

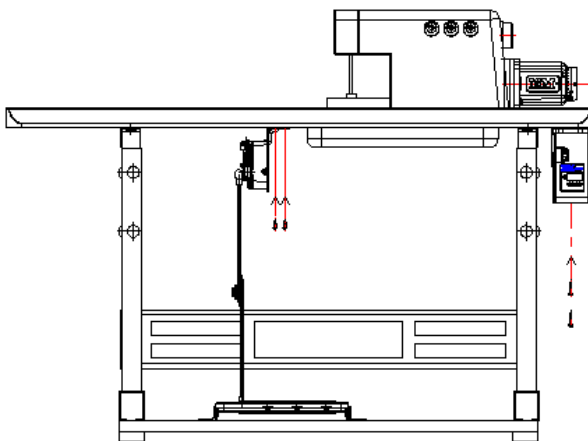
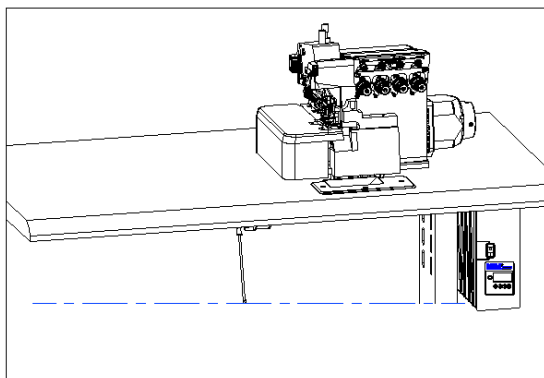
I For safe operation

安全與注意事項：

- 1.1 Prior the use of this product, please read the instruction Manual. Keep this Instruction Manual and the user may read it at anytime when necessary.
使用本產品前,請先閱讀本說明書,並保管說明書以便查閱。
- 1.2 Before turn on the power, be sure to check the power voltage and phase agreeing with the nameplate that indicated in the control box.
電源開啟前,請先確認電源的電壓與相數,是否與控制箱銘牌相符。
 - * The operated voltage should follow the nameplate with $\pm 10\%$ range.
 - * 使用電壓,須依銘牌標示 $\pm 10\%$ 範圍內使用
- 1.3 Grounding the machine is always necessary for safe and normal operation.
為了正常安全運轉,須安裝地線與接地工程。
- 1.4 Check lubricating oil prior to operation.
操作前,請先確認縫紉機潤滑油充足。
- 1.5 Check that rotational direction of the motor is correct prior to operation.
首次送電,請先低速運轉確認馬達轉動方向。
- 1.6 So as to prevent personal injuries during operation, be careful not to allow your head and hands to come close to the moving parts. Also never try to stop it with external forces.
運轉中切勿觸碰動作部位;亦不可以外力,強制停止動作部位。
- 1.7 For the following conditions, turn off the power or disconnect the power plug from receptacle:
下列情況,應關閉電源或拔下電源插頭:
 - * For threading needle or replacing bobbin.
 - * 穿線和更換旋梭時。
 - * To plug or unplug any connectors from control box.
 - * 插拔控制箱上任何連接線與接頭時。
 - * For maintenance and repairing.
 - * 保養與維修時。
 - * When machine is not at use, inspected or adjusted.
 - * 翻抬針車頭,取下皮帶時或機器不用時。
 - * When lightning and thunder occurs.
 - * 打雷閃電時。
- 1.8 Operating environment
使用環境
 - * Operating environment temperature $5^{\circ}\text{C}\sim 45^{\circ}\text{C}$.
 - * 使用環境溫度 $5^{\circ}\text{C}\sim 45^{\circ}\text{C}$
 - * Operating environment humidity $30\%\sim 95\%$.
 - * 使用環境濕度 $30\%\sim 95\%$
 - * Not close to high frequency or heat sources (such as electric heater).
 - * 不可靠近高週波或熱源(如電熱器)
 - * Dew, corrosive gases, and dust places should be avoided.
 - * 有露水、腐蝕性氣體、粉塵多等場所,皆應避免
 - * Indoor use only, avoid the direct sunlight.
 - * 僅限室內使用,不可直接日照
- 1.9 Warranty and maintenance
保固與維修
 - * The warranty period of the product is 12 months from the date of manufacture.
 - * 本品保固期為出廠月份起 12 個月
 - * Warranty void if improper use / man-made damage / voltage abnormal / bad grounding / self-dismantling / self-repair.
 - * 不當使用/ 人為損壞/ 電壓異常/ 接地不良/ 自行拆解/ 自行維修 均不保固
 - * Warranty void if foreign matter into / natural disasters / lightning / salt corrosion / damp / fall / self-transport damage.
 - * 異物進入/ 天災/ 雷擊/ 鹽蝕/ 潮濕 / 摔落/ 自行運送損壞 均不保固
 - * Repair parts should be provided by our company / maintenance person should be approved by our company.
 - * 維修零件須由本司提供/ 維修人員需由本司認可

