

# HONTKO



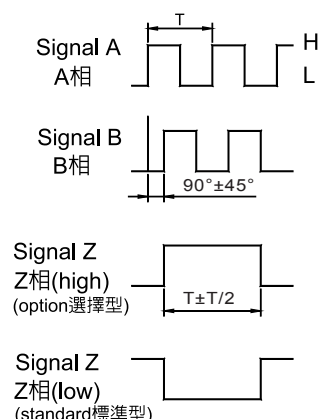
CE

- **Incremental Encoder**
- **Absolute Encoder**
- **Linear Wire Encoder / Pot.**
- **Manual Pulse Generator**

# ◀ INCREMENTAL ENCODER'S ELECTRICAL DATA ▶

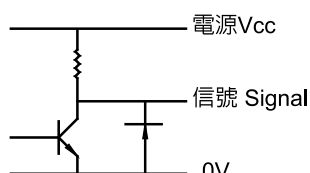
## 增量型譯碼器電氣特性

### • 輸出波形圖 Output Wave Form

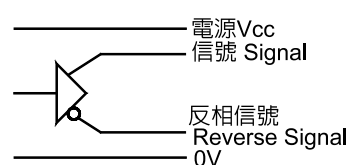


### • 電路輸出信號 Circuit Of Output Signal

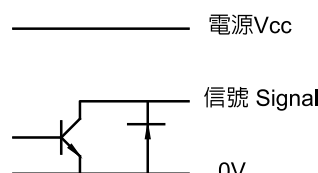
#### 電壓型 Voltage Type



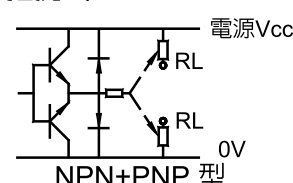
#### 線性差動 Line Driver



#### 電流型 Open-Collector



#### 推挽式 Push-Pull



### • 接線圖 Electrical Connections

Color wire function of cable

電壓電流型接法 NORMAL CIRCUIT

線性差動式接法 LINE DRIVER CIRCUIT

Color of wire	(pin)	Function	Color of wire	(pin)	Function
Red 紅	1A	+V	Red 紅	1A	+V
Black 黑	2B	0V Common	Black 黑	2B	0V Common
White 白	3C	A 相 CH A	Blue 藍	3C	A 相 CH A
Green 綠	4D	B 相 CH B	Green 綠	4D	B 相 CH B
Yellow 黃	5E	Z 相 CH Z	Yellow 黃	5E	Z 相 CH Z
Shield 隔離線	-	NC	Violet 紫	6F	/A 反相 CH A (reverse)
			Orange 橘	7G	/B 反相 CH B (reverse)
			Brown 棕	8H	/Z 反相 CH Z (reverse)
			Shield 隔離線	-	NC

Pin function of connector

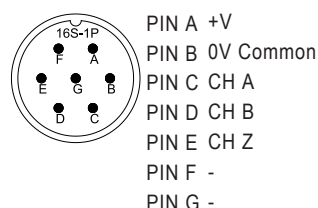
★ FOR LINEAR WIRE POT.

拉線式電阻尺用

TYPE:MS3102A16S-1P

(7pin connector)

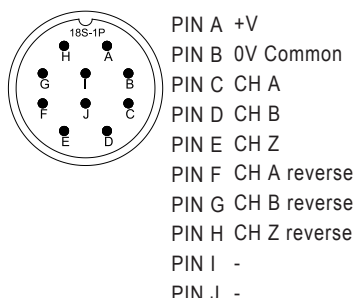
\*for Voltage, Open Collector, Push Pull



TYPE:MS3102A18S-1P

(10 pin connector)

