature

- Low cost
- Miniature size
- Easy mounting

● Resolution

200, 250, 256, 300, 360, 400, 500, 512, 600, 720, 800, 1000, 1024, 1200, 1440, 1600, 2000, 2048, 8192 P/R

● Electrical Spec

Resolution		200 ~ 2048		3200 ~ 8192
Output circuit		Z _□ VT、Z _□ OT	Z _□ LT	Z _□ LT
Supply voltage		4.5 ~ 5.5V	4.5 ~ 5.5V	4.5 ~ 5.5V
Supply current (Max.)		60mA	80mA	90mA
Signal		A, B, Z	A+, A-, B+, B-, Z+, Z-	A+, A-, B+, B-, Z+, Z-
Rise/Fall time (Max.)		100ns	50ns	10ns
Frequency		220kHz	550kHz	1.5MHz
Output voltage	"H"	2.4V min.	2.4V min.	2.4V min.
	"L"	0.4V Max.	0.4V Max.	0.4V Max.
Max. output current		5mA	5mA	5mA

● Mechanical Spec

Hollow diameter	Φ 2, 3, 4 mm
Housing material	PPS
Max. R.P.M.	6000 rpm*
Net weight	30g

*R.P.M = Frequency * 60 / Resolution

● Environmental Spec

Operating temp.	-20 ~ +85°C
Storage temp.	-20 ~ +85°C
Operating humidity	RH 85% Max. non-collecting
Shock	490 m/s ² , 3Dx2 times
Vibration	1.2mm, 10~55KHz, 3Dx30min.
Protection	IP 40



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● Connection

Signal : A, B, Z (UL2464 、AWG26 、5pin + Shield)

Molex : 532610671 (Compatible headers)

Red	Black	White	Green	Yellow	Blue
Vcc	Gnd	A	B	Z	Shield

Signal : A+, A-, B+ ,B- ,Z+ ,Z- (UL2517 、AWG28 、8pin + Shield)

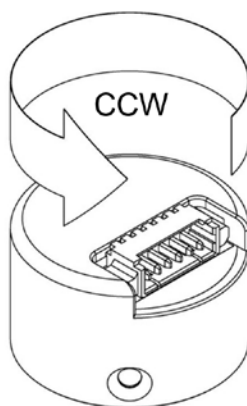
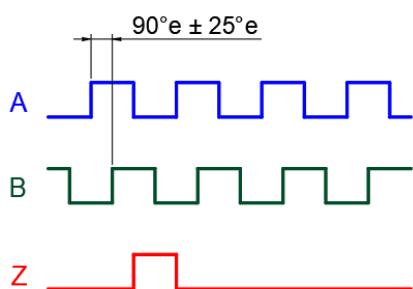
JST : SM09B-SRSS-TB (Compatible headers)

Red	Black	White	White/Black	Green	Green/Black	Yellow	Yellow/Black	Blue
Vcc	Gnd	A+	A-	B+	B-	Z+	Z-	Shield

● Output Waveform

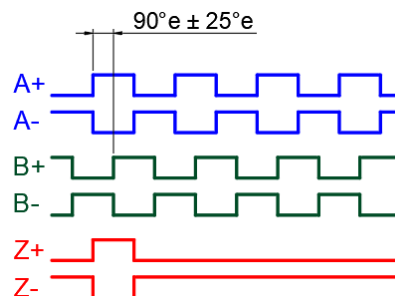
Shaft rotation CCW

A leads B



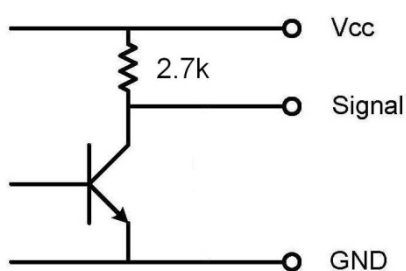
Shaft rotation CCW

A leads B

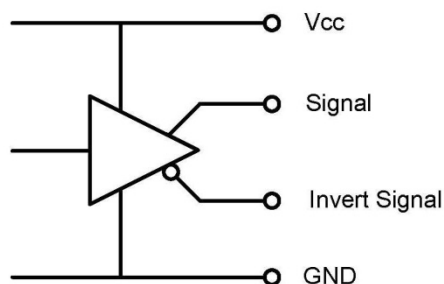


● Output circuit

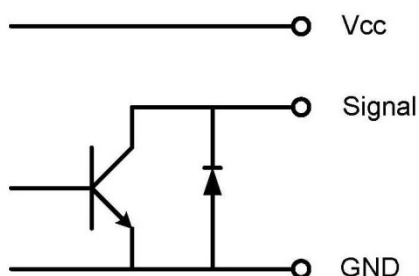
Voltage output



Line driver(AM26C31)



