

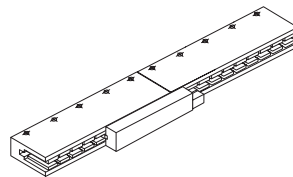
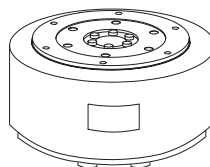
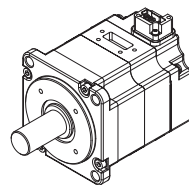
Σ-7系列 AC伺服驅動器

Σ-7S 伺服單元

MECHATROLINK-II通訊指令型

中英文警報排除手冊

型號：SGD7S F15-SN-Z7AL



維護

介紹了警報及警告的內容、原因和處理方法。

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12.1 檢查和部件更換

以下說明伺服單元的檢查和部件更換。

12.1.1 檢查

伺服單元不需要日常檢查，但下列項目一年需至少檢查一次以上。

檢修項目	檢查間隔時間	檢修要領	故障時的處裡
外觀檢修	至少每年一次	不得有垃圾、灰塵、油漬等。	請用布擦拭或用氣槍清掃。
螺絲的鬆動		端子排、連接器安裝螺絲等不得有鬆動。	請進一步緊固。

12.1.2 部件更換的大致標準

伺服單元內部的電氣、電子零件會發生機械性磨損及老化。請採用以下任一方法確認更換的大致標準。

- 使用伺服單元的壽命預測功能。
壽命預測功能請參照如下內容。
 9.4 監視產品壽命（第 9-13 頁）
- 參照下表。

零件名	更換大致標準	備註
冷卻扇	4 ~ 5 年	左側所示的更換大致標準為在下列條件下使用時的數值。 • 使用環境溫度：年平均 30°C • 負載率：80% 以下 • 運轉率：20 小時以下 / 日
電解電容	10 年	
繼電器	電源接通次數 10 萬次	電源接通頻率：1 小時 1 次左右
電池	未通電狀態下 3 年	未通電狀態下的環境溫度：20°C

達到更換大致標準時，請與附近的本公司代理店、分公司或售後服務部門聯繫。我們將在調查之後，判斷是否需要更換零件。



重要

歸還為更換部件而送至本公司的伺服單元，參數將恢復為出廠設定後返還。使用者自行設定的參數請務必做好備份紀錄。使用前請重新設定參數。

12.1.3 電池的更換

電池電壓約在 2.7V 以下時，將顯示“編碼器電池警報（A.830）”或“絕對值編碼器電池異常警告（A.930）”。

顯示此警報或警告時，需要更換電池。

電池的更換方法請參照如下內容。

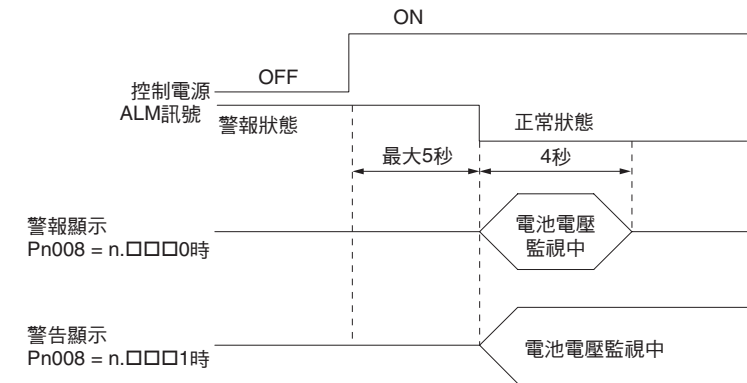
 電池的更換步驟（第 12-3 頁）

電池警報 / 警告的設定

是顯示警報還是警告，通過電池欠電壓的警報 / 警告（Pn008 = n.□□□X）設定。

	參數	含義	生效時間	類別
Pn008	n.□□□0 [出廠設定]	電池電壓降低時顯示警報（A.830）。	再次接通電源後	設定
	n.□□□1	電池電壓降低時顯示警告（A.930）。		

- 設為 Pn008 = n.□□□0 時
- 接通電源，最長 5 秒輸出伺服警報輸出（ALM）訊號後，監視電池電壓 4 秒。
即使 4 秒後電池電壓下降到規定值以下，也不會顯示警報。
- 設為 Pn008 = n.□□□1 時
接通電源，最長 5 秒輸出伺服警報輸出（ALM）訊號後，將一直監視電池電壓。



電池的更換步驟

◆ 將電池安裝在上位裝置上時

1. 只接通伺服單元的控制電源。
2. 拆下舊電池，裝上新電池。
3. 為解除“A.830（編碼器電池警報）”顯示，請關閉伺服單元的控制電源。
4. 再次接通伺服單元的控制電源。
5. 確認警報顯示消失，伺服單元可正常動作。

◆ 使用帶電池單元的編碼器電纜時

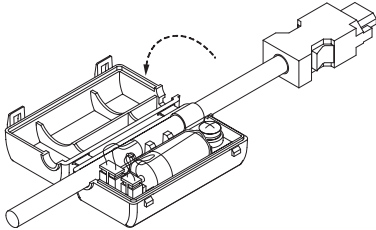
1. 只接通伺服單元的控制電源。



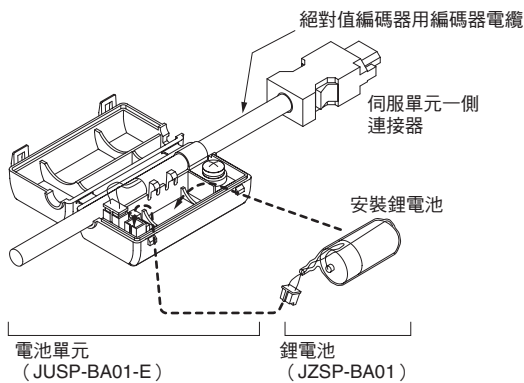
若在伺服單元的控制電源 **OFF** 後拆下電池（包括拆下編碼器電纜時），絕對值編碼器中的記憶資料將會丟失。

重要

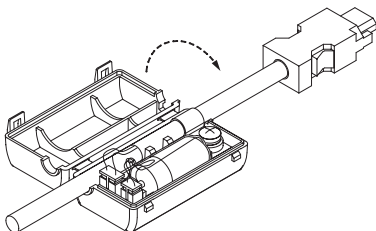
2. 開啟電池單元的外蓋。



3. 拆下舊電池，裝上新電池。



4. 蓋上電池單元的外蓋。



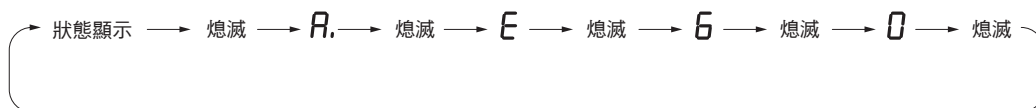
5. 為解除“A.830（編碼器電池警報）”顯示，請關閉伺服單元的電源。
6. 再次接通伺服單元的電源。
7. 確認錯誤顯示消失，伺服單元可正常動作。

12.2 顯示警報時

伺服單元發生異常時，面板顯示部的 LED 顯示警報編號。

正在發生的警報編號如下所示，逐字進行顯示。

例：發生“A.E60”時



在此說明警報一覽表及警報的原因及處理措施。

12.2.1 警報一覽表

警報一覽表按照警報編號的順序，列出了警報名稱、警報內容、發生警報時的停止方法、警報重置可否。

發生警報時的馬達停止方法

有關警報發生時的馬達停止方法，請參照如下內容。

📖 5.13.2 發生警報時的馬達停止方法（第 5-35 頁）

警報重置可否

可：可通過警報歸位解除警報。但如果仍然存在警報因素，則無法解除。

否：無法解除警報。

警報編號	警報名稱	警報內容	發生警報時的停止方法	警報重置可否
A.020	參數和校驗異常	伺服單元內部參數的資料異常。	Gr.1	否
A.021	參數格式異常	伺服單元內部參數的資料格式異常。	Gr.1	否
A.022	系統和校驗異常	伺服單元內部參數的資料異常。	Gr.1	否
A.024	系統警報	伺服單元內部程式發生異常。	Gr.1	否
A.025	系統警報	伺服單元內部程式發生異常。	Gr.1	否
A.030	主電路檢出部故障	主迴路的各種檢出資料異常。	Gr.1	可
A.040	參數設定故障	超出設定範圍。	Gr.1	否
A.041	分頻脈衝輸出設定異常	編碼器分頻脈衝數（Pn212）或編碼器輸出解析度（Pn281）不符合設定範圍或設定條件。	Gr.1	否
A.042	參數組合故障	多個參數的組合超出設定範圍。	Gr.1	否
A.044	半閉迴路 / 全閉迴路參數設定故障	選購模組與 Pn002 = n.X□□□（外部編碼器的使用方法）的設定不符。	Gr.1	否
A.04A	參數設定異常 2	庫組 / 庫資料的設定異常。	Gr.1	否
A.050	組合錯誤	在可組合的馬達容量範圍外。	Gr.1	可
A.051	產品未支援警報	連接了不支援的產品。	Gr.1	否
A.070	馬達類型變更檢出	連接與前次連接馬達不同類型的馬達。	Gr.1	否
A.080	線性編碼器光學尺節距設定異常	線性編碼器光學尺節距（Pn282）的值保持出廠設定。	Gr.1	否
A.0b0	伺服 ON 指令無效警報	執行讓馬達通電的協助工具後，從上位裝置傳送了伺服 ON（SV_ON）指令。	Gr.1	可
A.100	過電流檢出	功率電晶體過電流或散熱片過熱。	Gr.1	否
A.300	再生異常	再生類故障。	Gr.1	可
A.320	再生過載	發生再生過載。	Gr.2	可
A.330	主電路電源配線錯誤	• AC 電源輸入 / DC 電源輸入的設定有誤。 • 電源線配線錯誤。	Gr.1	可

12.2 顯示警報時

12.2.1 警報一覽表

(續)

警報編號	警報名稱	警報內容	發生警報時的停止方法	警報重置可否
A.400	過電壓	主迴路 DC 電壓異常高。	Gr.1	可
A.410	欠電壓	主迴路 DC 電壓不足。	Gr.2	可
A.510	超速度	馬達速度超過了最高速度。	Gr.1	可
A.511	分頻脈衝輸出過速度	- 超過了設定的編碼器分頻脈衝數 (Pn212) 的脈衝輸出速度。(旋轉型伺服馬達時) - 超過編碼器輸出解析度 (Pn281) 的馬達速度上限。(直線伺服馬達時)	Gr.1	可
A.520	振動警報	檢出馬達速度異常振動。	Gr.1	可
A.521	自動調整警報	免調整功能自動調整中檢出了振動。	Gr.1	可
A.550	最高速度設定異常	Pn385 (馬達最高速度) 的設定值超過了馬達最高速度。	Gr.1	可
A.710	過載 (瞬間最大負載)	以大幅度超過額定值的轉矩進行了數秒至數十秒的運轉。	Gr.2	可
A.720	過載 (連續最大負載)	以超過額定值的轉矩進行了連續運轉。	Gr.1	可
A.730 A.731	DB 過載	由於 DB (動態制動器) 動作, 旋轉或運轉能量超過了 DB 電阻的容量。	Gr.1	可
A.740	湧入電流限制電阻過載	主迴路電源接通頻度過高。	Gr.1	可
A.7A1	內部溫度異常 1 (控制電路板溫度異常)	控制電路板的環境溫度異常。	Gr.2	可
A.7A2	內部溫度異常 2 (電源電路板溫度異常)	電源電路板的環境溫度異常。	Gr.2	可
A.7A3	內部溫度檢出部異常	溫度檢出迴路異常。	Gr.2	否
A.7AB	伺服單元內置風扇停止	伺服單元內部的風扇停止轉動。	Gr.1	可
A.810	編碼器備份警報	編碼器的電源完全耗盡, 位置資料被清除。	Gr.1	否
A.820	編碼器和校驗警報	編碼器記憶體的和校驗結果異常。	Gr.1	否
A.830	編碼器電池警報	接通控制電源後, 電池的電壓下降到規定值以下。	Gr.1	可
A.840	編碼器資料警報	編碼器內部資料異常。	Gr.1	否
A.850	編碼器過速度	電源 ON 時, 編碼器高速旋轉。	Gr.1	否
A.860	編碼器過熱	編碼器的內部溫度過高。	Gr.1	否
A.861	過熱	馬達的內部溫度過高。	Gr.1	否
A.890	編碼器光學尺錯誤	線性編碼器的故障。	Gr.1	否
A.891	編碼器模組錯誤	線性編碼器的異常。	Gr.1	否
A.8A0	外部編碼器異常	外部編碼器故障。	Gr.1	可
A.8A1	外部編碼器模組故障	串列轉換單元故障。	Gr.1	可
A.8A2	外部編碼器感測器故障 (增量型)	外部編碼器故障。	Gr.1	可
A.8A3	外部編碼器位置故障 (絕對值)	外部編碼器的位置資料異常。	Gr.1	可
A.8A5	外部編碼器超速故障	來自外部編碼器的超速故障。	Gr.1	可
A.8A6	外部編碼器過熱故障	來自外部編碼器的過熱故障。	Gr.1	可
A.b33	電流檢出故障 3	電流檢出迴路故障。	Gr.1	否
A.b6A	MECHATROLINK 通訊 ASIC 故障 1	發生 MECHATROLINK 通訊 ASIC 故障 1。	Gr.1	否
A.b6b	MECHATROLINK 通訊 ASIC 故障 2	發生 MECHATROLINK 通訊 ASIC 故障 2。	Gr.2	否
A.bF0	系統警報 0	發生了伺服單元內部程式故障 0。	Gr.1	否
A.bF1	系統警報 1	發生了伺服單元內部程式故障 1。	Gr.1	否
A.bF2	系統警報 2	發生了伺服單元內部程式故障 2。	Gr.1	否
A.bF3	系統警報 3	發生了伺服單元內部程式故障 3。	Gr.1	否
A.bF4	系統警報 4	發生了伺服單元內部程式故障 4。	Gr.1	否
A.C10	失控檢出	伺服馬達失控。	Gr.1	可
A.C20	相位錯誤檢出	錯誤檢出相位。	Gr.1	否

(續)

警報編號	警報名稱	警報內容	發生警報時的停止方法	警報重置可否
A.C21	霍爾式感測器故障	霍爾式感測器故障。	Gr.1	否
A.C22	相位資訊不一致	相位資訊不一致。	Gr.1	否
A.C50	磁極檢出失敗	磁極檢出失敗。	Gr.1	否
A.C51	磁極檢出時超程檢出	磁極檢出時檢出了超程訊號。	Gr.1	可
A.C52	磁極檢出未完	在磁極檢出未完的狀態下伺服 ON。	Gr.1	可
A.C53	磁極檢出超出活動範圍	移動到磁極檢出活動範圍 (Pn48E) 設定值以上。	Gr.1	否
A.C54	磁極檢出失敗 2	磁極檢出失敗。	Gr.1	否
A.C80	編碼器清除故障 (旋轉圈數上限值設定故障)	絕對值編碼器的旋轉圈數資料的清除或者設定不正確。	Gr.1	否
A.C90	編碼器通訊故障	編碼器與伺服單元間無法通訊。	Gr.1	否
A.C91	編碼器通訊 位置資料加速度異常	編碼器的位置資料的計算中發生了故障。	Gr.1	否
A.C92	編碼器通訊定時器異常	編碼器與伺服單元間的通訊用定時器發生了故障。	Gr.1	否
A.CA0	編碼器參數異常	編碼器的參數被破壞。	Gr.1	否
A.Cb0	編碼器回送校驗異常	與編碼器的通訊內容錯誤。	Gr.1	否
A.CC0	旋轉圈數上限值不一致	編碼器和伺服單元的旋轉圈數上限值不一致。	Gr.1	否
A.CF1	回饋選購模組通訊故障 (接收失敗)	回饋選購模組的訊號接收失敗。	Gr.1	否
A.CF2	回饋選購模組通訊故障 (定時器停止)	與回饋選購模組通訊用的定時器發生故障。	Gr.1	否
A.d00	位置偏差過大	在伺服 ON 狀態下，位置偏差超過了位置偏差過大警報值 (Pn520)。	Gr.1	可
A.d01	伺服 ON 時 位置偏差過大警報	伺服 OFF 中位置偏差超過伺服 ON 時位置偏差過大警報值 (Pn526) 的設定值時保持伺服 ON。	Gr.1	可
A.d02	伺服 ON 時速度限制所引起的 位置偏差過大警報	在位置偏差積累狀態下伺服 ON，則通過伺服 ON 時速度限制值 (Pn529 或 Pn584) 執行速度限制。在該狀態下輸入位置指令，不解除限制而超出了位置偏差過大警報值 (Pn520) 的設定值。	Gr.2	可
A.d10	馬達 — 負載位置間偏差過大	全閉迴路控制時，馬達 — 負載位置間的偏差過大。	Gr.2	可
A.d30	位置資料過大	位置回饋資料為 1879048192B	Gr.1	否
A.E02	MECHATROLINK 內部同步異常 1	MECHATROLINK 通訊與伺服單元同步異常。	Gr.1	可
A.E40	MECHATROLINK 傳輸週期設定故障	MECHATROLINK 通訊的傳輸週期設定有誤。	Gr.2	可
A.E50	MECHATROLINK 同步異常	MECHATROLINK 通訊中發生同步異常。	Gr.2	可
A.E51	MECHATROLINK 同步失敗	MECHATROLINK 通訊中發生同步失敗。	Gr.2	可
A.E60	MECHATROLINK 通訊故障 (接收錯誤)	MECHATROLINK 通訊中連續發生通訊故障。	Gr.2	可
A.E61	MECHATROLINK 傳送週期異常 (同步間隔異常)	MECHATROLINK 通訊中發生傳送週期異常。	Gr.2	可
A.E72	回饋選購模組檢出失敗警報	回饋選購模組的檢出失敗。	Gr.1	否
A.EA2	DRV 警報 2 (伺服單元 WDC 異常)	發生了伺服單元 DRV 異常 0。	Gr.2	可
A.Eb1	安全功能用訊號輸入時間故障	安全功能用訊號輸入時間異常。	Gr.1	否
A.Ed1	指令執行逾時	發生 MECHATROLINK 指令逾時錯誤。	Gr.2	可
A.F10	電源線缺相	在主迴路電源 ON 的狀態下，R，S，T 相中某一相的低電壓狀態持續了 1 秒以上。	Gr.2	可
A.F50	馬達主迴路電纜斷線	即使在可接收伺服 ON (SV_ON) 指令的狀態下輸入 SV_ON 指令，伺服馬達也不動作或不通電。	Gr.1	可

