

## 索引|Index

*公司簡介(Company profile).....	1-2
*步進馬達用語定義(Definations of terms for stepping motors).....	3
*主要規格一覽表(Table of major specifications).....	4
*DSH40系列規格表(DSH40 series specifications).....	5
*DSH56系列規格表(DSH56 series specifications).....	6
*DSH86系列規格表(DSH86 series specifications).....	8
*DST42系列規格表(DST42 series specifications).....	9
*DST56系列規格表(DST56 series specifications).....	10
*DST86系列規格表(DST86 series specifications).....	12
*步進驅動器(Stepping driver).....	13-16

TECO Electro Devices Co., Ltd. is a family member of the world motor giant TECO Electric & Machinery Co., Ltd. It was founded in 1985 as a department of TECO in producing of stepping motor, in 1998 it was spurn off from TECO to be a professional stepping motor producer. In last 18 years, TED has successfully sold its products worldwide in large number, mainly it goes through the cooperation of OEM, ODM with or for U.S.A. and European customers. TED has strong capability in R&D to produce highly advanced product to meet with customer's critical requirement and leading the highest level of international standard as well.

Based on its solid expertise, TED has expanded its production lines to offer customers a wider range of selections and the system solution. Hybrid Stepping Motor, Servo Motor, Servo Motor's Driver, Controller, PMDC/BLDC, PM Stepping Motor, Stepping Driver are TED's major products.

TECO has devoted itself to the motor industry for more than 47 years, now it is the world 5<sup>th</sup> largest motor manufacturer. As a member of this motor family, TED is doing its utmost to keep the good name of TECO in both quality and reliability. Offering the best product and quick service to the customer is the commitment and guideline of TED.

東元精電股份有限公司(TECO Electro Devices Co., Ltd.) 原為國際知名的馬達界巨人 -- 東元電機股份有限公司於1985年成立之步進馬達事業單位。為了成為步進馬達的專業製造廠而於1998年正式獨立營運，過去18年來，一直致力於步進馬達之專業製造。同時，藉由為歐美大廠ODM 或 OEM代工等方式，業已成功地將產品行銷全球超過15年以上。透過與業界先鋒顧客的密切合作，東元精電無論是在研發技術方面或產品品質及性能上，均已能充份掌握國際發展趨勢，並滿足其需求標準。

為了能在電控領域的競技場成為佼佼者，憑藉著過去穩固的專業基礎，東元精電不斷地擴充產品線以提供顧客更多的系統服務及產品選擇，如混步型步進馬達(Hybrid Stepping Motor)、伺服馬達(Servo Motor)、伺服驅動器(Servo Driver)、控制器(Controller)、直流有刷馬達(PMDC)/直流無刷馬達(BLDC)、永磁式步進馬達(PM Stepping Motor)及步進馬達驅動器(Stepping Driver)等，這些多樣化的產品已成為東元精電的產品支柱。

東元集團投入馬達工業領域已超過47年的歲月，現已躍升為世界前五大馬達製造商。身為馬達專業家族的一員，東元精電理所當然身負維護集團產品品質及信賴度良好聲譽的重責大任。如何提供最先進的產品及一流的服務，將永遠成為東元精電不變的信念及最高的行事準則。

TED's precise motor is made of high magnetic-inductive parts and unique magnetic-resistance technology, featuring low noise, low vibration, proper torque, and smooth run. These products, which are of high quality and high reliability, can fully satisfy customers.

In quality assurance, most of the products of TED have been evidenced with major international certifications - as zero-defect products that fulfill the customers' satisfaction and requirements.

- 1996 ISO-9002 certified
- 1996 Won ROC National Quality Award Session 7
- 1997 ISO-14001 certified
- 2001 ISO-9001 certified
- 2002 Stepping Motors Won Taiwan's  
Prestigious Symbol of Excellence Awards

東元精電各項精密馬達採用高磁元件，並以獨特之磁阻製造技術及優越的機能，生產低噪音、低振動、扭力適當、平穩運轉的高品質、高信賴性系列產品，以滿足客戶的需求。在品質的保證方面，東元精電各產品已通過多項國際性的肯定，期以零缺點的產品品質，服務客戶：

- 1996 榮獲經濟部商品檢驗局ISO-9002認證
- 1996 榮獲第七屆國家品質獎
- 1997 榮獲經濟部商品檢驗局ISO-14001認證
- 2001 榮獲經濟部商品檢驗局ISO-9001認證
- 2002 步進馬達榮獲經濟部精品獎

**TED offers customize items are as follows.**

**Shaft modification** : hollow shafts、flats、cross pin holes、through shaft tapped holes、keyways.  
single-sided or double-sided、length、diameter、pinions.

**Winding** : Resistance、Inductance.

**Rotor** : Stack configuration.

**Lead wires** : Length、Lead configuration、connector.

東元精電步進馬達可依客戶的需求做下列修改：

軸的修改：如中空軸、扁平軸、中空軸、出力軸加鍵槽、單邊出力軸或雙邊出力軸、軸的長度、軸的直徑等。

繞線 : 繞阻、電感。

轉子 : 結構。

出線 : 長度、出線數目、接頭。

● **無激磁靜止扭矩**  $T_d : N \cdot m (gf \cdot cm)$

在無激磁狀況下，由外部給予扭力直到馬達的角度產生變化時，此時所給予的最大扭力稱之。也就是永久磁鐵與轉子的作用力，又稱為殘磁轉矩。

● **Detent torque**  $T_d : N \cdot m (gf \cdot cm)$

Maximum torque that is generated when any angle deviation is made by applying external torque in non-exciting state for the motor using a permanent magnet on it's rotor. Also it is called as non-exciting holding torque or residual torque.

● **握持扭矩**  $T_h : N \cdot m (gf \cdot cm)$

步進馬達於通電狀態（通過額定電流）停止時，所能保持的最大扭力稱之。又稱為最大靜止扭矩。

● **Holding torque**  $T_h : N \cdot m (gf \cdot cm)$

Maximum torque that is generated when any angle deviation is made by applying external torque in defined exciting condition. Also it is called as maximum static torque.

● **最大自起動頻率**  $f_s : pulse/sec$

當步進馬達在無負載的狀況下，可瞬間（無加減速時間）起動的最大脈波速度（頻率）。

● **Maximum self-starting frequency**  $f_s : pulse/sec$

Maximum input pulse frequency that can start itself to synchronize with the input pulse frequency applied from outside as a step function in no-load condition.

● **最大響應頻率**  $f_r : pulse/sec$

當步進馬達在無負載的狀況下，在有加減速的條件下，能使馬達運轉的最大脈波速度（頻率）。

● **Maximum response frequency**  $f_r : pulse/sec$

Maximum input pulse frequency that can operate synchronize in no-load condition.