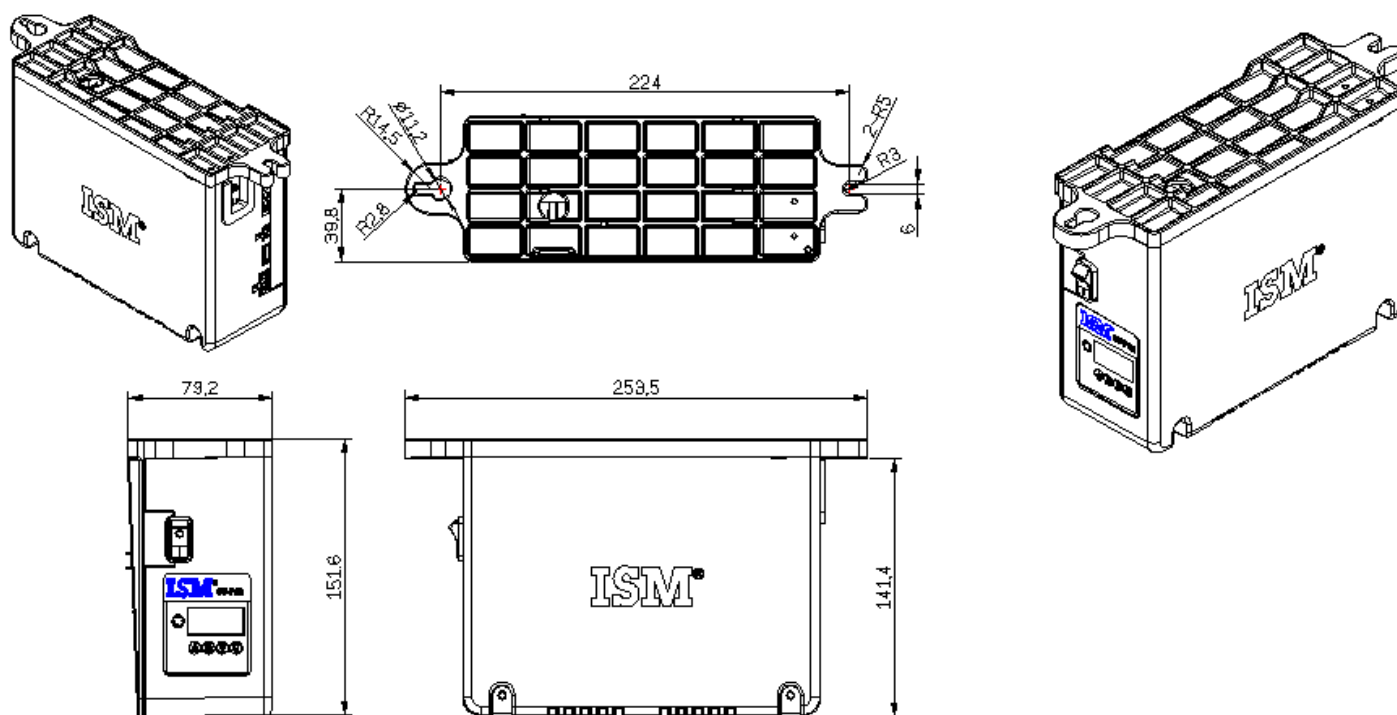
II. For control box set up

控制箱的安裝:



Dimensions of control box as shown in Fig.1

控制箱的外型尺寸如圖(一)所示: ↓



III.Connector Diagram

接頭定義圖：

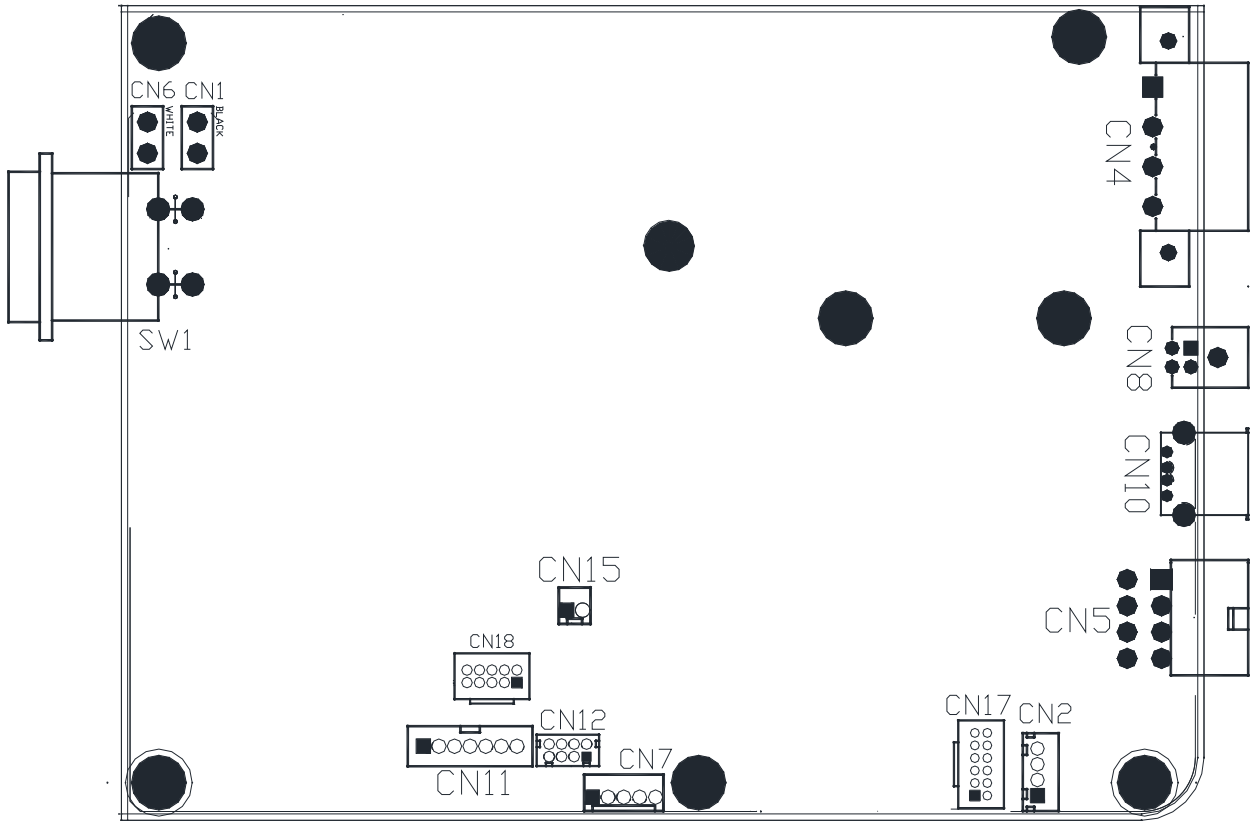


Fig.1(圖一) CTL BOARD Connector

| Connector 接頭 | Connectors' description 接頭說明 | Connector 接頭 | Connectors' description 接頭說明 |
|-----------------|---------------------------------------|-----------------|--|
| CN1,CN6 | AC power input connector 外部電源輸入接頭 | CN10 | USB Programming connector USB 程式燒錄接頭 |
| CN2 | Synchronizer connector 同步器接頭 | CN11 | External panel connector 選針盒接頭 |
| CN4 | Motor power line connector 馬達動力線接頭 | CN12 CN17 | Debug connector 除錯用接頭 |
| CN5 | Motor encoder connector 馬達編碼器接頭 | CN15 | LED lighting Power output connector LED燈電源輸出接頭 |
| CN7 | Display Panel connector 顯示面板排線接頭 | CN18 | Standing operation pedal connector 立式踏板接頭 |
| CN8 | Speed unit connector 速度基座接頭 | | |

IV. How to set 設定方法

4.1 Panel Button Definitions

面板按鍵定義:

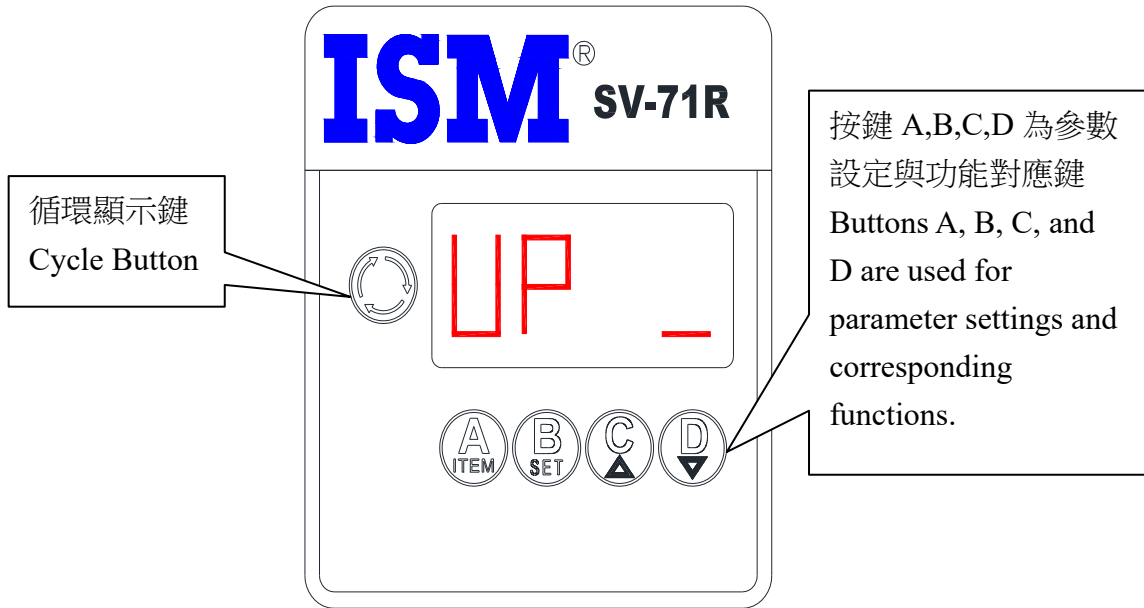


Fig 2.A (圖二 A) Display Panel 顯示面板

4.2 How to set the parameter

參數設定方式



1. Turn on the power by pressing the cycle button, or long-press the cycle button in normal using mode.

1.按循環鍵開電，或是在正常模式下長按循環鍵。

2. Release the button when the screen displays the sewing mode, then it will display the parameter number.

2.畫面顯示車頭選項後放開，即進入參數模式。

3.Short pressing the button A can increase the parameter number by 1. Long pressing the button A can decrease the parameter number by 1.

3.短按  鍵參數項目+1，長按  鍵參數項目-1。



4.Press the button B to enter the content value of the parameter.

4.按  鍵進入該參數項目內容值。

5.Press the button C and D can increase or decrease the content value of the parameter.

5.按   鍵增加減少項目內容值。

6.Short pressing the button A can return to the parameter list. Long pressing the button B can save.

6.短按  鍵可回到參數項目，或長按  鍵儲存。

7.After turning off the power, turning on the power again can return to the sewing mode.

7.關掉電源後，再開啟電源可重新回到車縫模式。


4.3. How to select the sewing mode :

選擇針車頭選項:

1. Turn off the power.

1. 關掉電源.


2. Hold down the B button, and simultaneously turn on the power until the screen displays "rEST," and then release the button. It will display the sewing mode option.

2. 按住  鍵, 同時打開電源, 直到畫面出現 rEST 才將按鍵放開出現車頭選項畫面.



3. If the displayed screen is different from the above, please repeat steps 1-2 again.

3. 如果顯示畫面與上述不同, 請重覆步驟 1~2.

4. Keep Press the button A and select the sewing mode to be set, and then press the button B for two seconds to save it and after that will display the motor type option.

4. 按  鍵, 選擇要設定的針車模式後, 按下  鍵兩秒存儲並進入馬達選項畫面.

5. Press the button A to select the correct motor type, and then press the button B for two seconds to save.

5. 按  鍵, 選擇要設定的馬達型號後, 按下  鍵兩秒存儲.

6. Turn off the power, and then turn power on. The control box will reset the all value of parameter as draft setting basic on instruction manual.


