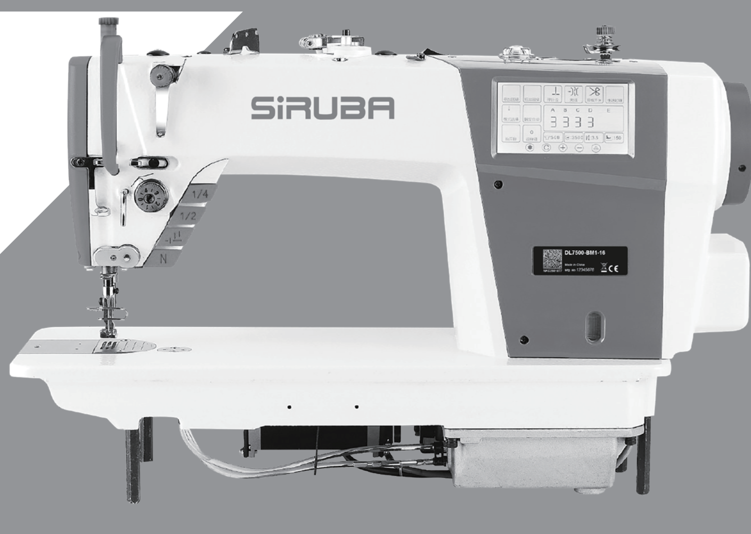
SiRUBA

電控參數說明書

ELECTRONIC CONTROL PARAMETER MANUAL

DL7500



⚠安全指示

1) 在安裝或使用本產品前，使用者必须詳細閱讀本操作手冊。
2) 本產品须由受過正確訓練的人員來安裝或操作。安裝作業時必须關閉所有電源，切記不可帶電操作。
3) 所有標有⚠符號的指示，必须特別注意並按照說明書上的執行，以免造成不必要的損害。
4) 為安全起見，禁止以延長線作電源座供應二項以上的電器產品使用。
5) 在連接電源線時，必须確定工作電壓低於 AC 250V，且符合本產品標識中規定的額定電壓值。
   ※注意　：電控箱電源規格如為 AC220V 時，請勿插接至 AC380V 的電源插座上，否則將出現異常且電機無法動作。此時請立即關閉電源開關，重新檢查電源。持續供應380V 超過五分鐘以上，將可能燒損電控箱內器件，而危及人身安全。
6) 請不要在日光直接照射的場所、室外及室溫 45℃以上或 0℃以下的場所操作。
7) 請不要在暖氣（電熱器）旁、有露水的場所及在相對濕度 10%以下或 90%以上的場所操作。
8) 請不要在灰塵多的場所、具有腐蝕性物質的場所及有揮发性氣體的場所操作。
9) 請注意所有電源線、信號線、接地線等接線時不要受壓或過度扭曲，以確保使用安全。
10) 電源線的接地端须以适當大小的導線和接頭連接到生產工廠的系統地線，此連接必须被永久固定。
11) 所有可轉動的部分，必须以所提供的零件加以防範露出。
12) 在安裝完成第一次開電後先關閉切線功能以低速操作縫紉機並檢查轉動方向是否正確、運轉是否穩定。
13) 在進行以下操作前，請先關閉所有電源：
   1.在控制箱與馬達上插拔任何連接插頭時。
   2.穿針線時。
   3.翻抬縫紉機機頭時。
   4.修理或做任何機械上的調整時。
   5.機器閒置不用時。
14) 修理或高層次的保養工作，僅能由受過訓練的機電技師來執行。
   所有維修用的零件，须由本公司提供認可，方可使用。
15) 使用本產品請遠离高頻電磁波和電波发射器等，以免所產生的電磁波干擾伺服驅動裝置而发生誤動作。
16) 請不要以不适當物體來敲擊或撞擊本產品及各裝置。

   保修期限

   本產品保修期限為購買日期起一年內或出廠月份起兩年內。

   保修內容

   本產品在正常情況使用且無人為操作失誤的前提下，於保修期間無償為客戶維修使能正常操作。

   但以下情況於保修期間將收取維修費用：

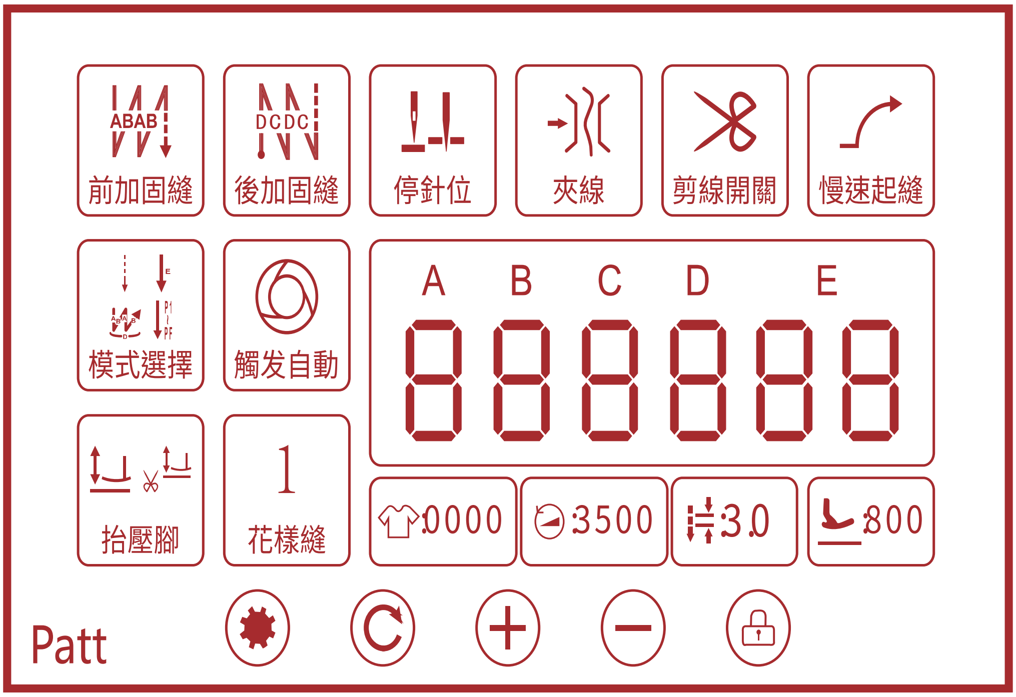
   1. 不當使用包括誤接高壓電源、將產品移做其它用途、自行拆卸、維修、更改、或不依規格範圍使用、進水進油及插入異物於本產品。

   2. 火災、地震、閃電、風災、水災、鹽蝕、潮濕、異常電壓及其它天災或不當場所造成的損害。

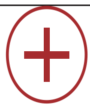
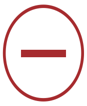
   3. 客戶購買後摔落本產品，或客戶自行運輸（或托付運輸公司）造成的損害。