● **起動扭矩**  $T_s : N \cdot m (gf \cdot cm)$

在能夠自起動的頻率時所能產生的最大轉矩。

● **Starting torque**  $T_s : N \cdot m (gf \cdot cm)$

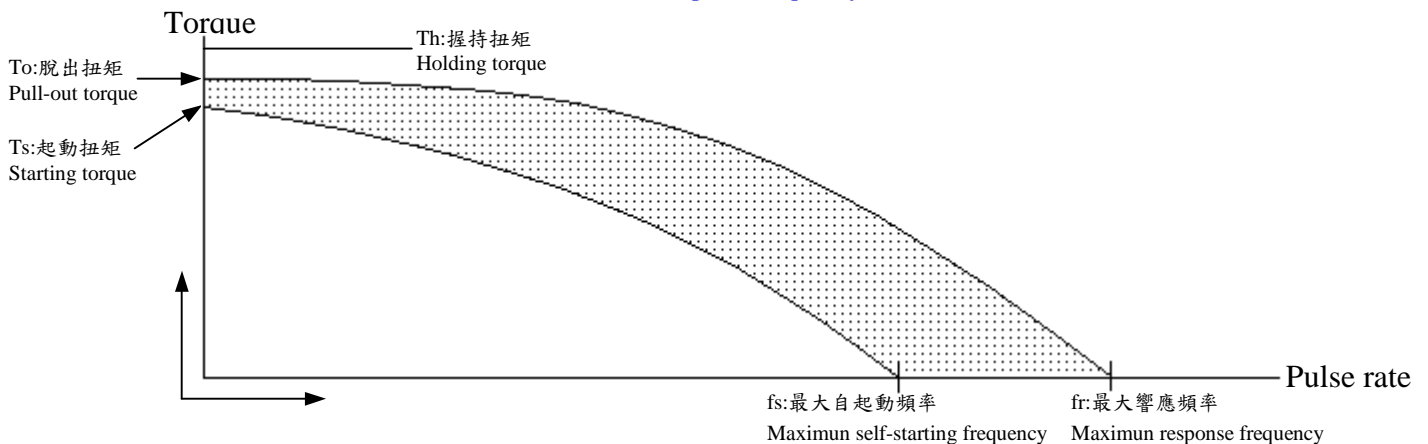
Maximum load torque that can start itself at a certain input pulse frequency.

● **脫出扭矩**  $T_o : N \cdot m (gf \cdot cm)$

各種運轉速度（輸入脈波頻率）所能產生的最大轉矩。

● **Pull-out torque**  $T_o : N \cdot m (gf \cdot cm)$

Maximum torque that can operate synchronously at a certain input pulse frequency.



● **靜止角度誤差**  $\epsilon_p : \%$

在無負載的條件下，轉子理論上的停止位置與實際上停止位置的差距稱之。量測方式為：以轉子任意一停止位置作為起點，對每一步級（步進角度）進行測量，共量測360°，將其理論位置值與實際位置值之差的最大+值及最大-值來進行計算，算式如下：

$$\epsilon_p = \pm \frac{[+ \Delta \theta_i + | - \Delta \theta_j |]}{2\theta_s} \times 100\%$$

● **Static angle error**  $\epsilon_p : \%$

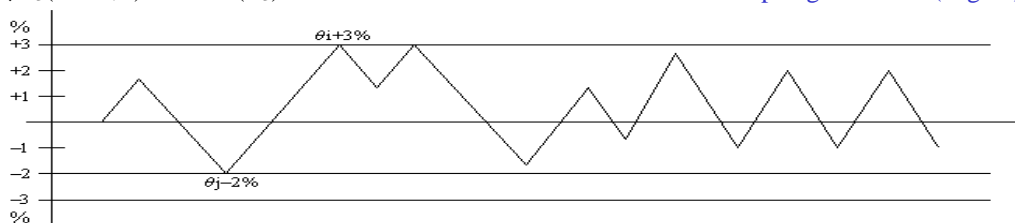
The rotor is rotated step by step any angle by means of flowing the rated current to its winding indefind exciting pattern with no-load. Then the difference between the theoretical angle and the average of maximum absolute positive and represented as follows:

符號定義

- $\epsilon_p$  : 靜止角度誤差 .....(%)
- $+ \Delta \theta_i$  : 最大正誤差值 ( $\theta_i - i \theta_s$ ) .....(度)
- $- \Delta \theta_j$  : 最大負誤差值 ( $\theta_j - j \theta_s$ ) .....(度)
- $\theta_s$  : 步進角度(理論值) .....(度)

Where

- $\epsilon_p$  : Static angle error .....(%)
- $+ \Delta \theta_i$  : Maximum positive value ( $\theta_i - i \theta_s$ ) .....(degree)
- $- \Delta \theta_j$  : Maximum negative value ( $\theta_j - j \theta_s$ ) .....(degree)
- $\theta_s$  : Theoretical step angle .....(degree)



$$\epsilon_p = \pm \frac{1}{2} \{ + 3\% + | - 2\% | \} = \pm 2.5\%$$

# 步進馬達(Stepping motors)

2相(2 phase)、4相(4 phase) (HyBrid系列、HighTorque系列)

## 馬達編碼說明(Indications Of The Model Number)

**DS T 42 E F 2 7 A**

- ※High Precision、High torque、High speed。
- ※Full type, Suit on your purpose。
- ※Quality Assurance, ISO9001 Certifier。

馬達種類(Motor type)	步進馬達(stepping motor)			
馬達系列(構造Model)	H: Hybrid		T: High Torque	
Frame尺寸(Dimension)	40: 40mm	42: 42mm	56: 56mm	86: 86mm
步進角角度(Step angle)	D: 0.9°		E: 1.8°	
馬達長度(Motor Length)	F、X、S、M、L、C: 參照各系列馬達詳細規格說明(See detail's page)			
馬達出線數 (Lead wire number)	2、4: 4條出線 Bipolar series connection	6: 6條出線 unipolar	8: 8條出線 User defined configuration	
繞線方式 (Lead wire number)	保留 (Details reserved)			
出力軸(Shaft)	A: 單邊出力軸(Single-sided)		B: 雙邊出力軸(Double-sided)	

## DSH系列依Frame尺寸可區分成三種尺寸 (Specification of DSH series)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

Frame Size (mm)	Step angle (degrees)	Rated voltage (VDC)	Rated Current (A/Phase)	Holding torque (gf-cm)	詳細規格頁數 Details in page	其他特殊規格 請與經銷商洽詢 To customize motors, please contact with our agent.
40	1.8	3.3~12.0	0.32~1.2	780~2200	Page 5	
56	0.9/1.8	1.4~24.0	0.2~3.8	2300~12000	Page 6	
86	0.9/1.8	1.8~12.0	1.0~4.5	8500~40000	Page 8	

## DST系列依Frame尺寸可區分成三種尺寸 (Specification of DST series)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

Frame Size (mm)	Step angle (degrees)	Rated voltage (VDC)	Rated Current (A/Phase)	Holding torque (gf-cm)	詳細規格頁數 Details in page	其他特殊規格 請與經銷商洽詢 To customize motors, please contact with our agent.
42	1.8	1.9~24.0	0.2~1.4	800~3200	Page 9	
56	0.9/1.8	1.9~8.6	1.0~5.0	3900~18000	Page 10	
86	1.8	2.0~7.6	2.0~6.7	20000~66000	Page 12	