6. 關掉電源, 再打開電源, 將以說明書上參數的初始值來運作.

| | Machine Type | 針車型式 | | Motor Type | 馬達型式 |
|------|---------------------|------------|----|------------------|---------------|
| TT | FACTORY TEST | 工廠測試用車頭 | d8 | SM7-3570 motor | SM7-3570 馬達 |
| 46 | Flatseaming machine | 4 針 6 線併縫車 | db | SM7-5070 motor | SM7-5070 馬達 |
| CS | Chainstitch | 三本車 | dA | SM7-6560 motor | SM7-6560 馬達 |
| DL87 | lockstitch | 平車 | U4 | SM -4550 motor | SM -4550 馬達 |
| OL | Overlock | 拷克車 | d3 | SM6-5550 motor | SM6-5550 馬達 |
| PB | Postbed | 羅拉車 | d2 | SM6-5535 motor | SM6-5535 馬達 |
| | | | U6 | SM80-6535 motor | SM80-6535 馬達 |
| | | | U5 | SM80-5535 motor | SM80-5535 馬達 |
| | | | 45 | SM72-4550 motor | SM72-4550 馬達 |
| | | | 55 | SM72-5535 motor | SM72-5535 馬達 |
| | | | 65 | SM72-6535 motor | SM72-6535 馬達 |
| | | | dC | SM7-4050 motor | SM7-4050 馬達 |
| | | | d9 | SM7-3570V2 motor | SM7-3570V2 馬達 |
| | | | dE | SM7-5560 motor | SM7-5560 馬達 |
| | | | d6 | SM6-6535 motor | SM7-6535 馬達 |
| | | | dJ | SM7-4550 motor | SM7-4550 馬達 |
| | | | dM | SM9-6560 motor | SM9-6560 馬達 |
| | | | dN | SM6-4550 motor | SM6-4550 馬達 |
| | | | do | SM7-4050 motor | SM7-4050 馬達 |
| | | | dq | SM8-7535 motor | SM8-7535 馬達 |
| | | | dL | SM7-6535 motor | SM7-6535 馬達 |

4.4.How to switch the function screen

功能畫面切換:

In normal sewing mode, the screen displays the positioning point. 在平常工作模式，畫面顯示定位點，
Press the cycle key button to enter the following screens:

按下  鍵依序進入以下畫面




1. Speed Display Mode: When the sewing machine stops, the screen displays SP 0. When sewing, the screen displays the sewing machine's speed.

1.速度顯示模式:針車停止時，畫面顯示 SP 0，車縫時，畫面顯示針車轉速。

2. When the screen displays H000. The count resets automatically when the C000 increases everytime This function are counting the sewing stitch number from beginning to case end.

2.單件計針畫面顯示 H000，計件值加一時會自動歸零。

3. When the screen displays C000, pressing the button C can increase the count by 1. Pressing the button D can decrease the count by 1. Holding the button A for 2 seconds can reset the count number.

3.計件值畫面顯示 C000，按  鍵→計件值增加 1，按  鍵→計件值減少 1 按  鍵 2 秒→計件值歸零

4. Total motor running time displays r000. Hold the button A for 2 seconds to reset the motor running time.

4. 馬達運轉時間畫面顯示 r000，按  鍵 2 秒，馬達運轉時間歸零。



4.5.How to display Historical Error Message

錯誤歷史顯示:



1.Turn off the power.

1.關掉電源，



2. Turn on the power while holding the button C and D together. It will appear ERROR.

2.按住   鍵，同時打開電源.出現 ERROR

3. Release the button C and D. The screen will display the last error code.

3.放開   鍵.顯示畫面出現 最後出現的錯誤訊息代碼

4. Press the button C and D to display the last six error messages.

4.按  or  鍵來顯示最近所發生的 6 次錯誤訊息

4.6. How to set the Neutral Point of the Pedal Sensor

速度基座中立點設定模式:


1. Turn off the power.

1. 關掉電源

2. Place the Pedal Sensor at the neutral point. Turn on the power while holding the button A. It will appear OFST.

2. 速度基座置於中立點, 按住  鍵, 同時打開電源, 出現 OFST

3. Release the button A. It will appear the recording value of the Pedal Sensor.

3. 放開  鍵, 會出現速度基座的讀值

4. The screen will display two statuses: out of range, or within the right range (37~55).

4. 顯示器有兩種表示狀況: 超過設定範圍、範圍內(37~55)。

5. Pressing the button B can calibrate the Pedal Sensor

5. 按下 B 鍵可做速度基座校正。

6. If "— — or _ _" keeps appearing, it indicates that the neutral point of the Pedal Sensor is too far off.



Need Adjust the neutral point of the Pedal Sensor and repeat step 4.