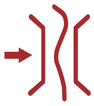
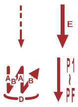
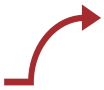
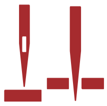
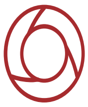
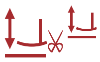
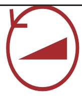
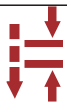
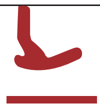
   * 本產品在生產及測試上皆盡最大努力和嚴格控制使其達到高品質及高穩定的標准，但外部的電磁或靜電干擾或不穩定的供應電源，仍可能對本產品造成影響或損害，因此操作場所的接地系統一定要確實做好，並建議用戶安裝故障安全防護裝置(如漏電保護器)

1· 按鍵顯示及操作說明



1.1 主界面說明

名稱	按鍵	注明
功能參數鍵		進入功能參數的界面。
多段定針縫切換鍵		設定多段定針縫連續回縫圖標，多段定針縫切換（只在多段縫模式中生效）。
鎖屏鍵		設定使用或取消鎖屏功能。
速度遞增鍵		當前模式下，速度增大鍵。
參數遞減鍵		當前模式下，速度減小鍵。
花樣縫快捷鍵	Patt	設定開啟或關閉花樣縫鍵，當此鍵開啟時，當前的縫紉模式都會默認關閉，只開啟花樣縫。
起始回縫鍵	 ABAB	執行起始回縫 B 段或執行起始回縫（A、B 段）1 次 執行起始回縫（A、B 段）2 次
終止回縫鍵	 DCDC	執行終止回縫 C 段或執行終止回縫（C、D 段）1 次 執行終止回縫（C、D 段）2 次
切線鍵		設定使用或取消切線功能。

夾線鍵		設定使用或取消夾線功能。
模式切換鍵		縫紉模式在自由縫，一段定針縫，連續回縫，多段定針縫進行切換。
慢速起縫鍵		設定使用或取消慢速起縫功能。
上/下停針鍵		設定停在上針位或下針位。
自動觸发鍵		（只在一段定針縫，多段定針縫中有效）設定使用或取消自動觸发功能。
自動抬壓腳鍵		在中途抬壓腳，剪線後抬壓腳進行切換。
計數顯示鍵		顯示當前計數值。
速度顯示鍵		顯示當前縫紉模式速度。
針距鍵		顯示當前針距值，若點擊可進入針距設置。
壓腳高度鍵		顯示當前壓腳高度，若點擊可進入壓腳高度設置。

2. 設置界面

若在其他畫面中按下設置鍵，將顯示設置界面。

若點擊相應欄目可進入相應設置界面。

No.	設置
1	起始回縫設置
2	縫紉模式設置
3	終止回縫設置
4	慢速起縫設置
5	輸出功能設置
6	主軸電機相關設置
7	踏板相關設置
8	計數器設置
9	手動開關功能設置
10	安全保護設置
11	其他設置
12	界面顯示

13	輔助功能
14	關於系統

2.1 起始回縫設置

No.	顯示	範圍	初始值	說明與備註
1001	起始回縫速度	200-3200	1600	
1002	起始回縫運動模式選擇	OFF/ON	ON	起始回縫段途中停止可否： OFF: 受踏板控制，可任意停止與啟動 ON: 輕觸踏板，自動執行回縫動作
1003	起始回縫結束點操作模式選擇	OFF/ON	ON	OFF: 起始回縫段針數完成後自動停止 ON: 起始回縫段完成後，自動連續下一段縫紉

2.2 縫紉模式設置

No.	顯示	範圍	初始值	說明與備註
2001	自由縫速度	100-5000	3500	
2002	自動定針縫速度	200-4000	3500	定針縫自動觸发功能打開的速度設定。
2003	連續回縫速度	200-4000	2000	
2004	加固縫針迹補償	0-200	167	
2005	連續回縫運動模式選擇	0-1	1	連續回縫段途中停止可否： 0：受踏板控制，可任意停止與啟動 1：輕觸踏板，自動執行回縫動作

2.3 終止回縫設置

No.	顯示	範圍	初始值	說明與備註
3001	終止回縫速度	200-3200	2000	

2.4 慢速起縫設置

No.	顯示	範圍	初始值	說明與備註
4001	慢速啟動	ON/OFF	OFF	
4002	慢速起縫速度	200-1500	400	
4003	慢速起縫針數	1-99	2	

2.5 輸出功能設置

No.	顯示	範圍	初始值	說明與備註
5001	切線功能設置			
5002	夾線/撥線功能設置			
5003	壓腳功能設置			
5004	鬆線功能設置			

2.5.1 切線功能設置

No.	顯示	範圍	初始值	說明與備註
5101	切線出力功能設定	ON/OFF	ON	
5102	切線步進回程速度	20-400	100	
5103	切線第一段速度	20-400	200	

5104	切線第二段速度	20-400	100	
5105	切線動作時間	10-990	200	
5106	切線第一次進刀角度	0-1439	935	
5107	切線第二次進刀角度	0-1439	1435	
5108	第一次切線距离	0-200	100	
5109	第二次切線距离	0-200	145	
5110	切線步進回程時間	10-990	60	

2.5.2 夾線/撥線功能設置

No.	顯示	範圍	初始值	說明與備註
5201	夾線力度設置	0-11	3	0: 關閉 1: 變為撥線功能 2-11: 夾線功能，數值越大，力度越大
5202	夾線開始角度	10-359	100	
5203	夾線結束角度	10-359	270	
5204	撥 / 掃線動作時間	10-990	380	撥 / 掃時序的動作時間

2.5. 3 壓腳功能設置

No.	顯示	範圍	初始值	說明與備註
5301	壓腳下放時間	10-990	150	
5302	車縫途中踏板回到中踏位置時，壓腳高度補償	0-160	80	以 80 為 0 補償，往大調為正補償，壓腳高度升高，往小調為負補償，壓腳高度降低
5303	最高壓腳高度	0-150	150	
5304	壓腳速度	20-400	200	
5305	抬壓腳有無鬆線動作	0-1	1	0：抬壓腳時有鬆線動作 1：抬壓腳時無鬆線動作

2.5. 4 鬆線功能設置

No.	顯示	範圍	初始值	說明與備註
5401	鬆線開始角度	1-359	30	
5402	鬆線結束角度	1-359	180	
5403	鬆線力度設置	0-80	30	數值越大，動作力度越大

2.6 主軸電機相關設置

No.	顯示	範圍	初始值	說明與備註
6001	剪線過程主軸電機速度	100-500	300	
6002	切線後,反轉提針功能選擇	ON/OFF	OFF	
6003	切線後,反轉提針角度的調整	40-200	160	

