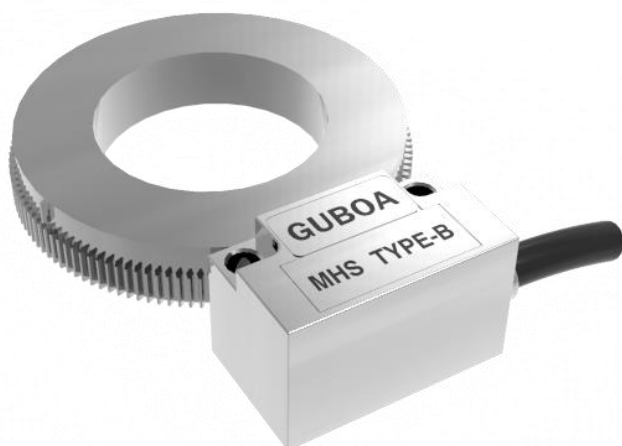


Manual

MHS Type-B

Mitsubishi High Speed Serial Interface (MHSSI) Encoder



Applications

Speed and position feedback for motorized spindles, CNC lathe, turning/milling machines

General Information

- MHS series is an incremental rotary encoder, the signal is transmitted in the digital form.
- Data transmission interface: Mitsubishi high speed serial interface (MHSSI) 2.5 Mbit/s ;
MHS series can be directly connected to Mitsubishi CNC series M800/M80/E80/C80.
- Contactless detection of rotating position and speed can avoid mechanical wear problem.
- Compact design for the installation and application in the narrow space.
- Fully encapsulated packing, protecting rating IP68.
- Available to provide partial customization.

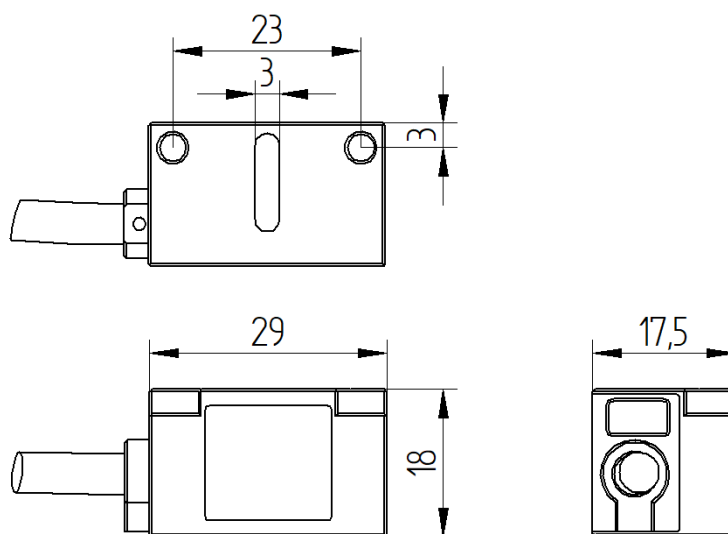
■ Specification

Specification	MHS 04B
Supply voltage Vcc (DCV)	5 V± 5%
Current consumption (open output)	≤ 90 mA
Data transmission interface	Mitsubishi high speed serial interface (MHSSI)
Data transmission rate	2.5 Mbit/s
Switch-on time	< 0.5 s
Maximum rotational speed	≤ 40000 rpm
Sensing gap	0.15 ± 0.03 mm
Operating temperature	-20°C ~ 85 °C
Protection rating	IP 68
Weight (encoder)	105 g

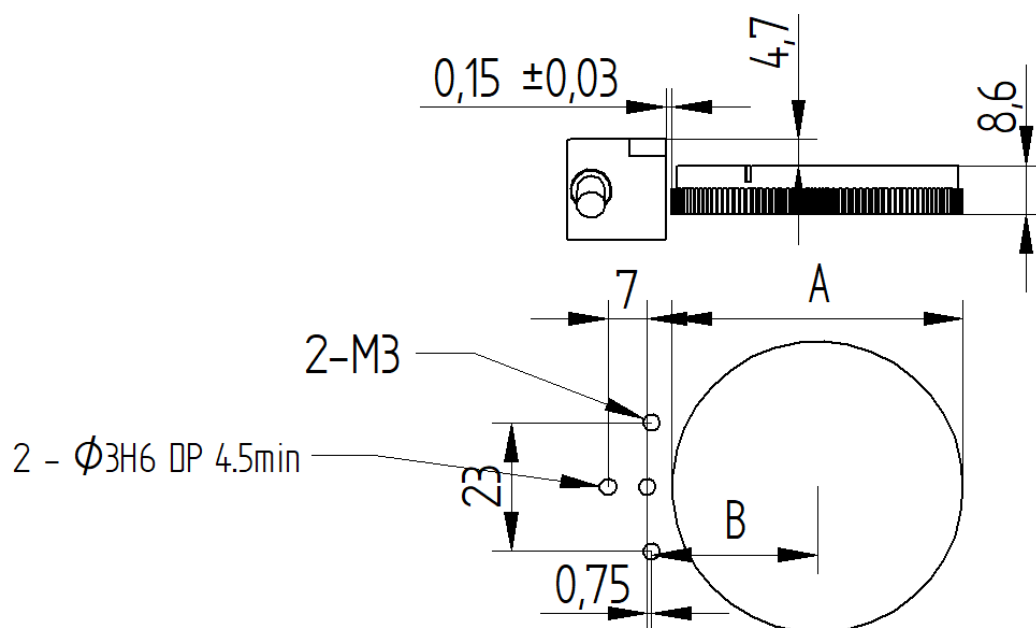
■ Application

Available on Mitsubishi CNC M800 / M80 / E80 / C80	
Spindle drive	Servo drive
Series <ul style="list-style-type: none"> ■ MDS-E-SP ■ MDS-EH-SP ■ MDS-EJ-SP ■ MDS-EM-SP ■ MDS-EMH-SP 	Series <ul style="list-style-type: none"> ■ MDS-E-Vx ■ MDS-EH-Vx ■ MDS-EJ-Vx ■ MDS-EHG-Vx ■ MDS-EM-Vx ■ MDS-EMH-Vx
Firmware : BND-1501W202	Firmware : BND-1501W201
Firmware : BA or later	Firmware : BA or later