12.2 顯示警報時

12.2.2 警報的原因及處理措施

(續)

警報編號	警報名稱	警報內容	發生警報時的停止方法	警報重置可否
FL-1*	系統警報	伺服單元內部程式發生異常。	—	否
FL-2*				
FL-3*				
FL-4*				
FL-5*				
CPF00	數位操作器通訊錯誤 1	數位操作器（型號：JUSP-OP05A-1-E）與伺服單元間無法通訊（CPU 異常等）。	—	否
CPF01	數位操作器通訊錯誤 2			
A.--	不是錯誤顯示	正常動作狀態	—	—

* 本警報不會保存在警報記錄中。僅顯示在面板顯示部。

12.2.2 警報的原因及處理措施

下面列出了警報的原因和處理措施。如果按照下表進行處理後仍然無法清除故障，請與本公司代理店或最近的公司聯繫。

警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.020： 參數和校驗異常 （伺服單元內部參數的資料異常）	電源電壓瞬間下降	測量電源電壓。	在規格範圍內設定電源電壓，執行參數設定值的初始化。	第 5-8 頁
	參數寫入時斷電	確認斷電的時間。	參數設定值初始化後重新輸入參數。	
	參數的寫入次數超過了最大值	確認是否從上位裝置頻繁地進行了參數變更。	有可能是伺服單元故障。更換伺服單元。改變參數輸入方法。	—
	因來自 AC 電源、接地以及靜電等的噪音而產生了誤動作	重新接通伺服單元的電源。仍然發生警報時，可能受到了干擾。	採取防止噪音干擾的措施。	第 4-5 頁
	由於氣體、水滴或切削油等導致伺服器內部的部件發生了故障	確認設定環境。	有可能是伺服單元故障。更換伺服單元。	—
	伺服單元故障	重新接通伺服單元的電源。仍然發生警報時，有可能是故障。	有可能是伺服單元故障。更換伺服單元。	—
A.021： 參數格式異常 （伺服單元內部參數的資料形式異常）	與發生警報的伺服單元的軟體版本相比，輸入參數的軟體版本更新。	讀取產品資訊，確認軟體版本是否相同。如果版本不同，有可能導致警報發生。	輸入軟體版本、型號相同的其他伺服單元的參數，然後再接通電源。	第 9-2 頁
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
A.022： 系統參數和校驗異常 （伺服單元內部參數的資料異常）	電源電壓瞬間下降	測量電源電壓。	有可能是伺服單元故障。更換伺服單元。	—
	在設定協助工具的過程中關閉了電源	確認斷電的時間。	有可能是伺服單元故障。更換伺服單元。	—
	伺服單元故障	重新接通伺服單元的電源。仍然發生警報時，有可能是故障。	有可能是伺服單元故障。更換伺服單元。	—
A.024： 系統警報 （伺服單元內部程式發生異常）	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
A.025： 系統警報 （伺服單元內部程式發生異常）	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
A.030： 主迴路檢出故障	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—

(續)

警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.040： 參數設定異常 (超過了設定範圍)	伺服單元容量與伺服馬達容量不匹配。	確認伺服單元與伺服馬達的容量及組合。	使伺服單元與伺服馬達的容量相互匹配。	—
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
	在參數設定範圍外	確認變更後的參數的設定範圍。	將變更後的參數設為設定範圍內的值。	—
	電子齒輪比的設定值在設定範圍外	確認電子齒輪比是否為 $0.001 < (\text{Pn20E}/\text{Pn210}) < 64000$ 。	將電子齒輪比設定為 $0.001 < (\text{Pn20E}/\text{Pn210}) < 64000$ 。	第 5-40 頁
A.041： 分頻脈衝輸出設定異常	編碼器分頻脈衝數 (Pn212) 或編碼器輸出解析度 (Pn281) 不符合設定範圍、設定條件。	確認 Pn212 或 Pn281。	將 Pn212 或 Pn281 設定為適當的值。	第 6-21 頁
A.042： 參數組合異常	由於變更了電子齒輪比 (Pn20E/Pn210) 或伺服馬達，使得程式 JOG 運轉的速度不符合設定範圍。	確認檢出條件公式 *1 是否成立。	減小電子齒輪比 (Pn20E/Pn210) 的值。	第 5-40 頁
	由於變更了程式 JOG 移動速度 (Pn533 或 Pn585)，使得程式 JOG 運轉的速度不符合設定範圍	確認檢出條件公式 *1 是否成立。	增大 Pn533 或 Pn585 的值。	第 7-12 頁
	由於變更了電子齒輪比 (Pn20E/Pn210) 或伺服馬達，高級自動調整的移動速度不符合設定範圍。	確認檢出條件公式 *2 是否成立。	減小電子齒輪比 (Pn20E/Pn210) 的值。	第 5-40 頁
A.044： 半閉迴路 / 全閉迴路參數設定異常	全閉環模組和外部編碼器的使用方法 (Pn002 = n.X□□□) 的設定不符	確認 Pn002 = n.X□□□ 的設定。	使全閉迴路模組和 Pn002 = n.X□□□ 的設定相符。	第 10-4 頁
A.04A： 參數設定異常 2	在向庫組登錄 4 位元組參數時，有 2 個組未被連續登錄。	—	將庫組的位元組變更為適當的值。	—
	庫資料總數超過 64 (Pn900xPn901 > 64)	—	使庫資料的總數在 64 以下。	—
A.050： 組合錯誤 (在可組合的馬達容量範圍以外)	伺服單元容量與伺服馬達的容量不匹配	確認 $\frac{1}{4} \leq \frac{\text{馬達容量}}{\text{伺服單元容量}} \leq 4$ 。	使伺服單元與伺服馬達的容量相互匹配。	—
	編碼器故障	與別的編碼器更換，確認警報不再發生。	更換伺服馬達 (編碼器)。	—
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
A.051： 產品未支援警報	馬達參數檔未寫入線性編碼器中。(僅不使用串列轉換單元時)	確認馬達參數檔是否寫入線性編碼器中。	將馬達參數檔案寫入線性編碼器中。	第 5-17 頁
	在伺服單元上連接了不支援的串列轉換單元、編碼器、外部編碼器	確認產品的組合規格。	變更為配套的組合。	—
A.070： 馬達類型變更檢出 (連接與前次連接馬達不同類型的馬達)	拆下旋轉型伺服馬達，連接直線伺服馬達。	—	設定與直線伺服馬達相符的參數，執行馬達類型警報刪除。然後，再次接通伺服單元的電源。	—
	拆下直線伺服馬達，連接旋轉型伺服馬達。	—	設定與旋轉型伺服馬達相符的參數，執行馬達類型警報刪除。然後，再次接通伺服單元的電源。	—

(續)

警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.080： 線性編碼器光學尺 節距設定異常	線性編碼器的光學尺節距（Pn282）的設定保持出廠設定	確認 Pn282 的值。	正確設定 Pn282 的值。	第 5-16 頁
A.0b0： 伺服 ON 指令無效 警報	執行讓馬達通電的協助工具後，從上位裝置傳送了伺服 ON（SV_ON）指令。	—	重新接通伺服單元的電源。 或執行軟體重定。	第 6-43 頁
A.100： 過電流檢出 （過電流流過了功率 電晶體或散熱片過 熱）	主迴路電纜配線錯誤，或接觸不良	確認配線是否正確。	修改配線。	第 4-17 頁
	主迴路電纜內部短路，或發生了接地短路。	確認電纜的 UVW 相間、UVW 與接地之間是否發生短路。	電纜有可能短路。更換電纜。	
	伺服馬達內部發生短路或接地短路。伺服馬達內部發生短路或接地短路。	確認馬達端子的 UVW 相間、UVW 與接地之間是否發生短路。	有可能是伺服馬達故障。更換伺服馬達。	
	伺服單元內部發生短路或接地短路	確認伺服單元的伺服馬達連接端子的 UVW 相間、UVW 與接地之間是否發生短路。	有可能是伺服單元故障。更換伺服單元。	
	再生電阻配線錯誤或接觸不良	確認配線是否正確。	修改配線。	第 4-15 頁
	動態制動器（因 DB、伺服單元而發生的緊急停止）的使用頻度高、或發生了 DB 超載警報	通過 DB 電阻功耗來確認 DB 的使用頻率。或利用警報顯示來確認是否發生了 DB 超載警報（A.730 或 A.731）。	變更伺服單元的選擇、運轉方法和機構，以降低 DB 的使用頻率。	—
	再生電阻值過高，超過了再生處理能力	利用 SigmaWin+ 的動作監視畫面的【回生負荷率】來確認再生電阻的使用頻率。	考慮運轉條件和負載，再次探討再生電阻值。	—
	伺服單元的再生電阻值過小	利用 SigmaWin+ 的動作監視畫面的【回生負荷率】來確認再生電阻的使用頻率。	將再生電阻值變更為伺服單元最小容許電阻值以上的值。	—
	在伺服馬達停止時或低速運轉時承受了高負載	確認運轉條件是否在伺服驅動器的規格範圍以外。	減輕伺服馬達承受的負載。或以較高的運轉速度運轉。	—
	因噪音而產生誤動作	改善配線、設定等噪音環境，確認有無效果。	採取防止噪音的措施，諸如正確進行 FG 的配線等。另外，FG 的電線尺寸請使用和伺服單元主迴路電線尺寸相同的電線。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.300： 再生故障	SGD7S-R70A, R90A, 1R6A, 2R8A 時，將再生電阻容量（Pn600）設定為“0”以外的值，不安裝再生電阻器	確認外置再生電阻器的連接和 Pn600 的值。	連接外置再生電阻器，或在不需再生電阻器時，將 Pn600（再生電阻容量）設定為 0（設定單位：10W）。	第 5-49 頁
	SGD7S-3R8A, 5R5A, 7R6A, 120A, 180A, 200A 時，再生電阻器連接端子 B2-B3 的跨配線脫落	確認電源端子跨配線的配線。	對跨配線進行正確配線。	第 4-15 頁
	外置再生電阻器的配線不良、脫落或斷線	確認外置再生電阻器的配線。	對外置再生電阻器進行正確配線。	
	伺服單元故障	—	在不接通主迴路電源的狀態下，再次接通伺服單元的控制電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—

(續)

警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.320： 再生過載	電源電壓超過規格範圍	測量電源電壓。	將電源電壓設定在規格範圍內。	—
	外置再生電阻值或再生電阻容量不足，或處於連續再生狀態	再次確認運轉條件和容量（容量選擇軟體 SigmaJunmaSize+ 等）。	變更再生電阻值、再生電阻容量。再次進行運轉條件的調整（容量選擇軟體 SigmaJunmaSize+ 等）。	—
	連續承受負負載，處於連續再生狀態	確認向運轉中的伺服馬達施加的負載。	再次探討包括伺服、機械、運轉條件在內的系統。	—
	Pn600（再生電阻容量）中設定的容量小於外置再生電阻的容量	確認再生電阻器的連接和 Pn600 的值。	校正 Pn600 的設定值。	第 5-49 頁
	Pn603（再生電阻值）中設定的值小於外置再生電阻值	確認再生電阻器的連接和 Pn603 的值。	校正 Pn603 的設定值。	第 5-49 頁
	外置再生電阻值過大	確認再生電阻值是否正確。	將其變更為正確的電阻值和容量。	—
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
A.330： 主迴路電源配線錯誤 （在接通主迴路電源時檢出）	伺服單元內部的電源電壓過高，再生電阻器斷線	用測量儀器測量再生電阻器的電阻值。	使用伺服單元內置的再生電阻器時，更換伺服單元。 使用外置再生電阻器時，更換再生電阻器。	—
	設定 AC 電源輸入時，輸入了 DC 電源	確認電源是否為 DC 電源。	使電源的設定值與使用的電源保持一致。	第 5-12 頁
	設定 DC 電源輸入時，輸入了 AC 電源	確認電源是否為 AC 電源。	使電源的設定值與使用的電源保持一致。	
	SGD7S-R70A, R90A, 1R6A, 2R8A 時，將再生電阻容量（Pn600）設定為“0”以外的值，不安裝再生電阻器	確認外置再生電阻器的連接和 Pn600 的值。	連接外置再生電阻器，或在不需要外置再生電阻器時，將 Pn600 設定為 0。	第 4-15 頁，第 5-49 頁
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
A.400： 過電壓 （伺服單元內部的主迴路電源部檢出過電壓）	電源電壓超過規格範圍	測量電源電壓。	將 AC/DC 電源電壓調節到產品規格範圍內。	—
	電源處於不穩定狀態，或受到了雷擊的影響	測量電源電壓。	改善電源狀況，設置突波吸收器後再次接通伺服單元電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
	AC 電源電壓超過規格範圍時進行了加減速	確認電源電壓和運轉中的速度、轉矩。	將 AC 電源電壓調節到產品規格範圍內。	—
	外置再生電阻值比運轉條件大	確認運轉條件和再生電阻值。	考慮運轉條件和負載，再次探討再生電阻值。	—
	在容許轉動慣量比或品質比以上的狀態下運轉	確認轉動慣量比或品質比在容許範圍以內。	延長減速時間，或減小負載。	—
	伺服單元故障	—	在不接通主迴路電源的狀態下，再次接通伺服單元的控制電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—

12.2 顯示警報時

12.2.2 警報的原因及處理措施

(續)				
警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.410： 欠電壓 (伺服單元內部的主 迴路電源部檢出欠電 壓)	電源電壓低於規格範圍	測量電源電壓。	將電源電壓調節到正常範圍。	—
	運轉中電源電壓下降	測量電源電壓。	增大電源容量。	—
	發生瞬間停電	測量電源電壓。	如果變更了瞬間停止保持時間 (Pn509)，則設定為較小的 值。	第 6-13 頁
	伺服單元的保險絲熔斷	—	更換伺服單元，將電抗器連接到 DC 電抗器連接端子 ($\ominus 1$ ， $\ominus 2$) 後，使用伺服 單元。	—
	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—
A.510： 超速度 (馬達速度在最高 速度以上)	馬達配線的 U、V、W 相序錯誤	確認伺服馬達的配線。	確認馬達配線是否有問題。	—
	指令輸入值超過了過速度值	確認輸入指令。	降低指令值。或調整增益。	—
	馬達速度超過了最高速度	確認馬達速度的波形。	降低速度指令輸入增益，調整 伺服增益。 或調整運轉條件。	—
	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—
A.511： 分頻脈衝輸出過速度	分頻脈衝的輸出頻率 過大，超過了限制值	確認分頻脈衝的輸出設定。	降低編碼器分頻脈衝數 (Pn212) 或編碼器輸出解析 度 (Pn281) 的設定。	第 6-21 頁
	馬達速度過高，分頻脈衝 的輸出頻率超過了限制值	確認分頻脈衝的輸出設定和馬 達速度。	降低馬達速度。	—
A.520： 振動警報	檢出馬達速度異常振動	確認馬達的異常聲音和運轉時 的速度、轉矩波形。	降低馬達速度。 或降低速度環增益 (Pn100)。	—
	轉動慣量比 (Pn103) 的值比實際值大或進行了 大的變動	確認轉動慣量比或品質比。	正確地設定轉動慣量比 (Pn103)。	—
A.521： 自動調整警報 (自訂調整， EasyFFT，免調整 功能中檢出了振動)	在使用免調整功能時馬達 振動很大	確認馬達速度的波形。	減小負載，使其在容許轉動慣 量比以下，或增大免調整值設 定的負載值，降低剛性值。	第 8-10 頁
	自訂調整、EasyFFT 執 行時馬達振動很大	確認馬達速度的波形。	實施各功能的操作步驟中說明 的處理方法。	第 8-36 頁，第 8- 76 頁
A.550： 最高速度設定異常	Pn385 (馬達最高 速度) 的設定超過了最高 速度	確認 Pn385 的設定值和馬達 最高速度設定上限值 / 編碼器 輸出解析度設定上限值。	將 Pn385 設定為馬達最高速 度以下。	第 6-16 頁
A.710： 過載 (瞬間最大負載) A.720： 過載 (連續最大)	馬達配線、編碼器配線不 良或連接不良	確認配線。	確認馬達配線、編碼器配線是 否有問題。	第 4-17 頁
	馬達運轉超過了過載保護 特性	確認馬達的過載特性和運轉指 令。	重新探討負載條件、運轉條 件。或者重新研討馬達容量。	—
	由於機械性因素而導致馬 達不驅動，造成運轉時的 負載過大	確認運轉指令和馬達速度。	改善機械性因素。	—
	線性編碼器的光學尺節距 (Pn282) 的設定異常	確認 Pn282 的設定值。	將 Pn282 設定為適當的值。	第 5-16 頁
	馬達相序選擇 (Pn080 = n.□□X□) 異常	確認 Pn080 = n.□□X□ 的 設定值。	將 Pn080 = n.□□X□ 設定 為適當的值。	第 5-21 頁
	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—
A.730： A.731： DB 過載 (檢出動態制動器的 耗電量過大)	馬達在被外力驅動	確認運轉狀態。	不要通過外力驅動馬達	—
	DB 停止時的旋轉或運轉 能量超過了 DB 電阻的 容量	通過 DB 電阻功耗來確認 DB 的使用頻率。	嘗試以下措施。 • 降低伺服馬達的指令速度。 • 調小轉動慣量比或品質比。 • 減少 DB 停止的次數	—
	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—