6004	開電後自動找上定位	0-1	0	0：始終不找上定位 1：始終找上定位
6005	上定位數值	0-1439	230	
6006	下定位數值	0-1439	930	
6007	低速（定位速度）	100-500	210	定位速度設定
6008	中途停車力度	1-45	16	
6009	切線後停車力度	10-50	20	
6010	手動倒縫限速	0-3200	0	
6011	上針位快捷調整	0-40	40	
6012	下針位快捷調整	0-750	750	

2.7　踏板相關設置

No.	顯示	範圍	初始值	說明與備註
7001	定針縫時是否自動執行終止回縫功能選擇	ON/OFF	ON	ON：在執行完最後一段定針縫後，將自動執行終止回縫動作。 OFF：在執行完最後一段定針縫後，將無法自動執行終止回縫功能，此時可進行補針功能。縫紉完後，再次做前踏或全後踏動作時則自動執行終止回縫。
7002	加速曲線調整（%）	10-100	80	控速器爬升斜率設定 斜率值愈大，速度愈陡；斜率值愈小，速度愈慢
7003	車縫途中踏板回到中踏位置時，壓腳位置選擇	0-1	0	0：不抬升 1：抬升
7004	切線後踏板回到中踏位置時，壓腳位置選擇	0-1	0	0：不抬升 1：抬升
7005	踏板到半後踏位置時，壓腳位置選擇	0-1	1	0：不抬升 1：抬升
7006	踏板前踏點電壓	30-1000	520	
7007	踏板中踏點電壓	30-1000	420	
7008	踏板半反踏點電壓	30-1000	270	
7009	踏板反踏點電壓	30-1000	130	
7010	半反踏延遲時間	10-900	200	

2.8　計數器設置

No.	顯示	範圍	初始值	說明與備註
8001	計數器選擇	0-2	1	0：沒有使用計數器 1：加數縫制計數器（每切線 1 次，計數加 1；現在值和設定值相同之後，計數畫面被顯示。） 2：減數縫制計數器（每切線 1 次，計數減 1；現在值變成 0 後，計數畫面被顯示。）

8002	計數器現在值、設定值	0-9999	0/0	現在值為當前實際值；設定值是參考值
8003	縫制計數器切線次數	0-50	1	如果選 1，按剪一次線計一次件數。如果選 2，按剪兩次線計一次數，以此類推。

2.9　手動開關功能設置

No.	顯示	範圍	初始值	說明與備註
9001	設置手動補針開關 A 的功能	0-3	2	0：點擊補半針 1：點擊補一針 2：點擊補半針，長按連續補半針 3：點擊補一針，長按連續補一針
9002	設置手動倒縫開關 B 的功能	0-1	0	0：在車縫中或中途停止時具有倒縫動作 1：在車縫中為倒縫功能，中途停止時為補針功能

2.10　安全保護設置

No.	顯示	範圍	初始值	說明與備註
10001	機頭保護開關檢測	0-2	1	0：不檢測 1：檢測正信號　2：檢測負信號
10002	油位過低保護檢測	0-1	1	0：不檢測　　1：檢測
10003	輸入高壓保護數值設置	500-1023	880	當檢測外部輸入 AC電壓轉換成 DC電壓後數值超出設定值時，系統將報警 E01並停止工作
10004	鬆線電磁鐵保護時間	1-120	15	電磁鐵工作保護時間（S)

2.11　其他設置

No.	顯示	範圍	初始值	說明與備註
11001	電機零點校正			
11002	膝靠啟動 AD值	0-1023	600	
11003	正常針距	0-75	30	
11004	手動密縫針距	0-81	52	
11005	正縫針距補償	0-100	50	
11006	倒縫針距補償	0-100	50	
11007	補針針距	0-81	76	

2.11.1　電機零點校正

No.	顯示	範圍	初始值	說明與備註
11011	主軸電機零點校正	0-720	160	
11012	倒縫電機零點校正	0-100	50	針距設為 0mm時微調該值使實際縫紉針距為 0mm

11013	壓腳電機零點校正	0-100	50	

2.12 界面顯示

No.	顯示	範圍	初始值	說明與備註
12001	亮度	1-100	50	
12002	主界面自動鎖定時間	0-900	30	0：從不； 1-900：主界面一定時長無操作後，主界面自動鎖定
12003	語言設置	0-1	0	0：中文 1：English

2.13 輔助功能

No.	顯示	範圍	初始值	說明與備註
13001	無鳥巢模式			
13002	終止密縫模式			
13003	層縫模式			
13004	花樣縫模式			
13005	測試模式			

2.13.1 無鳥巢模式

No.	顯示	範圍	初始值	說明與備註
13011	無鳥巢鉤線前延時	0-990	100	
13012	無鳥巢鉤線動作時間	0-990	30	
13013	無鳥巢鉤線返程時間	0-990	30	
13014	無鳥巢鉤線占空比	1-100	30	
13015	無鳥巢吸氣時間	0-5000	1000	
13016	無鳥巢挺線占空比	0-100	0	

2.13.2 終止密縫模式

No.	顯示	範圍	初始值	說明與備註
13021	終止密縫針距	0-60	10	
13022	終止密縫速度	100-1000	500	
13023	終止密縫方向	0/1	0	0：逆時針 1：順時針
13024	終止密縫針數	0-12	0	數值為 0 時關閉終止密縫模式

2.1 3.3 層縫模式

No.	顯示	範圍	初始值	說明與備註
13031	層縫模式開關	ON/OFF	OFF	
13032	層縫模式過厚轉速	200-3700	2000	
13033	面料厚度感應器 AD閾值	0-1023	530	(下方顯示面料厚度感應器當前 AD數值)
13034	層縫比例	1-100	10	
13035	層縫針距限制	0-200	100	

2.1 3.4 花樣縫模式

No.	顯示	範圍	初始值	說明與備註
13041	花樣縫模式開關	ON/OFF	OFF	
13042	花樣縫樣式選擇	1-9	1	
13043	花樣縫樣式設置			
13044	花樣縫速度	100-3000	2500	