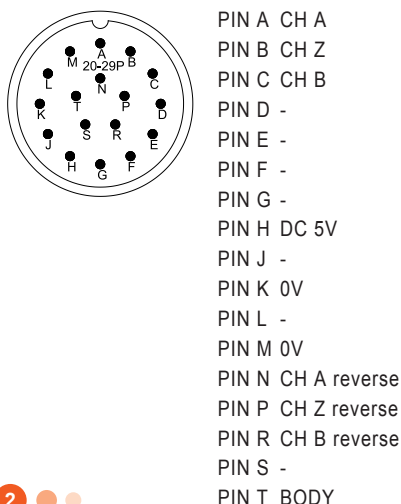
\*for Line Driver



TYPE:MS3102A20S-1P

(17 pin connector)-only for HPN-6D

\*for Line Driver



TYPE:PLT-164P



# Application of Rotary Encoder 旋轉式譯碼器基本應用例

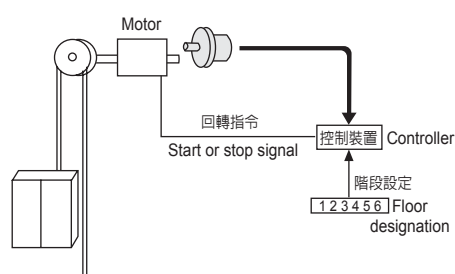
## 應用產品類別

伺服 / 步進馬達、機械手臂、繪圖機、射出機、電梯、XY工作檯、CNC車床、封套機械、雷達、輸送機，塗佈機、繞線機、裁切機、加油機、空油壓機及其他相關自動控制場合

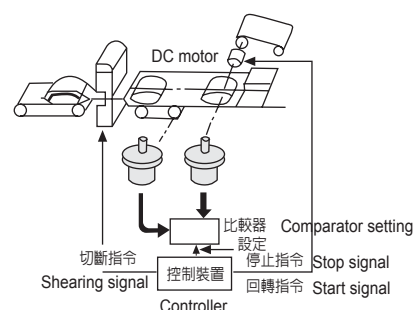
Servo motors, Robots, Plotters, Cutting machine, Injection machine, Office product, Elevator, Tape speed control, Rotary and X-Y table, NC machine, IC Bonder, Welding machine and other control for position or angle measurement.

## 應用圖例

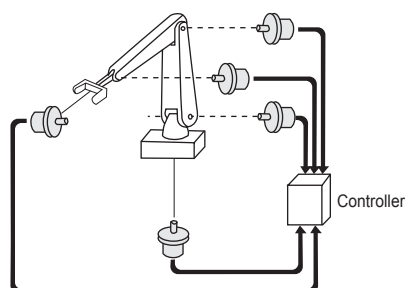
### ■ 電梯速度，位置控制 For elevators



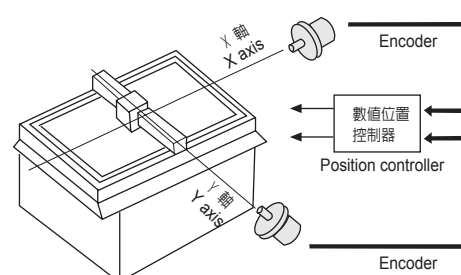
### ■ 長度裁切檢出 For shearing control



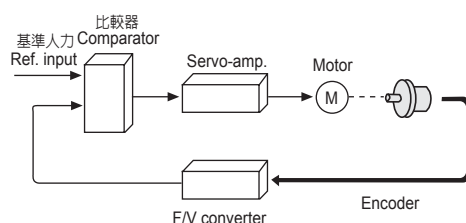
### ■ 工業機械手臂角度檢出 For industrial robots



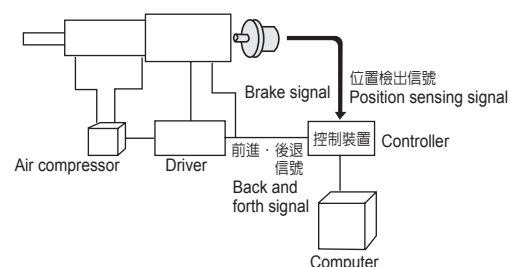
### ■ 繪圖機，CNC車床位置控制 For drafting machines and NC machines.



