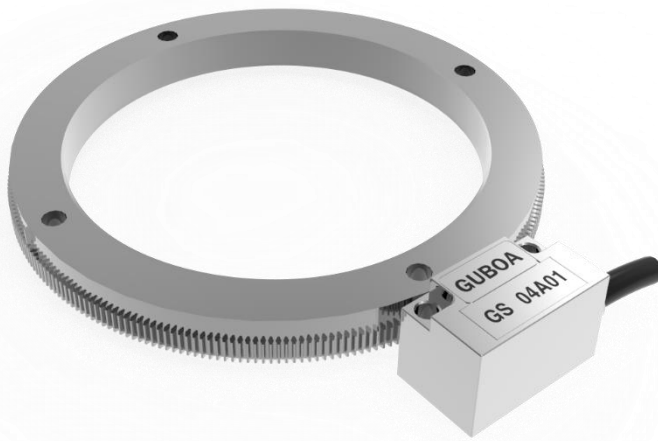


Manual

FIS Incremental Encoder



Applications

- Speed and position feedback for high speed spindles, motors, CNC machines

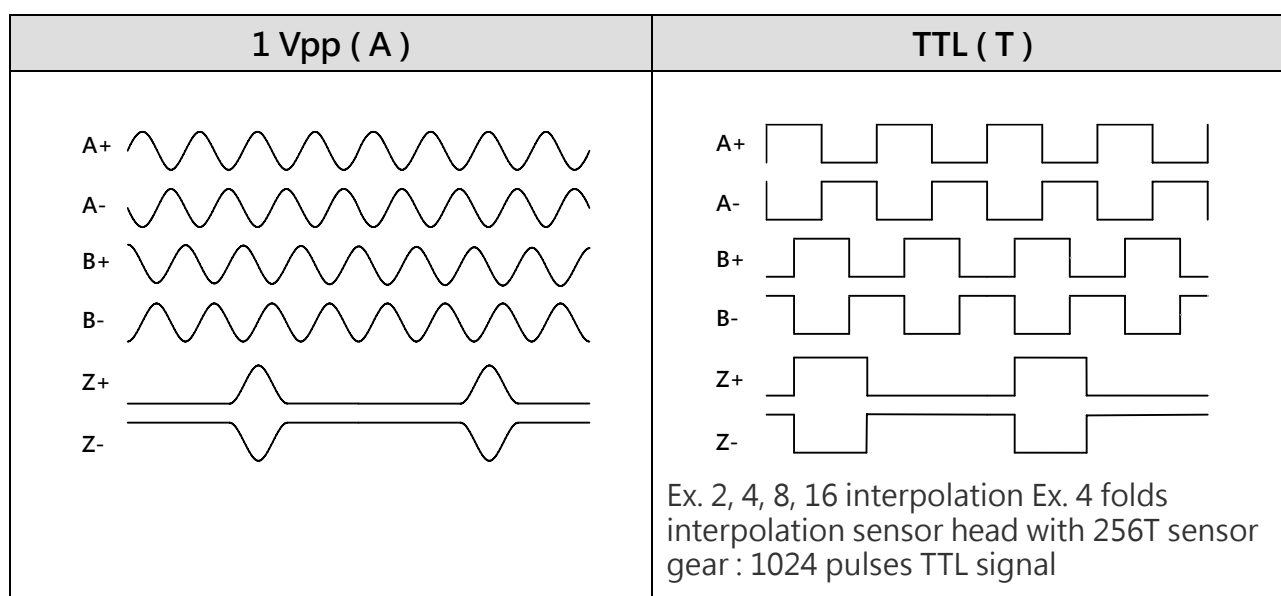
General Information

- Contactless scanning of rotating position and speed.
- Compact design for used in limited space.
- Contact free detection without any mechanical wear problem
- High protecting class IP68.
- Sensing gear wheel from module 0.4 , 1.0
- High response, up to 100,000 rpm