2.1 3.4 .3 花樣縫樣式1設置

段	針數	針距(mm)	重復次數
1	1	4.8	5
2	1	2.0	1
3-10	0	0.0	1

花樣縫樣式2設置

段	針數	針距(mm)	重復次數
1	1	4.0	5
2	4	2.0	1
3-10	0	0.0	1

花樣縫樣式3設置

段	針數	針距(mm)	重復次數
1	1	3.5	5
2	4	1.5	1
3-10	0	0.0	1

2.1 3.5 測試模式

No.	顯示	範圍	初始值	說明與備註

13051	測試模式開關	ONOFF	OFF	（按測試速度執行啟動-車縫-停車-切線等功能的循環）
13052	輸出功能單項測試			
13053	測試模式設置			

2.13.5.1　自動運行測試模式

周期	測試速度（測試速度為 0 時不執行當前周期	運行時間(s)	停止時間(s)	電機運行方向	運行總時間（m）（時間為 0 時無限制）
1	3000	20	20	1	0
2	0	0	0	1	0
3	0	0	0	1	0
4	0	0	0	1	0
5	0	0	0	1	0

2.13.5.2　輸出功能單項測試

剪線	壓腳步進復位
壓腳	步進 2

2.14　關於系統

No.	顯示	範圍	初始值	說明與備註
14001	版本號			進入後顯示琦星二維碼、電控版本號、電控副版本號、顯示板版本號、資源版本號
14002	狀態信息			
14003	高級設置			進入“高級設置密碼”界面，輸入密碼，若正確則進入高級設置界面，若錯誤則無效並顯示“密碼錯誤”。
14004	恢復出廠設置			取消：不恢復 確認：恢復到原始出廠數據

2.14.2　狀態信息

No.	顯示	範圍	初始值	說明與備註
14021	電機轉速顯示			顯示電機當前轉速
14022	針位角度數值			顯示機頭當前電機角度
14023	控速器 AD數值			顯示踏板當前 AD值
14024	母線電壓檢測 AD數值			
14025	油位感應 AD數值			

14026	膝靠位置感應 AD數值			
14027	切線位置感應 AD數值			
14028	壓腳高度感應 AD數值			
14029	光柵信號			

2.14.3 高級設置

No.	顯示	範圍	初始值	說明與備註
14031	主軸電機相關高級設置			
14032	倒縫步進電機相關高級設置			
14033	壓腳步進電機相關高級設置			
14034	高級設置密碼修改			
14035	主軸電機最高速度限制	100-5000	4000	
14036	針距限制	0-173	164	

2.14.3.1 主軸電機相關高級設置

No.	顯示	範圍	初始值	說明與備註
140311	上、下定位距离數值	100-1400	720	在上、下停針位快捷設置界面，保存上定位數值時將根據上、下定位距离數值自動計算出下定位數值
140312	主軸電機轉動方向設定	CCW/CW	CCW	CW: 順時針方向 CCW: 逆時針方向（平車機型運轉方向）
140313	主軸電機最大電流（A）	0-20	10	
140314	主軸電機堵轉電流（A）	0-20	10	
140315	主軸電機平時電流（A）	0-20	16	
140316	主軸電機編碼器類型選擇	0-1	0	0：無磁環 1：有磁環

2.14.3.2 倒縫步進電機相關高級設置

No.	顯示	範圍	初始值	說明與備註
140321	倒縫步進電機的保持電流	1-12	6	
140322	倒縫步進電機的最大電流	1-12	12	
140323	倒縫步進電機最高轉速	20-600	550	

2.14.3.3 壓腳步進電機相關高級設置

No.	顯示	範圍	初始值	說明與備註

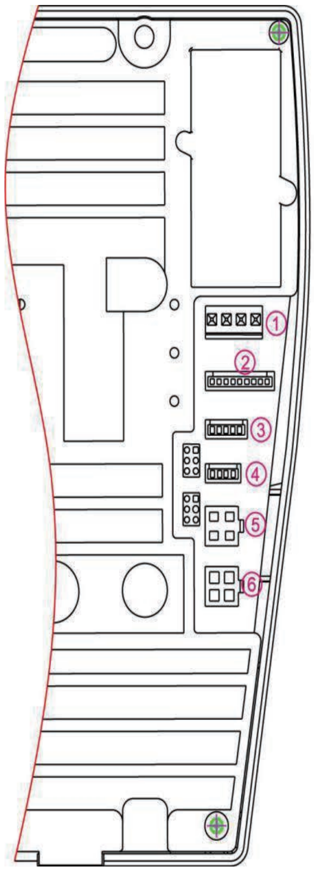
140331	壓腳步進電機的保持電流	1-12	8	
140332	壓腳步進電機的最大電流	1-12	8	

3. 錯誤代碼表

錯誤碼	問題描述	解決措施
E01	超電壓	關閉系統電源，檢測供應電源電壓是否正確。（或是否超過使用規定的額定電壓）。 若正確，請更換控制箱並通知售後服務。
E02	低電壓	關閉系統電源，檢測供應電源電壓是否正確。（或是否低於使用規定的額定電壓）。 若正確，請更換控制箱並通知售後服務。
E03	CPU 通信異常	關閉系統電源，檢查控制面板的連線是否鬆動或脫落，將其恢復正常後重啟系統。若仍不能正常工作，請更換控制箱並通知售後服務。
E05	控速器接觸異常	關閉系統電源，檢查控速器接頭是否鬆動或脫落，將其恢復正常後重啟系統。若仍不能正常工作，請更換控速器並通知售後服務。
E07	電機堵轉	轉動機頭手輪觀察是否卡住。如卡住則先排除機械故障。 如轉動正常，檢查電機編碼器接頭和電機電源線接頭是否鬆動。如有鬆動請修正。 如接觸良好，檢查供應電源電壓是否異常或轉速設置過高。如有請調整。 若仍不能正常工作，請更換控制箱並通知售後服務。
E08-0	通信異常	關閉系統電源，觀察步進電機是否卡住。如卡住則先排除機頭機械故障。 如正常，檢查步進電機接口是否鬆動或脫落，將其恢復正常後重啟系統。 若仍不能正常工作，請更換控制箱並通知售後服務。
E08-2	倒縫步進電機過流	
E08-4	倒縫步進電機開機找不到原點	
E08-16	剪線步進電機過流	
E08-32	剪線步進電機找不到原點	
E09 E11	定位信號異常	關閉系統電源，檢查電機編碼器接口是否鬆動或脫落，將其恢復正常後重啟系統。若仍不能正常工作，請更換電機並通知售後服務。

E10	電磁鐵過流保護	關閉系統電源，檢查電磁鐵（電磁閥）是否損壞或短路。
E14	編碼器信號異常	關閉系統電源，檢查電機編碼器接口是否鬆動或脫落，將其恢復正常後重啟系統。若仍不能正常工作，請更換電機並通知售後服務。
E15	電力模塊不正常過流保護	關閉系統電源，再重新開啟。若仍不能正常工作，請更換控制箱並通知售後服務。
E17	機頭保護開關沒到正確位置	關閉系統電源，檢查機頭是否掀開，控制箱內滾珠開關是否移位或損壞。
E20	電機啟動失敗（電角度錯誤）	關閉系統電源，檢查電機編碼器接口和電機電源接口是否鬆動或脫落，將其恢復正常後重啟系統。若仍不能正常工作，請更換控制箱並通知售後服務。

