

# Manual

## IGS 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 0.3 ~ 1.0
- High response, up to 100,000 rpm
- Customized according dimensions

**Specification**

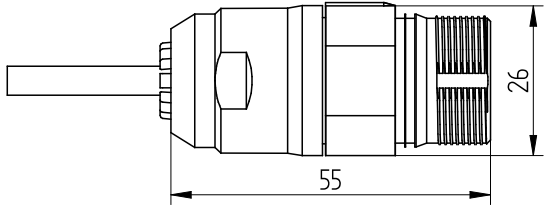
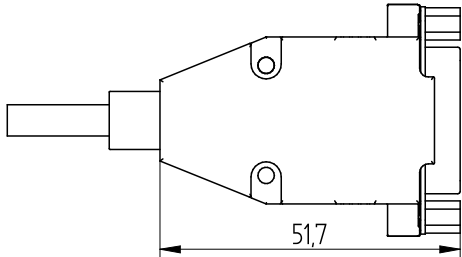
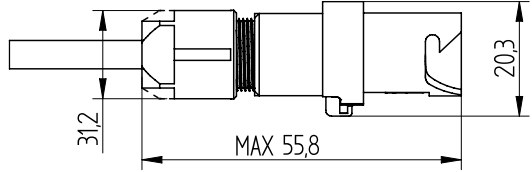
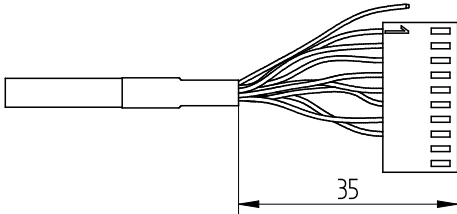
	1 Vpp ( A )	TTL ( T )
Power supply Vcc (DCV)	5 V ± 5%	5 V ± 5%
Load current (open output)	≤ 60 mA	≤ 60 mA
VOH (open -output)	N/A	≥ 2.5 V
VOL (open -output)	N/A	≤ 0.5 V
Output signal type	Differential Analog ( 1 Vpp )	RS 422 ( TTL )
Max. Output signal frequency	150 KHZ	500 KHZ
Output signal amplitude	≥ 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)	Standard head 30 ± 5% ; Mini head 10 ± 5%	

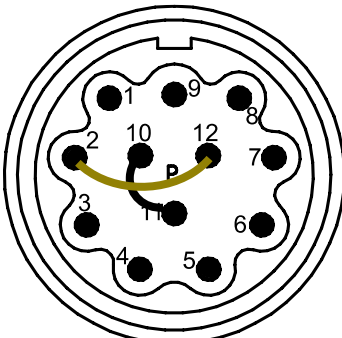
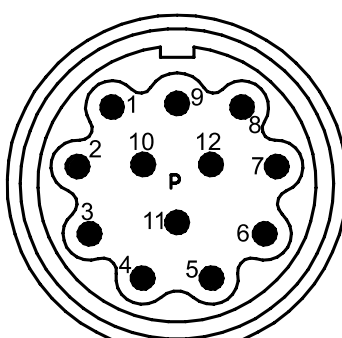
**Signal diagram**

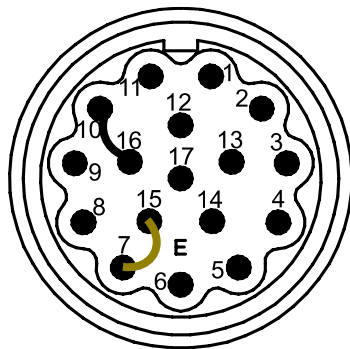
1 Vpp ( A )	TTL ( T )
<p>Diagram showing six waveforms for the 1 Vpp (A) mode. A+ and A- are sine waves in phase. B+ and B- are sine waves shifted 90 degrees relative to A+ and A-. Z+ and Z- are narrow pulses occurring at the zero-crossings of the A and B signals.</p>	<p>Diagram showing six square wave signals for the TTL (T) mode. A+ and A- are complementary square waves. B+ and B- are complementary square waves shifted 90 degrees relative to A+ and A-. Z+ and Z- are narrow square pulses occurring at the zero-crossings of the A and B signals.</p>
	<p>2, 4, 8, 16 interpolation Ex. 4 folds interpolation sensor head with 256T sensor gear : 1024 pulses TTL signal</p>