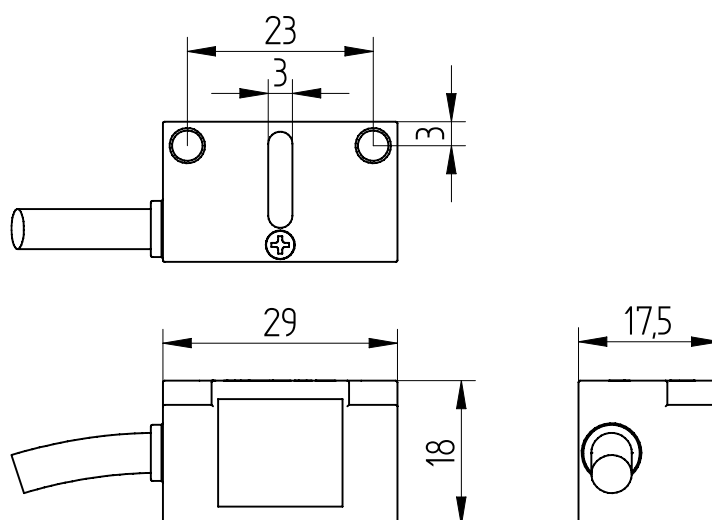
■ Specification

	1 Vpp (A)	TTL (T)
Power supply Vcc (DCV)	5 V ± 5%	5 V ± 5%
Load current (open output)	≤ 60 mA	≤ 60 mA
VOH (open -output)	N/A	≥ 2.5 V
VOL (open -output)	N/A	≤ 0.5 V
Output signal type	Differential Analog (1 Vpp)	RS 422A (TTL)
Max. Output signal frequency	150 KHZ	500 KHZ
Output signal amplitude	≥ 1 Vpp	N/A
A 、 B phase shifting	≤ 90 ± 10°	≤ 90 ± 25°
Sensing gap	0.15 ± 0.03 mm	0.15 ± 0.03 mm
Operating temperature	-20°C ~ 100°C	-20°C ~ 100°C
Protection rating	IP 68	IP 68
Approx weight scanning head (g)	90 ± 5%	70 ± 5%

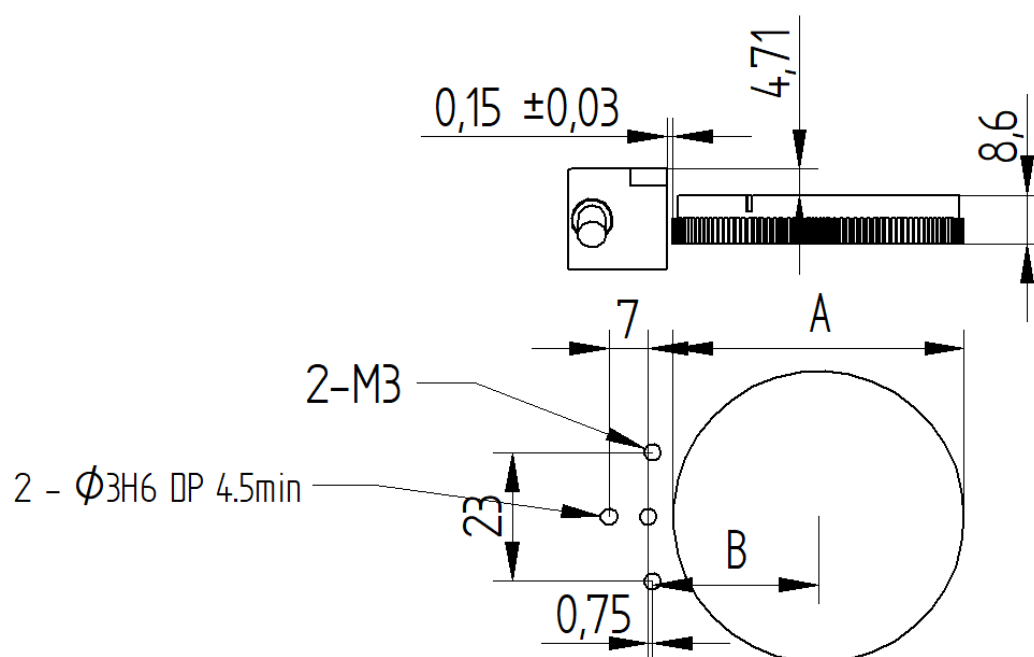
■ Signal diagram



■ Dimensions

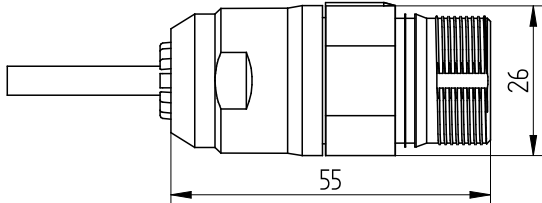
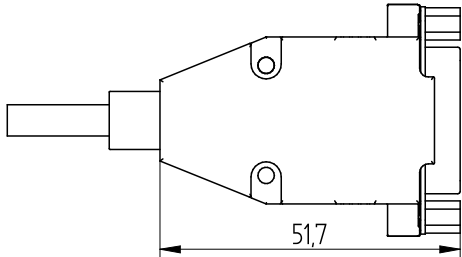
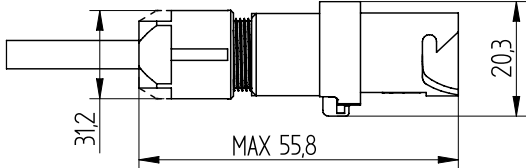
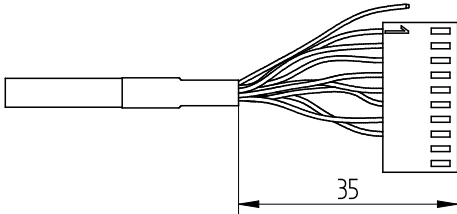