4. 端口示意圖



① 主轴电机电源线接口

② 主轴电机编码器线接口

③ 倒缝步进电机编码器线接口

④ 剪线步进电机编码器线接口

⑤ 倒缝步进电机电源线接口

⑥ 剪线步进电机电源线接口

⚠Safety Instruction

1. Users are required to read the operation manual completely and carefully before installation or operation.
2. All the instruction marked with sign ⚠ must be observed or executed; otherwise, bodily injuries might occur.
3. The product should be installed and pre-operated by well-trained persons.
4. For perfect operation and safety, it is prohibited that using extension cable with multi-outlet for power connection.
5. When connecting power supply cords to power sources, it is necessary to make sure that the power voltage matches the rated voltage ±20% indicated on the motor's name plate.
6. Don′t operate in direct sun light，outdoors area and where the room temperature is over 45°C or below 5°C.
7. Please avoid operating near the heater at dew area or at the humidity below 30% or above 95%.
8. Don′t operate in area with heavy dust, corrosive substance or volatile gas.
9. Avoid power cord being applied by heavy objects or excessive force, or over bend.
10. The earth wire of power cord must be connected to the system ground of the production plant by proper size of conductions and terminals. This connection should be fixed permanently.
11. All the moving portions must be prevented to be exposed by the parts provided.
12. Turing on the machine in the first time, operate the sewing machine at low speed and check the correct rotation direction.
13. Turn off the power before the following operation：
    a) Connecting or disconnecting any connectors on the control box or motor.
    b) Threading needle.
    c) Raising the machine head.
    d) Repairing or doing any mechanical adjustment.
    e) Machines idling.
14. Repairs and high level maintenance work should only be carried out by electronic technicians with appropriate training.
15. All the spare parts for repair must be provided or approved by the manufacturer.
16. Don't use any objects or force to hit or ram the product.

Guarantee Time

Warranty period of this product is 1 year dated from purchasing, or within 2 years from ex-factory date.

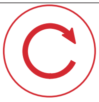
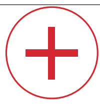
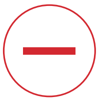
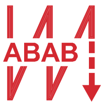
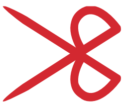
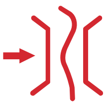
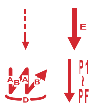
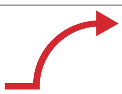
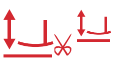
Warranty Detail:

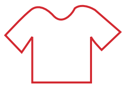
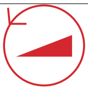
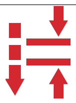
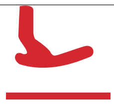
Any trouble found within warranty period under normal operation, it will be repaired free of charge. However, maintenance cost will be charged in the following cases even if within warranty period:

1. Inappropriate use, including: wrong connecting high voltage, wrong application, disassemble, repair, modification by incompetent personnel, or operation without the precaution, or operation out of its specification range, or inserting other objects or liquids into the product.
2. Damage by fire, Earth quake, lighting, wind, flood, salt corrosive, moisture, abnormal power voltage and any other damage cause by the natural disaster or by the inappropriate environments.
3. Dropping after purchasing or damage in transportation by customer himself or by customer's shipping agency

Note: We make our best effort to test and manufacture the product for assuring the quality. However, it is possible that this product can be damaged due to external magnetic interference and electronic static or noise or unstable power source more than expected; therefore the grounding system of operate area must guarantee the good earth and it's also recommended to install a failsafe device. (Such as residual current breaker)

1 Button Displays and Operating Instructions

Name	Key	Indicate
Function parameter edit		Press this key can enter or exit the user parameter setting interface.
Multi-section Sewing		Set the icon of continuous backstitch for multi-section stitch setting, and switch multi-section stitch setting (only works in multi-section stitch mode).
Locking screen function		If click, set used or cancelled locking screen function.
Speed increase		Increase the sewing speed.
Speed decrease		Decrease the sewing speed.
Pattern sewing key	Patt	Press this key can set used or cancelled pattern sewing function. When this mode is turned on, the current sewing mode will be turned off by default.
Start back-tacking sewing		Executions starting back seam B segment or execution starting back seam (A, B segment) 1 time. Execution starting back seam (A, B segment) 2 times.
End back-tacking sewing		Execution terminates back seam C segment or execution terminates back seam (C, D segment) 1time. Execution terminates back seam (C, D segment) 2 times.
Thread trimming		Set used or cancelled thread trimming function.
Clamp function setting		Set used or cancelled clamp function.
Mode shift key		If click, shift to free sewing, constant stitch sewing, continuous back seam shortcuts and multi-section set needle shortcuts.
Slow launch setting		Press this key can set used or cancelled slow launch function.
Needle stop position selection		Short-press to shift halfway stop needle UP/Down position.
Auto function		(valid for constant stitch sewing and multi-section set needle shortcuts)Press this key can set used or cancelled automatic function.
Automatic presser foot lifting setting		Press this key it can execute the cycle shift of automatic presser foot lifting after pause and automatic presser foot lifting after trimming.

Count display key		Displays the current count value.
Speed display key		Displays the current sewing mode speed.
Stitches length setting		Display the current stitch length value. Click to enter stitch length setting.
Press foot height key		Display the current presser height. Click to enter the presser height setting.

2 Simulation Parameters

If the setting key is pressed in other screens, the setting interface will be displayed.

Click the corresponding column to enter the corresponding setting interface.

No.	Setting
1	Start Back-Tacking Setting
2	Sewing Mode Setting
3	End Back-Tacking Setting
4	Soft Start Setting
5	Output Function Setting
6	Main Shaft Motor Relative Setting
7	Pedal Relative Setting
8	Counter Setting
9	Manual Switch Function Setting
10	Safety Protection Setting
11	Other Setting
12	Interface Display
13	Auxiliary Function
14	About System

2.1 Start Back-Tacking Setting

No.	Items	Range	Default	Description
1001	Start Back-Tacking Speed	200-3200	1600	
1002	Start Back-Tacking Mode Selection	OFF/ON	ON	OFF: Pedal- control can stop and start. ON: One shot to pedal, it can automatic execute back-tacking action.
1003	Mode Selection at the end of Start Back-Tacking	OFF/ON	ON	OFF: At the end of Start Back-Tacking, machine stops. ON: At the end of Start Back-Tacking, machine continues sewing if pedal pressed or START signal on (standing operation)

2.2 Sewing Mode Setting

No.	Items	Range	Default	Description
2001	Free Sewing Speed	100-5000	3500	
2002	Automatic Constant-Stitch	200-4000	3500	Constant-Stitch sewing speed adjustment when one shot

	Sewing Speed			signal is active.
2003	Bar-Tacking Speed	200-4000	2000	
2004	Back-Tacking Stitch Compensation	0-200	167	
2005	Mode Selection for Bar-Tacking	0-1	1	0: Pedal- control can stop and start. 1: One shot to pedal, it can automatic execute bar-tacking action.