## 全系列馬達一般性規格(General Specification)

項目(Item)	DSH40、DSH56、DST42、DST56	DSH86、DST86
步進角精度(Step Angle Accuracy)	±5%	
靜態徑向誤差(Redial Play)	0.025mm Max. (0.5Kg Load)	
靜態軸向誤差(End Play)	0.075mm Max. (1Kg Load)	
動態徑向誤差(Shaft Run-Out)	0.05 mm (T.I.R)	
軸心同心度(Concentricity)	0.075mm (T.I.R)	
軸心垂直度(Perpendicularity)	0.08mm (T.I.R)	
溫升(Temperature Rise)	80°C (Max.)	
周圍溫度(Ambient Temperature)	-10°C~50°C	
線圈絕緣等級(Insulation Class)	B (130°C)	
絕緣電阻值(Insulation Resistance)	100MΩ min. (at 500VDC)	
耐壓等級(Dielectric Strength)	500VAC (for 1 min.)	900VAC (for 1 min)

# DSH 40 series – 規格及尺寸圖

## Specification and dimension

4線式規格表(Bipolar series connection – 4 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DSH40EF28A	1.8	3.3	1.0	780	3.3	3.0	12	140
DSH40EX24A	1.8	5.0	1.0	1200	5.0	6.0	13	145

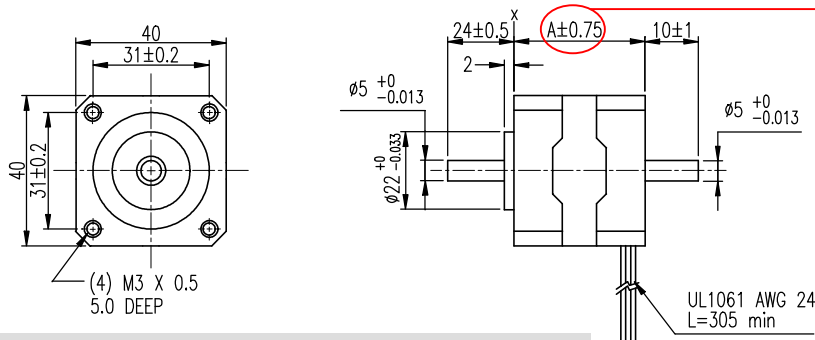
6線式規格表(Unipolar – 6 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DSH40ES61A	1.8	4.0	0.95	1000	4.2	3.0	19	200
DSH40ES62A	1.8	9.6	0.4	1000	24	16	19	200
DSH40ES63A	1.8	12	0.32	1000	37.5	22	19	200
DSH40EM61A	1.8	6.0	0.8	1600	7.5	7.5	25	220
DSH40EM62A	1.8	12	0.4	1600	30	30	25	220
DSH40EL61A	1.8	4.0	1.2	2160	3.3	3.3	35	260
DSH40EL62A	1.8	6.0	0.8	2200	7.5	7.5	35	260
DSH40EL63A	1.8	12	0.4	2160	30	30	35	260

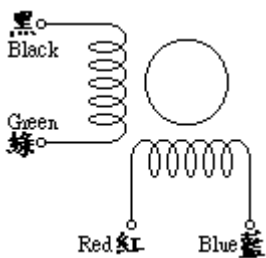
DIMENSION (UNIT : mm)



A-馬達長度(Motor Length)	
DSH40E F 28A(Model number)	
F	22 mm
X	26 mm
S	33 mm
M	39 mm
L	47 mm

出線線色、接線及驅動方式(Wiring diagram and driving)

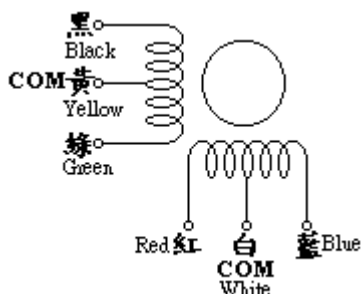
4線式馬達(Bipolar series connection – 4 leads diagram)



Bipolar ; 兩相激磁  
Two phase driving

STEP	黑 Black A	紅 Red B	綠 Green A/	藍 Blue B/	CCW
1	+	+	-	-	↑ ↓
2	-	+	+	-	
3	-	-	+	+	
4	+	-	-	+	
1	+	+	-	-	CW

6線式馬達(Unipolar – 6 leads diagram)



Unipolar ; 兩相激磁  
Two phase driving

STEP	黑 Black A	紅 Red B	綠 Green A/	藍 Blue B/	COM + VDC	CCW
1	+	+	-	-	↑ ↓	
2	-	+	+	-		
3	-	-	+	+		
4	+	-	-	+		
1	+	+	-	-	CW	

# DSH 56 series — 規格及尺寸圖

## Specification and dimension



4線式規格表 (Bipolar series connection - 4 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DSH56EL2JA	1.8	3.8	2.0	12700	1.9	7.0	220	850

6線式規格表 (Unipolar - 6 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DSH56DX62A	0.9	12	0.4	2300	30	35	60	350
DSH56DS61A	0.9	6.0	0.85	4200	7.1	14	110	500
DSH56DM62A	0.9	12	0.6	5800	20	40	130	550
DSH56EX62A	1.8	12	0.4	2500	30	30	60	340
DSH56EX63A	1.8	24	0.2	2500	120	110	60	340
DSH56ES61A	1.8	6.0	0.85	5000	7.1	13	110	500
DSH56ES62A	1.8	12	0.42	5000	29	38	110	500
DSH56ES63A	1.8	24	0.21	5000	112	180	110	500
DSH56ES64A	1.8	5.0	1.0	5000	5.0	9.0	110	500
DSH56ES65A	1.8	1.4	3.8	5000	0.37	0.45	110	500
DSH56EM61A	1.8	6.0	1.2	6000	5.0	9.0	125	550
DSH56EM62A	1.8	12	0.6	6000	20	38	125	550
DSH56EM63A	1.8	24	0.3	6000	80	145	125	550
DSH56EL61A	1.8	5.4	1.5	9000	3.6	7.0	220	850
DSH56EL62A	1.8	12	0.68	9000	17	33	220	850
DSH56EL63A	1.8	24	0.34	9700	70.6	110	220	850
DSH56EC61A	1.8	6.0	1.88	12500	3.2	8.0	350	1400
DSH56EC62A	1.8	12	0.94	12000	12.8	30	350	1400

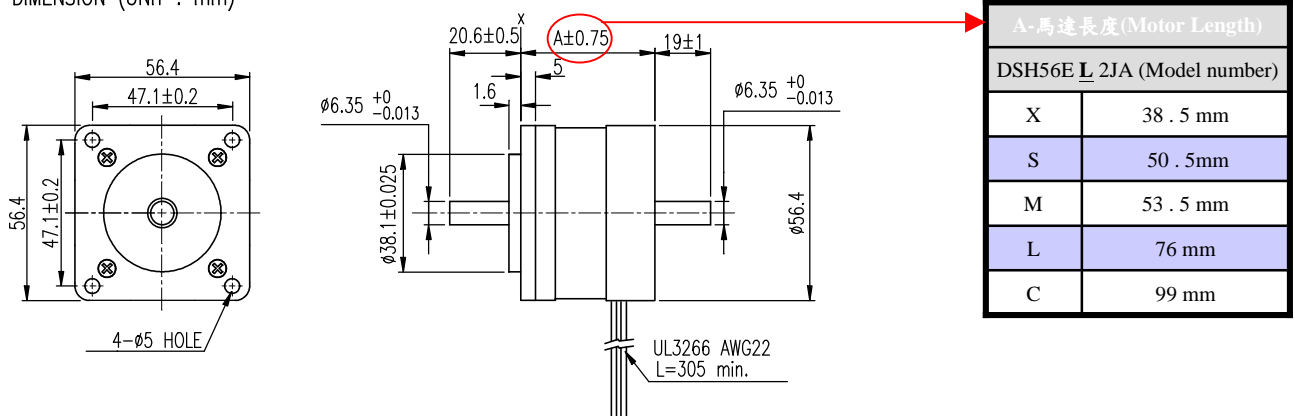
8線式規格表 (8 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