■ Installation



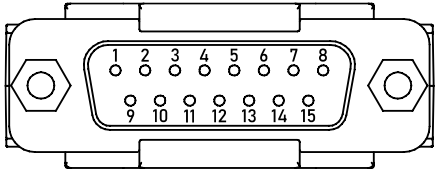
Teeth	96	128	192	256	384	512	640	768
A	39.2	52	77.6	103.2	154.4	205.6	256.8	308
B	22.8	29.2	42	54.8	80.4	106	131.6	157.2

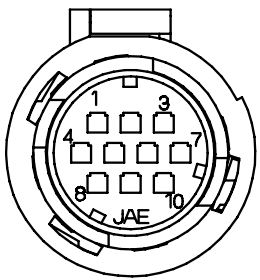
Note: $B = A (OD) / 2 + 3.15 \text{ mm}$

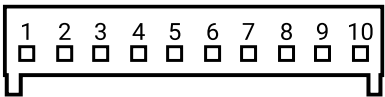
Connector type	code	
<p>M23 12 Pin / 17 Pin</p>	<p>E12 / E17</p>	
<p>D-SUB 15 Pin</p>	<p>D</p>	
<p>JAE 10 Pin</p>	<p>P</p>	
<p>Open-end</p>	<p>N</p>	

M23 12 Pin				
1Vpp (A)	Pin	Function	Color	TTL (T)
	1	B-	red	
	2	sensor +	-	
	3	Z+	grey	
	4	Z-	pink	
	5	A+	green	
	6	A-	yellow	
	7	-	-	
	8	B+	blue	
	9	-	-	
	10	0V	white	
	11	sensor -	-	
	12	+ 5V	brown	
cover	GND	shielding		

M23 17 Pin	Pin	Signal	Color
	1	A+	green
	2	A-	yellow
	3	Z+	grey
	4	-	-
	5	-	-
	6	-	-
	7	0V	white
	8	-	-
	9	-	-
	10	+ 5V	brown
	11	B+	blue
	12	B-	red
	13	Z-	pink
	14	-	-
	15	sensor -	-
	16	sensor +	-
	17	-	-
cover	GND	shielding	

D-SUB 15 Pin	Pin	Signal	Color
	1	+ 5V	brown
	2	0V	white
	3	A+	green
	4	A-	yellow
	5	-	-
	6	B+	blue
	7	B-	red
	8	-	-
	9	-	-
	10	Z+	grey
	11	-	-
	12	Z-	pink
	13	-	-
	14	-	-
	15	-	-
cover	GND	shielding	

JAE 10 Pin	Pin	Signal	Color
	1	B+	blue
	2	B-	red
	3	GND	shielding
	4	+ 5V	brown
	5	A+	green
	6	A-	yellow
	7	0V	white
	8	Z+	grey
	9	Z-	pink
	10	-	-

Open-end	Pin	Signal	Color
	1	A+	green
	2	A-	yellow
	3	+ 5V	brown
	4	0V	white
	5	B+	blue
	6	B-	red
	7	Z+	grey
	8	Z-	pink
	9	-	-
	10	-	-

Encoder model

Encoder type code	
GS XX - X - XX - FIX - X ① ② ③ ④ ⑤	
①	Module 04: 0.4
②	Signal type A: Differential analog (1 Vpp) T : RS 422A (TTL)
③	Interpolation 01: 1 , For 1 Vpp & TTL 08 : 8 , For TTL only
④	Cable lenth FIS : 1 m FIL : 3 m
⑤	Connectors E12 : M23 12 Pin E17 : M23 17 Pin D : D-sub 15 Pin P : JAE 10 pin N : Open end

Encoder type code (FANUC)	
GS 04 - A - 21 - FIX - P ①	
04	Module 0.4
A 21	Compatible signal with FANUC
①	Cable length S : 1 m L : 3 m
P	Connectors P : JAE

■ Standard selection table for FIS gear wheel

Specification	OD (A)	ID (B)	PCD (C)	Mounting Hole Diameter (D)	Number of teeth
M4768- 250FS	308	250 $+0/-0.025$	275	8*Ø6.6	768
M4640- 220FS	256.8	220 $+0.02/-0$	230	8*Ø5.5	640
M4512- 160FS	205.6	160 $+0.02/-0$	170	8*Ø5.5	512
M4384- 125FS	154.4	125 $+0.025/-0$	134	8*Ø4.5	384
M4256- 82FS	103.2	82 $+0/-0.018$	n/a	n/a	256
M4192- 60FS	77.6	60 $+0/-0.018$	n/a	n/a	192
M4128- 40FS	52	40 $+0.016/-0$	n/a	n/a	128

Length Unit : mm