(續)

警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.740： 湧入電流限制 電阻過載 (主迴路電源接通 頻率過高)	超過主迴路電源 ON/ OFF 時的衝擊電流限制 電阻的容許次數	—	降低主迴路電源的 ON/OFF 頻率。	—
	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—
A.7A1： 內部溫度異常 1 (控制電路板溫度 異常)	環境溫度過高	用溫度計測量環境溫度。或通 過伺服單元設定環境監視確認 運轉狀況。	改善伺服單元的設定條件，降 低環境溫度。	—
	通過關閉電源而多次對超 載警報復位後進行了運轉	利用警報顯示來確認是否發生 了過載警報。	變更警報的重置方法。	—
	負載過大，或運轉時超過 了再生處理能力	通過累積負載率確認運轉中的 負載，通過再生負載率確認再 生處理能力。	重新探討負載條件、運轉條 件。	—
	伺服單元的安裝方向、與 其他伺服單元的間隔不合 理	確認伺服單元的安放狀態。	根據伺服單元的安裝標準進行 安裝。	第 3-3 頁， 第 3-5 頁
	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—
A.7A2： 內部溫度異常 2 (電源電路板溫度 異常)	環境溫度過高	用溫度計測量環境溫度。或通 過伺服單元設定環境監視確認 運轉狀況。	改善伺服單元的設定條件，降 低環境溫度。	—
	通過關閉電源多次對過載 警報重置後進行了運轉	利用警報顯示來確認是否發生 了過載警報。	變更警報的重置方法。	—
	負載過大，或運轉時超過 了再生處理能力	通過累積負載率確認運轉中的 負載，通過再生負載率確認再 生處理能力。	重新探討負載條件、運轉條 件。	—
	伺服單元的安裝方向、與 其他伺服單元的間隔不合 理	確認伺服單元的安放狀態。	根據伺服單元的安裝標準進行 安裝。	第 3-3 頁， 第 3-5 頁
	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—
A.7A3： 內部溫度檢出部異常 (溫度檢出迴路 異常)	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—
A.7AB： 伺服單元內建風扇 停止	伺服單元內部的風扇停止 轉動	確認是否卡入了異物。	去除異物後，仍然發生警報 時，有可能是伺服單元故障。 更換伺服單元。	—
A.810： 編碼器備份警報 (僅在連接絕對值 編碼器時檢出) (在編碼器側檢出)	第一次接通絕對值編碼器 的電源	確認是否是第一次接通電源。	進行編碼器的設定操作。	第 5-43 頁
	拆下編碼器電纜後又進行 了連接，	確認是否是第一次接通電源。	確認編碼器的連接，進行編碼 器的設定操作。	
	伺服單元的控制電源 (+5V) 以及電池電源均 發生故障	確認編碼器連接器的電池和連 接器狀態是否正確。	恢復編碼器的供電 (更換電 池等) 之後，進行編碼器的設 定操作。	—
	絕對值編碼器故障	—	即使再次進行設定操作也不能 解除警報時，更換伺服馬達。	—
	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—
A.820： 編碼器和校驗警報 (在編碼器側檢出)	編碼器故障	—	■ 絕對值編碼器 重新設定編碼器。仍然頻繁發 生時，有可能是伺服馬達故 障。更換伺服馬達。 ■ 1 旋轉型絕對值編碼器或增 量型編碼器時 • 有可能是伺服馬達故障。更 換伺服馬達。 • 有可能是線性編碼器的故 障。更換線性編碼器。	第 5-43 頁
	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—

12.2 顯示警報時

12.2.2 警報的原因及處理措施

(續)

警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.830： 編碼器電池警報 (絕對值編碼器電池 的電壓在規定值以 下)	電池連接不良、未連接	確認電池的連接。	正確連接電池。	第 4-18 頁
	電池電壓低於規定值 (2.7V)	測量電池的電壓。	更換電池。	第 12-2 頁
	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—
A.840： 編碼器資料警報 (在編碼器側檢出)	編碼器誤動作	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺服 馬達或線性編碼器故障。更換 伺服馬達或線性編碼器。	—
	線性編碼器的讀取錯誤	—	線性編碼器未以合理的公差安 裝。重新安裝線性編碼器。	—
	線性編碼器速度過大	—	將馬達速度降到線性編碼器生 產廠家規定的速度以下，接通 控制電源。	—
	由於噪音等的干擾而導致 編碼器誤動作	—	正確進行編碼器週邊的配線 (分離編碼器電纜與伺服馬達 主迴路電纜、接地處理等)。	—
	磁極感測器的配線不正確	確認磁極感測器的配線。	修正磁極感測器的配線。	—
	磁極感測器故障	—	更換磁極感測器。	—
A.850： 編碼器過速度 (接通控制電源時 檢出) (在編碼器側檢出)	接通控制電源時，馬達以 200min ⁻¹ 以上的速度旋 轉 (旋轉型伺服馬達時)	通過馬達旋轉速度確認接通電 源時的馬達速度。	將伺服馬達轉速調節到不滿 200min ⁻¹ ，然後接通控制電 源。	—
	接通控制電源時，馬達以 規定值以上的速度移動 (直線式伺服馬達時)	通過馬達移動速度確認接通電 源時的馬達速度。	將馬達速度降到線性編碼器生 產廠家規定的速度以下，接通 控制電源。	—
	編碼器故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺服 馬達或線性編碼器故障。更換 伺服馬達或線性編碼器。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺服 單元故障。更換伺服單元。	—
A.860： 編碼器過熱 (僅在連接絕對值編 碼器時檢出) (在編碼器側檢出)	伺服馬達的環境溫度過 高。	測量伺服馬達的環境溫度。	將伺服馬達的環境溫度設定為 40CB	—
	伺服馬達以超過額定值的 負載運轉	通過累積負載率確認負載。	將伺服馬達的負載調節到額定 值以內後再運轉。	—
	編碼器故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺服 馬達或絕對值線性編碼器故 障。更換伺服馬達或絕對值線 性編碼器。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺服 單元故障。更換伺服單元。	—
A.861： 馬達過熱	伺服馬達的環境溫度過 高。	測量伺服馬達的環境溫度。	將伺服馬達的環境溫度設為 40°C 以下。	—
	伺服馬達以超過額定值的 負載運轉	通過 SigmaWin+ 的動作監 視畫面的 [累積負荷率] 來確 認負載。	將伺服馬達的負載調節到額定 值以內後再運轉。	—
	串列轉換單元故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是串列 轉換單元故障。更換串列轉換 單元。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺服 單元故障。更換伺服單元。	—
A.890： 編碼器光學尺錯誤	線性編碼器的故障	—	有可能是線性編碼器的故障。 更換線性編碼器。	—

(續)

警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.891： 編碼器模組故障	線性編碼器的故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是線性編碼器故障。更換線性編碼器。	—
A.8A0： 外部編碼器異常	馬達轉動，絕對值線性編碼器的原點位置設定失敗	設定原點位置前，利用全閉迴路回饋脈衝計數器來確認馬達是否轉動。	確保設定原點位置時馬達不轉動。	第 5-46 頁
	外部編碼器故障	—	更換外部編碼器。	—
A.8A1： 外部編碼器模組故障	外部編碼器故障	—	更換外部編碼器。	—
	串列轉換單元故障	—	更換串列轉換單元。	—
A.8A2： 外部編碼器感測器故障 (增量型)	外部編碼器故障	—	更換外部編碼器。	—
A.8A3： 外部編碼器位置故障 (絕對值)	絕對值外部編碼器故障	—	有可能是絕對值外部編碼器故障。請根據生產廠家的使用說明書採取相應措施。	—
A.8A5： 外部編碼器超速故障	檢出來自外部編碼器的超速故障	確認外部編碼器的最高速度。	在外部編碼器的最高速度以下使用。	—
A.8A6： 外部編碼器過熱故障	檢出來自外部編碼器的過熱故障	—	更換外部編碼器。	—
A.b33： 電流檢出故障 3	電流檢出迴路故障電流檢出迴路故障。	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
	伺服馬達主迴路電纜斷線	確認伺服馬達主迴路電纜的斷線。	修理馬達電纜。	—
A.b6A： MECHATROLINK 通訊 ASIC 故障 1	伺服單元 MECHATROLINK 通訊部故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.b6b： MECHATROLINK 通訊 ASIC 故障 2	由於干擾， MECHATROLINK 通訊部產生了誤動作	—	採取以下的抗干擾措施。 • 修正 MECHATROLINK 通訊電纜或 FG 的配線。 • MECHATROLINK 通訊電纜上裝上鐵氧體磁鐵。	—
	伺服單元的 MECHATROLINK 通訊部故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.bF0： 系統警報 0	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.bF1： 系統警報 1	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.bF2： 系統警報 2	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.bF3： 系統警報 3	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.bF4： 系統警報 4	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—

12.2 顯示警報時

12.2.2 警報的原因及處理措施

(續)				
警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.C10： 失控檢出 (在伺服 ON 時 檢出)	馬達配線的 U、V、W 相 序錯誤	確認馬達配線。	確認馬達配線是否有問題。	—
	馬達相序 (Pn080 = n.□□X□) 的設定異常	確認 Pn080 = n.□□X□。	將 Pn080 = n.□□X□ 設定 為適當的值。	第 5-21 頁
	編碼器故障	—	如果馬達配線沒有問題，再次 接通電源後仍然反發生警報 時，可能是伺服馬達或線性編 碼器的故障。更換伺服馬達或 線性編碼器。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺服 單元故障。更換伺服單元。	—
A.C20： 相位錯誤檢出	線性編碼器訊號電平低	確認線性編碼器訊號的電壓	微調光學尺讀數頭的安裝。或 更換線性編碼器。	—
	線性編碼器正計數方向和 馬達轉子的正方向不符	確認 Pn080 = n.□□X□ (馬達相序選擇) 的設定和線 性編碼器、馬達轉子的安裝方 向。	變更 Pn080 = n.□□X□ 的 設定。重新安裝線性編碼器和 馬達轉子。	第 5-21 頁
	磁極感測器訊號受到干擾	—	修正 FG 配線。實施磁極感測 器配線抗干擾對策。	—
A.C21： 磁極感測器故障	磁極感測器外露在馬達 定子外部	確認磁極感測器。	重新安裝馬達轉子或定子。	—
	線性編碼器光學尺節距 (Pn282) 設定值錯誤	確認線性編碼器光學尺節距 (Pn282)。	確認線性編碼器規格，正確設 定數值。	第 5-16 頁
	磁極感測器的配線不正確	確認磁極感測器的配線。	修正磁極感測器的配線。	—
	磁極感測器故障	—	更換磁極感測器。	—
A.C22： 相位資訊不一致	伺服單元和線性編碼器的 相位資訊不同	—	執行磁極檢出。	第 5-25 頁
A.C50： 磁極檢出失敗	參數設定不對	確認線性編碼器的規格及回饋 訊號的狀態。	線性編碼器光學尺節距 (Pn282)、馬達相序選擇 (Pn080 = n.□□X□) 的設 定可能與裝置的狀態不符。正 確設定參數。	第 5-16 頁，第 5- 21 頁
	光學尺訊號受到干擾	確認串列轉換單元、伺服馬達 的 FG 與伺服單元的 FG 連 接，伺服單元的 FG 與電源的 FG 連接。此外，確認線性編 碼器的電纜確實被屏蔽處理。 確認檢出指令是否朝同一方向 多次重複輸出。	對線性編碼器用電纜採取適當 的抗干擾措施。	—
	馬達轉子受到外力	—	對馬達轉子施加電纜張力等外 力時，即使檢出命令為 0，速 度回饋不為 0 時無法順利檢 出。 減小外力使速度回饋為 0。 無法減小外力時，增大磁極檢 出速度迴路增益 (Pn481)。	—
	線性編碼器的解析度低	確認線性編碼器光學尺節距是 否為 100μm 以內。	線性編碼器光學尺節距為 100μm 以上時，伺服單元無 法檢出正確的速度回饋。 使用高精確度的線性編碼器光 學尺節距 (推薦 40μm 以 內)。或增大磁極檢出指令速 度 (Pn485)。但是，磁極 檢出時的馬達動作範圍變大。	—

(續)

警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.C51： 磁極檢出時超程檢出	磁極檢出時檢出超程訊號	確認超程位置。	連接超程訊號。在無法檢出超程訊號的位置進行磁極檢出。	第 4-26 頁
A.C52： 磁極檢出未完	使用絕對值線性編碼器時，選擇無法通過絕對值線性編碼器檢出磁極的設定（Pn587 = n.□□□0），磁極檢出未定的狀態下伺服 ON	—	使用絕對值線性編碼器時，選擇通過絕對值線性編碼器檢出磁極的設定（Pn587 = n.□□□1）。	—
A.C53： 磁極檢出超出活動範圍	檢出中移動距離超出磁極檢出活動範圍（Pn48E）	—	擴大磁極檢出活動範圍（Pn48E）。或增大磁極檢出速度迴路增益（Pn481）。	—
A.C54： 磁極檢出失敗 2	受到外力	—	增大磁極檢出確認推力指令（Pn495）的值。 增大磁極檢出誤差容許範圍（Pn498）的值。但是，一旦擴大誤差容許範圍，馬達溫度將升高。	—
A.C80： 編碼器清除異常 （旋轉圈數上限值設定異常）	編碼器故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服馬達或線性編碼器故障。更換伺服馬達或線性編碼器。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.C90： 編碼器通訊故障	編碼器用連接器接觸不良或配線錯誤	確認編碼器用連接器的狀態。	再次插入編碼器用連接器，確認編碼器的配線。	第 4-17 頁
	編碼器電纜斷線、短路，或使用了超過規定阻抗的電纜	確認編碼器用電纜的狀態。	使用指定規格的編碼器電纜。	—
	溫度、濕度、氣體引起的腐蝕；水滴、切削油引起的短路；振動引起的連接器接觸不良	確認使用環境。	改善使用環境，更換電纜。即使這樣仍然不能好轉時，則更換伺服單元。	第 3-2 頁
	因噪音干擾而產生誤動作	—	正確進行編碼器週邊的配線（分離編碼器電纜與伺服馬達主迴路電纜、接地處理等）。	第 4-5 頁
	伺服單元故障	—	將伺服馬達連接到其他伺服單元上後接通控制電源時，如果不發生警報，則有可能是伺服單元故障。更換伺服單元。	—
A.C91： 編碼器通訊 位置資料加速度異常	編碼器電纜產生嵌入、包層損壞，訊號線受到干擾	確認編碼器用電纜和連接器的狀態。	確認編碼器電纜的鋪設是否有問題。	第 4-7 頁
	確認編碼器電纜是否與大電流電線捆在一起或者相距過近	確認編碼器用電纜的設定狀態。	將編碼器電纜鋪設在不會遭受浪湧電壓的位置。	—
	FG 的電位因馬達側設備（焊機等）的影響而產生變動	確認編碼器用電纜的設定狀態。	將機器接地，阻止向編碼器側 FG 的分流。	—
A.C92： 編碼器通訊計時器異常	編碼器的訊號線受到干擾	—	實施編碼器配線抗干擾對策。	第 4-5 頁
	編碼器承受過大的振動衝擊	確認使用情況。	降低機械的振動。 正確安裝伺服馬達或線性編碼器。	—
	編碼器故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服馬達或線性編碼器故障。更換伺服馬達或線性編碼器。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—

12.2 顯示警報時

12.2.2 警報的原因及處理措施

(續)				
警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.CA0： 編碼器參數異常	編碼器故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服馬達或線性編碼器故障。更換伺服馬達或線性編碼器。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.Cb0： 編碼器回送校驗異常	編碼器錯誤配線、接觸不良	確認編碼器的配線。	確認編碼器配線是否有問題。	第 4-17 頁
	編碼器電纜的規格不同，受到干擾	—	將電纜規格改為雙股絞合屏蔽線或者雙股絞合統一屏蔽線，芯線為 0.12mm^2 以上，鍍錫軟銅絞合線。	—
	編碼器電纜的距離過長，受到干擾	—	- 旋轉型伺服馬達時：編碼器電纜的配線距離最長 50m。 - 直線式伺服馬達時：線性編碼器電纜的配線距離最長 20m。	—
	FG 的電位因馬達側設備（焊機等）的影響而產生了變動	確認編碼器用電纜和連接器的狀態。	將機器接地，阻止向編碼器側 FG 的分流。	—
	編碼器承受過大的振動衝擊	確認使用情況。	降低機械的振動。正確安裝伺服馬達或線性編碼器。	—
	編碼器故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服馬達或線性編碼器故障。更換伺服馬達或線性編碼器。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.CC0： 旋轉圈數上限值不一致	直接驅動伺服馬達旋轉圈數上限值（Pn205）與編碼器的旋轉圈數上限值不同	確認 Pn205。	正確設定 Pn205 的值（0 ~ 65535）。	第 6-35 頁
	編碼器的旋轉圈數上限值與伺服單元的旋轉圈數上限值不同，或變更了旋轉圈數上限值	確認伺服單元 Pn205 的值。	發生警報時變更設定。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.CF1： 回饋選購模組通訊故障 （接收失敗）	串列轉換單元－伺服單元間的電纜配線錯誤或接觸不良	確認外部編碼器的配線。	正確進行串列轉換單元－伺服單元間的電纜的配線。	第 4-20 頁
	串列轉換單元－伺服單元間未使用指定的電纜	確認外部編碼器的電纜規格。	使用指定的正確電纜。	—
	串列轉換單元－伺服單元間的電纜過長	確認串列轉換單元連接電纜長度。	使串列轉換單元－伺服單元間的電纜長度在 20m 以內。	—
	串列轉換單元－伺服單元間的電纜包層破損	確認串列轉換單元連接電纜。	更換串列轉換單元－伺服單元間的電纜。	—
A.CF2： 回饋選購模組通訊故障 （定時器停止）	串列轉換單元－伺服單元間的電纜受到干擾	—	正確進行串列轉換單元周圍的配線（分離訊號線與電源線、接地處理等）。	—
	串列轉換單元故障	—	更換串列轉換單元。	—
	伺服單元故障	—	更換伺服單元。	—