6. 若一直出現“— — or _ _”表示速度基座中立點的機構位置偏離太多, 必須先調整速度基座中立點的機構位置, 再重復上述步驟 4 的動作。

4.7 How to measure the Motor Pulley Ratio

馬達皮帶輪比量測

1. Turn on the power while holding the button C until the screen appears the previously stored pulley ratios. Then release the button.

1. 按住  鍵, 同時打開電源直到畫面顯示之前儲存的皮帶輪比, 放開  鍵。

2. Press the pedal front. The motor will run for 7 turns automatically to calculate the pulley ratio. If it keeps running means abnormal, turn off the power and check if the stop signals on the synchronizer or encoder.

2. 踏板前踩後, 馬達將運轉 7 圈後, 自動計算皮帶輪比。若是一直轉動不停請關掉檢查同步器或編碼器上停點訊號是否異常。

3. Press the button B and it will save the pulley ratio.

3. 按  鍵後, 會將此一皮帶輪比儲存。

4. Restart the machine.

4. 請重新開機。

V. Error message indicator

錯誤訊息顯示

| Error Code | Problem of Error | Check Items |
|--------------|---|--|
| Er-1 or Er-A | Synchronizer failure | -Encoder failure. |
| Er-2 | Motor is not rotating | -Machine head is locked. -Motor is locked. -Motor power line or encoder line. is broken, or connector is loosen. |
| Er-5 | Speed unit output failure | -Speed unit connector is loosen -Speed unit is broken -Connecting rod installation is incorrect |
| Er-8 | Setting max. speed & limited max. speed over the motor maximum speed. | -Parameter A00 setting value is too large -Motor pulley diameter is too small -Motor pulley ratio setting error |
| Er-9 | Power transistor module is failed. | -Power module overheated -Short circuit or low voltage -Current is too high. |
| E.C | Braking timing error | -Increase value of parameter N09 -motor encoder fails. |

| 錯誤代碼 | 錯誤內容 | 確認項目 |
|-------------|------------------------|---|
| Er-1 或 Er-A | 同步器信號異常 | 編碼器訊號異常 |
| Er-2 | 馬達不動 | 針車頭鎖死 馬達鎖死 馬達接頭鬆脫(動力線與編碼器線) |
| Er-5 | 速度基座輸出異常 | 速度基座接頭鬆脫 連接桿安裝不適當 速度基座故障 |
| Er-8 | 最高轉速&限速設定 超過馬達的最快速度 | 參數 A00 設定值太大 馬達皮帶輪尺寸太小 馬達皮帶輪比設定錯誤 |
| Er-9 | 功率晶體模組故障 | 功率晶體模組過熱 短路低電壓 電流太大 馬達線圈阻抗太小 |
| Er-C | 煞車時間異常 | 增加參數設定中 N09 的值 編碼器訊號異常 |

VI. Parameter List

參數一覽表

| No 項目 | Item 內容 | Range 範圍 | Unit 單位 | CS | OL | 46 | DL87 |
|---|---|---|------------|------|------|------|------|
| A00 | Sewing machine maximum speed 針車最高速度 | 200 ~ 7000 | *1 spm | 5500 | 6000 | 3500 | 4000 |
| If input voltage are under AC 220V, sewing machine maximum speed may not reach. 若輸入電壓低於 220V，則可能會無法達到最高轉速設定。 | | | | | | | |
| A01 | Sewing machine positioning speed 針車定位速度 | 50 ~ 250 | *1 spm | 200 | 200 | 200 | 200 |
| A02 | Medium speed 中速 | 200~7000 | *1 spm | 6000 | 6500 | 6500 | 5000 |
| A05 | Motor's pulley dimension 馬達皮帶輪 | 50~125 | *1 mm | 65 | 50 | 50 | 75 |
| A06 | Machine's pulley dimension 針車皮帶輪 | 50~125 | *1 mm | 65 | 50 | 50 | 75 |
| A07 | Pulley ratio setting mode 皮帶輪比的設定 | ON:From Meas: Refer motor pulley ratio measurement 參考馬達皮帶比量測 的值 OFF:From Para:Refer A05&A06 參考 A05&A06 的設定 | -- | ON | ON | ON | ON |
| A08 | Virtual needle down positioning function 虛擬下停功能 | ON: With the function 有此功能 OFF: No such function. 無功能 | -- | ON | ON | ON | ON |
| A09 | The angles between virtual needle down positioning point and needle up signal 虛擬下停點,由上停信號開始點起算 | 40 ~ 250 | *1 ° | 180 | 180 | 180 | 145 |
| A10 | Soft start stitches 慢速啟動針數 | 0 ~ 19 | *1 stitch | 0 | 0 | 0 | 0 |
| A11 | Soft start speed 慢速啟動速度 | 250 ~ 2000 (note1) | *1 spm | 400 | 400 | 400 | 400 |
| A12 | No synchronizer operation mode 沒有同步器操作模式 | OFF.With Sync: ineffective 無功能 ON.W/O Sync: effective 有此功能(不會顯示 E1) | -- | OFF | OFF | OFF | OFF |