Open collector





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● Ordering Information

HS20A - XXXX - X X X X - X - NXXX

Resolution
200 ~ 8192

Phase
Z A, B, Z

Hollow
2 2mm
3 3mm
4 4mm

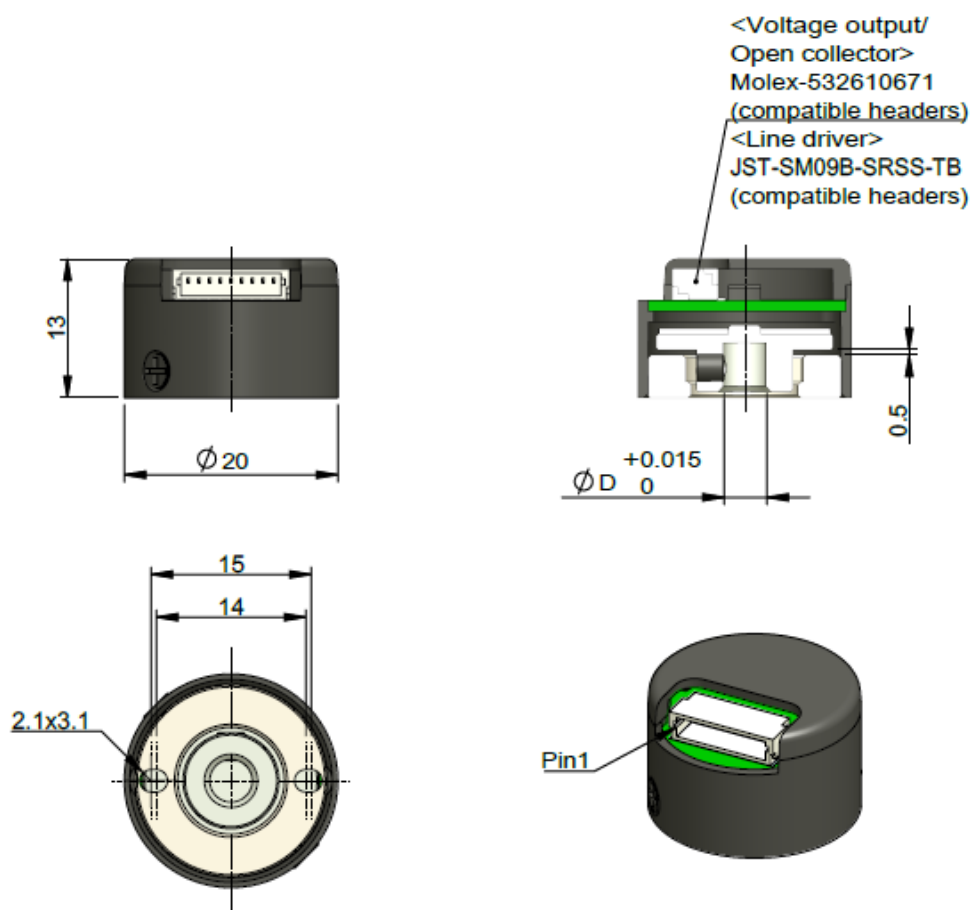
Type No.
001 , 002 , 003 ...

Base
D Default

Supply voltage
T TTL (5V)

Output circuit
V Voltage output(NPN)
O Open collector(NPN)
L Line driver

● Mechanical Drawing



Unit : mm



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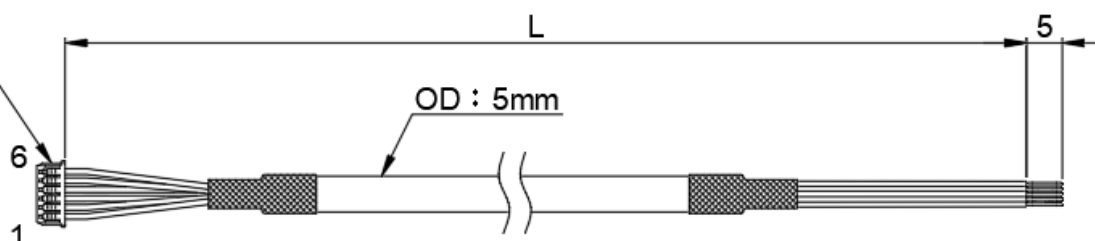
● Cable Introduction