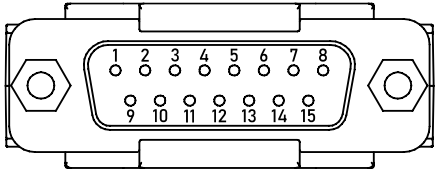
**Dimension & Installation**

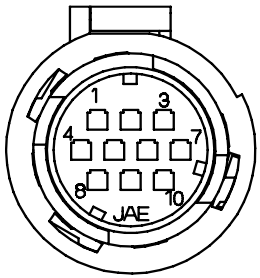
	Standard (SIS)	Mini (MIS)
Encoder Dimension		
Installation		
Cable Outlet	<p style="text-align: center;">Axial</p>	<p style="text-align: center;">Axial      Right (R)</p>

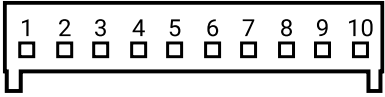
Connector type	code	
<p>M23 12 Pin / 17 Pin</p>	<p>E12 / E17</p>	
<p>D-SUB 15 Pin</p>	<p>D</p>	
<p>JAE 10 Pin</p>	<p>P</p>	
<p>Open-end</p>	<p>N</p>	

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


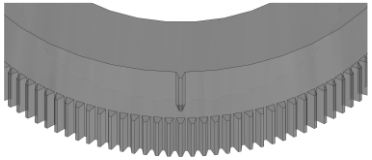
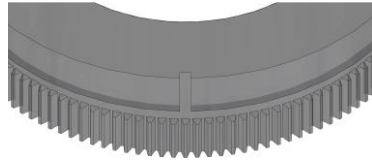
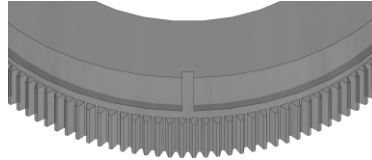
D-SUB 15 Pin	Pin	Signal	Color
	1	+ 5V	brown
	2	0V	white
	3	A+	green
	4	A-	yellow
	5	-	-
	6	B+	blue
	7	B-	red
	8	-	-
	9	-	-
	10	Z+	grey
	11	-	-
	12	Z-	pink
	13	-	-
	14	-	-
	15	-	-
cover	GND	shielding	

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	-	-

## ■ Gear model

Sensing gear code	
M	X    XXX - XXX - XXX
	①    ②    ③    ④
①	<b>Module:</b> 3 : module 0.3      4 : module 0.4 5 : module 0.5
②	<b>Teeth:</b> 128 : 128 teeth 256 : 256 teeth 384 : 384 teeth 512 : 512 teeth
③	<b>Inner diameter ( mm )</b> Ex. 125
④	<b>Reference mark:</b> STD : gap FR : flag GH : groove to hill GV : groove to valley

Reference mark	
STD	
FR	
GH	
GV	

Encoder model

Encoder type code	
GS XX - X - XX - XX - X - X - XX-XX - X ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨	
①	<b>Module</b> 03 : 0.3 04 : 0.4 05 : 0.5
②	<b>Signal type</b> A : 1 Vpp T : TTL / RS422
③	<b>Interpolation</b> 01 : 1, For 1 Vpp & TTL      11 : 1, For 1 Vpp signal control 02 : 2, For TTL only 04 : 4, For TTL only 08 : 8, For TTL only
④	<b>ZT converter (For 1 Vpp)</b> - : Without F : With ZT converter (For FANUC JYA2 · JYA4)
⑤	<b>Encoder Dimension</b> MI : Mini SI : Standard
⑥	<b>Cable lenth</b> S : 1 m L : 3 m
⑦	<b>Connectors</b> E12 : M23 12 Pin E17 : M23 17 Pin D : D-sub 15 Pin P : JAE 10 pin N : Open end
⑧	<b>Reference mark of gear</b> STD : gap FR : flag GH : groove to hill GV : groove to valley
⑨	<b>Cable outlet</b> - : Axial R : Right