(續)

警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.d00： 位置偏差過大 (在伺服 ON 的狀態下，位置偏差超過了位置偏差過大警報值 (Pn520))	伺服馬達的 U、V、W 的配線不正確	確認伺服馬達主迴路電纜的配線。	確認馬達電纜或編碼器電纜有無接觸不良等問題。	—
	位置指令速度過快	試著降低位置指令速度後再運轉。	降低位置指令速度或指令加速度，或調整電子齒輪比。	第 5-40 頁
	位置指令加速度過大	試著降低指令加速度後再運轉。	通過 MECHATROLINK 指令，降低位置指令加速度。或通過 MECHATROLINK 指令，選擇位置指令濾波器 (ACCFIL)，使位置指令加速度變得平滑。	—
	相對於運轉條件，位置偏差過大警報值 (Pn520) 較低。	確認位置偏差過大警報值 (Pn520) 是否適當。	正確設定參數 Pn520 的值。	第 8-7 頁
	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.d01： 伺服 ON 時 位置偏差過大警報	伺服 OFF 中位置偏差超過 Pn526 (伺服 ON 時位置偏差過大警報值) 的設定值時保持伺服 ON。	確認伺服 OFF 時的位置偏差量。	正確設定伺服 ON 時位置偏差過大警報值 (Pn526)。	—
A.d02： 伺服 ON 時 速度限制引起的位置 偏差過大警報	在位置偏差積累狀態下伺服 ON，則通過伺服 ON 時速度限制值 (Pn529 或 Pn584) 執行速度限制。在該狀態下輸入位置指令，超出了位置偏差過大警報值 (Pn520) 的設定值。	—	設定正確的位置偏差過大警報值 (Pn520)。或將伺服 ON 時速度限制值 (Pn529 或 Pn584) 設定為正確的值。	第 8-7 頁
A.d10： 馬達 - 負載位置間 偏差過大	馬達旋轉方向與外部編碼器安裝方向相反	確認馬達旋轉方向與外部編碼器安裝方向。	將外部編碼器安裝方向反過來，或將“外部編碼器的使用方法 (Pn002 = n.X□□□)”的旋轉方向設定為相反方向。	第 10-4 頁
	工件台等的負載位置和外部編碼器接合部的安裝故障	確認外部編碼器結合部。	再次進行機械性結合。	—
A.d30： 位置資料過大	位置資料超過 ±1879048192	確認輸入指令脈衝計數器。	修正運轉規格。	—
A.E02： MECHATROLINK 內部同步異常 1	MECHATROLINK 傳輸週期發生了變動	—	消除高階設備的傳輸週期變動的原因。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.E40： MECHATROLINK 傳輸週期設定故障	MECHATROLINK 傳輸週期設定超出了規格範圍	確認 MECHATROLINK 傳輸週期設定值。	將 MECHATROLINK 傳輸週期設定設定為正確的值。	—
A.E50： MECHATROLINK 同步異常	上位裝置的 WDT 資料更新異常	確認高階設備的 WDT 資料更新。	正確更新上位裝置的 WDT 資料	—
	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.E51： MECHATROLINK 同步失敗	同步通訊開始時，上位裝置的 WDT 資料更新異常，無法開始同步通訊	確認高階設備的 WDT 資料更新。	正確更新上位裝置的 WDT 資料	—
	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—

(續)

警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.E60： MECHATROLINK 通訊異常 (接收錯誤)	MECHATROLINK 配線 不正確	確認 MECHATROLINK 的 配線。	正確連接 MECHATROLINK 通訊電纜。正確連接終端電 阻。	—
	由於噪音干擾， MECHATROLINK 的資料接收錯誤	—	採取防止噪音干擾的措施。 (調整 MECHATROLINK 通 訊電纜或 FG 的配線。例如在 MECHATROLINK 通訊電纜 上加上鐵氧體磁鐵等)	—
	伺服單元故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺服 單元故障。更換伺服單元。	—
A.E61： MECHATROLINK 傳送週期異常 (同步間隔異常)	MECHATROLINK 傳輸 週期發生了變動	確認 MECHATROLINK 傳 輸週期設定值。	消除高階設備的傳輸週期變動 的原因。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺服 單元故障。更換伺服單元。	—
A.E72： 回饋選購模組 檢出失敗警報	伺服單元和回饋選購模組 的連接不良	確認伺服單元和回饋選購模組 的連接。	正確連接回饋選購模組。	—
	拆下回饋選購模組	—	執行選購模組檢出警報刪除， 重新接通伺服單元的電源。	第 12-24 頁
	回饋選購模組故障	—	更換回饋選購模組。	—
	伺服單元故障	—	更換伺服單元。	—
A.EA2： DRV 警報 2 (伺服單元 WDC 異常)	MECHATROLINK 傳輸 週期發生了變動	確認 MECHATROLINK 傳 輸週期設定值。	消除高階設備的傳輸週期變動 的原因。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺服 單元故障。更換伺服單元。	—
A.Eb1： 安全功能用訊號 輸入時間故障	硬體基極封鎖功能的輸入 訊號 /HWBB1、 /HWBB2 啟動的時間差 在 10 秒鐘以上	測量 2 個輸入訊號的時間差。	可能是 /HWBB1、/HWBB2 的輸出訊號迴路、機器故障、 伺服單元輸入訊號迴路故障、 輸入訊號用電纜斷線。確認故 障或斷線。	—
A.Ed1： 指令執行逾時	發生了 MECHATROLINK 指令 逾時錯誤。	確認執行指令時的監視器狀 態。	設定為在馬達動作中不執行 SV_ON，SENS_ON 指 令。	—
		- 進行全閉迴路控制時，確認 執行指令時的外部編碼器狀 態。 - 不是全閉迴路控制時，確認 執行指令時的線性編碼器狀 態。	設定為在未連接外部編碼器或 線性編碼器時不執行 SENS_ON 指令。	—
A.F10： 電源線缺相 (在主迴路電源 ON 的狀態下，R、S、 T 相中某一相的低電 壓狀態持續了 1 秒 以上)	三相電線配線不良	確認電源配線。	確認電源配線是否有問題。	第 4-9 頁
	三相電源不平衡	測量三相電源各相的電壓。	修正電源的不平衡 (調換相 位)。	—
	未設定單相 AC 電源輸入 (Pn00E = n.□1□□) 而輸入了單相電源	確認電源和參數設定。	設定正確的電源輸入和參數。	第 4-9 頁
	伺服單元故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺服 單元故障。更換伺服單元。	—

(續)

警報編號： 警報名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.F50 馬達主迴路電纜斷線 (即使在可接收伺服 ON (SV_ON) 指 令的狀態下輸入 SV_ON 指令，伺 服馬達也不動作或不 通電。)	伺服單元故障	—	有可能是伺服單元故障。更換 伺服單元。	—
	馬達配線的配線不良或連 接不良	確認配線。	確認馬達配線是否有問題。	第 4-17 頁
FL-1^{*3}： 系統警報	伺服單元故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺 服單元故障。 更換伺服單元。	—
FL-2^{*3}： 系統警報				
FL-3^{*3}： 系統警報				
FL-4^{*3}： 系統警報				
FL-5^{*3}： 系統警報				
CPF00： 數位操作器通訊 錯誤 1	數位操作器與伺服單元之 間連接不良	確認連接器的接觸。	重新插入連接器。或者更換電 纜。	—
	因噪音干擾而產生誤動作	—	使數位操作器主體或電纜遠離 產生噪音干擾的設備 / 電纜。	—
CPF01： 數位操作器通訊 錯誤 2	數位操作器故障	—	再次連接數位操作器。仍然發 生警報時，有可能是數位操 作器故障。更換數位操作器。	—
	伺服單元故障	—	重新接通伺服單元的電源。仍 然發生警報時，有可能是伺 服單元故障。更換伺服單元。	—

*1. 檢出條件公式

- 旋轉型伺服馬達時

下面兩個中任意一個條件式成立時，將檢出警報。

$$\cdot Pn533 [\text{min}^{-1}] \times \frac{\text{編碼器解析度}}{6 \times 10^5} \leq \frac{Pn20E}{Pn210}$$

$$\cdot \text{馬達最高速度} [\text{min}^{-1}] \times \frac{\text{編碼器解析度}}{\text{約 } 3.66 \times 10^{12}} \geq \frac{Pn20E}{Pn210}$$

- 直線式伺服馬達時

下面兩個中任意一個條件式成立時，將檢出警報。

$$\cdot \frac{Pn585 [\text{mm/s}]}{\text{線性編碼器的光學尺節距} [\text{mm}]} \times \frac{\text{串列轉換單元的解析度}}{10} \leq \frac{Pn20E}{Pn210}$$

$$\cdot \frac{Pn385 [100 \text{ mm/s}]}{\text{線性編碼器的光學尺節距} [\text{mm}]} \times \frac{\text{串列轉換單元的解析度}}{\text{約 } 6.10 \times 10^5} \geq \frac{Pn20E}{Pn210}$$

*2. 檢出條件公式

- 旋轉型伺服馬達時

下面兩個中任意一個條件式成立時，將檢出警報。

$$\cdot \text{馬達額定速度} [\text{min}^{-1}] \times 1/3 \times \frac{\text{編碼器解析度}}{6 \times 10^5} \leq \frac{Pn20E}{Pn210}$$

$$\cdot \text{馬達最高速度} [\text{min}^{-1}] \times \frac{\text{編碼器解析度}}{\text{約 } 3.66 \times 10^{12}} \geq \frac{Pn20E}{Pn210}$$

- 直線式伺服馬達時

下面兩個中任意一個條件式成立時，將檢出警報。

$$\cdot \frac{\text{馬達額定速度} [\text{mm/s}] \times 1/3}{\text{線性編碼器的光學尺節距} [\text{mm}]} \times \frac{\text{串列轉換單元的解析度}}{10} \leq \frac{Pn20E}{Pn210}$$

$$\cdot \frac{Pn385 [100 \text{ mm/s}]}{\text{線性編碼器的光學尺節距} [\text{mm}]} \times \frac{\text{串列轉換單元的解析度}}{\text{約 } 6.10 \times 10^5} \geq \frac{Pn20E}{Pn210}$$

*3. 本警報不會保存在警報記錄中。僅顯示在面板顯示部。

12.2.3 警報重置

發生伺服警報輸出（ALM）訊號時，請在排除警報原因後通過以下任一種方法重置。



將伺服警報重置前，請務必排除警報原因。
不排除警報原因就執行警報重置，保持運轉時，可能會導致設備損壞或火災。

重要

基於警報、警告清除（ALM_CLR）指令的重置

有關詳細內容，請參照以下手冊。

📖 Σ -7 系列 MECHATROLINK-II 通訊 指令手冊（資料編號：SIJP S800001 30）

基於數位操作器的重置

按數位操作器上的 **ALARM RESET** 鍵也可以將警報重置。警報的重置方法詳情請參照下列手冊。

📖 Σ -7 系列 數位操作器 操作手冊（資料編號：SIJP S800001 33）

12.2.4 警報記錄的顯示

伺服單元有回溯顯示功能，最多可以回溯顯示 10 個已發生的警報紀錄。

執行前的確認事項

無

可操作工具

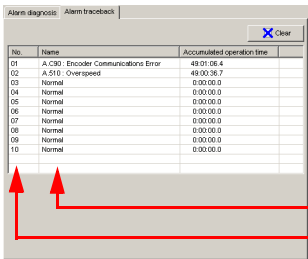
可顯示警報記錄的工具和使用該工具的警報記錄顯示的分配如下所示。

操作工具	分配	參照章節
數位操作器	Fn000	📖 Σ -7 系列 數位操作器 操作手冊（資料編號：SIJP S800001 33）
SigmaWin+	[Alarm] – [Display Alarm]	📖 操作步驟（第 12-22 頁）

操作步驟

顯示步驟如下所示。

1. 從 SigmaWin+ 主畫面的選單列點擊 [Alarm] – [Display Alarm]。
彈出 [Display Alarm] 對話方塊。
2. 點擊 [Alarm History] 標籤。
出現以下畫面，可確認過去發生的警報。



警報編號、警報名稱
警報發生順序
（數值越大，表示警報資料越舊。）

補充說明

1. 連續發生相同警報時，如果發生警報的間隔不到 1 小時則不保存，超過 1 小時則全部保存。
2. 警報記錄只有點擊 [Clear] 按鈕才能刪除。即使進行警報重定或者切斷伺服單元的主迴路電源，警報記錄也不會被刪除。

12.2.5 警報記錄的刪除

刪除伺服單元的警報記錄的功能。

即使進行警報重定或者切斷伺服單元的主迴路電源，警報記錄也不會被刪除，所以務必進行以下操作。

執行前的確認事項

執行警報記錄的刪除前，請確認以下設定。

- 參數的寫入禁止設定不得設定為“禁止寫入”

可操作工具

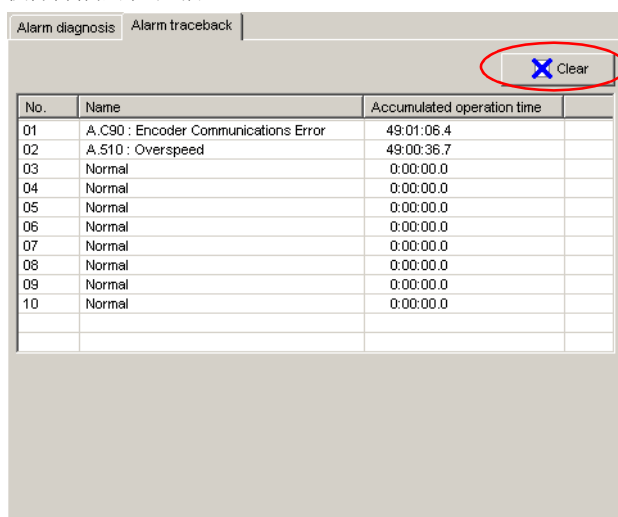
可刪除警報記錄的工具和使用該工具刪除警報記錄的分配如下所示。

操作工具	分配	參照章節
數位操作器	Fn006	Σ-7 系列 數位操作器 操作手冊（資料編號：SIJP S800001 33）
SigmaWin+	[Alarm] – [Display Alarm]	操作步驟（第 12-23 頁）

操作步驟

操作步驟如下所示。

1. 從 SigmaWin+ 主畫面的選單列點擊 [Alarm] – [Display Alarm]。
彈出 [Display Alarm] 對話方塊。
2. 點擊 [Alarm History] 標籤。
3. 點擊 [Clear] 按鈕。
執行警報記錄的刪除。



12.2.6 選購模組檢出警報的刪除

當為帶選購模組的伺服單元時，判斷伺服單元上是否連接了選購模組及其種類，並在發現故障時發出警報。
該功能用來刪除這些警報。

執行前的確認事項

執行選購模組檢出警報的刪除，應事先確認以下內容。

- 參數的寫入禁止設定沒有被設定為“禁止寫入”。

可操作工具

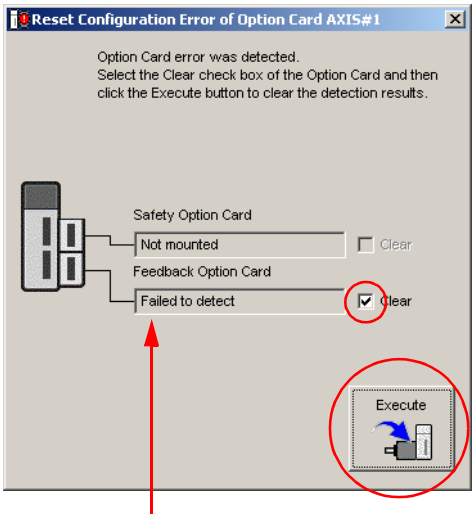
可刪除選購模組檢出警報的工具和使用該工具刪除選購模組檢出警報的分配如下所示。

操作工具	分配	參照章節
數位操作器	Fn014	Σ-7 系列 數位操作器 操作手冊（資料編號：SIJP S800001 33）
SigmaWin+	[Setup] – [Reset Configuration Error of Option Module]	操作步驟（第 12-24 頁）

操作步驟

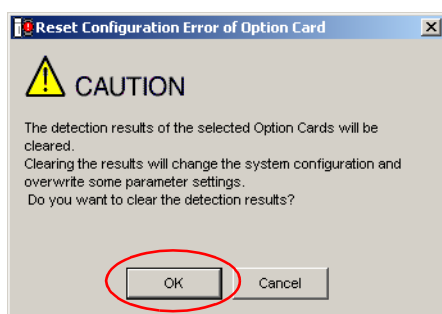
操作步驟如下所示。

1. 從 SigmaWin+ 主畫面的選單列選擇 [Setup] – [Reset Configuration Error of Option Module]。
彈出 [Reset Configuration Error of Option Module] 對話方塊。
SigmaWin+ 啟動時，選購模組發生異常的情況下自動顯示。
2. 確認已在要清除異常的選購模組的 [Clear] 勾選框中打勾後，點擊 [Execute] 按鈕。

