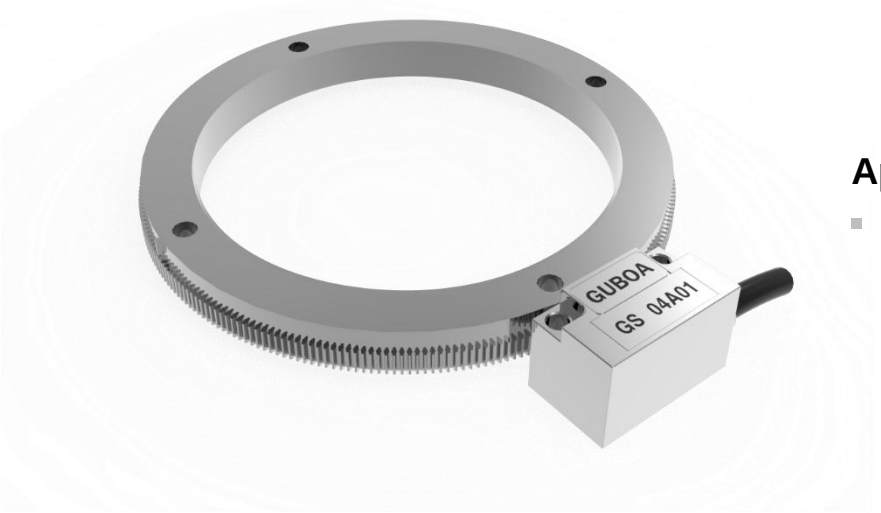
GUBOA

Ver. 212 315 106-en

Manual

FIS Incremental Encoder



Applications

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

General Information

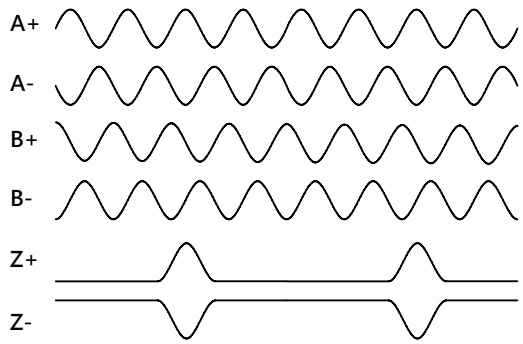
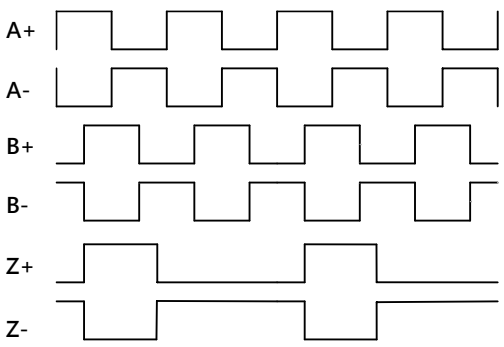
- Contactless scanning of rotating position and speed.
- Compact design for used in limited space.
- Contact free detection without any mechanical wear problem
- High protecting class IP68.
- Sensing gear wheel from module 0.4
- High response, up to 100,000 rpm

Specification

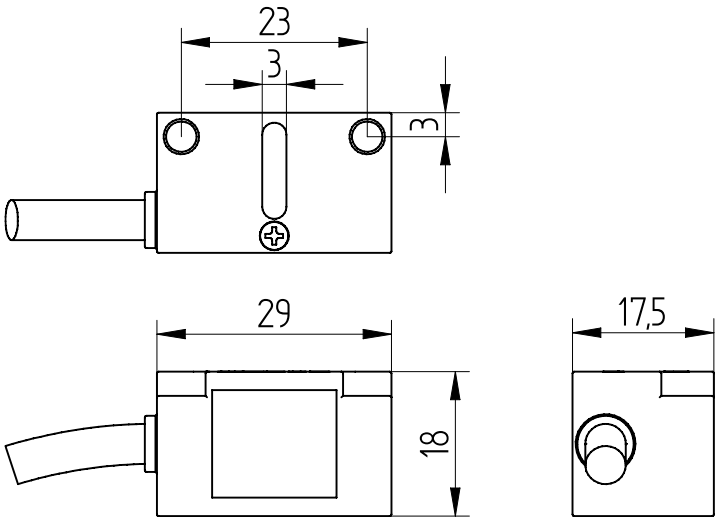
Technical data	1 Vpp (A)	TTL (T)
Power supply Vcc (DCV)	5 V ± 5%	5 V ± 5%
Load current (open output)	≦60 mA	≦60 mA
VOH (open -output)	N/A	≧2.5 V
VOL (open -output)	N/A	≦0.5 V
Output signal type	Differential Analog (1 Vpp)	RS 422A（TTL）
Max. Output signal frequency	150 KHZ	500 KHZ
Output signal amplitude	≧1 Vpp	N/A
A 、 B phase shifting	≦90 ± 10°	≦90 ± 25 °
Sensing gap	0.15 ± 0.03 mm	0.15 ± 0.03 mm
Weight (with 1m wire)	105g ± 5%	