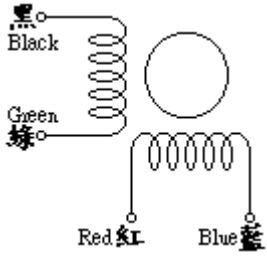
馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DSH56DL81A	0.9	5.4	1.5	8500	3.6	9.5	230	950
DSH56EX84A	1.8	2.3	1.5	2850	1.5	1.7	60	340
DSH56EC84A	1.8	3.4	2.9	12000	1.2	2.5	350	1400

DIMENSION (UNIT : mm)

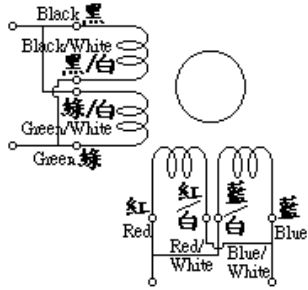


出線線色、接線及驅動方式(Wiring diagram and driving)

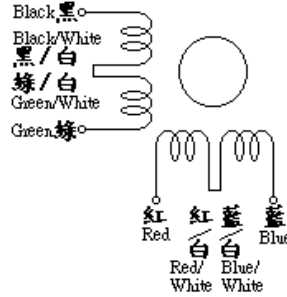
4線式馬達  
(Bipolar series connection – 4 leads diagram)



8線式—並聯接法  
(8 leads diagram – Parallel connection)



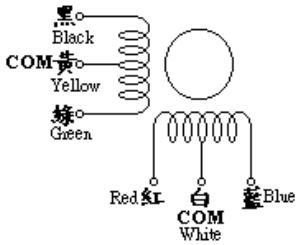
8線式—串聯接法  
(8 leads diagram – series connection)



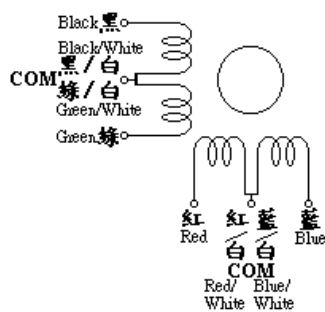
STEP	黑 Black A	紅 Red B	綠 Green A/ B/	藍 Blue B/ A/	CCW ↑ ↓ CW
1	+	+	-	-	↑ ↓
2	-	+	+	-	
3	-	-	+	+	
4	+	-	-	+	
1	+	+	-	-	

Bipolar ; 兩相激磁  
Two phase driving

6線式馬達  
(Unipolar – 6 leads diagram)



8線式—串聯接法  
(8 leads diagram – series connection for 6 leads)



STEP	黑 Black A	紅 Red B	綠 Green A/ B/	藍 Blue B/ A/	COM + VDC	CCW ↑ ↓ CW
1	+	+	-	-	↑ ↓	
2	-	+	+	-		
3	-	-	+	+		
4	+	-	-	+		
1	+	+	-	-		

Unipolar ; 兩相激磁  
Two phase driving



# DSH 86 series – 規格及尺寸圖 Specification and dimension



6線式規格表(Unipolar – 6 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DSH86DS6TA	0.9	3.2	2.85	13000	1.1	3.7	560	1400
DSH86DM61A	0.9	3.0	4.0	26000	0.75	4.0	1100	2650
DSH86DL61A	0.9	12	1.8	40000	6.5	43	1800	3600
DSH86ES61A	1.8	1.8	4.5	13000	0.4	1.5	560	1400
DSH86ES62A	1.8	5.5	1.25	14000	4.4	16	560	1400
DSH86EM61A	1.8	3.0	4.0	26000	0.75	4.2	1100	2650
DSH86EM62A	1.8	6.0	2.0	28000	3.0	16	1100	2650
DSH86EM63A	1.8	12	1.0	28000	12	72	1100	2650
DSH86EL61A	1.8	12	1.8	35000	6.6	40	1800	3700
DSH86EL62A	1.8	5.0	4.0	40000	1.25	7.0	1800	3700

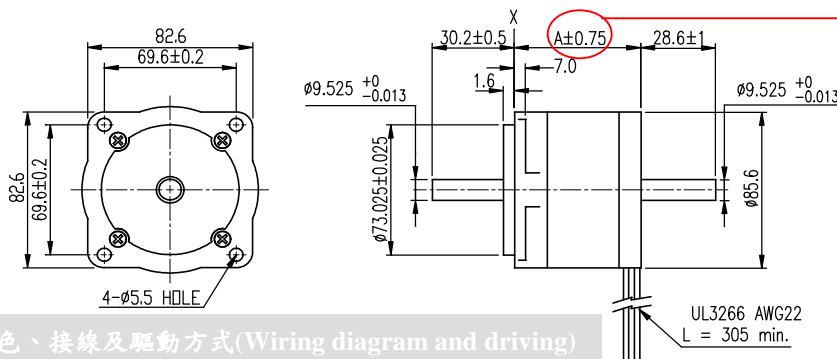
8線式規格表(8 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DSH86DX81A	0.9	3.3	2.0	9500	1.65	2.1	560	1400
DSH86EX82A	1.8	2.3	3.0	8500	0.75	1.1	560	1400
DSH86ES84A	1.8	1.9	4.2	13000	0.45	1.1	560	1400

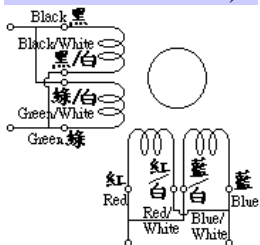
DIMENSION (UNIT : mm)



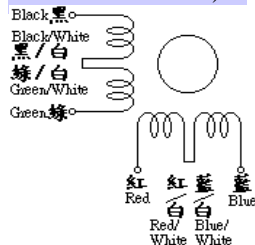
A-馬達長度(Motor Length)	
DSH86D S 6TA (Model number)	
X	47.5 mm
S	62.5 mm
M	94 mm
L	128 mm

出線線色、接線及驅動方式(Wiring diagram and driving)

8線式 – 並聯接法  
(8 leads diagram – Parallel connection)



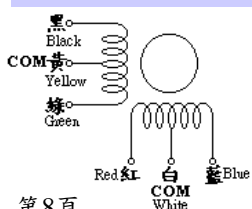
8線式 – 串聯接法  
(8 leads diagram – series connection)