2.3 End Back-Tacking Setting

No.	Items	Range	Default	Description
3001	End Back-Tacking Speed	200-3200	2000	

2.4 Soft Start Setting

No.	Items	Range	Default	Description
4001	Soft Start	ON/OFF	OFF	
4002	Soft Start Speed	200-1500	400	
4003	Stitch Numbers for Soft Start	1-99	2	

2.5 Output Function Setting

No.	Items	Range	Default	Description
5001	Trimming Function Setting			
5002	Clamp/Wiper Function Setting			
5003	Presser Foot Function Setting			
5004	Tension Release Device Function Setting			

2.5.1 Trimming Function Setting

No.	Items	Range	Default	Description
5101	Trimming Output Function Setting	ON/OFF	ON	
5102	Trimming Step Return Speed	20-400	100	
5103	Trimming First Section Speed	20-400	200	
5104	Trimming Second Section Speed	20-400	100	
5105	Trimming Action Time	10-990	200	
5106	The Angle of Trimming First Infeed	0-1439	935	
5107	The Angle of Trimming Second Infeed	0-1439	1435	
5108	First Trimming Distance	0-200	100	
5109	Second Trimming Distance	0-200	145	
5110	Trimming Step Return Time	10-990	60	

2.5.2 Clamp/Wiper Function Setting

No.	Items	Range	Default	Description
5201	Clamp Output Function	0-11	3	0: OFF

	Setting			1: Turn into wiper function 2-11: Thread clamp action and the pressure gradually increased
5202	Clamp Start Angle	10-359	100	
5203	Clamp End Angle	10-359	270	
5204	Wiper / Sweep Thread Action Time	10-990	380	Wiper / Sweep Thread Action Time

2.5.3 Presser Foot Function Setting

No.	Items	Range	Default	Description
5301	Presser Foot Lay Down Time	10-990	150	
5302	Presser Foot Lift Highness Compensation When Pedal Return to Intermediate Step at Sewing Stop	0-160	80	The 80 as 0 compensation, the large value as positive compensation, and the presser foot lift will be raise. The small value as negative compensation, the presser foot lift will be decline
5303	The Highest of Presser Foot Lift Highness	0-150	150	
5304	Presser Foot Speed	20-400	200	
5305	Presser Foot Pressure	0-1	1	0: Loosen the line when lifting the foot 1: No loosen the line when lifting the foot

2.5.4 Tension Release Device Function Setting

No.	Items	Range	Default	Description
5401	Thread Tension Release Start Angel	1-359	30	
5402	Thread Tension Release End Angel	1-359	180	
5403	Thread Tension Release Force Setting	0-80	30	The larger the value, the greater the action force

2.6 Main Shaft Motor Setting

No.	Items	Range	Default	Description
6001	Trimming Process Main Shaft Motor Speed	100-500	300	
6002	Reverse Angle Function Selection after Trimming	ON/OFF	OFF	
6003	Adjustment of Reverse Angles after Trimming	40-200	160	
6004	Needles Goes Up Automatically as Power Turned On	0-1	0	0: No Function. 1: Power turned on, needle goes up position automatically
6005	Up Position Adjustment	0-1439	230	
6006	Down Position Adjustment	0-1439	930	
6007	Low (Positioning) Speed	100-500	210	Setting Positioning Speed
6008	Stopping Strength as Half-way	1-45	16	
6009	Stopping Strength after Trimming	10-50	20	
6010	Manual Back-Tacking Limit	0-3200	0	

6011	Upper Needle Position Adjustment	0-40	40	
6012	Lower Needle Position Adjustment	0-750	750	

2.7 Presser Foot Setting

No.	Items	Range	Default	Description
7001	The Constant- Stitch Whether Can Execute End Back-Tacking Sewing Function Selection	ON/OFF	ON	ON: After finished the last seam of Stitch-Correction, it can automatic execute end back-tacking action. OFF: After finished the last seam of Stitch-Correction, it can't automatic execute end back-tacking function, it must step or full heeling action again then can execute end back-tacking or stitch-correction function.
7002	Speed Curve Adjustment （%）	10-100	80	The speed controller climbing slope setting. The large of slope value = the fast of the speed. The small of slope value = the slow of the speed.
7003	Presser Foot UP / Down at Intermediate Stop When Pedal Return to Half Step	0-1	0	0: Presser foot keeps down 1: Presser foot goes up
7004	Presser Foot UP / Down after Trimming When Pedal Return to Half Step	0-1	0	0: Presser foot keeps down 1: Presser foot goes up
7005	Pedal to Half-Heeling Position, Presser Foot Position Selection	0-1	1	0: Presser foot keeps down 1: Presser foot goes up
7006	The Voltage of Forward Step Pedal Point	30-1000	520	
7007	The Voltage of Intermediate Step Pedal Point	30-1000	420	
7008	The Voltage of Half Heeling Pedal Point	30-1000	270	
7009	The Voltage of Heeling Pedal Point	30-1000	130	
7010	Delay Time of Half Heeling Pedal	10-900	200	

2.8 Counter Setting

No.	Items	Range	Default	Description
8001	Counter Selection	0-2	1	0: OFF 1： Increment sewing counter (1 time for each trimming, add 1 to the count, the current value is the same as the set value, the count screen is displayed.) 2: Decrement sewing counter (Once for each trimming, count minus 1, screen is displayed after the current value becomes 0.）
8002	Counter Current Value/ Setting Value	0-9999	0/0	The present value is the current actual value; The set value is the reference value.
8003	Sewing Counter Trimming Time	0-50	1	If you choose 1, count the number of pieces per cut. If you choose 2, count it by cutting it twice, and so on.