Electrical testing	
EMC/EMI	EN 61000-6-1; EN 61000-6-2 /EN 61000-6-3; EN 61000-6-4
Protection	IP 68 (IEC 60529)
Vibration	200 m/ s², 55Hz to 2000Hz (EN 60068-2-6)
Shock	2000 m/ s², 6ms (EN 60068-2-27)
Operating temperature	-20℃ ~ 85 ℃

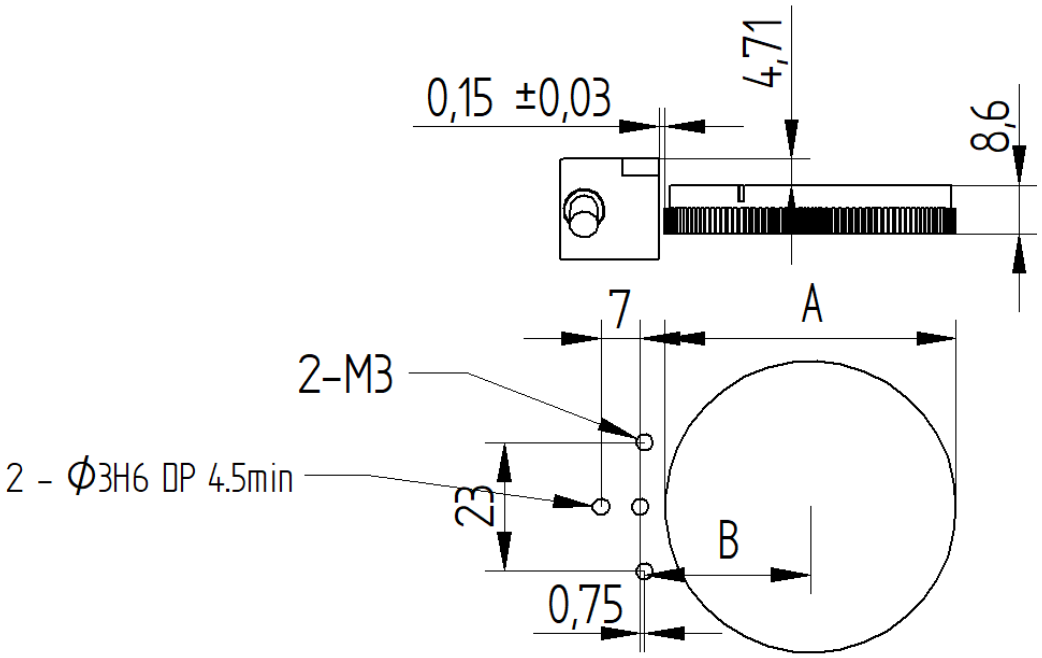
Signal diagram

1 Vpp (A)	TTL (T)
	
	Ex. 2, 4, 8, 16 interpolation Ex. 4 folds interpolation sensor head with 256T sensor gear : 1024 pulses TTL signal

Dimensions



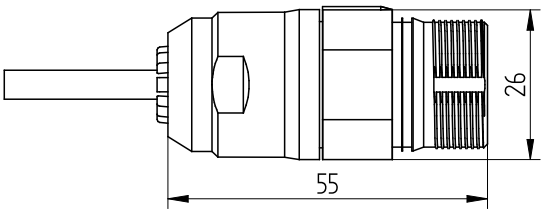
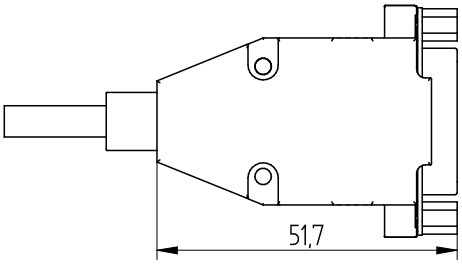
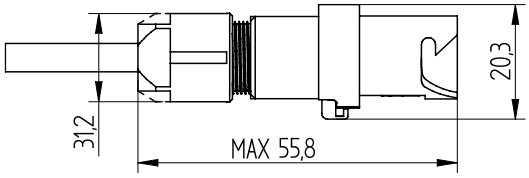
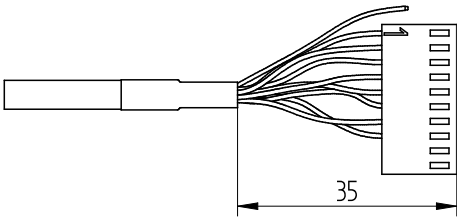
Installation