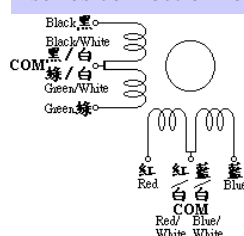
Bipolar ; 兩相激磁  
Two phase driving

STEP	黑 Black A	紅 Red B	綠 Green A/	藍 Blue B/	CCW
1	+	+	-	-	↑
2	-	+	+	-	
3	-	-	+	+	
4	+	-	-	+	
1	+	+	-	-	CW

6線式馬達  
(Unipolar – 6 leads diagram)



8線式 – 串聯接法  
(8 leads diagram – series connection for 6 leads)



Unipolar ; 兩相激磁  
Two phase driving

STEP	黑 Black A	紅 Red B	綠 Green A/	藍 Blue B/	COM	CCW
1	+	+	-	-	+ VDC	↑
2	-	+	+	-		
3	-	-	+	+		
4	+	-	-	+		
1	+	+	-	-	CW	

# DST 42 series — 規格及尺寸圖

## Specification and dimension

4線式規格表(Bipolar series connection – 4 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DST42EF27A	1.8	1.9	1.4	800	1.35	1.2	16	150
DST42EX27A	1.8	2.6	1.4	1400	1.85	2.0	16	150

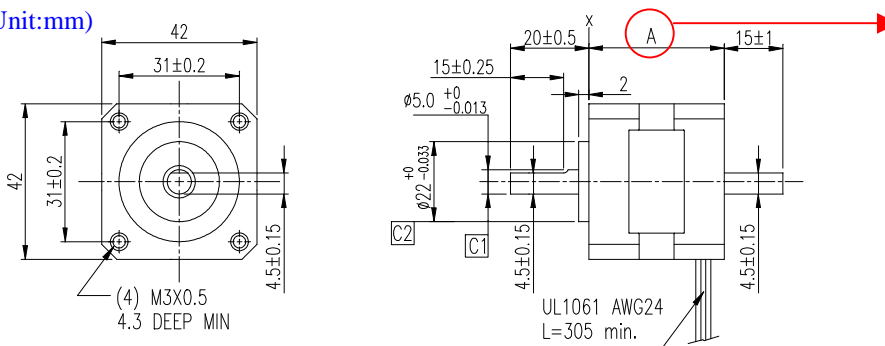
6線式規格表(Unipolar – 6 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DST42ES61A	1.8	4.0	0.95	1600	4.2	2.5	35	200
DST42ES62A	1.8	9.6	0.4	1600	24	15	35	200
DST42ES63A	1.8	12	0.31	1600	38.5	23	35	200
DST42EM61A	1.8	4.0	1.2	2600	3.3	3.2	53	250
DST42EM62A	1.8	6.0	0.8	2600	7.5	7.0	53	250
DST42EM63A	1.8	12	0.4	2600	30	28	53	250
DST42EM64A	1.8	24	0.2	2600	120	112	53	250
DST42EL61A	1.8	4.0	1.2	3200	3.3	2.8	68	350
DST42EL62A	1.8	6.0	0.8	3200	7.5	7.0	68	350
DST42EL63A	1.8	12	0.4	3200	30	28	68	350

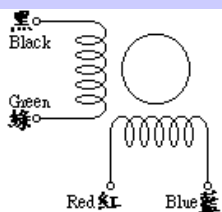
DIMENSION(Unit:mm)



A-馬達長度(Motor Length)	
DST42E F 27A (Model number)	
F	22 mm
X	26 mm
S	33 mm
M	39 mm
L	47 mm

出線線色、接線及驅動方式

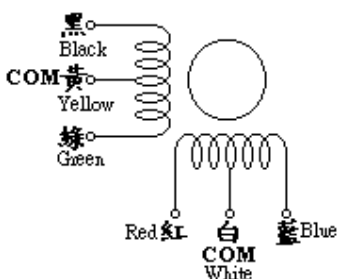
4線式馬達(Bipolar series connection – 4 leads diagram)



Bipolar ; 兩相激磁  
Two phase driving

STEP	黑 Black A	紅 Red B	綠 Green A/	藍 Blue B/	CCW
1	+	+	-	-	↑ ↓
2	-	+	+	-	
3	-	-	+	+	
4	+	-	-	+	
1	+	+	-	-	CW

6線式馬達(Unipolar – 6 leads diagram)



Unipolar ; 兩相激磁  
Two phase driving

STEP	黑 Black A	紅 Red B	綠 Green A/	藍 Blue B/	COM + VDC	CCW
1	+	+	-	-	↑ ↓	
2	-	+	+	-		
3	-	-	+	+		
4	+	-	-	+		
1	+	+	-	-	CW	

# DST 56 series — 規格及尺寸圖

## Specification and dimension



4線式規格表(Bipolar series connection – 4 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DST56EX43A	1.8	2.7	2.12	5400	1.3	2.24	120	470
DST56EM2HA	1.8	2.1	4.2	11000	0.5	2.1	300	700
DST56EL2FA	1.8	2.0	4.0	17000	0.5	2.2	480	1000

6線式規格表(Unipolar – 6 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DST56DF61A	0.9	5.7	1.0	3900	5.7	6.3	90	400
DST56DX63A	0.9	1.9	3.0	4300	0.63	0.7	120	450
DST56DM62A	0.9	3.6	2.0	8500	1.8	3.3	300	700
DST56DL63A	0.9	3.0	3.0	13500	1.0	1.9	480	1000
DST56DC67A	0.9	5.1	3.0	18000	1.7	5.3	720	1500
DST56EX61A	1.8	5.7	1.0	4300	5.7	5.6	120	470
DST56EX62A	1.8	2.8	2.0	4300	1.4	1.5	120	470
DST56EX63A	1.8	1.9	3.0	4100	0.63	0.6	120	470
DST56EM61A	1.8	7.4	1.0	8500	7.4	15	280	700
DST56EM62A	1.8	3.6	2.0	8500	1.8	2.9	300	700
DST56EM63A	1.8	2.3	3.0	9000	0.75	1.6	300	700
DST56EL61A	1.8	8.6	1.0	13500	8.6	16.5	480	1000
DST56EL62A	1.8	4.5	2.0	13500	2.25	3.8	480	1000
DST56EL63A	1.8	3.0	3.0	13500	1.0	1.7	480	1000
DST56EC67A	1.8	5.1	3.0	18000	1.7	5.3	720	1500