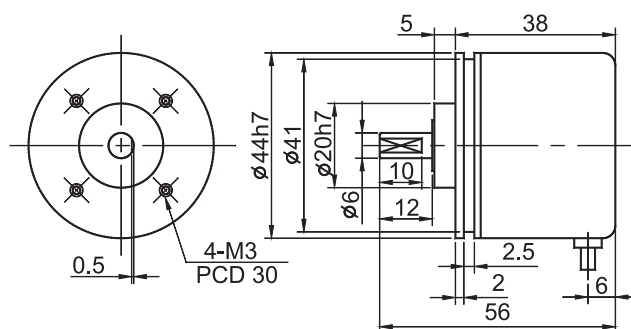
### ■ 迴轉速度控制 For digital servo systems



### ■ 空油壓位置檢出 For cylinder's position sensing



## HTR-W



### ◀ ECONOMICAL & SMALL ROTARY ENCODER ▶

#### ELECTRICAL SPEC.

Detection System	Incremental 增量型
Output Wave 輸出波形	Square Wave 方波
Standard Number of Pulse Per Revolution 解析	10, 20, 30, 40, 50, 60, 80, 100, 120, 125, 150, 180, 200, 250, 300, 360, 400, 500, 512, 600, 720, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048
Output Phase 輸出相	AB phase or ABZ phase
Electronics 電路特性	Voltage 電壓型, Open Collector 電流型, Push Pull 推挽式 or Line Driver 差動式
Power Supply 供應電源	DC 8~26V, DC 5V fixed
Current Consumption 消耗電流	≤ 60 mA
Output Capacity 輸出容量	Sync. Current: 20 mA, Residual Voltage: 0.5V or less
Max. Response 最大響應頻率	10K Hz ~ 100K Hz
Phase Different 相位差	A, B phase different 90°±45° (T/4±T/8), Z phase T±T/2
Wave Form Rise / Fall 波形上下時間	2 μs or less

#### MECHANICAL SPEC.

Shaft Diameter 軸徑	6 mm
Shaft Loading 軸荷重	(10~400 PPR)Axial 軸向: 1 Kg, Radial 徑向: 2 Kg (over 400 PPR)Axial 軸向: 0.5 Kg, Radial 徑向: 1 Kg
Starting Torque (at 25°) 起動轉矩	30 gf-cm or less
Max. Speed 最大機械容許速度	6,000 rpm
Vibration 震動	10g (10±1,500 Hz)
Polarity 極性保護	Against Reverse Protection (not with 5V)
Shock 衝擊	20g per 11 ms
Cable 電線	Ø4.5, 50 cm long
Weight 重量	≤ 200g

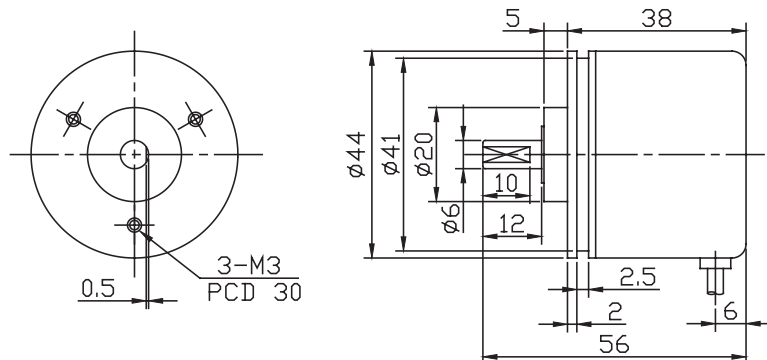
#### ENVIRONMENTAL SPEC.

Operating Temp. / Humidity 操作溫度/濕度	0°C ~ 60°C, RH 35% ~ 90% (No Condensation)
Storage Temp. 儲存溫度	-20°C ~ 80°C
Protection 保護等級	IP50: Dust Proof

#### ORDERING INFORMATION

HTR-W	Pulse per Revolution 解析	Output Phase 輸出相	Electronics 電路特性	Supply Voltage 供應電源
	10, 20, 30, 40, 50, 60, 80, 100, 120, 125, 150, 180, 200, 250, 300, 360, 400, 500, 512, 600, 720, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048 P/R	2: AB phase 3: ABZ phase 3H: AB+Z high phase	Blank: Voltage C: Open-Collector PP: Push-Pull *L: Line Driver 5 Vdc *HL: Line Driver 8~26Vdc	Blank: 8~26 Vdc 5V: 5 Vdc fixed

# HTR-W2



## ◀ ECONOMICAL & SMALL ROTARY ENCODER ▶

### ELECTRICAL SPEC.

Detection System	Incremental 增量型
Output Wave 輸出波形	Square Wave 方波
Standard Number of Pulse Per Revolution 解析	10, 20, 30, 40, 50, 60, 80, 100, 120, 125, 150, 180, 200, 250, 300, 360, 400, 500, 512, 600, 720, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048
Output Phase 輸出相	AB phase or ABZ phase
Electronics 電路特性	Voltage 電壓型, Open Collector 電流型, Push Pull 推挽式 or Line Driver 差動式
Power Supply 供應電源	DC 8~26V, DC 5V fixed
Current Consumption 消耗電流	≤ 60 mA
Output Capacity 輸出容量	Sync. Current: 20 mA, Residual Voltage: 0.5V or less
Max. Response 最大響應頻率	10K Hz ~ 100K Hz
Phase Different 相位差	A, B phase different 90°±45° (T/4±T/8), Z phase T±T/2
Wave Form Rise / Fall 波形上下時間	2 μs or less