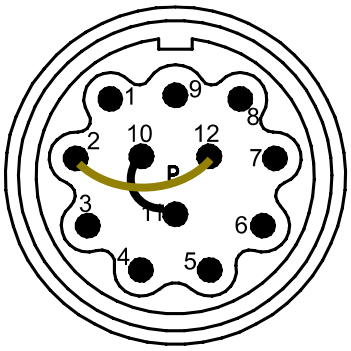
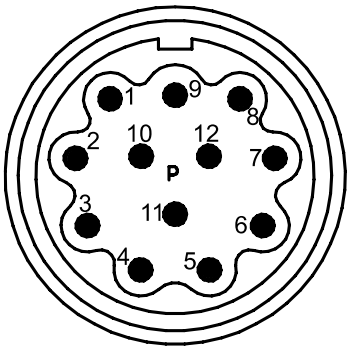


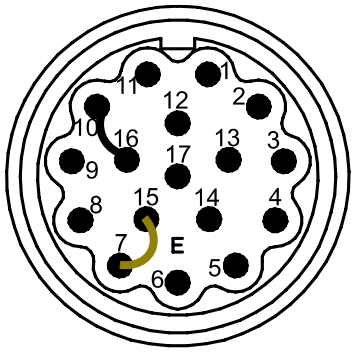
Teeth	96	128	192	256	384	512	640	768
A	39.2	52	77.6	103.2	154.4	205.6	256.8	308
B	22.8	29.2	42	54.8	80.4	106	131.6	157.2

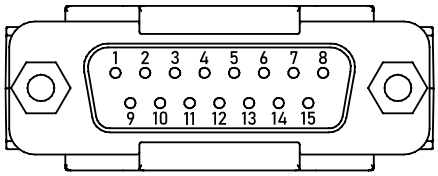
Note: B = A (OD) / 2 + 3.15 mm

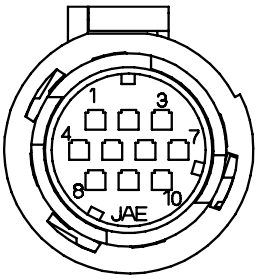
Connectors

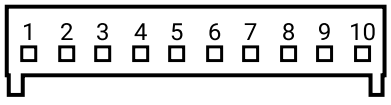
Connector type	code	
M23 12 Pin / 17 Pin	E12 / E17	
D–SUB 15 Pin	D	
JAE 10 Pin	P	
Open-end	N	

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 Model: JN1HS10PL3	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

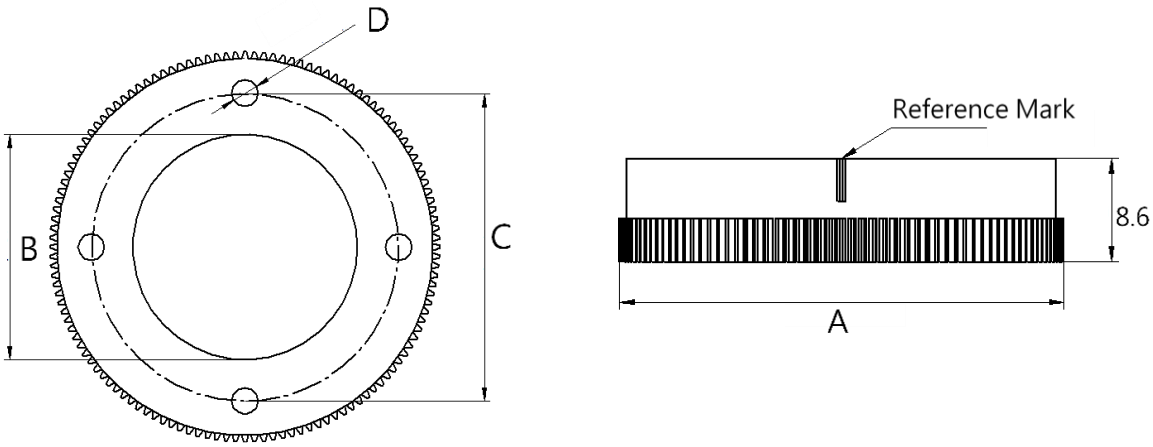
Encoder type code	
GS XX – X – XX – FIX – X ① ② ③ ④ ⑤	
①	**Module** 04: 0.4
②	**Signal type** A: Differential analog (1 Vpp) T : RS 422A （ TTL ）
③	**Interpolation** 01：1 , For 1 Vpp 08：8 , For TTL only
④	**Cable lenth** FIS：1 m FIL：3 m
⑤	**Connectors** E12 ：M23 12 Pin E17 ：M23 17 Pin D ：D-sub 15 Pin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

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



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