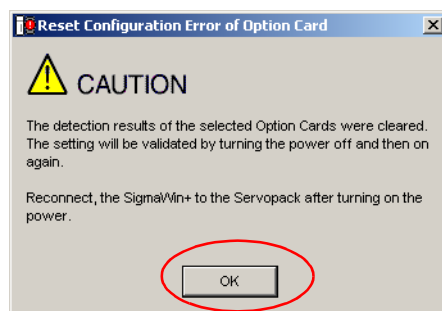


此處顯示為“故障檢出”時，無法執行檢出結果的清除。請
確認選購模組是已拆卸還是已正確安裝。

3. 點擊 [OK] 按鈕。



4. 點擊 [OK] 按鈕。



5. 重新接通伺服單元的電源。

12.3 顯示警告時

伺服單元發生警告時，面板顯示部的 LED 顯示警報編號。警告將在發生異常前顯示。
下面列出了警告一覽表及警告的原因和處理措施。

12.3.1 警告一覽表

下面按照警告編號的順序，列出了警告名稱及警告內容。

警告編號	警告名稱	警告內容
A.900* ¹	位置偏差過大	積存的位置偏差超過了 $\left(\frac{Pn520 \times Pn51E}{100}\right)$ 設定的比例。
A.901* ¹	伺服 ON 時位置偏差過大	伺服 ON 時積存的位置偏差超過了 $\left(\frac{Pn526 \times Pn528}{100}\right)$ 設定的比例。
A.910* ¹	過載	是即將達到過載（A.710 或 A.720）警報之前的警告顯示。如繼續運轉，則有可能發生警報。
A.911* ¹	振動	檢出馬達動作中異常振動。與 A.520 檢出值相同，通過振動檢出開關（Pn310）來設定為警報還是警告。
A.912	內部溫度警告 1 （控制電路板溫度異常）	控制電路板的環境溫度異常。
A.913	內部溫度警告 2 （電源電路板溫度異常）	電源電路板的環境溫度異常。
A.920* ¹	再生過載	是即將達到再生過載（A.320）警報之前的警告顯示。如繼續運轉，則有可能發生警報。
A.921* ¹	DB 過載	是即將達到 DB 過載（A.731）警報之前的警告顯示。 如繼續運轉，則有可能發生警報。
A.923	伺服單元內部風扇停止	伺服單元內部的風扇停止轉動。
A.930* ¹	絕對值編碼器的電池故障	是絕對值編碼器電池電壓過低的警告顯示。
A.942	速度脈動補償資訊不一致	編碼器和伺服單元內所存儲的速度脈動補償資訊不同。
A.94A* ²	資料設定警告 1 （參數編號）	資料設定警告 1（參數編號）指令的參數編號有誤。
A.94B* ²	資料設定警告 2 （資料範圍外）	指令資料中設定了範圍外的值。
A.94C* ²	資料設定警告 3 （計算錯誤）	檢測出計算錯誤。
A.94D* ²	資料設定警告 4 （參數尺寸）	檢出了資料大小不符。
A.94E* ²	資料設定警告 5 （門鎖模式異常）	檢出了門鎖模式異常。
A.95A* ²	指令警告 1 （指令條件外）	在指令條件不充分的情況下進行了指令。
A.95B* ²	指令警告 2 （未支援指令）	指令了未支援的指令。
A.95D* ²	指令警告 4 （指令的干擾）	指令的干擾（主要指門鎖指令的干擾）
A.95E* ²	指令警告 5 （不可使用子指令）	子指令與主指令的干擾
A.95F* ²	指令警告 6 （未定義指令）	指令了未定義的指令。
A.960* ²	MECHATROLINK 通訊警告	MECHATROLINK 通訊中發生了通訊誤。
A.971* ³	欠電壓	是即將達到欠電壓（A.410）警報之前的警告顯示。 如繼續運轉，則有可能發生警報。
A.9A0* ¹	多餘行程	伺服 ON 中檢出超程。
A.9B0	預防維護警告	任一壽命零件達到了產品壽命。

*1. 警告檢出的選擇通過 Pn008 = n.□X□□（警告檢出）進行。

*2. 警告檢出的選擇通過 Pn800 = n.□□X□（警告檢查屏蔽）進行。

*3. 警告檢出的選擇通過 Pn008 = n.□□X□（電池欠電壓的警報 / 警告選擇）進行。

- (註) 1. 如果沒有設定為“輸出警報代碼和警告代碼 (Pn001 = n.1□□□)”，則不輸出警告代碼。
 2. 設定為“不檢出警告 (Pn008 = n.□1□□)”，則不發出欠電壓警告 (A.971) 以外的警告。

12.3.2 警告的原因及處理措施

下表列出了警告的原因和處理措施。如果按照下表進行處理後仍然無法清除故障，請與本公司代理店或最近的分公司聯繫。

警告編號： 警告名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.900： 位置偏差過大	伺服馬達的 U、V、W 的配線不正確	確認伺服馬達主迴路電纜的配線。	確認馬達電纜或編碼器電纜有無接觸不良等問題。	—
	伺服單元的增益較低	確認伺服單元的增益是否過低。	通過自動調整（無上位指令）功能等提高伺服增益。	第 8-20 頁
	位置指令加速度過大	試著降低指令加速度後再運轉。	通過 MECHATROLINK 指令，降低位置指令加速度。或通過 MECHATROLINK 指令，選擇位置指令濾波器（ACCFIL），使位置指令加速度變得平滑。	—
	相對於運轉條件，位置偏差過大警報值（Pn520）較低	確認位置偏差過大警報值（Pn520）是否適當。	正確設定參數 Pn520 的值。	第 8-7 頁
	伺服單元故障	—	重新接通伺服單元的電源。仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.901： 伺服 ON 時 位置偏差過大	伺服 ON 時積存的位置偏差超過了 $\left(\frac{\text{Pn526} \times \text{Pn528}}{100} \right)$ 設定的比例。	—	正確設定伺服 ON 時位置偏差過大警告值（Pn528）。	—
A.910： 過載 （變為過載警報 （A.710 或 A.720）之 前的警告）	馬達配線、編碼器配線不良或連接不良	確認配線。	確認馬達配線、編碼器配線是否有問題。	—
	馬達運轉超過了過載保護特性	確認馬達的過載特性和運轉指令。	重新探討負載條件、運轉條件。或者重新研討馬達容量。	—
	由於機械性因素而導致馬達不驅動，造成運轉時的負載過大	確認運轉指令和馬達速度。	改善機械性因素。	—
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
A.911： 振動	檢出馬達動作中異常振動	確認馬達的異常聲音和運轉時的速度、轉矩波形。	降低馬達速度。或通過自訂調整等降低伺服增益。	第 8-36 頁
	轉動慣量比（Pn103）的值比實際值大或有大的變動	確認轉動慣量比或品質比。	正確地設定轉動慣量比（Pn103）。	—
A.912： 內部溫度警告 1 （控制電路板溫度異常）	環境溫度過高	用溫度計測量環境溫度。或通過伺服單元設定環境監視確認運轉狀況。	改善伺服單元的設定條件，降低環境溫度。	—
	通過關閉電源多次對過載警報重置後進行了運轉	利用警報顯示來確認是否發生了過載警報。	變更警報的重置方法。	—
	負載過大，或運轉時超過了再生處理能力	通過累積負載率確認運轉中的負載，通過再生負載率確認再生處理能力。	重新探討負載條件、運轉條件。	—
	伺服單元的安裝方向、與其他伺服單元的間隔不合理	確認伺服單元的安放狀態。	根據伺服單元的安裝標準進行安裝。	第 3-3 頁， 第 3-5 頁
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—

12.3 顯示警告時

12.3.2 警告的原因及處理措施

(續)

警告編號： 警告名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.913： 內部溫度警告 2 (電源電路板溫度異常)	環境溫度過高	用溫度計測量環境溫度。或通過伺服單元設定環境監視確認運轉狀況。	改善伺服單元的設定條件，降低環境溫度。	—
	通過關閉電源多次對過載警報重置後進行了運轉	利用警報顯示來確認是否發生了過載警報。	變更警報的重置方法。	—
	負載過大，或運轉時超過了再生處理能力	通過累積負載率確認運轉中的負載，通過再生負載率確認再生處理能力。	重新探討負載條件、運轉條件。	—
	伺服單元的安裝方向、與其他伺服單元的間隔不合理	確認伺服單元的安放狀態。	根據伺服單元的安裝標準進行安裝。	第 3-3 頁， 第 3-5 頁
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
A.920： 再生過載 (變為再生過載 (A.320) 之前的警告)	電源電壓超過規格範圍	測量電源電壓。	將電源電壓設定在規格範圍內。	—
	外置再生電阻值、伺服單元的容量或再生電阻容量不足，或處於連續再生狀態	再次確認運轉條件和容量 (容量選擇軟體 SigmaJunmaSize+ 等)。	變更再生電阻值、再生電阻容量或伺服單元容量。再次進行運轉條件的調整 (容量選擇軟體 SigmaJunmaSize+ 等)。	—
	連續承受負載，處於連續再生狀態	確認向運轉中的伺服馬達施加的負載。	再次探討包括伺服、機械、運轉條件在內的系統。	—
A.921： DB 過載 (變為 DB 過載 (A.731) 之前的警告)	馬達在被外力驅動	確認運轉狀態。	不要通過外力驅動馬達	—
	DB 停止時的旋轉或運轉能量超過了 DB 電阻的容量	通過 DB 電阻功耗來確認 DB 的使用頻率。	嘗試以下措施。 • 降低伺服馬達的指令速度。 • 調小轉動慣量或品質。 • 減少 DB 停止的次數	—
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
A.923： 伺服單元內部風扇停止	伺服單元內部的風扇停止轉動	確認是否卡入了異物。	去除異物後，仍然發生警報時，有可能是伺服單元故障。更換伺服單元。	—
A.930： 絕對值編碼器的 電池故障 (絕對值編碼器電池的 電壓在規定值以下) (僅在連接絕對值編碼 器時檢出)	電池連接不良、未連接	確認電池的連接。	正確連接電池。	第 4-18 頁
	電池電壓低於既定值 (2.7V)	測量電池的電壓。	更換電池。	第 12-2 頁
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
A.942： 速度脈動補償資訊不一 致	編碼器和伺服單元內 所存儲的速度脈動補 償資訊不同。	—	通過 SigmaWin+ 重新設定速度脈動補償值	—
		—	設定為 Pn423 = n.□□1□ (不檢出 A.942)。 但是變更設定時速度脈動可能增大。請注意。	—
		—	設定為 Pn423 = n.□□□0 (不使用速度脈動補償功能)。 但是變更設定時速度脈動可能增大。請注意。	—
A.94A： 資料設定警告 1 (參數編號)	使用了不能使用的參數。	使用“12.4 警報和警告發生時的通訊資料監視 (第 12-31 頁)”，確認發生原因的指令。	使用正確的參數。	—
A.94B： 資料設定警告 2 (資料範圍外)	指令資料中設定了設定範圍外的值。	使用“12.4 警報和警告發生時的通訊資料監視 (第 12-31 頁)”，確認發生原因的指令。	在參數中設定處於設定範圍內的值。	—

(續)

警告編號： 警告名稱	原因	確認方法	處理措施	處理措施的 參照對象
A.94C： 資料設定警告 3 (計算錯誤)	設定值的計算結果出錯。	使用“12.4 警報和警告發生時的通訊資料監視 (第 12-31 頁)”，確認發生原因的指令。	在參數中設定處於設定範圍內的值。	—
A.94D： 資料設定警告 4 (參數尺寸)	指令中設定的參數尺寸不正確	使用“12.4 警報和警告發生時的通訊資料監視 (第 12-31 頁)”，確認發生原因的指令。	設定正確的參數尺寸。	—
A.94E： 資料設定警告 5 (門鎖模式異常)	檢出了門鎖模式異常。	使用“12.4 警報和警告發生時的通訊資料監視 (第 12-31 頁)”，確認發生原因的指令。	將 Pn850 的設定值或上位裝置傳送的 LTMOD_ON 指令內的 LT_MOD 資料設定為適當的值。	—
A.95A： 指令警告 1 (指令條件外)	不具備指令條件。	使用“12.4 警報和警告發生時的通訊資料監視 (第 12-31 頁)”，確認發生原因的指令。	具備指令條件後再傳送指令。	—
A.95B： 指令警告 2 (未支援指令)	傳送了未支援的指令	使用“12.4 警報和警告發生時的通訊資料監視 (第 12-31 頁)”，確認發生原因的指令。	不傳送未支援的指令。	—
A.95D： 指令警告 4 (指令的干擾)	不滿足門鎖相關指令的傳送條件。	使用“12.4 警報和警告發生時的通訊資料監視 (第 12-31 頁)”，確認發生原因的指令。	滿足傳送條件後再傳送指令。	—
A.95E： 指令警告 5 (不可使用子指令)	不滿足子指令的傳送條件。	使用“12.4 警報和警告發生時的通訊資料監視 (第 12-31 頁)”，確認發生原因的指令。	滿足傳送條件後再傳送指令。	—
A.95F： 指令警告 6 (未定義指令)	指令了未定義的指令。	使用“12.4 警報和警告發生時的通訊資料監視 (第 12-31 頁)”，確認發生原因的指令。	不使用未定義的指令。	—
A.960： MECHATROLINK 通訊警告	MECHATROLINK 的通訊電纜配線不正確。	確認配線狀態。	正確連接 MECHATROLINK 通訊電纜。或將終端電阻連接在終端站上。	第 4-32 頁
	由於噪音干擾，MECHATROLINK 的資料接收錯誤。	確認設定環境。	採取以下抗干擾措施。 調整 MECHATROLINK 通訊電纜及 FG 的配線，以免受到干擾。 MECHATROLINK 通訊電纜上裝上鐵氧體磁鐵。	—
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—
A.971： 欠電壓	200V 用伺服單元時，AC 電源電壓在 140V 以下	測量電源電壓。	將電源電壓調節到正常範圍。	—
	運轉中電源電壓下降	測量電源電壓。	增大電源容量。	—
	發生瞬間停電	測量電源電壓。	如果變更了瞬間停止保持時間 (Pn509)，則設定為較小的值。	第 6-13 頁
	伺服單元的保險絲熔斷	—	更換伺服單元，連接電抗器後再使用伺服單元。	第 4-16 頁
	伺服單元故障	—	有可能是伺服單元故障。更換伺服單元。	—

12.3 顯示警告時

12.3.2 警告的原因及處理措施

(續)

警告編號： 警告名稱	原因	確認方法	處理措施	處理措施 的參照 對象
A.9A0： 超程 (檢出超程狀態)	伺服 ON 中檢出了超程	通過輸入訊號監視確認超程訊號的狀態。	無法通過輸入訊號監視確認超程訊號時，可能瞬間檢出超程。執行以下項目。 • 不執行從上位裝置到超程領域的指令。 • 確認超程訊號的配線。 • 採取防干擾措施。	—
A.9B0： 預防維護警告	任一壽命零件達到了產品壽命。	—	更換零件。更換時，請與本公司代理店、分公司或售後服務部門聯繫。	—

12.4

警報和警告發生時的通訊資料監視

警報或警告（例：資料設定警告（A.94□）、指令警告（A.95□））發生時的指令資料，可通過以下參數監視。以下為正常狀態下發生警報或警告時的資料。

發生警報或警告時的 CMD 資料：Pn890 ~ Pn89E

發生警報或警告時的 RSP 資料：Pn8A0 ~ Pn8AE

指令 位元組順序	發生警報、警告時的指令資料儲存位置	
	CMD	RSP
1	Pn890 = n.□□□□□□XX	Pn8A0 = n.□□□□□□XX
2	Pn890 = n.□□□□XX□□	Pn8A0 = n.□□□□XX□□
3	Pn890 = n.□□XX□□□□	Pn8A0 = n.□□XX□□□□
4	Pn890 = n.XX□□□□□□	Pn8A0 = n.XX□□□□□□
5 ~ 8	Pn892	Pn8A2
9 ~ 12	Pn894	Pn8A4
13 ~ 16	Pn896	Pn8A6
17 ~ 20	Pn898	Pn8A8
21 ~ 24	Pn89A	Pn8AA
25 ~ 28	Pn89C	Pn8AC
29 ~ 32	Pn89E	Pn8AE

（註）1. 資料按小位元組儲存次序排列，以 16 進制表示。

2. 關於指令的詳情，請參照如下手冊。

📖 Σ-7 系列 MECHATROLINK-II 通訊指令手冊（資料編號：SIJP S800001 30）

12.5

可以從伺服馬達的動作、狀態來判斷的故障原因及處理措施

可以從伺服馬達的動作、狀態來判斷的故障原因及處理方法如下所示。

對下表粗線框的事項進行檢查和處理時，請務必切斷伺服系統的電源。

故障內容	原因	確認方法	處理措施	參照章節
伺服馬達不啟動	控制電源未接通	測量控制電源端子間的電壓。	正確進行配線，使控制電源為 ON。	—
	主迴路電源未接通	測量主迴路電源輸入端子間的電壓。	正確進行配線，使主迴路電源為 ON。	—
	輸入輸出訊號連接器 (CN1) 的端子有配線錯誤和遺漏	確認輸入輸出訊號連接器 (CN1) 端子的連接狀態。	正確連接輸入輸出訊號連接器 (CN1) 端子。	第 4-24 頁
	伺服馬達主迴路電纜、編碼器用電纜的配線脫落	確認配線狀態。	正確配線。	—
	伺服馬達承受的負載過大	試著進行空載運轉，確認負載狀態。	減輕負載，或更換為容量較大的伺服馬達。	—
	使用的編碼器種類與 Pn002 = n.□X□□ (編碼器使用方法) 的設定不同	確認使用的編碼器種類與 Pn002 = n.□X□□ 的設定。	按照使用的編碼器種類設定 Pn002 = n.□X□□。	第 6-28 頁
	輸入訊號 (Pn50A, Pn50B, Pn511, Pn516) 的分配有誤	確認輸入訊號 (Pn50A, Pn50B, Pn511, Pn516) 的分配。	正確分配輸入訊號 (Pn50A, Pn50B, Pn511, Pn516)。	第 6-3 頁
	沒有伺服 ON (SV-ON) 指令	確認上位裝置的指令。	從上位裝置輸入伺服 ON (SV_ON) 指令。	—
	編碼器電源 ON (SENS_ON) 指令未指令	確認上位裝置的指令。	根據正確的順序將指令傳送至伺服單元。	—
	禁止正轉側驅動輸入 (P-OT) 訊號、禁止反轉側驅動輸入 (N-OT) 訊號保持 OFF	確認 P-OT 訊號或 N-OT 訊號。	將 P-OT 訊號或 N-OT 訊號設為 ON。	—
	安全輸入訊號 (/HWBB1 或 /HWBB2) 保持 OFF	/ 確認 HWBB1 及 /HWBB2 輸入訊號。	/ 將 HWBB1、/HWBB2 輸入訊號置為 ON。 不使用安全功能時，請在 CN8 上安裝附帶的安全跨接連接器。	—
	強制停止輸入 (FSTP) 訊號保持 OFF	確認 FSTP 訊號。	- 將 FSTP 訊號設為 ON。 - 不使用強制停止功能時，請通過 Pn516 = n.□□□X (強制停止輸入 (FSTP) 訊號的分配) 使功能無效。	—
	伺服單元故障	—	更換伺服單元。	—
	不執行磁極檢出	檢查磁極感測器 (Pn080 = n.□□□X) 的設定。	正確進行參數設定。	第 5-23 頁
		檢查伺服 ON (SV_ON) 指令的輸入。	- 增量型線性編碼器時，從上位裝置輸入伺服 ON (SV_ON) 指令。 - 使用絕對值線性編碼器時，執行磁極檢出。	第 5-24 頁