2.9 Manual Switch Function Setting

No.	Items	Range	Default	Description
9001	Setting Function of Manual Switch A	0-3	2	0: Half stitch 1: One stitch

				2. Continuous correct half stitch 3. Continuous correct one stitch
9002	Setting Function of Manual Switch B	0-1	0	0: It will back tacking action when machine is stopped or running 1: It is back tacking when machine is running, and it will active stitch-correction action when machine is stopped

2.10 Safety Protection Setting

No.	Items	Range	Default	Description
10001	Machine Protection Switch Testing	0-2	1	0: Disable 1: Testing positive signal 2: Testing negative signal
10002	Oil Level Lower Protection Testing	0-1	1	0: Disable 1: Testing
10003	Setting High Voltage Protection Value	500-1023	880	After testing external input AC voltage to transfer DC voltage the value out of the setting value, the system will alarm E01 and stop running.
10004	Thread Slacking Electromagnet Protection Time	1-120	15	Working protection time of electromagnet (S)

2.11 Other Setting

No.	Items	Range	Default	Description
11001	Motor Zero-Point Correcting			
11002	Sensor by Knee Start AD Value	0-1023	600	
11003	Normal Stitches Length	0-75	30	
11004	Manual Tight Seam Stitch Length	0-81	52	
11005	Tacking Stitch Length Compensation	0-100	50	
11006	Back-Tacking Stitch Length Compensation	0-100	50	
11007	Forward Stitch Correction Stitch Length	0-81	76	

2.11.1 Motor Zero-Point Correction

No.	Items	Range	Default	Description
11011	Main Shaft Motor Zero-Point Correction	0-720	160	
11012	Back Tacking Motor Zero-Point Correction	0-100	50	When the stitch length is set to 0mm, fine tune the value to make the actual sewing stitch length 0mm.
11013	Press Foot Motor Zero-Point Correction	0-100	50	

2.12 Interface Display

No.	Items	Range	Default	Description
12001	Brightness	1-100	50	
12002	Main Interface Locked Automatically	0-900	30	0: Never 1-900: After main interface keep a certain times

				without operation, the main interface will locked automatically
12003	Language Setting	0-1	0	0: Chinese 1: English

2.13 Auxiliary Function

No.	Items	Range	Default	Description
13001	With Clamp Function without any Thrum Mode			
13002	Ending Tight Seam Mode			
13003	Layer Seam Mode			
13004	Pattern Seam Mode			
13005	Testing Mode			

2.13.1 With Clamp Function without any Thrum Mode

No.	Items	Range	Default	Description
13011	The Delay Time before Hook Thread with Clamp Function without any Thrum	0-990	100	
13012	The Hook Thread Action Time with Clamp Function without any Thrum	0-990	30	
13013	The Return Back Delay Time of Hook Thread with Clamp Function without any Thrum	0-990	30	
13014	Duty Cycle for Hook Thread with Clamp Function without any Thrum	1-100	30	
13015	The Suction Time for Clamp Function without any Thrum	0-5000	1000	
13016	Duty Cycle for Pull Thread with Clamp Function without any Thrum	0-100	0	

2.13.2 Ending Tight Seam Mode

No.	Items	Range	Default	Description
13021	Ending Tight Seam Stitches	0-60	10	
13022	Ending Tight Seam Speed	100-1000	500	
13023	Ending Tight Seam Direction	0/1	0	0: Counter Clockwise 1: Clockwise
13024	Ending Tight Seam Stitches Number	0-12	0	Close ending tight seam mode when the value is 0.

2.13.3 Layer Seam Mode

No.	Items	Range	Default	Description
13031	Layer Seam Mode Switch	ON/OFF	OFF	
13032	Layer Seam Mode Rotation Speed over Thick	200-3700	2000	
13033	Fabric Thickness Sensor AD Value	0-1023	530	Current fabric thickness sensor AD value is shown below
13034	Setting Layer Scale	1-100	10	
13035	Layer Seam Stitch Length Limit	0-200	100	

2.13.4 Pattern Seam Mode

No.	Items	Range	Default	Description
13041	Pattern Seam Mode Switch	ON/OFF	OFF	
13042	Pattern Seam Mode Selection	1-9	1	
13043	Pattern Seam Mode Setting			
13044	Pattern Seam Maximum Limit	100-3000	2500	

2.13.4.3 Setting of pattern seam style 1

No.	Stitch Numbers	Stitches Length（mm）	Repeat Times
1	1	4.8	5
2	1	2.0	1
3-10	0	0.0	1

Setting of pattern seam style 2

No.	Stitch Numbers	Stitches Length（mm）	Repeat Times
1	1	4.0	5
2	4	2.0	1
3-10	0	0.0	1

Setting of pattern seam style 3

No.	Stitch Numbers	Stitches Length（mm）	Repeat Times
1	1	3.5	5
2	4	1.5	1
3-10	0	0.0	1

2.13.5 Testing Mode

No.	Items	Range	Default	Description

13051	Testing Mode Switch	ON-OFF	OFF	As testing speed execute the cycle of Start – Sewing –Stop - Trimming
13052	Output Function Single Testing			
13053	Testing Mode Setting			

2.13.5.1 Autorun Test Mode

Period	Testing Speed (When the test speed is 0, the current cycle is not executed)	Running Time (S)	Stop Time (S)	Motor Running Direction	Periodic Time (No limit at time 0)
1	3000	20	20	1	0
2	0	0	0	1	0
3	0	0	0	1	0
4	0	0	0	1	0
5	0	0	0	1	0

2.13.5.2 Output Function Single Testing

Trimming	Presser Foot Step Reset
Press Foot	Step Motor 2

2.14 About System

No.	Items	Range	Default	Description
14001	Version Number			Display QIXING QR code, Control box version number, Control box minor version number, Display board version number, Resource version number
14002	State Information			
14003	Advanced Settings			Enter the "advanced password setting" interface and enter the password. If it is correct, enter the "advanced password setting" interface; if it is wrong, it will be invalid and "password error" will be displayed.
14004	Restore Factory Defaults			Cancel: Cancel Sure: Restore to original factory data

2.14.2 State Information

No.	Items	Range	Default	Description
14021	Motor Speed Display			Display the current motor speed
14022	Needle Position Angel Value			Display the current motor angle of the machine
14023	Pedal AD Value			Display the current pedal AD value
14024	Busbar Voltage AD Value			
14025	Oil Level Sensor AD Value			
14026	Knee Moving Position Sensor AD Value			

14027	Trimming Position Sensor AD Value			
14028	Presser Foot Lift Highness Sensor AD Value			
14029	Grating Signal			

2.14.3 Advanced Settings

No.	Items	Range	Default	Description
14031	Main Shaft Motor Related Advanced Settings			
14032	Back-Tacking Step Motor Related Senior Setting			
14033	Presser Foot Step Motor Related Senior Setting			
14034	Advanced Settings Password Modification			
14035	Main Shaft Motor Maximum Speed Limit	100-5000	4000	
14036	Stitch Length Limit	0-173	164	