### MECHANICAL SPEC.

Shaft Diameter 軸徑	6 mm
Shaft Loading 軸荷重	(10~400 PPR)Axial 軸向: 1 Kg, Radial 徑向: 2 Kg (over 400 PPR)Axial 軸向: 0.5 Kg, Radial 徑向: 1 Kg
Starting Torque (at 25°) 起動轉矩	30 gf-cm or less
Max. Speed 最大機械容許速度	6,000 rpm
Vibration 震動	10g (10±1,500 Hz)
Polarity 極性保護	Against Reverse Protection (not with 5V)
Shock 衝擊	20g per 11 ms
Cable 電線	Ø4.5, 50 cm long
Weight 重量	≤ 200g

### ENVIRONMENTAL SPEC.

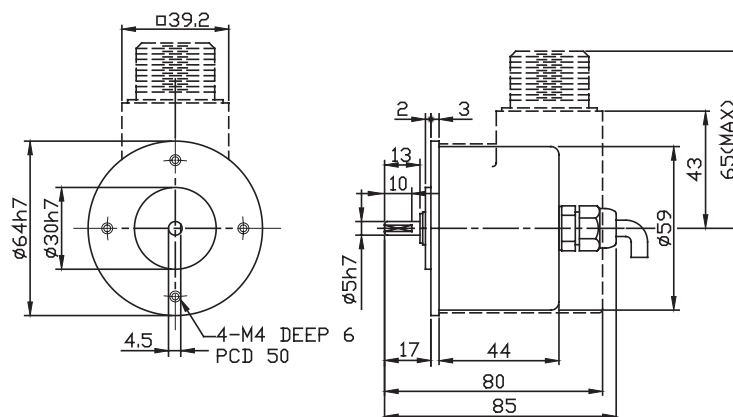
Operating Temp. / Humidity 操作溫度/濕度	0°C ~ 60°C, RH 35% ~ 90% (No Condensation)
Storage Temp. 儲存溫度	-20°C ~ 80°C
Protection 保護等級	IP50: Dust Proof

### ORDERING INFORMATION

HTR-W2	Pulse per Revolution 解析	Output Phase 輸出相	Electronics 電路特性	Supply Voltage 供應電源
	10, 20, 30, 40, 50, 60, 80, 100, 120, 125, 150, 180, 200, 250, 300, 360, 400, 500, 512, 600, 720, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048 P/R	2: AB phase 3: ABZ phase 3H: AB+Z high phase	Blank: Voltage C: Open-Collector PP: Push-Pull *L: Line Driver 5 Vdc *HL: Line Driver 8~26 Vdc	Blank: 8~26 Vdc 5V: 5 Vdc fixed



## HTR-6A



## ◀ HEAVY DUTY ROTARY ENCODER ▶

### ELECTRICAL SPEC.

Detection System	Incremental 增量型
Output Wave 輸出波形	Square Wave 方波
Standard Number of Pulse Per Revolution 解析	10, 20, 30, 40, 50, 60, 80, 100, 120, 125, 150, 180, 200, 250, 300, 360, 400, 500, 512, 600, 720, 800, 900, 1000, 1024, 1200, 1500, 1800, 2000, 2048, 2500
Output Phase 輸出相	AB phase or ABZ phase
Electronics 電路特性	Voltage 電壓型, Open Collector 電流型, Push Pull 推挽式 or Line Driver 差動式
Power Supply 供應電源	DC 8~26V, DC 5V fixed
Current Consumption 消耗電流	$\leq 60$ mA
Output Capacity 輸出容量	Sync. Current: 20 mA, Residual Voltage: 0.5V or less
Max. Response 最大響應頻率	10K Hz ~ 100K Hz
Phase Different 相位差	A, B phase different $90^\circ \pm 45^\circ$ (T/4 $\pm$ T/8), Z phase T $\pm$ T/2
Wave Form Rise / Fall 波形上下時間	2 $\mu$ s or less

### MECHANICAL SPEC.

Shaft Diameter 軸徑	5 mm
Shaft Loading 軸荷重	Axial 軸向: 1 Kg, Radial 徑向: 2 Kg
Starting Torque (at 25°) 起動轉矩	60 gf-cm or less
Max. Speed 最大機械容許速度	6,000 rpm
Vibration 震動	10g (10 $\pm$ 1,500 Hz)
Polarity 極性保護	Against Reverse Protection (not with 5V)
Shock 衝擊	20g per 11 ms
Cable 電線	$\phi 5.4$ , 100 cm long
Weight 重量	$\leq 350$ g