(續)

故障內容	原因	確認方法	處理措施	參照章節
伺服馬達瞬間運轉後停止不動	伺服馬達的配線錯誤	確認配線。	正確配線。	—
	編碼器或串列轉換單元的配線錯誤	確認配線。	正確配線。	—
	線性編碼器配線錯誤	確認配線。	正確配線。	—
	線性編碼器光學尺節距 (Pn282) 錯誤	檢查 Pn282 的設定是否正確。	校正 Pn282 的設定。	第 5-16 頁
	線性編碼器正計數方向和馬達轉子的正方向不符	檢查方向是否相符。	變更馬達相序選擇 (Pn080 = n.□□X□) 的設定。使線性編碼器和馬達的方向一致。	第 5-21 頁
	未正確進行磁極檢出	檢查任意位置電氣角 2 (從磁極原點開始的角度 (電氣角)) 的值是否在 10 以內。	修正磁極檢出相關參數。	—
伺服馬達的動作不穩定	伺服馬達的電纜配線不良	動力線 (U、V、W 相) 及編碼器或串列轉換單元的連接器連接可能不穩定。確認配線。	緊固端子或連接器的鬆弛，正確配線。	—
未發出指令而伺服馬達運轉	伺服單元故障	—	更換伺服單元。	—
	線性編碼器正計數方向和馬達轉子的正方向不符	檢查方向是否相符。	變更馬達相序選擇 (Pn080 = n.□□X□) 的設定。使線性編碼器和伺服馬達的方向一致。	第 5-21 頁
	未正確進行磁極檢出	檢查任意位置電氣角 2 (從磁極原點開始的角度 (電氣角)) 的值是否在 10 以內。	修正磁極檢出相關參數。	—
動態制動器 (DB) 不動作	Pn001 = n.□□□X (伺服 OFF 及 Gr.1 警報發生時的停止方法) 的設定不當	確認 Pn001 = n.□□□X 的設定值。	正確設定 Pn001 = n.□□□X。	—
	DB 電阻斷線	確認轉動慣量、速度、DB 的使用頻率。可能是轉動慣量、速度、DB 的使用頻率過大或 DB 電阻斷線。	更換伺服單元。另外，為了防止斷線，可以採取減輕負載狀態的措施。	—
	DB 驅動迴路故障	—	DB 迴路部件故障。更換伺服單元。	—

12.5 可以從伺服馬達的動作、狀態來判斷的故障原因及處理措施

12.3.2 警告的原因及處理措施

(續)

故障內容	原因	確認方法	處理措施	參照章節
伺服馬達發出異常聲音	在使用免調整功能時（出廠時的設定）伺服馬達振動很大	確認馬達速度的波形。	減小負載，使其在容許轉動慣量比或容許品質比以下，或增大免調整值設定的負載值，降低剛性值。	第 8-10 頁
	機械性安裝不良	確認伺服馬達的安裝狀態。	重新擰緊安裝螺絲。	—
	機械性安裝不良	確認聯軸節是否偏芯。	使聯軸節的芯對準。	—
		確認聯軸節的平衡狀態。	使聯軸節保持平衡。	—
	軸承內故障	確認軸承附近的聲音、有無振動。	更換伺服馬達。	—
	振動源頭在配合機器	確認機器側的活動部分有無異物進入或破損、變形。	請與機器生產商聯繫。	—
	由於輸入輸出訊號用電纜的規格錯誤，發生了噪音干擾。	確認輸入輸出訊號用電纜是否滿足規格。電纜規格：雙股絞合屏蔽線或者雙股絞合統一屏蔽線（芯線為 0.12mm^2 以上，鍍錫軟銅絞合線）	使用滿足規格的電纜。	—
	由於輸入輸出訊號用電纜過長，發生了噪音干擾。	確認輸入輸出訊號用電纜的長度。	使輸入輸出訊號用電纜的長度在 3m 以內。	—
	由於編碼器用電纜的規格錯誤，發生了噪音干擾。	確認編碼器用電纜是否滿足規格。電纜規格：雙股絞合屏蔽線或者雙股絞合統一屏蔽線（芯線為 0.12mm^2 以上，鍍錫軟銅絞合線）	使用滿足規格的電纜。	—
	由於編碼器用電纜過長，發生了噪音干擾。	確認編碼器用電纜長度。	- 旋轉型伺服馬達時：將編碼器電纜的長度設定在 50m 以內。 - 直線式伺服馬達時：將串列轉換單元連接電纜的長度設定在 20m 以內，線性編碼器連接電纜的長度及感測器連接電纜的長度設定在 15m 以內。	—
	由於編碼器電纜損傷，發生了噪音干擾	確認編碼器電纜是否被夾住、包層是否破損。	更換編碼器電纜，改變電纜的鋪設環境。	—
	編碼器電纜上有過大的噪音干擾	確認編碼器電纜是否與大電流電線捆在一起或者相距過近。	改變編碼器電纜的鋪設環境，以免受到大電流電線的浪湧電壓影響。	—
	FG 的電位因伺服馬達側裝置（焊機等）的影響而產生變動	確認伺服馬達側設備的接地狀態（忘記接地、不完全接地）。	將伺服馬達側裝置正確接地，阻止向編碼器側 FG 的分流。	—
	因噪音干擾而導致伺服單元的脈衝計算錯誤	確認編碼器到訊號線之間是否有噪音干擾。	對編碼器配線採取抗干擾對策。	—
	編碼器受到過大振動衝擊影響	確認是否發生機械振動。確認伺服馬達安裝狀態（安裝面的精確度、固定狀態、偏芯）。確認線性編碼器的安裝狀態（安裝面精確度、固定方法）。	降低機械振動。改善伺服馬達或線性編碼器的安裝狀態。	—
	編碼器故障	—	更換伺服馬達。	—
	串列轉換單元故障	—	更換串列轉換單元。	—
	線性編碼器的故障	—	更換線性編碼器。	—

(續)

故障內容	原因	確認方法	處理措施	參照章節
頻率約為 200 ~ 400Hz 時，馬達發生振動	伺服增益的匹配不當	確認是否實施了增益的調整。	執行自動調整（無上位指令）。	第 8-20 頁
	速度迴路增益（Pn100）的設定值過高	確認速度迴路增益（Pn100）的設定值。 出廠設定：Kv = 40.0Hz	設定正確的速度迴路增益（Pn100）的設定值。	—
	位置迴路增益（Pn102）的設定值過高	確認位置迴路增益（Pn102）的設定值。 出廠設定：Kp = 40.0/s	設定正確的位置迴路增益（Pn102）的設定值。	—
	速度迴路積分時間參數（Pn101）的設定值不正確	確認速度迴路積分時間參數（Pn101）的設定值。 出廠設定：Ti = 20.0ms	設定正確的速度迴路積分時間參數（Pn101）的設定值。	—
	轉動慣量比或品質比（Pn103）的設定值不正確	確認轉動慣量比或品質比（Pn103）的設定值。	設定正確的轉動慣量比或品質比（Pn103）。	—
起動與停止時的速度超調過大	伺服增益的匹配不當	確認是否實施了增益的調整。	執行自動調整（無上位指令）。	第 8-20 頁
	速度迴路增益（Pn100）的設定值過高	確認速度迴路增益（Pn100）的設定值。 出廠設定：Kv = 40.0Hz	設定正確的速度迴路增益（Pn100）的設定值。	—
	位置迴路增益（Pn102）的設定值過高	確認位置迴路增益（Pn102）的設定值。 出廠設定：Kp = 40.0/s	設定正確的位置迴路增益（Pn102）的設定值。	—
	速度迴路積分時間參數（Pn101）的設定值不正確	確認速度迴路積分時間參數（Pn101）的設定值。 出廠設定：Ti = 20.0ms	設定正確的速度迴路積分時間參數（Pn101）的設定值。	—
	轉動慣量比或品質比（Pn103）的設定值不正確	確認轉動慣量比或品質比（Pn103）的設定值。	設定正確的轉動慣量比或品質比（Pn103）。	—
	轉矩指令飽和	確認轉矩指令波形。	使用模式開關功能。	—
	推力限制（Pn483, Pn484）保持出廠設定	推力限制：出廠設定 Pn483 = 30% Pn484 = 30%	設定正確的推力限制（Pn483, Pn484）值。	第 6-24 頁

12.5 可以從伺服馬達的動作、狀態來判斷的故障原因及處理措施

12.3.2 警告的原因及處理措施

(續)

故障內容	原因	確認方法	處理措施	參照章節
絕對值編碼器位置偏差錯誤（上位裝置所記錄的電源 OFF 時的位置與再次電源 ON 時的位置間的偏差）	由於編碼器用電纜的規格錯誤，發生了噪音干擾。	確認編碼器用電纜是否滿足規格。 電纜規格： 雙股絞合屏蔽線或者雙股絞合統一屏蔽線（芯線為 0.12mm^2 以上，鍍錫軟銅絞合線）	使用滿足規格的電纜。	—
	由於編碼器用電纜過長，發生了噪音干擾。	確認編碼器用電纜長度。	- 旋轉型伺服馬達時：將編碼器電纜的長度設定在 50m 以內。 - 直線式伺服馬達時：將串列轉換單元連接電纜的長度設定在 20m 以內，線性編碼器連接電纜的長度及感測器連接電纜的長度設定在 15m 以內。	—
	由於編碼器電纜損傷，發生了噪音干擾	確認編碼器電纜是否被夾住、包層是否破損。	更換編碼器電纜，改變電纜的鋪設環境。	—
	編碼器電纜上有過大的噪音干擾	確認編碼器電纜是否與大電流電線捆在一起或者相距過近。	改變編碼器電纜的鋪設環境，以免受到大電流電線的浪湧電壓影響。	—
	FG 的電位因伺服馬達側裝置（焊機等）的影響而產生變動	確認伺服馬達側設備的接地狀態（忘記接地、不完全接地）。	將伺服馬達側裝置正確接地，阻止向編碼器側 FG 的分流。	—
	因噪音干擾而導致伺服單元的脈衝計算錯誤	確認是否在編碼器或串列轉換單元到訊號線之間有噪音干擾。	對編碼器或串列轉換單元的配線採取抗干擾對策。	—
	編碼器受到過大振動衝擊影響	確認是否發生機械振動。 確認伺服馬達安裝狀態（安裝面的精確度、固定狀態、偏芯）。 確認線性編碼器的安裝狀態（安裝面精確度、固定方法）。	降低機械振動。並改善伺服馬達或線性編碼器的安裝狀態。	—
	編碼器故障	—	更換伺服馬達或線性編碼器。	—
	伺服單元故障	—	更換伺服單元。	—
	上位裝置的旋轉圈數資料或絕對值編碼器位置資料讀取錯誤	確認上位裝置的錯誤檢出部。	使上位裝置的錯誤檢出部正常工作。	—
		利用上位裝置確認奇偶數據是否已被校驗。	進行旋轉圈數資料或絕對值編碼器位置資料的同位。	—
		確認伺服單元與上位裝置之間的電纜上有無噪音干擾。	採取防干擾措施，再次進行旋轉圈數資料或絕對值編碼器位置資料的同位。	—

(續)

故障內容	原因	確認方法	處理措施	參照章節
發生超程 (OT)	輸入了禁止正轉側 / 反轉側驅動輸入 (P-OT/N-OT) 訊號	確認輸入訊號用外部電源 (+24V) 的電壓。	將輸入訊號用外部電源 (+24V) 電壓設定為正確的值。	—
		確認超程限制開關的動作狀態。	使超程限制開關正常動作。	—
		確認超程限制開關的配線。	正確進行超程限制開關的配線。	第 5-27 頁
		確認超程輸入訊號分配 (Pn50A 或 Pn50B) 的設定值。	正確設定參數。	第 5-27 頁
	禁止正轉側 / 反轉側驅動輸入 (P-OT/N-OT) 訊號誤動作	確認輸入訊號用外部電源 (+24V) 的電壓有無波動。	消除輸入訊號用外部電源 (+24V) 的電壓波動。	—
		確認超程限制開關的動作狀態是否不穩定。	使超程限制開關的動作狀態穩定。	—
		確認超程限制開關的配線 (電纜有無損傷、螺絲的緊固狀態等)。	正確進行超程限制開關的配線。	—
	對參數 (Pn50A = n.X□□□, Pn50B = n.□□□X) 分配的禁止正轉側 / 反轉側驅動輸入 (P-OT/N-OT) 訊號錯誤	確認 P-OT 訊號分配到 Pn50A = n.X□□□。	如果其他訊號被分配給了 Pn50A = n.X□□□, 則重新將 P-OT 訊號分配給該參數。	第 5-27 頁
		確認 N-OT 訊號分配到 Pn50B = n.□□□X。	如果其他訊號被分配給了 Pn50B = n.□□□X, 則重新將 N-OT 訊號分配給該參數。	
	伺服馬達停止方法選擇錯誤	確認伺服 OFF 時的停止方法 (Pn001 = n.□□□X, 或 Pn001 = n.□□X□)。	選擇自由運轉停止以外的伺服馬達停止方法。	第 5-28 頁
		確認轉矩控制時的停止方法 (Pn001 = n.□□□X, 或 Pn001 = n.□□X□)。	選擇自由運轉停止以外的伺服馬達停止方法。	
因超程 (OT) 而導致停止位置不當	極限開關的位置與肘節的長度不當	—	將極限開關設定在適當的位置。	—
	超程極限開關的位置比慣性運轉量短	—	將超程極限開關設定在適當的位置。	—

(續)

故障內容	原因	確認方法	處理措施	參照章節
發生位置偏差 (未發生警報)	由於編碼器用電纜的規格錯誤，發生了噪音干擾。	確認編碼器用電纜是否滿足規格。 電纜規格： 雙股絞合屏蔽線或者雙股絞合統一屏蔽線（芯線為 0.12mm^2 以上，鍍錫軟銅絞合線）	使用滿足規格的電纜。	—
	由於編碼器用電纜過長，發生了噪音干擾。	確認編碼器用電纜長度。	- 旋轉型伺服馬達時：將編碼器電纜的長度設定在 50m 以內。 - 直線式伺服馬達時：將串列轉換單元連接電纜的長度設定在 20m 以內，線性編碼器連接電纜的長度及感測器連接電纜的長度設定在 15m 以內。	—
	由於編碼器電纜損傷，發生了噪音干擾	確認編碼器電纜是否被夾住、包層是否破損。	更換編碼器電纜，改變電纜的鋪設環境。	—
	編碼器電纜上有過大的噪音干擾	確認編碼器電纜是否與大電流電線捆在一起或者相距過近。	改變編碼器電纜的鋪設環境，以免受到大電流電線的浪湧電壓影響。	—
	FG 的電位因伺服馬達側裝置（焊機等）的影響而產生變動	確認伺服馬達側設備的接地狀態（忘記接地、不完全接地）。	將伺服馬達側裝置正確接地，阻止向編碼器側 FG 的分流。	—
	因噪音干擾而導致伺服單元的脈衝計算錯誤	確認是否在編碼器或串列轉換單元到訊號線之間有噪音干擾。	對編碼器或串列轉換單元的配線採取抗干擾對策。	—
	編碼器受到過大振動衝擊影響	確認是否發生機械振動。 確認伺服馬達安裝狀態（安裝面的精確度、固定狀態、偏芯）。 確認線性編碼器的安裝狀態（安裝面精確度、固定方法）。	降低機械振動。並改善伺服馬達或線性編碼器的安裝狀態。	—
	機器與伺服馬達的聯軸節故障	確認機器與伺服馬達的聯軸節部有無錯位。	正確固定機器與伺服馬達的聯軸節。	—
	由於輸入輸出訊號用電纜的規格錯誤，發生了噪音干擾。	確認輸入輸出訊號用電纜是否滿足規格。 電纜規格： 雙股絞合屏蔽線或者雙股絞合統一屏蔽線（芯線為 0.12mm^2 以上，鍍錫軟銅絞合線）	使用滿足規格的電纜。	—
	由於輸入輸出訊號用電纜過長，發生了噪音干擾。	確認輸入輸出訊號用電纜的長度。	使輸入輸出訊號用電纜的長度在 3m 以內。	—
伺服馬達過熱	編碼器故障（脈衝不變化）	—	更換伺服馬達或線性編碼器。	—
	伺服單元故障	—	更換伺服單元。	—
	環境溫度過高	測量伺服馬達的環境溫度。	將環境溫度控制在 40°C 以下。	—
	伺服馬達表面髒污	目測確認馬達表面的髒污。	去除馬達表面的髒污、塵埃、油污等。	—
	伺服馬達承受的負載過大	通過監視器確認負載狀態。	如果過載，則減輕負載，或更換為容量較大的伺服單元及伺服馬達。	—
	未正確進行磁極檢出	檢查任意位置電氣角 2（從磁極原點開始的角度（電氣角））的值是否在 $\pm 10^{\circ}$ 以內。	修正磁極檢出相關參數	—

Maintenance

12

This chapter provides information on the meaning of, causes of, and corrections for alarms and warnings.