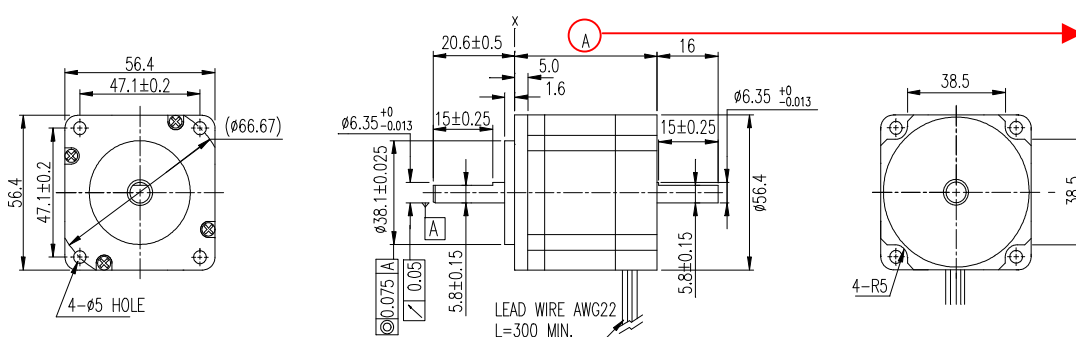
8線式規格表(8 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DST56DS85A	0.9	6.0	1.2	7500	5.0	11.6	275	450
DST56ES85A	1.8	5.0	1.0	7000	5.0	9.5	275	620
DST56EM82A	1.8	3.6	2.0	8000	1.8	2.9	300	700
DST56EC89A	1.8	2.5	5.0	15000	0.5	1.1	720	1500

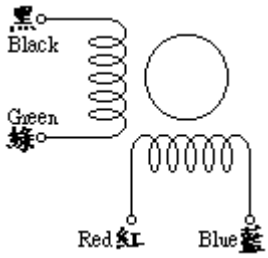
### DIMENSION(Unit:mm)



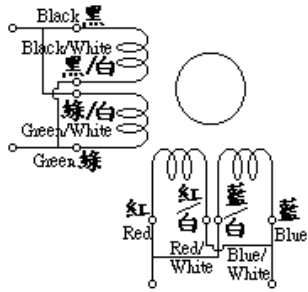
A-馬達長度(Motor Length)	
DST56E X 43A (Model number)	
F	39 mm
X	43.5 mm
S	52 mm
M	55 mm
L	77.5 mm
C	103 mm

出線線色、接線及驅動方式(Wiring diagram and driving)

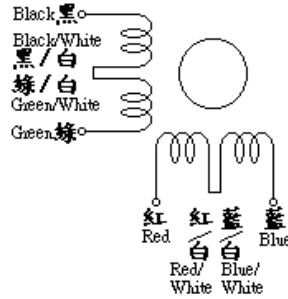
4線式馬達  
(Bipolar series connection –  
4 leads diagram)



8線式—並聯接法  
(8 leads diagram –  
Parallel connection)



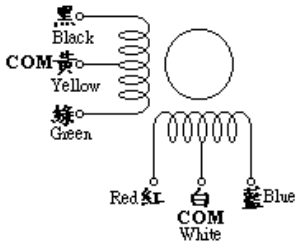
8線式—串聯接法  
(8 leads diagram –  
series connection)



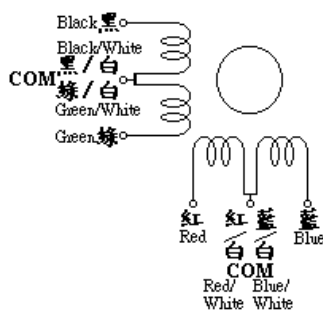
STEP	黑 Black A	紅 Red B	綠 Green A/	藍 Blue B/	CCW ↑
1	+	+	-	-	↓ CW
2	-	+	+	-	
3	-	-	+	+	
4	+	-	-	+	
1	+	+	-	-	

Bipolar ; 兩相激磁  
Two phase driving

6線式馬達  
(Unipolar – 6 leads diagram)



8線式—串聯接法  
(8 leads diagram –  
series connection for 6 leads)



STEP	黑 Black A	紅 Red B	綠 Green A/	藍 Blue B/	COM +	CCW ↑
1	+	+	-	-	+ VDC ↓ CW	
2	-	+	+	-		
3	-	-	+	+		
4	+	-	-	+		
1	+	+	-	-		

Unipolar ; 兩相激磁  
Two phase driving

# DST 86 series — 規格及尺寸圖

## Specification and dimension



6線式規格表(Unipolar – 6 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DST86ES61A	1.8	4.4	2.0	20000	2.2	8.0	1400	1750
DST86ES62A	1.8	3.0	3.0	22000	1.0	4.0	1400	1750
DST86ES63A	1.8	2.0	4.5	22000	0.45	1.9	1400	1750
DST86EM61A	1.8	6.4	2.0	44000	3.2	20	2700	2800
DST86EM62A	1.8	4.2	3.0	44000	1.4	6.6	2700	2800
DST86EM63A	1.8	2.8	4.5	42000	0.66	3.0	2700	2800
DST86EL61A	1.8	7.6	2.0	66000	3.8	25	4000	3930
DST86EL62A	1.8	3.8	4.0	66000	0.97	5.5	4000	3930

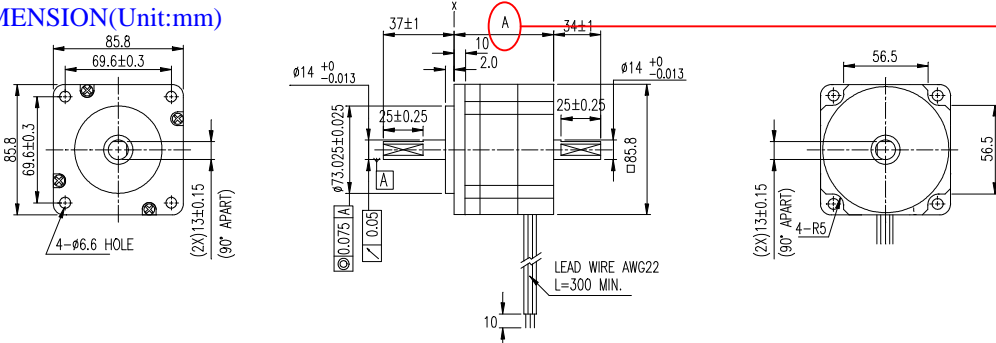
8線式規格表(8 leads specification)

1gf-cm=0.001 kgf-cm

1 gf-cm=0.000098 N-m

馬達編號 Model number	Step angle (degrees)	Rated voltage (VDC)	Rated current (A/φ)	Holding torque (gf-cm)	Winding resistance (Ω±10% / φ)	Inductance (mH ±20% / φ)	Rotor inertia (g-cm <sup>2</sup> )	Weight (gw)
DST86ES83A	1.8	2.0	4.5	22000	0.45	1.7	1400	1750
DST86EM82A	1.8	4.2	3.0	44000	1.4	6.6	2700	2800
DST86EM83A	1.8	2.8	4.5	42000	0.66	3.0	2700	2800
DST86EL82A	1.8	3.8	4.0	66000	0.97	5.5	4000	3930
DST86EL87A	1.8	3.0	6.7	66000	0.45	2.7	4000	3840

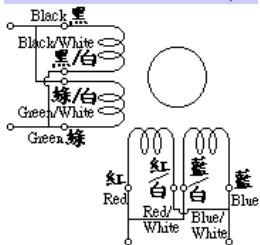
### DIMENSION(Unit:mm)



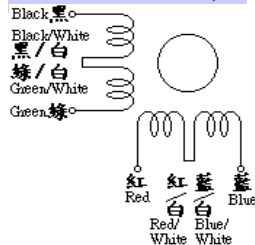
A-馬達長度(Motor Length)	
DST86E S 61A (Model number)	
X	47.5 mm
S	62.5 mm
M	94 mm
L	128 mm