■ Dimension

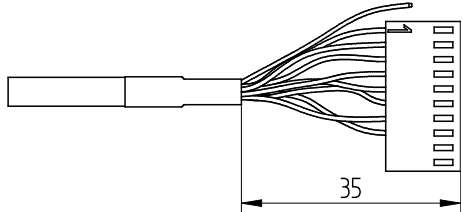
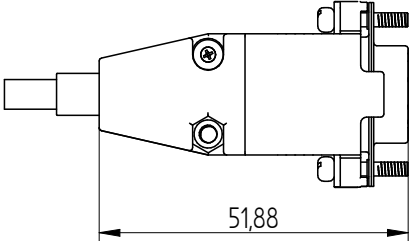
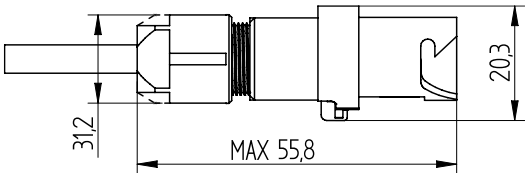


■ Installation Position Layout

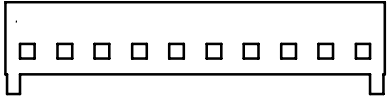


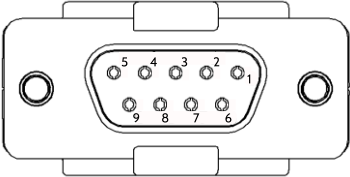
$$B = A (\text{Gear outer diameter}) / 2 + 3.15$$

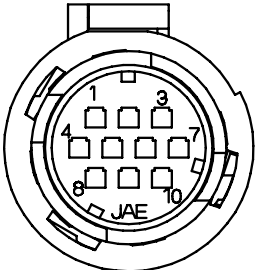
■ Connector Type

Type	Code	Image
Open-end	N	
D-SUB 9 Pin / Female	D	
JAE 10 Pin / Socket	P	

Pin Definition

Open-end	Function	Color
	RQ +	green
	RQ -	yellow
	+5 V	brown
	0 V	white
	Data -	pink
	Data +	gray
	Shield	-

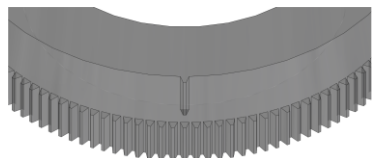
D-SUB - 9 Pin / Female	Pin	Function	Color
	1	-	-
	2	RQ +	green
	3	RQ -	yellow
	4	+5 V	brown
	5	-	-
	6	0 V	white
	7	Data -	pink
	8	Data +	gray
	9	-	-
	Outer casing	Shield	

JAE 10 Pin / Socket	Pin	Function	Color
	1	-	-
	2	-	-
	3	RQ +	green
	4	RQ -	yellow
	5	Data +	gray
	6	Data -	pink
	7	+5 V	brown
	8	0 V	white
	9	Shield	-
	10	-	-

■ Gear model

Sensing gear code	
M X XXX - XXX - FS ① ② ③ ④	
①	Module: 4: module 0.4
②	Teeth * 128~640
③	Inner diameter * (mm) : 40~220
④	Reference mark: FS : Flag (For MHS Type-B)

* Customized available

Reference mark	Image
FS	

Encoder model

Encoder type code	
MHS 04B – XX – XXX – X – X ①② ③ ④ ⑤ ⑥	
①	Module 04: Module 0.4
②	Type B: Mini size metal case
③	Resolution * 20 bits
④	Induction teeth * 128~640
⑤	Connectors * N: Open-end D : D-sub 9 Pin P : JAE 10 pin
⑥	Cable length * S : 1 m L : 3 m

* Customized available

Standard model

Encoder	Gear	Max. speed (rpm)	Resolution (bits)	Resolution (in degree)
MHS 04B-20-128-xx	M4 128-40FS	40,000	20	0.00034
MHS 04B-20-192-xx	M4 192-60FS	27,000	20	0.00034
MHS 04B-20-256-xx	M4 256-82FS	20,000	20	0.00034
MHS 04B-20-384-xx	M4 384-125FS	13,000	20	0.00034
MHS 04B-20-512-xx	M4 512-160FS	10,000	20	0.00034
MHS 04B-20-640-xx	M4 640-220FS	8,000	20	0.00034

■ Gear wheel model

Model	OD (A)	ID (B)	PCD (C)	Hole (D)	Teeth
M4128- 40FS	52	40 $+0.016/-0$	n/a	n/a	128
M4192- 60FS	77.6	60 $+0/-0.018$	n/a	n/a	192
M4256- 82FS	103.2	82 $+0/-0.018$	n/a	n/a	256
M4384- 125FS	154.4	125 $+0.025/-0$	134	8*Ø4.5	384
M4512- 160FS	205.6	160 $+0.02/-0$	170	8*Ø5.5	512
M4640- 220FS	256.8	220 $+0.02/-0$	230	8*Ø5.5	640