12.1 Inspections and Part Replacement 12-2

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- 12.1.2 Guidelines for Part Replacement 12-2
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12.2 Alarm Displays 12-5

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12.1 Inspections and Part Replacement

This section describes inspections and part replacement for SERVOPACKs.

12.1.1 Inspections

Perform the inspections given in the following table at least once every year for the SERVOPACK. Daily inspections are not required.

Item	Frequency	Inspection	Correction
Exterior	At least once a year	Check for dust, dirt, and oil on the surfaces.	Clean with compressed air or a cloth.
Loose Screws		Check for loose terminal block and connector screws and for other loose parts.	Tighten any loose screws or other loose parts.

12.1.2 Guidelines for Part Replacement

The following electric or electronic parts are subject to mechanical wear or deterioration over time. Use one of the following methods to check the standard replacement period.

- Use the service life prediction function of the SERVOPACK.
Refer to the following section for information on service life predictions.

 9.4 Monitoring Product Life on page 9-14

- Use the following table.

Part	Standard Replacement Period	Remarks
Cooling Fan	4 to 5 years	The standard replacement periods given on the left are for the following operating conditions. • Surrounding air temperature: Annual average of 30°C • Load factor: 80% max. • Operation rate: 20 hours/day max.
Electrolytic Capacitor	10 years	
Relays	100,000 power ON operations	Power ON frequency: Once an hour
Battery	3 years without power supplied	Surrounding temperature without power supplied: 20°C

When any standard replacement period is close to expiring, contact your Yaskawa representative. After an examination of the part in question, we will determine whether the part should be replaced.



Important

The parameters of any SERVOPACKs that are sent to Yaskawa for part replacement are reset to the factory settings before they are returned to you. Always keep a record of the parameter settings. And, always confirm that the parameters are properly set before starting operation.

12.1.3 Replacing the Battery

If the battery voltage drops to approximately 2.7 V or less, an A.830 alarm (Encoder Battery Alarm) or an A.930 warning (Encoder Battery Warning) will be displayed.

If this alarm or warning is displayed, the battery must be replaced.

Refer to the following section for the battery replacement procedure.

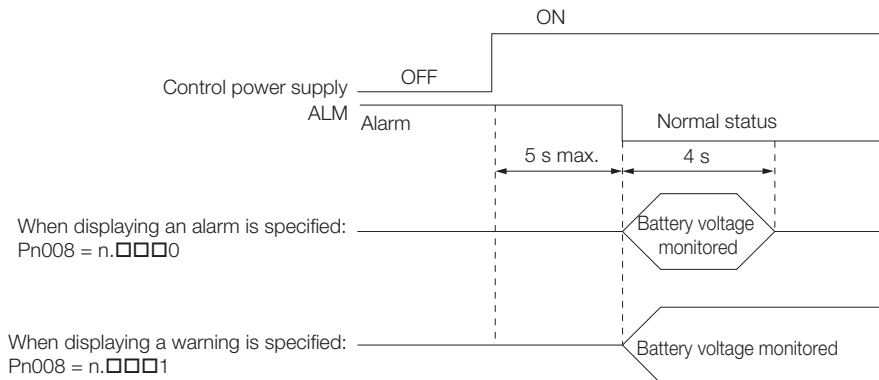
 *Battery Replacement Procedure on page 12-3*

Battery Alarm/Warning Selection

Whether to display an alarm or a warning is determined by the setting of Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection).

Parameter	Meaning	When Enabled	Classification
Pn008	n.□□□0 (default setting)	After restart	Setup
	n.□□□1		

- Pn008 = n.□□□0
- The ALM (Servo Alarm) signal is output for up to five seconds when the control power supply is turned ON, and then the battery voltage is monitored for four seconds.
No alarm will be displayed even if the battery voltage drops below the specified value after these four seconds.
- Pn008 = n.□□□1
The ALM (Servo Alarm) signal is output for up to five seconds when the control power supply is turned ON, and then the battery voltage is monitored continuously.



Battery Replacement Procedure

◆ When Installing a Battery on the Host Controller

1. Turn ON only the control power supply to the SERVOPACK.
2. Remove the old battery and mount a new battery.
3. Turn OFF the control power supply to the SERVOPACK to clear the A.830 alarm (Absolute Encoder Battery Error).
4. Turn ON the control power supply to the SERVOPACK again.
5. Make sure that the alarm has been cleared and that the SERVOPACK operates normally.

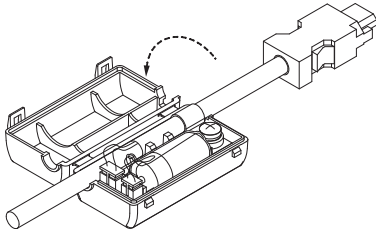
◆ When Using an Encoder Cable with a Battery Case

1. Turn ON only the control power supply to the SERVOPACK.

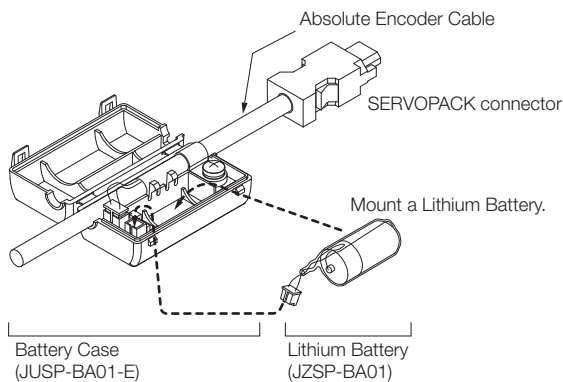


If you remove the Battery or disconnect the Encoder Cable while the control power supply to the SERVOPACK is OFF, the absolute encoder data will be lost.

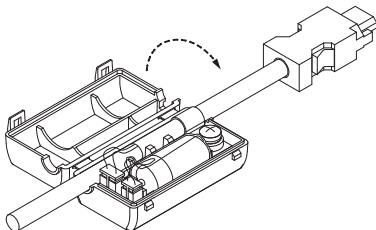
2. Open the cover of the Battery Case.



3. Remove the old Battery and mount a new Battery.



4. Close the cover of the Battery Case.



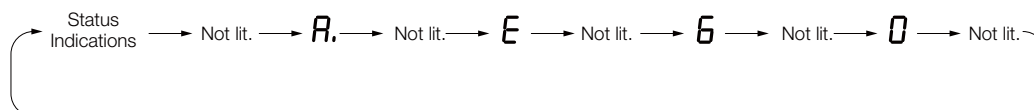
5. Turn OFF the power supply to the SERVOPACK to clear the A.830 alarm (Absolute Encoder Battery Error).
6. Turn ON the power supply to the SERVOPACK.
7. Make sure that the alarm has been cleared and that the SERVOPACK operates normally.

12.2 Alarm Displays

If an error occurs in the SERVOPACK, an alarm number will be displayed on the panel display.

If there is an alarm, the display will change in the following order.

Example: Alarm A.E60



This section provides a list of the alarms that may occur and the causes of and corrections for those alarms.

12.2.1 List of Alarms

The list of alarms gives the alarm name, alarm meaning, alarm stopping method, alarm reset possibility, and alarm code output in order of the alarm numbers.

Servomotor Stopping Method for Alarms

Refer to the following section for information on the stopping method for alarms.

 5.13.2 Servomotor Stopping Method for Alarms on page 5-38

Alarm Reset Possibility

Yes: You can use an alarm reset to clear the alarm. However, this assumes that the cause of the alarm has been removed.

No: You cannot clear the alarm.

List of Alarms

Alarm Number	Alarm Name	Alarm Meaning	Servo-motor Stopping Method	Alarm Reset Possible?
A.020	Parameter Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No
A.022	System Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.024	System Alarm	An internal program error occurred in the SERVOPACK.	Gr.1	No
A.025	System Alarm	An internal program error occurred in the SERVOPACK.	Gr.1	No
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Gr.1	No

Continued on next page.

12.2 Alarm Displays

12.2.1 List of Alarms

Continued from previous page.

Alarm Number	Alarm Name	Alarm Meaning	Servo-motor Stopping Method	Alarm Reset Possible?
A.042	Parameter Combination Error	The combination of some parameters exceeds the setting range.	Gr.1	No
A.044	Semi-Closed/Fully-Closed Loop Control Parameter Setting Error	The settings of the Option Module and Pn002 = n.X□□□ (External Encoder Usage) do not match.	Gr.1	No
A.04A	Parameter Setting Error 2	There is an error in the bank members or bank data settings.	Gr.1	No
A.050	Combination Error	The capacities of the SERVOPACK and Servomotor do not match.	Gr.1	Yes
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No
A.070	Motor Type Change Detected	The connected motor is a different type of motor from the previously connected motor.	Gr.1	No
A.080	Linear Encoder Pitch Setting Error	The setting of Pn282 (Linear Encoder Pitch) has not been changed from the default setting.	Gr.1	No
A.0b0	Invalid Servo ON Command Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes
A.100	Overcurrent Detected	An overcurrent flowed through the power transformer or the heat sink overheated.	Gr.1	No
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes
A.320	Regenerative Overload	A regenerative overload occurred.	Gr.2	Yes
A.330	Main Circuit Power Supply Wiring Error	- The AC power supply input setting or DC power supply input setting is not correct. - The power supply wiring is not correct.	Gr.1	Yes
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes
A.511	Encoder Output Pulse Overspeed	- Rotary Servomotor: The pulse output speed for the setting of Pn212 (Encoder Output Pulses) was exceeded. - Linear Servomotor: The motor speed upper limit for the setting of Pn281 (Encoder Output Resolution) was exceeded.	Gr.1	Yes
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes
A.550	Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes
A.710	Instantaneous Overload	The Servomotor was operating for several seconds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes
A.730 A.731	Dynamic Brake Overload	When the dynamic brake was applied, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Gr.1	Yes
A.740	Inrush Current Limiting Resistor Overload	The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes

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Alarm Number	Alarm Name	Alarm Meaning	Servo-motor Stopping Method	Alarm Reset Possible?
A.7A1	Internal Temperature Error 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes
A.7A2	Internal Temperature Error 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Yes
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No
A.860	Encoder Overheated	The internal temperature of encoder is too high.	Gr.1	No
A.861	Motor Overheated	The internal temperature of motor is too high.	Gr.1	No
A.890	Encoder Scale Error	A failure occurred in the linear encoder.	Gr.1	No
A.891	Encoder Module Error	An error occurred in the linear encoder.	Gr.1	No
A.8A0	External Encoder Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes
A.8A5	External Encoder Over-speed	An overspeed error occurred in the external encoder.	Gr.1	Yes
A.8A6	External Encoder Overheated	An overheating error occurred in the external encoder.	Gr.1	Yes
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No
A.b6A	MECHATROLINK Communications ASIC Error 1	ASIC error 1 occurred in MECHATROLINK communications.	Gr.1	No
A.b6b	MECHATROLINK Communications ASIC Error 2	ASIC error 2 occurred in MECHATROLINK communications.	Gr.2	No
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVOPACK.	Gr.1	No
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVOPACK.	Gr.1	No
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVOPACK.	Gr.1	No
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVOPACK.	Gr.1	No
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVOPACK.	Gr.1	No
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes

Continued on next page.

12.2 Alarm Displays

12.2.1 List of Alarms

Continued from previous page.

Alarm Number	Alarm Name	Alarm Meaning	Servo-motor Stopping Method	Alarm Reset Possible?
A.C20	Phase Detection Error	The detection of the phase is not correct.	Gr.1	No
A.C21	Polarity Sensor Error	An error occurred in the polarity sensor.	Gr.1	No
A.C22	Phase Information Disagreement	The phase information does not match.	Gr.1	No
A.C50	Polarity Detection Failure	The polarity detection failed.	Gr.1	No
A.C51	Overtravel Detected during Polarity Detection	The overtravel signal was detected during polarity detection.	Gr.1	Yes
A.C52	Polarity Detection Not Completed	The servo was turned ON before the polarity was detected.	Gr.1	Yes
A.C53	Out of Range of Motion for Polarity Detection	The travel distance exceeded the setting of Pn48E (Polarity Detection Range).	Gr.1	No
A.C54	Polarity Detection Failure 2	The polarity detection failed.	Gr.1	No
A.C80	Encoder Clear Error or Multiturn Limit Setting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No
A.C90	Encoder Communications Error	Communications between the encoder and SERVOPACK is not possible.	Gr.1	No
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No
A.C92	Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVOPACK.	Gr.1	No
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No
A.CC0	Multiturn Limit Disagreement	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No
A.CF1	Reception Failed Error in Feedback Option Module Communications	Receiving data from the Feedback Option Module failed.	Gr.1	No
A.CF2	Timer Stopped Error in Feedback Option Module Communications	An error occurred in the timer for communications with the Feedback Option Module.	Gr.1	No
A.d00	Position Deviation Overflow	The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.	Gr.1	Yes
A.d01	Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes
A.d02	Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes
A.d10	Motor-Load Position Deviation Overflow	There was too much position deviation between the motor and load during fully-closed loop control.	Gr.2	Yes
A.d30	Position Data Overflow	The position feedback data exceeded $\pm 1,879,048,192$.	Gr.1	No

Continued on next page.

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Alarm Number	Alarm Name	Alarm Meaning	Servo-motor Stopping Method	Alarm Reset Possible?
A.E02	MECHATROLINK Internal Synchronization Error 1	A synchronization error occurred during MECHATROLINK communications with the SERVOPACK.	Gr.1	Yes
A.E40	MECHATROLINK Transmission Cycle Setting Error	The setting of the MECHATROLINK communications transmission cycle is not correct.	Gr.2	Yes
A.E41	MECHATROLINK Communications Data Size Setting Error	The setting of the MECHATROLINK communications data size is not correct.	Gr.2	Yes
A.E42	MECHATROLINK Station Address Setting Error	The setting of the MECHATROLINK station address is not correct.	Gr.2	No
A.E50*	MECHATROLINK Synchronization Error	A synchronization error occurred during MECHATROLINK communications.	Gr.2	Yes
A.E51	MECHATROLINK Synchronization Failed	Synchronization failed during MECHATROLINK communications.	Gr.2	Yes
A.E60*	Reception Error in MECHATROLINK Communications	Communications errors occurred continuously during MECHATROLINK communications.	Gr.2	Yes
A.E61	Synchronization Interval Error in MECHATROLINK Transmission Cycle	An error occurred in the transmission cycle during MECHATROLINK communications.	Gr.2	Yes
A.E63	MECHATROLINK Synchronization Frame Not Received	Synchronization frames were continuously not received during MECHATROLINK communications.	Gr.2	Yes
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No
A.Eb1	Safety Function Signal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No
A.EC8	Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No
A.EC9	Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No
A.Ed1	Command Execution Timeout	A timeout error occurred for a MECHATROLINK command.	Gr.2	Yes
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes
A.F50	Servomotor Main Circuit Cable Disconnection	The Servomotor did not operate or power was not supplied to the Servomotor even though the SV_ON (Servo ON) command was input when the Servomotor was ready to receive it.	Gr.1	Yes
FL-1*	System Alarm	An internal program error occurred in the SERVOPACK.	—	No
FL-2*				
FL-3*				
FL-4*				
FL-5*				
CPF00	Digital Operator Communications Error 1	Communications were not possible between the Digital Operator (model: JUSP-OP05A-1-E) and the SERVOPACK (e.g., a CPU error occurred).	—	No
CPF01	Digital Operator Communications Error 2			

* These alarms are not stored in the alarm history. They are only displayed on the panel display.