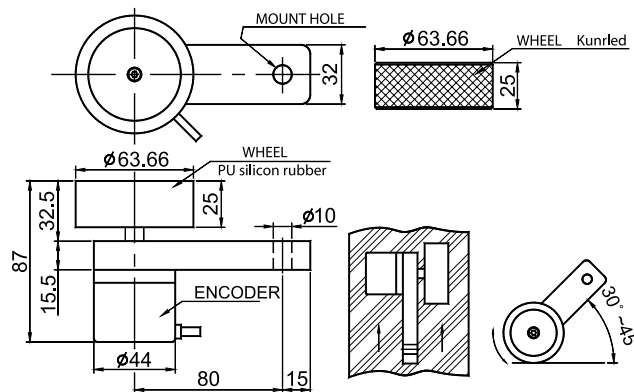
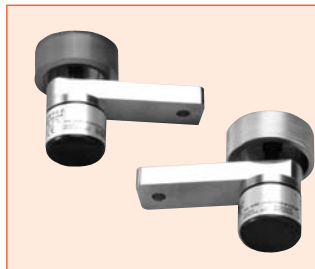
### ENVIRONMENTAL SPEC.

Operating Temp. / Humidity 操作溫度/濕度	-10°C ~ 60°C, RH 35% ~ 90% (No Condensation)
Storage Temp. 儲存溫度	-20°C ~ 80°C
Protection 保護等級	IP64: Dust & Dripping proof

### ORDERING INFORMATION

HTR-6A	Pulse per Revolution 解析	Output Phase 輸出相	Electronics 電路特性	Supply Voltage 供應電源	Connection 連接器
	10, 20, 30, 40, 50, 60, 80, 100, 120, 125, 150, 180, 200, 250, 300, 360, 400, 500, 512, 600, 720, 800, 900, 1000, 1024, 1200, 1500, 1800, 2000, 2048, 2500 P/R	2: AB phase 3: ABZ phase 3H: AB+Z high phase	Blank: Voltage C: Open-Collector PP: Push-Pull *L: Line Driver 5 Vdc *HL: Line Driver 8~26 Vdc	Blank: 8~26 Vdc 5V: 5 Vdc fixed	Blank: Axial Cable *A7: Axial 7 pin *R7: Radial 7 pin *A10: Axial 10 pin *R10: Radial 10 pin

## HTR-MW



## ◀ METER WHEEL ENCODER ▶

## ELECTRICAL SPEC.

Detection System	Incremental 增量型
Output Wave 輸出波形	Square Wave 方波
Resolution (mm/pulse) 解析	10, 5, 2, 1, 0.5, 0.2, 0.1 mm/pulse
Output Phase 輸出相	A phase or AB phase
Electronics 電路特性	Voltage 電壓型, Open Collector 電流型, Push Pull 推挽式 or Line Driver 差動式
Power Supply 供應電源	DC 8~26V, DC 5V fixed
Current Consumption 消耗電流	≤ 60 mA
Output Capacity 輸出容量	Sync. Current: 20 mA, Residual Voltage: 0.5V or less
Max. Response 最大響應頻率	10K Hz ~ 100K Hz
Phase Different 相位差	A, B phase different 90°±45° (T/4±T/8)
Wave Form Rise / Fall 波形上下時間	2 μs or less

## MECHANICAL SPEC.

Type of wheel 輪子種類	Metal Knurled 金屬壓花輪 / PU silicon rubber
Max. Speed	8 m / sec
Vibration 震動	10g (10±1,500 Hz)
Polarity 極性保護	Against Reverse Protection
Shock 衝擊	20g per 11 ms
Cable 電線	Ø4.5, 50 cm long
Weight 重量	≤ 500 g

## ENVIRONMENTAL SPEC.

Operating Temp. / Humidity 操作溫度/濕度	0°C ~ 60°C, RH 35% ~ 90% (No Condensation)
Storage Temp. 儲存溫度	-20°C ~ 80°C
Protection 保護等級	IP50: Dust Proof