### 出線線色、接線及驅動方式(Wiring diagram and driving)

#### 8線式—並聯接法 (8 leads diagram – Parallel connection)



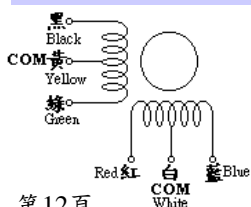
#### 8線式—串聯接法 (8 leads diagram – series connection)



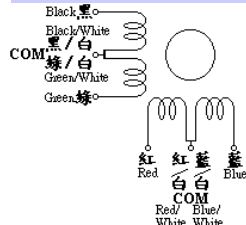
Bipolar ; 兩相激磁  
Two phase driving

STEP	黑 Black A	紅 Red B	綠 Green A/	藍 Blue B/	CCW
1	+	+	-	-	↑
2	-	+	+	-	
3	-	-	+	+	
4	+	-	-	+	
1	+	+	-	-	CW

#### 6線式馬達 (Unipolar – 6 leads diagram)



#### 8線式—串聯接法 (8 leads diagram – series connection for 6 leads)



Unipolar ; 兩相激磁  
Two phase driving

STEP	黑 Black A	紅 Red B	綠 Green A/	藍 Blue B/	COM + VDC	CCW
1	+	+	-	-	↓	↓
2	-	+	+	-		
3	-	-	+	+		
4	+	-	-	+		
1	+	+	-	-	CW	

# 步進驅動器 (Stepping driver)

AU系列(series)、DU系列(series)、RU系列(series)

驅動器編碼說明 (Indications Of The Model Number)

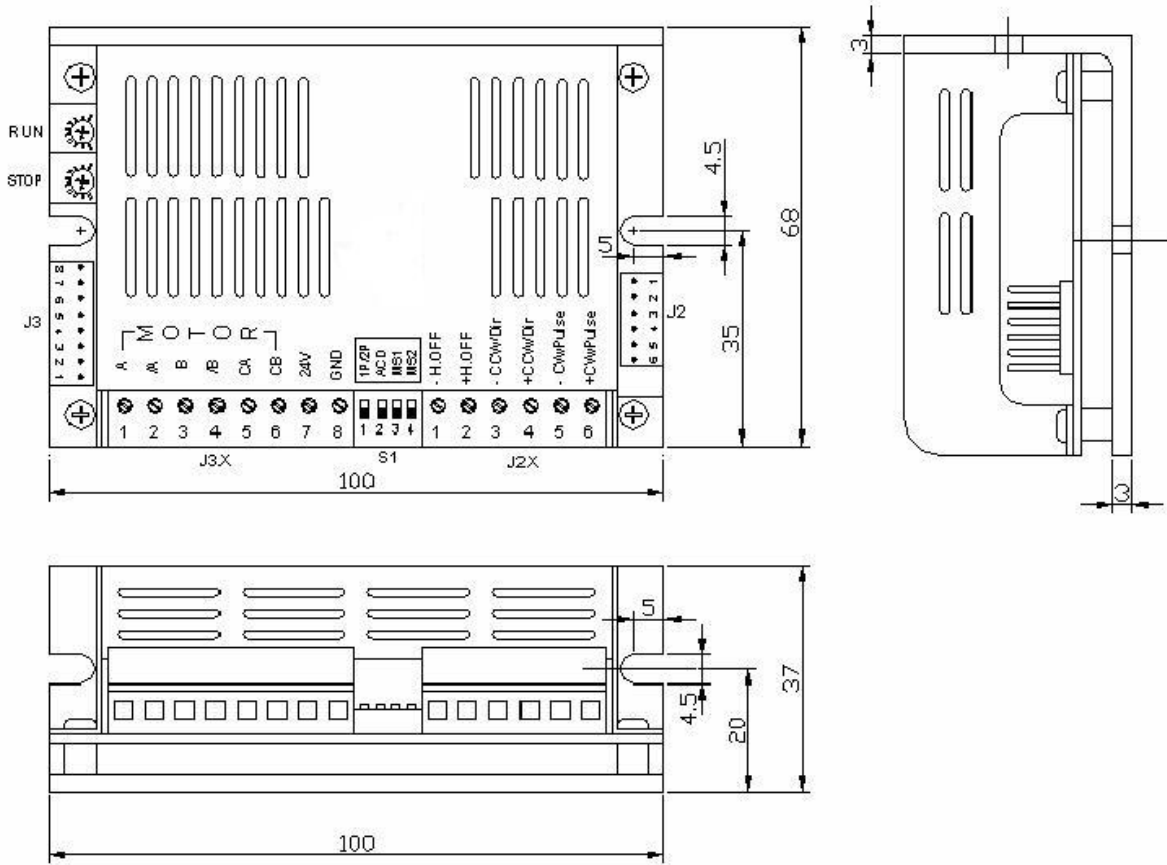
**A U 1 2 1 0**

A	輸入電壓 (Power type)	A:AC電源 (AC power)	D:DC電源 (DC power)	R: AC/DC電源 (AC/DC power)
U	驅動方式 (Driving system)	B : Bipolar		U : Unipolar
1	輸入電壓 (Power range)	1=AC 110V	1=DC12V 2=DC24V 3=DC36V	4=DC 48V 6=DC 75V R=DC24V或AV24V (DC24V or AC24V)
2	額定電流 (Rated current)	2=2A	3=3A	4=4A 6=6A
1	輸入控制方式 (Divide)	0=全步/半步 Full/Half step	1=全步/半步 Full/Half step	2=微步級 Micro step 3=微步級 Micro step
0	保留 (Reserved)	保留 (Reserved)		

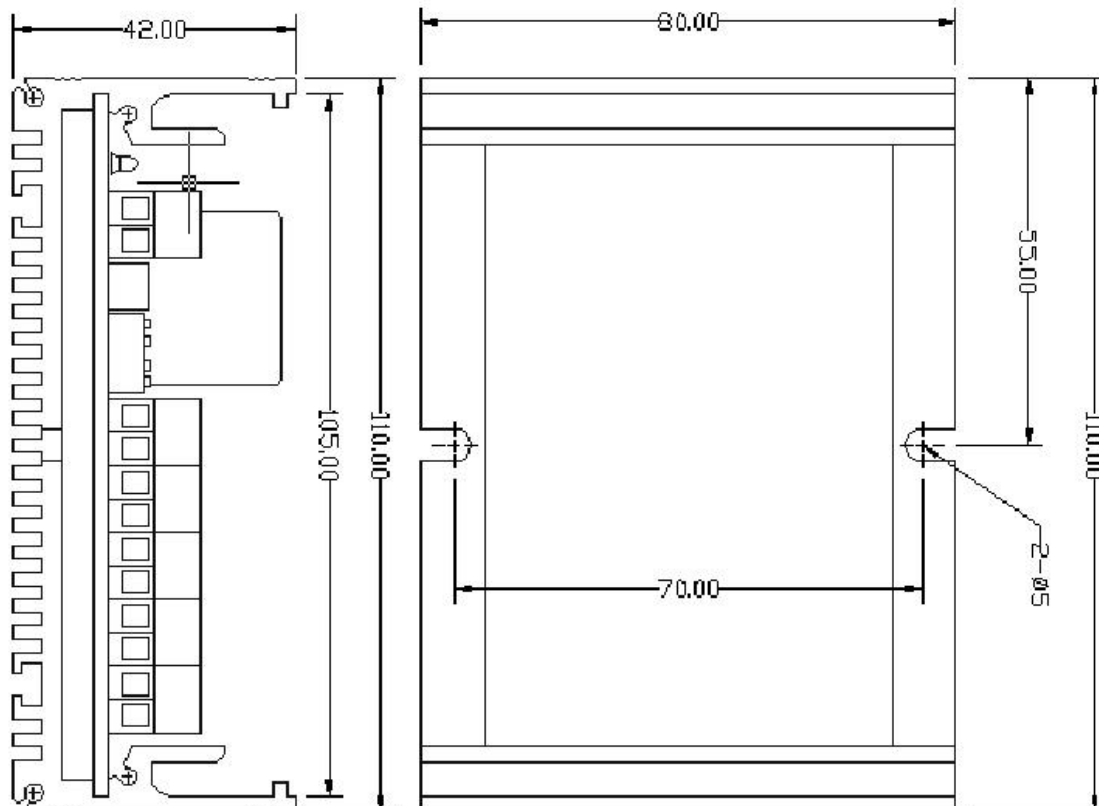
DU/RU系列(series)