| | | | | | | | |
|-----|---|--|--------|------|------|------|------|
| A13 | Motor rotating direction 馬達轉向 | CW: Clockwise 順時針 CCW: Counter-Clockwise 逆時針 | -- | CW | CW | CCW | CW |
| A14 | Motor static brake function 馬達靜止煞車功能 | 0: No such function 無功能 1 ~ 4: The bigger value means the more powerful braking force. 有此功能, 設定值越大煞車力量越大 | -- | 0 | 0 | 0 | 0 |
| A15 | Auto needle up positioning when POWER ON 開機自動上停 | 0: no such function 無功能 1: determine based on Upper signal 根據上停訊號判定 2: Motor runs until meeting the edge of Upper stop position when power on. 開機馬達轉動直到上停訊號邊緣 | -- | 2 | 1 | 1 | 2 |
| A16 | Needle up function when pedal is heeled. 取消後踩上停功能 | 0.NDL UP@PH: With the needle up function when pedal is heeled 有踏板後踩提針功能 1.XX @PH: Cancel the needle up function when pedal is heeled. And just the foot lifting function is effective 取消踏板後踩提針功能只做舉壓腳動作 | -- | 0 | 0 | 0 | 0 |
| A17 | Lock function 參數鎖定功能 | UNLK : no such function 無此功能 LOCK : with the function 有此功能 | -- | UNLK | UNLK | UNLK | UNLK |
| A18 | In auto test mode, motor running time adjustment 自動測試模式下, 馬達運轉時間調整 | 10-2000 | *10 ms | 200 | 500 | 500 | 200 |

| | | | | | | | |
|-----|---|---|--------|------|------|------|------|
| A19 | In auto test mode, motor stopping time adjustment 自動測試模式下，馬達停止時間調整 | 10-2000 | *10 ms | 200 | 200 | 200 | 200 |
| A20 | Reversed revolution angles after pedal is heeled. 後踩反轉角度 | 0~250° | *1 ° | 0 | 0 | 0 | 0 |
| B00 | Pedal type 踏板類型 | COIL PK-70 MP:Magnetic Pedal 磁感性踏板 GC1:Reserved 預留 GC2:Reserved 預留 | -- | COIL | COIL | COIL | COIL |
| B01 | Pedal forward curve 踏板前踩曲線 | 1~5 | -- | 1 | 1 | 1 | 1 |
| B02 | How many times undertrimming counting as one piece. 切線n次計次一件 | 1~255 | -- | 1 | 1 | 1 | 1 |
| B07 | The pedal stroke adjustment for motor rotating 馬達開始轉動的踏板行程調整 | 75-90 | -- | 75 | 75 | 75 | 75 |
| B08 | Pedal stroke adjusts for motor accelerating 馬達開始加速的踏板行程調整 | 91-120 | -- | 103 | 103 | 103 | 103 |
| B09 | Pedal stroke adjusts for foot lifter acting 壓腳開始動作的踏板行程調整 | 15-35 | -- | 25 | 25 | 25 | 25 |
| B10 | Pedal stroke adjusts for start thread trimming 切線開始動作的踏板行程調整 | 1-10 | -- | 5 | 5 | 5 | 5 |

Note1. This value depends on motor specification. 根據馬達規格會有不同的值

Note2. Reserved 預留功能