## ORDERING INFORMATION

HTR-MW		Type of Wheel 輪子種類	Pulse per Revolution 解析	Output Phase 輸出相	Electronics 電路特性	Supply Voltage 供應電源
		<b>K:</b> metal knurled <b>R:</b> rubber	10, 5, 2, 1, 0.5, 0.2, 0.1 mm	<b>1:</b> A phase <b>2:</b> AB phase	<b>Blank:</b> Voltage <b>C:</b> Open-Collector <b>PP:</b> Push-Pull <b>*L:</b> Line Driver 5 Vdc <b>*HL:</b> Line Driver 8~26 Vdc	<b>Blank:</b> 8~26 Vdc <b>5V:</b> 5 Vdc fixed

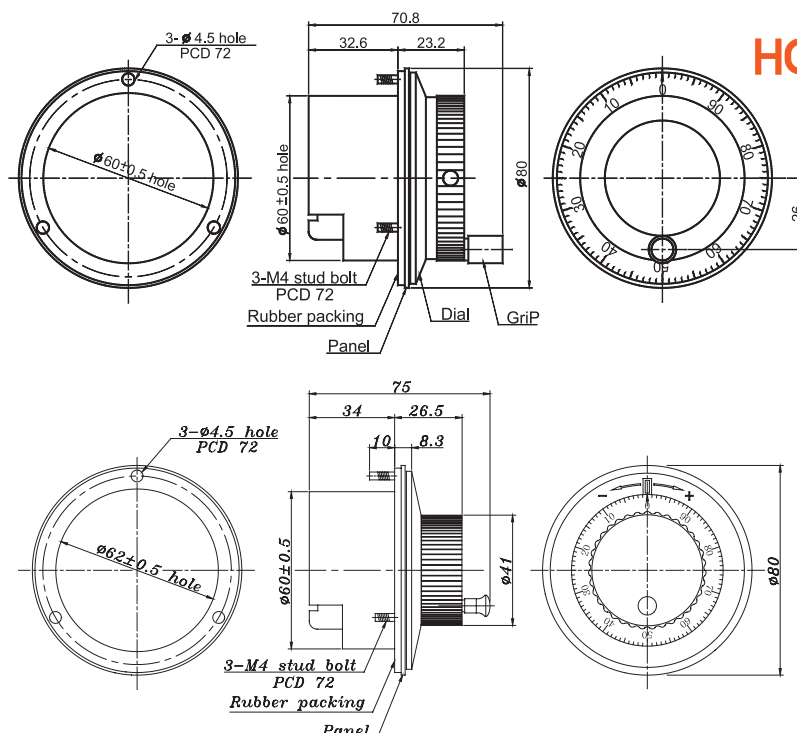
## PG-A



## NPG-A



\* with LED indicator



## ◀ MANUAL PULSE GENERATOR ▶

SUITABLE APPLICATION FOR CNC MACHINE BY PROVIDING HOME POSITION ADJUSTMENT AND INTERRUPTION SIGNAL.

### FEATURES:

- 25 PPR or 100 PPR available.
- Standard LINE DRIVER output for long-distance transmission.
- Short body and lightweight design.
- With dust & waterproof.
- Easy to install & Low cost solution.

### ELECTRICAL SPEC.

Pulse Number 脈波數	25, 100 PPR
Power Supply 供應電源	DC 12V or DC 5V (+/- 10%)
Output Current 輸出電流	100 mA
Output Phase 輸出相	AB phase
Output Mode 輸出信號	Voltage or Line Driver
Response Frequency 反應頻率	10K Hz
Power Consumption 消耗電流	120 mA

### MECHANICAL SPEC.

Starting Torque 始動轉矩	500 g
Shaft Loading (radial) 軸心負荷	2 Kg
Rotational Life (cycle)	10 <sup>6</sup>
Net Weight 重量	400 g
X.Y.Z. Vibration	0.5 g
Shock 耐衝擊	2 g

### ENVIRONMENTAL SPEC.

Operating Temp. / Humidity 操作溫度/濕度	-10°C ~ 50°C, RH 35% ~ 90% (No Condensation)
Storage Temp. 儲存溫度	-20°C ~ 80°C

### ORDERING INFORMATION

PG-A — TYPE

NPG-A

Type	Specification		
	DC POWER	PULSE	OUTPUT TYPE
A	5V	100 PPR	Voltage (R)
B	5V	25 PPR	Voltage (R)
C	12V	100 PPR	Voltage (R)
D	12V	25 PPR	Voltage (R)
E	5V	100 PPR	Line Driver (DIFF)
F	5V	25 PPR	Line Driver (DIFF)
G	24V	100 PPR	Voltage (R)
H	24V	25 PPR	Voltage (R)