型號 (MODEL .NO)	DU3131	RUC330	DB6630
搭配馬達 Compatible motors	DSH40/DST42系列 6/8線 1.5A以下 DSH40/DST42 series Lead lines: 6 or 8 Rated current is under 1.5A.	DSH40/DST42系列 6/8線 2.5A以下 DSH56/DST56 series Lead lines: 6 or 8 Rated current is under 2.5A.	DSH86/DST86 4/6/8線 3~6A DSH86/DST86 series Lead lines: 4 or 6 or 8 Rated current is from 3A to 6A.
驅動方式 Driving Method	單極定電流 6線 Unipolar constant current	單極定電流 6線 Unipolar constant current	雙極定電流 4線 Bipolar constant current
電源輸入 Power Input	DC 24~36V 3A (minimum)	DC 24~36V 3A (minimum) or AC 24V	DC75V (maximum)
額定電流 Rated Current(A/phase)	0~1.5A/phase	0~2.5A/phase	3~6AA/phase
步進角 Stepping Angle	微步級 200/400/800/1600s/r Microstep 200/400/800/1600s/r	微步級 400/800/1600s/r Microstep 400/800/1600s/r	微步級 400/800/1600s/r Microstep 400/800/1600s/r
選擇功能 Function	單/雙脈波輸入 One/Two Pulse Input Method	單/雙脈波輸入 One/Two Pulse Input Method	單/雙脈波輸入 One/Two Pulse Input Method
	電流自動下降 Auto Current Down	電流自動下降 Auto Current Down	電流自動下降 Auto Current Down
	RUN/STOP 電流調整 RUN/STOP Current Adjustable	RUN/STOP 電流調整 RUN/STOP Current Adjustable	RUN/STOP 電流調整 RUN/STOP Current Adjustable
輸入信號 Input Signal	光耦合信號輸入 Photo Coupler Input H=+4.5V~5.5V,L=0~+0.5V 20mA(Max)	光耦合信號輸入 Photo Coupler Input H=+4.5V~5.5V,L=0~+0.5V 20mA(Max)	光耦合信號輸入 Photo Coupler Input H=+4.5V~5.5V,L=0~+0.5V 20mA(Max)
運轉溫度 Operating Temperature	0~40C	0~40C	0~40C
運轉溼度 Operating Humidity	85 RH	85 RH	85 RH
重量 Weight	0.18	0.27	0.6
尺寸 Size	100(W)*70(D)*37(H)	110(W)*80(D)*42(H)	160(W)*110(D)*42(H)

### DU3131尺寸圖(Dimension)



### DU3X31尺寸圖(Dimension)







**AU系列(series)**

型號 (MODEL .NO)	AU1210	AB1210	AB1410	AB1610
搭配馬達 Compatible motors	DSH40/DST42系列6/8線 DSH56/DST56系列6/8線 2A以下  DSH40/DST42/ DSH56/DST56 series Lead lines: 6 or 8 Rated current is under 2A.	DSH40/DST42系列4/6/8線 DSH56/DST56系列4/6/8線 2A以下  DSH40/DST42/ DSH56/DST56 series Lead lines: 4 or 6 or 8 Rated current is under 2A.	DSH56/DST56系列4/6/8線 DSH86/DST86系列4/6/8線 4A以下  DSH56/DST56/ DSH86/DST86 series Lead lines: 4 or 6 or 8 Rated current is under 4A.	DSH86/DST86系列4/6/8線 6A以下  DSH86/DST86 series Lead lines: 4 or 6 or 8 Rated current is under 6A.
驅動方式 Driving Method	單極定電流 6線 Unipolar constant current	雙極定電流 4線 Bipolar constant current	雙極定電流 4線 Bipolar constant current	雙極定電流 4線 Bipolar constant current
電源輸入 Power Input	AC110V,60Hz	AC110V,60Hz	AC110V,60Hz	AC110V,60Hz
額定電流 Rated Current(A/phase)	0~2A/phase	0~2A/phase	0~4A/phase	0~6AA/phase
步進角 Stepping Angle	200/400 s/r	200/400 s/r	200/400 s/r	200/400 s/r
選擇功能 Function	單/雙脈波輸入 One/Two Pulse Input Method	單/雙脈波輸入 One/Two Pulse Input Method	單/雙脈波輸入 One/Two Pulse Input Method	單/雙脈波輸入 One/Two Pulse Input Method
	電流自動下降 Auto Current Down	電流自動下降 Auto Current Down	電流自動下降 Auto Current Down	電流自動下降 Auto Current Down
	RUN/STOP 電流調整 RUN/STOP Current Adjustable	RUN/STOP 電流調整 RUN/STOP Current Adjustable	RUN/STOP 電流調整 RUN/STOP Current Adjustable	RUN/STOP 電流調整 RUN/STOP Current Adjustable
輸入信號 Input Signal	光耦合信號輸入 Photo Coupler Input H=+4.5V~5.5V,L=0~+0.5V 20mA(Max)	光耦合信號輸入 Photo Coupler Input H=+4.5V~5.5V,L=0~+0.5V 20mA(Max)	光耦合信號輸入 Photo Coupler Input H=+4.5V~5.5V,L=0~+0.5V 20mA(Max)	光耦合信號輸入 Photo Coupler Input H=+4.5V~5.5V,L=0~+0.5V 20mA(Max)
運轉溫度 Operating Temperature	0~40C	0~40C	0~40C	0~40C
運轉溼度 Operating Humidity	85 RH	85 RH	85 RH	85 RH
重量Weight	0.76	0.75	0.75	0.75
尺寸Size	130(W)*158(D)*52(H)	130(W)*158(D)*52(H)	130(W)*158(D)*52(H)	130(W)*158(D)*52(H)

**AU1210/AB1210/AB1410/AB1610尺寸圖(Dimension)**