2.14.3.1 Main Shaft Motor Related Advanced Settings

No.	Items	Range	Default	Description
140311	UP/DOWN Needle Position Distance Value	100-1400	720	On the up and down needle position shortcut setting interface, save the up needle position value.
140312	Main Shaft Motor Rotation Direct Setting	CCW/CW	CCW	CW: Clockwise CCW: Counter Clockwise (Lockstitch type rotation direction)
140313	Main Shaft Motor Maximum Current (A)	0-20	10	
140314	Main Shaft Motor Lockedrotor Current (A)	0-20	10	
140315	Main Shaft Motor Normal Current (A)	0-20	16	
140316	Main Shaft Motor Encoder Type Selection	0-1	0	0: without magnetic ring 1: with magnetic ring

2.14.3.2 Back-Tacking Step Motor Related Senior Setting

No.	Items	Range	Default	Description
140321	Back-Tacking Step Motor Steady Current	1-12	6	
140322	Back-Taking Step Motor Maximum Current	1-12	12	
140323	Back-Taking Step Motor Maximum Speed	20-600	550	

2.14.3.3 Presser Foot Step Motor Related Senior Setting

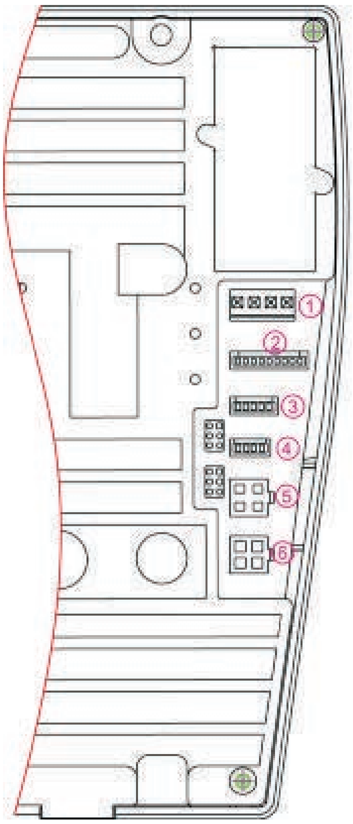
No.	Items	Range	Default	Description
140331	Presser Foot Step Motor Steady Current	1-12	8	
140332	Presser Foot Motor Maximum Current	1-12	8	

3 Error Code List

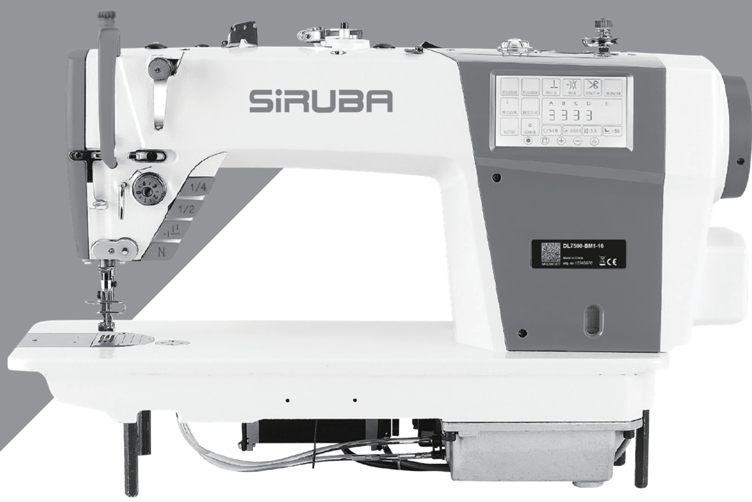
<table>
<tr><th>Error Code</th><th>Problem Description</th><th>Measure</th></tr>
<tr><td>E01</td><td>Over-voltage</td><td>Turn off the machine, check the power supply voltage. (Or whether exceed the rated voltage of use).
If there are still errors, please replace the control box and call for customer service.</td></tr>
<tr><td>E02</td><td>Low-voltage</td><td>Turn off the machine, check the power supply voltage. (Or whether under the rated voltage of use).
If there are still errors, please replace the control box and call for customer service.</td></tr>
<tr><td>E03</td><td>CPU communication error</td><td>Turn off the machine, please check if the operation panel in bad connection or is too loose. To get it right and turn on.
If there are still errors, please replace the control box and call for customer service.</td></tr>
<tr><td>E05</td><td>Pedal connection error</td><td>Turn off the machine, please check if the pedal in bad connection or is too loose. To get it right and turn on.
If there are still errors, please replace the control box and call for customer service.</td></tr>
<tr><td>E07</td><td>Motor locked-rotor error</td><td>Turn the machine handwheel, check if it is stuck. If it is stuck, you have to rule out the mechanical failure. If turn normal, check if the encoder and motor in bad connection or is too loose. If yes, please correct.
If connection well, check if the power supply voltage is abnormal or sewing speed is too high. If yes, please adjust.
If there are still errors, please replace the control box and call for customer service.</td></tr>
<tr><td>E08-0</td><td>Communication abnormal</td><td rowspan="5">Turn off the machine, check if motor is stuck. If it is stuck, you have to rule out the mechanical failure.
If turn normal, please check if the motor in bad connection or is too loose.
To get it right and turn on.
If there are still errors, please replace the control box and call for customer service.</td></tr>
<tr><td>E08-2</td><td>Back-tacking step motor over current</td></tr>
<tr><td>E08-4</td><td>Back-tacking step start can’t find original point.</td></tr>
<tr><td>E08-16</td><td>Trimming step motor over current</td></tr>
<tr><td>E08-32</td><td>Trimming step motor can’t find
original point</td></tr>
<tr><td>E09
E11</td><td>Positioning signal error</td><td>Turn off the machine, please check if the encoder in bad connection or is too loose. To get it right and turn on.
If there are still errors, please replace the control box and call for customer service.</td></tr>
<tr><td>E10</td><td>Solenoid over-current</td><td>Turn off the machine, please check the related circuit is shorted or damaged.</td></tr>
<tr><td>E14</td><td>Encoder error</td><td>Turn off the machine, please check if the encoder in bad connection or is too loose.
To get it right and turn on. If there are still errors, please</td></tr>
</table>

		replace the control box and call for customer service.
E15	Power supply module abnormal over-current	Turn off the machine, then turn on again. If there are still errors, please replace the control box and call for customer service.
E17	Machine protection switch is not in the correct position	Turn off the machine, check if the machine is turn over, or the mercury switch is shifted or damaged.
E20	Motor failed to start (Electrical angle error)	Turn off the machine, please check if the encoder and motor in bad connection or is too loose. To get it right and turn on. If there are still errors, please replace the control box and call for customer service.

4 Port Diagram



1. Spindle motor power cord connector
2. Spindle motor encoder wire interface
3. Backstitch line stepper motor encoder interfaces
4. Cut wire stepper motor encoder wire interface
5. Backstitch stepper motor power cord connector
6. Trimming stepper motor Power cord connector



高林股份有限公司
KAULIN MFG. CO., LTD.

DML-13P02.MAY.2022