<Voltage output / Open collector>

Molex
510210600
500798000

Color :

1. Red
2. Black
3. White
4. Green
5. Yellow
6. Blue



<Wire spec>

AWG26 、UL2464 、Braid shielding

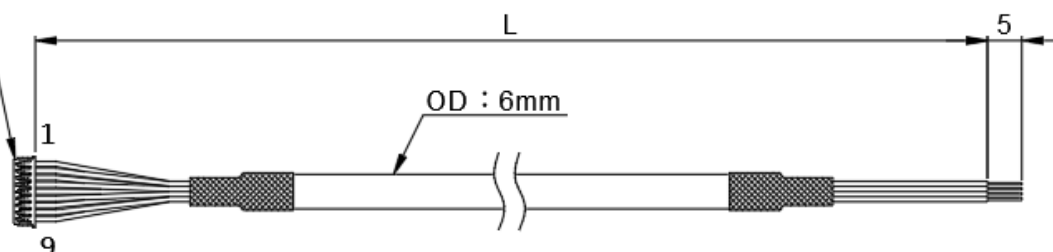
Cable length : 500 、 1000 、 2000mm

<Line driver>

JST
SHR-09V-S-B
SSH-003T-P0.2-H

Color :

1. Red
2. Black
3. White
4. White/Black
5. Green
6. Green/Black
7. Yellow
8. Yellow/Black
9. Blue



<Wire spec>

AWG28 、UL2517 、Braid shielding

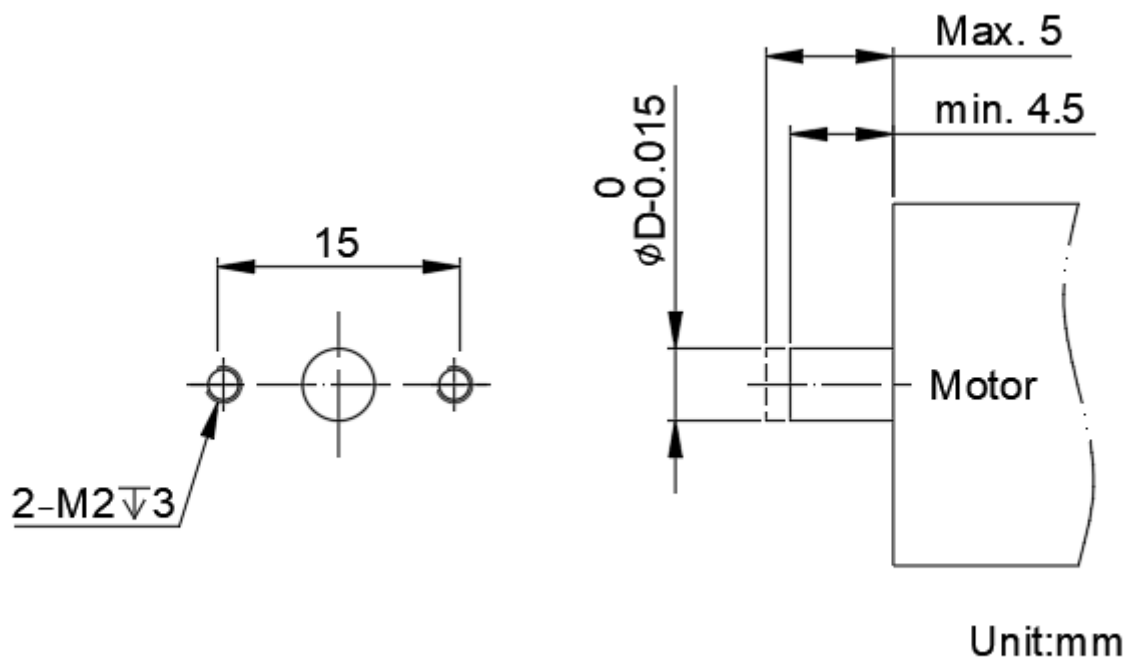
Cable length : 500 、 1000 、 2000mm



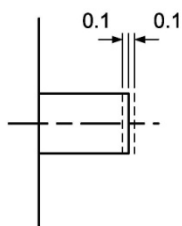
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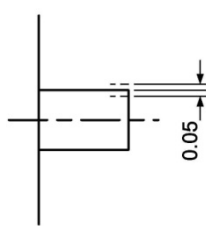
● Setting Dimension



Axial assembly tolerance



Radial assembly tolerance



Concentric angle tolerance

