

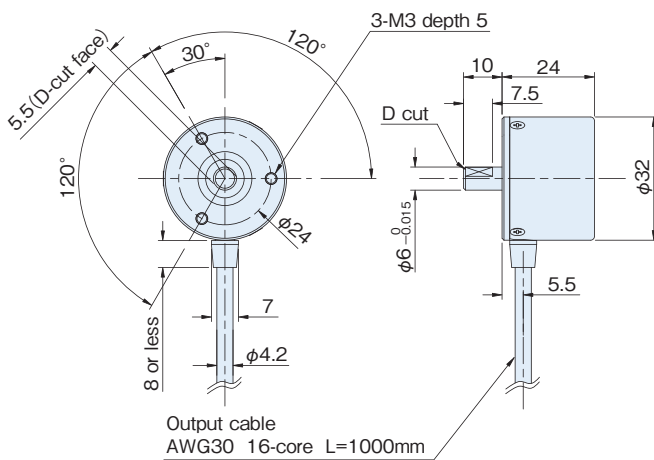
MA-20 series

[Absolute]

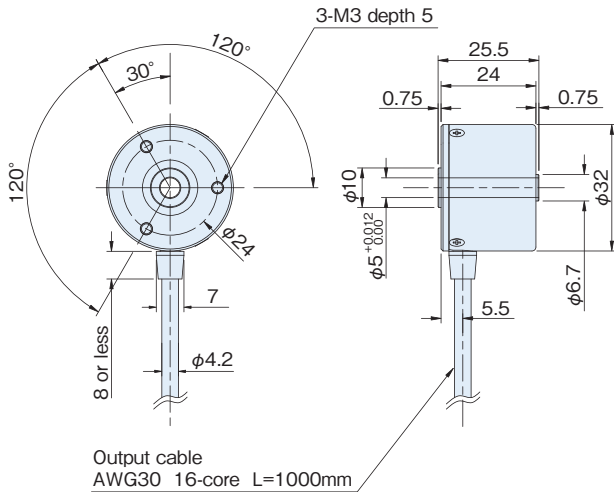


Outside dimensions

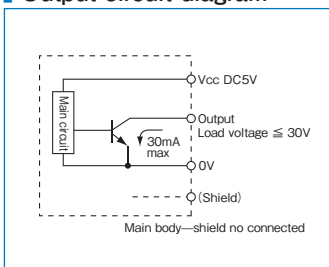
MAS-20



MAH-20



Output circuit diagram



*A capacitor (0.33 μ F) is connected between 0V and FG (frame ground).

Specifications

Type name		MA□-20-□□1	
Item		Shaft shape ●S=single shaft ●H=hollow shaft	Pulse number Output code** ●G=gray code ●N=pure binary code ●B=BCD code
Supply voltage	DC5V \pm 5%		
Current consumption	100mA or less (under no load)		
Output code	G1: gray code N1: pure binary code	B1: BCD code	
Logic	Negative logic (H=0, L=1)		
Resolution	256 512	1,024 2,048	4,096 3,600
Output circuit	NPN open collector		
Output capacity	Sink current:30mAmax, load voltage:30Vmax, Output residual voltage:0.5V or less (Cable length 1m, Sink current: at 30mA)		
Allowable load of shaft (electrical)	Radial	14.7N (1.5kgf)	
	Thrust	4.9N (0.5kgf)	
Maximum revolutions (mechanical)	6,000r/min		
Maximum response frequency	10kHz		
Working temperature/humidity	-10°C~70°C / 35%~90%RH no dewing		
Storage temperature	-20°C~80°C		
Vibration resistance	Durability 55Hz, double amplitude 1.5mm 2 hours each in X, Y, and Z directions		
Impact resistance	Durability 500m/s ² (about 50G) 3 times each in X, Y, and Z directions		
Cable	Outside diameter $\phi 4.2$ 16-core vinyl wire AWG30 Insulated shield cable (length 1m)		
Mass	150g (excluding cable)		

(* Output code "B" is selectable only in Shaft shape "S")

Connection

Cable color	Type	Output signal		
		MA-20-□G1	MA-20-□N1	MA-20-□B1
Brown		Output 2 ⁰		Output 2 ⁰
Brown/Black		Output 2 ¹		Output 2 ¹
Orange		Output 2 ²		Output 2 ²
Orange/Black		Output 2 ³		Output 2 ³
Yellow		Output 2 ⁴		Output 2 ⁰ ×10 ¹
Yellow/Black		Output 2 ⁵		Output 2 ¹ ×10 ¹
Green		Output 2 ⁶		Output 2 ² ×10 ¹
Green/Black		Output 2 ⁷		Output 2 ³ ×10 ¹
Blue		Output 2 ⁸		Output 2 ⁰ ×10 ²
Blue/Black		Output 2 ⁹		Output 2 ¹ ×10 ²
Purple		Output 2 ¹⁰		Output 2 ² ×10 ²
Purple/Black		2 ¹¹		Output 2 ³ ×10 ²
Gray		N.C.		Output 2 ⁰ ×10 ³
White		N.C.		Output 2 ¹ ×10 ³
Red		Vcc (DC5V)		
Black		0V		

Note: The shield is in the encoder and not connected. A capacitor (0.1mF) is connected between 0V and FG.