12.2.2 Troubleshooting Alarms

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.020: Parameter Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply volt- age within the specified range, and initialize the parameter settings.	page 5-8
	The power supply was shut OFF while writing parameter set- tings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	
	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were fre- quently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER- VOPACK. Reconsider the method for writing the param- eters.	–
	A malfunction was caused by noise from the AC power supply, ground, static elec- tricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermea- sures against noise.	page 4-5
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	–
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	–
A.021: Parameter For- mat Error (There is an error in the parameter data format in the SERVOPACK.)	The software version of the SERVOPACK that caused the alarm is older than the soft- ware version of the parameters specified to write.	Read the product infor- mation to see if the soft- ware versions are the same. If they are differ- ent, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	page 9-2
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SER- VOPACK.	–
A.022: System Check- sum Error (There is an error in the parameter data in the SER- VOPACK.)	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	–
	The power supply was shut OFF while setting a utility func- tion.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	–
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	–

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.024: System Alarm (An internal program error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.025: System Alarm (An internal program error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.030: Main Circuit Detector Error	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.040: Parameter Setting Error (A parameter setting is outside of the setting range.)	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	–
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	–
	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following range: $0.001 < (\text{Pn20E}/\text{Pn210}) < 64,000$.	Set the electronic gear ratio in the following range: $0.001 < (\text{Pn20E}/\text{Pn210}) < 64,000$.	page 5-43
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	page 6-19
A.042: Parameter Combination Error	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*1 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	page 5-43
	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Speed) was changed.	Check to see if the detection conditions*1 are satisfied.	Increase the setting of Pn533 or Pn585.	page 7-14
	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	page 5-43

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.X□□□ (External Encoder Usage).	Check the setting of Pn002 = n.X□□□.	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = n.X□□□.	page 10-6
A.04A: Parameter Setting Error 2	For 4-byte parameter bank members, there are two consecutive members with nothing registered.	–	Change the number of bytes for bank members to an appropriate value.	–
	The total amount of bank data exceeds 64 (Pn900 × Pn901 > 64).	–	Reduce the total amount of bank data to 64 or less.	–
A.050: Combination Error (The capacities of the SERVOPACK and Servomotor do not match.)	The SERVOPACK and Servomotor capacities do not match each other.	Check the capacities to see if they satisfy the following condition: $1/4 \leq \frac{\text{Servomotor capacity}}{\text{SERVOPACK capacity}} \leq 4$	Select a proper combination of the SERVOPACK and Servomotor capacities.	–
	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	–
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.051: Unsupported Device Alarm	The motor parameter file was not written to the linear encoder. (This applies only when not using a Serial Converter Unit.)	Check to see if the motor parameter file was written to the linear encoder.	Write the motor parameter file to the linear encoder.	page 5-17
	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	–
A.070: Motor Type Change Detected (The connected motor is a different type of motor from the previously connected motor.)	A Rotary Servomotor was removed and a Linear Servomotor was connected.	–	Set the parameters for a Linear Servomotor and reset the motor type alarm. Then, turn the power supply to the SERVOPACK OFF and ON again.	page 12-44
	A Linear Servomotor was removed and a Rotary Servomotor was connected.	–	Set the parameters for a Rotary Servomotor and reset the motor type alarm. Then, turn the power supply to the SERVOPACK OFF and ON again.	page 12-44
A.080: Linear Encoder Pitch Setting Error	The setting of Pn282 (Linear Encoder Pitch) has not been changed from the default setting.	Check the setting of Pn282.	Correct the setting of Pn282.	page 5-16

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.0b0: Invalid Servo ON Command Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.	–	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	page 6-46
A.100: Overcurrent Detected (An overcurrent flowed through the power transformer or the heat sink overheated.)	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	page 4-23
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	
	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SERVOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SERVOPACK.	
	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	page 4-19
	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power consumed by the DB resistor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	–
	The regenerative resistor value exceeded the SERVOPACK regenerative processing capacity.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	–

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12.2 Alarm Displays

12.2.2 Troubleshooting Alarms

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat sink overheated.)	The SERVOPACK regenerative resis- tance is too small.	Check the regenerative load ratio in the Sig- maWin+ Motion Monitor Tab Page to see how frequently the regenera- tive resistor is being used.	Change the regenerative resistance to a value larger than the SERVO- PACK minimum allowable resistance.	–
	A heavy load was applied while the Ser- vomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	–
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermea- sures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO- PACK's main circuit wire size.	–
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.101: Motor Overcur- rent Detected (The current to the motor exceeded the allowable cur- rent.)	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	page 4-23
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short- circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servo- motor.	
	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER- VOPACK, or between the ground and termi- nals U, V, or W.	The SERVOPACK may be faulty. Replace the SER- VOPACK.	
	A heavy load was applied while the Ser- vomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	–

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.101: Motor Overcurrent Detected (The current to the motor exceeded the allowable current.)	A malfunction was caused by noise.	Improve the noise environment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVOPACK's main circuit wire size.	–
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.300: Regeneration Error	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not connected to one of the following SERVOPACKs: SGD7S-R70A, -R90A, -1R6A, -2R8A, or -330A.	Check to see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: $\times 10$ W) if no Regenerative Resistor is required.	page 5-52
	An External Regenerative Resistor is not connected to one of the following SERVOPACKs: SGD7S-470A, -550A, -590A, or -780A.	Check to see if an External Regenerative Resistor or a Regenerative Resistor Unit is connected and check the setting of Pn600.	Connect an External Regenerative Resistor and set Pn600 to an appropriate value, or connect a Regenerative Resistor Unit and set Pn600 to 0.	
	The jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following SERVOPACKs: SGD7S-3R8A, SGD7S-5R5A, SGD7S-7R6A, SGD7S-120A, SGD7S-180A, or SGD7S-200A.	Check to see if the jumper is connected between power supply terminals B2 and B3.	Correctly connect a jumper.	page 4-19
	The External Regenerative Resistor is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor.	Correct the wiring of the External Regenerative Resistor.	
	A failure occurred in the SERVOPACK.	–	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.320: Regenerative Overload	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	–
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	–
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	–
	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check it see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	page 5-52
	The setting of Pn603 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	page 5-52
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	–
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.330: Main Circuit Power Supply Wiring Error (Detected when the main circuit power supply is turned ON.)	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK. If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	–
	DC power was supplied when an AC power supply input was specified in the settings.	Check the power supply to see if it is a DC power supply.	Correct the power supply setting to match the actual power supply.	page 5-12
	AC power was supplied when a DC power supply input was specified in the settings.	Check the power supply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply.	
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not connected to one of the following SERVOPACKs: SGD7S-R70A, SGD7S-R90A, SGD7S-1R6A, or SGD7S-2R8A.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenerative Resistor is not required, set Pn600 to 0.	page 4-19, page 5-52
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–

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12.2 Alarm Displays

12.2.2 Troubleshooting Alarms

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.400: Overvoltage (Detected in the main circuit power supply section of the SERVOPACK.)	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	–
	The power supply is not stable or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	–
	The external regenerative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	–
	The moment of inertia ratio or mass ratio exceeded the allowable value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	–
	A failure occurred in the SERVOPACK.	–	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.410: Undervoltage (Detected in the main circuit power supply section of the SERVOPACK.)	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	–
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	–
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	page 6-15
	The SERVOPACK fuse is blown out.	–	Replace the SERVOPACK and connect a reactor to the DC reactor terminals (⊖1 and ⊖2) on the SERVOPACK.	–
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.510: Overspeed (The motor exceeded the maximum speed.)	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servomotor is correctly wired.	–
	A reference value that exceeded the over-speed detection level was input.	Check the input reference.	Reduce the reference value. Or, adjust the gain.	–
	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed reference input gain and adjust the servo gain. Or, reconsider the operating conditions.	
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.511: Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution).	page 6-24
	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse setting and the motor speed.	Reduce the motor speed.	–
A.520: Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	–
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	–
A.521: Autotuning Alarm (Vibration was detected while executing the custom tuning, Easy FFT, or the tuning-less function.)	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuning-less level settings.	page 8-12
	The Servomotor vibrated considerably while performing custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure of corresponding function and implement corrections.	page 8-42, page 8-96
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the maximum motor speed.	page 6-18

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12.2 Alarm Displays

12.2.2 Troubleshooting Alarms

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.710: Instantaneous Overload A.720: Continuous Overload	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servomotor and encoder are correctly wired.	page 4-23
	Operation was performed that exceeded the overload protection characteristics.	Check the motor overload characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	–
	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	–
	There is an error in the setting of Pn282 (Linear Encoder Pitch).	Check the setting of Pn282.	Correct the setting of Pn282.	page 5-16
	There is an error in the setting of Pn080 = n.□□X□ (Motor Phase Selection).	Check the setting of Pn080 = n.□□X□.	Set Pn080 = n.□□X□ to an appropriate value.	page 5-21
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.730 and A.731: Dynamic Brake Overload (An excessive power consumption by the dynamic brake was detected.)	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	–
	When the Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: • Reduce the Servomotor command speed. • Decrease the moment of inertia ratio or mass ratio. • Reduce the frequency of stopping with the dynamic brake.	–
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply was frequently turned ON and OFF.)	The allowable frequency of the inrush current limiting resistor was exceeded when the main circuit power supply was turned ON and OFF.	–	Reduce the frequency of turning the main circuit power supply ON and OFF.	–
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.7A1: Internal Temperature Error 1 (Control Board Temperature Error)	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	–
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	–
	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	–
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	page 3-3, page 3-5
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.7A2: Internal Temperature Error 2 (Power Board Temperature Error)	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	–
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	–
	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	–
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	page 3-3, page 3-5
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.7Ab: SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.810: Encoder Backup Alarm (Detected at the encoder, but only when an absolute encoder is used.)	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	page 5-46
	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder connection and set up the encoder.	
	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar measures to supply power to the encoder, and set up the encoder.	
	A failure occurred in the absolute encoder.	–	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	–
A.820: Encoder Check-sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	–	■ When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■ When Using a Single-turn Absolute Encoder or Incremental Encoder • The Servomotor may be faulty. Replace the Servomotor. • The linear encoder may be faulty. Replace the linear encoder.	page 5-46
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.830: Encoder Battery Alarm (The absolute encoder battery voltage was lower than the specified level.)	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	page 4-24
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	page 12-3
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.840: Encoder Data Alarm (Detected at the encoder.)	The encoder malfunctioned.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servomotor or linear encoder.	—
	An error occurred in reading data from the linear encoder.	—	The linear encoder is not mounted within an appropriate tolerance. Correct the mounting of the linear encoder.	—
	Excessive speed occurred in the linear encoder.	—	Control the motor speed within the range specified by the linear encoder manufacturer and then turn ON the control power supply.	—
	The encoder malfunctioned due to noise.	—	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	—
	The polarity sensor is not wired correctly.	Check the wiring of the polarity sensor.	Correct the wiring of the polarity sensor.	—
	The polarity sensor failed.	—	Replace the polarity sensor.	—
A.850: Encoder Over-speed (Detected at the encoder when the control power supply is turned ON.)	Rotary Servomotor: The Servomotor speed was 200 min ⁻¹ or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min ⁻¹ , and turn ON the control power supply.	—
	Linear Servomotor: The Servomotor exceeded the specified speed when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Control the motor speed within the range specified by the linear encoder manufacturer and then turn ON the control power supply.	—
	A failure occurred in the encoder.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servomotor or linear encoder.	—
	A failure occurred in the SERVOPACK.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	—

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.860: Encoder Over-heated (Detected at the encoder, but only when an absolute encoder is used.)	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	–
	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the specified range.	–
	A failure occurred in the encoder.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or absolute linear encoder may be faulty. Replace the Servomotor or absolute linear encoder.	–
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.861: Motor Over-heated	The surrounding temperature around the Servomotor is too high.	Measure the surrounding temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	–
	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the specified range.	–
	A failure occurred in the Serial Converter Unit.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Converter Unit may be faulty. Replace the Serial Converter Unit.	–
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.890: Encoder Scale Error	A failure occurred in the linear encoder.	–	The linear encoder may be faulty. Replace the linear encoder.	–
A.891: Encoder Module Error	A failure occurred in the linear encoder.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the linear encoder may be faulty. Replace the linear encoder.	–
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the origin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	page 5-49
	A failure occurred in the external encoder.	–	Replace the external encoder.	–

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.8A1: External Encoder Module Error	A failure occurred in the external encoder.	–	Replace the external encoder.	–
	A failure occurred in the Serial Converter Unit.	–	Replace the Serial Converter Unit.	–
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	–	Replace the external encoder.	–
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	–	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	–
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maximum speed.	–
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	–	Replace the external encoder.	–
A.b33: Current Detection Error 3	A failure occurred in the current detection circuit.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
	The Servomotor Main Circuit Cable is disconnected.	Check for a disconnection in the Servomotor's Main Circuit Cables.	Correct the Servomotor wiring.	–
A.b6A: MECHATROLINK Communications ASIC Error 1	There is a fault in the SERVOPACK MECHATROLINK communications section.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.b6b: MECHATROLINK Communications ASIC Error 2	A malfunction occurred in the MECHATROLINK communications section due to noise.	–	Implement the following countermeasures against noise. • Check the MECHATROLINK Communications Cable and FG wiring. • Attach a ferrite core to the MECHATROLINK Communications Cable.	–
	There is a fault in the SERVOPACK MECHATROLINK communications section.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.bF0: System Alarm 0	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–

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12.2 Alarm Displays

12.2.2 Troubleshooting Alarms

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	—
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	—
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	—
A.bF4: System Alarm 4	A failure occurred in the SERVOPACK.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	—
A.C10: Servomotor Out of Control (Detected when the servo is turned ON.)	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servomotor is correctly wired.	—
	There is an error in the setting of Pn080 = n.□□X□ (Motor Phase Selection).	Check the setting of Pn080 = n.□□X□.	Set Pn080 = n.□□X□ to an appropriate value.	page 5-21
	A failure occurred in the encoder.	—	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor or linear encoder may be faulty. Replace the Servomotor or linear encoder.	—
	A failure occurred in the SERVOPACK.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	—
A.C20: Phase Detection Error	The linear encoder signal level is too low.	Check the voltage of the linear encoder signal.	Fine-tune the mounting of the scale head. Or, replace the linear encoder.	—
	The count-up direction of the linear encoder does not match the forward direction of the Moving Coil in the motor.	Check the setting of Pn080 = n.□□X□ (Motor Phase Selection). Check the installation orientation for the linear encoder and Moving Coil.	Change the setting of Pn080 = n.□□X□. Correctly reinstall the linear encoder or Moving Coil.	page 5-21
	The polarity sensor signal is being affected by noise.	—	Correct the FG wiring. Implement countermeasures against noise for the polarity sensor wiring.	—

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C21: Polarity Sensor Error	The polarity sensor is protruding from the Magnetic Way of the motor.	Check the polarity sensor.	Correctly reinstall the Moving Coil or Magnetic Way of the motor.	–
	The setting of Pn282 (Linear Encoder Pitch) is not correct.	Check the setting of Pn282 (Linear Encoder Pitch).	Check the specifications of the linear encoder and set a correct value.	page 5-16
	The polarity sensor is not wired correctly.	Check the wiring of the polarity sensor.	Correct the wiring of the polarity sensor.	–
	The polarity sensor failed.	–	Replace the polarity sensor.	–
A.C22: Phase Information Disagreement	The SERVOPACK phase information is different from the linear encoder phase information.	–	Perform polarity detection.	page 5-26

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C50: Polarity Detection Failure	The parameter settings are not correct.	Check the linear encoder specifications and feedback signal status.	The settings of Pn282 (Linear Encoder Pitch) and Pn080 = n.□□X□ (Motor Phase Selection) may not match the installation. Set the parameters to correct values.	page 5-16, page 5-21
	There is noise on the scale signal.	Check to make sure that the frame grounds of the Serial Converter Unit and Servomotor are connected to the FG terminal on the SERVOPACK and that the FG terminal on the SERVOPACK is connected to the frame ground on the power supply. And, confirm that the shield is properly processed on the Linear Encoder Cable. Check to see if the detection reference is repeatedly output in one direction.	Implement appropriate countermeasures against noise for the Linear Encoder Cable.	—
	An external force was applied to the Moving Coil of the motor.	—	The polarity cannot be properly detected if the detection reference is 0 and the speed feedback is not 0 because of an external force, such as cable tension, applied to the Moving Coil. Implement measures to reduce the external force so that the speed feedback goes to 0. If the external force cannot be reduced, increase the setting of Pn481 (Polarity Detection Speed Loop Gain).	—
	The linear encoder resolution is too low.	Check the linear encoder scale pitch to see if it is within 100 μm.	If the linear encoder scale pitch is 100 μm or higher, the SERVOPACK cannot detect the correct speed feedback. Use a linear encoder scale pitch with higher resolution. (We recommend a pitch of 40 μm or less.) Or, increase the setting of Pn485 (Polarity Detection Reference Speed). However, increasing the setting of Pn485 will increase the Servomotor movement range that is required for polarity detection.	—
A.C51: Overtravel Detected during Polarity Detection	The overtravel signal was detected during polarity detection.	Check the overtravel position.	Wire the overtravel signals. Execute polarity detection at a position where an overtravel signal would not be detected.	page 4-33

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C52: Polarity Detection Not Completed	The servo was turned ON when using an absolute linear encoder, Pn587 was set to n.□□□0 (Do not detect polarity), and the polarity had not been detected.	—	When using an absolute linear encoder, set Pn587 to n.□□□1 (Detect polarity)	—
A.C53: Out of Range of Motion for Polarity Detection	The travel distance exceeded the setting of Pn48E (Polarity Detection Range) in the middle of detection.	—	Increase the setting of Pn48E (Polarity Detection Range). Or, increase the setting of Pn481 (Polarity Detection Speed Loop Gain).	—
A.C54: Polarity Detection Failure 2	An external force was applied to the Servomotor.	—	Increase the setting of Pn495 (Polarity Detection Confirmation Force Reference). Increase the setting of Pn498 (Polarity Detection Allowable Error Range). Increasing the allowable error will also increase the motor temperature.	—
A.C80: Encoder Clear Error or Multiturn Limit Setting Error	A failure occurred in the encoder.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servomotor or linear encoder.	—
	A failure occurred in the SERVOPACK.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	—

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C90: Encoder Communications Error	There is a faulty contact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	page 4-23
	There is a cable disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specified specifications.	–
	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	page 3-2
	A malfunction was caused by noise.	–	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	page 4-5
	A failure occurred in the SERVOPACK.	–	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.C91: Encoder Communications Position Data Acceleration Rate Error	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	page 4-8
	The Encoder Cable is bundled with a high-current line or installed near a high-current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	–
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	–

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C92: Encoder Commu- nications Timer Error	Noise entered on the signal line from the encoder.	–	Implement countermeasures against noise for the encoder wiring.	page 4-5
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor or linear encoder.	–
	A failure occurred in the encoder.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servomotor or linear encoder.	–
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.CA0: Encoder Parameter Error	A failure occurred in the encoder.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servomotor or linear encoder.	–
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–

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12.2 Alarm Displays

12.2.2 Troubleshooting Alarms

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.Cb0: Encoder Echo-back Error	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	page 4-23
	The specifications of the Encoder Cable are not correct and noise entered on it.	—	Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	—
	The Encoder Cable is too long and noise entered on it.	—	- Rotary Servomotors: The Encoder Cable wiring distance must be 50 m max. - Linear Servomotors: The Encoder Cable wiring distance must be 20 m max.	—
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	—
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor or linear encoder.	—
	A failure occurred in the encoder.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servomotor or linear encoder.	—
	A failure occurred in the SERVOPACK.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	—
A.CC0: Multiturn Limit Disagreement	When using a Direct Drive Servomotor, the setting of Pn205 (Multiturn Limit Setting) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	page 6-38
	The multiturn limit of the encoder is different from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVOPACK.	Change the setting if the alarm occurs.	—
	A failure occurred in the SERVOPACK.	—	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	—

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.CF1: Reception Failed Error in Feed- back Option Module Commu- nications	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Converter Unit and SERVOPACK.	page 4-25
	A specified cable is not being used between Serial Converter Unit and SERVOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	–
	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Converter Unit and SERVOPACK must be 20 m or less.	–
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVOPACK.	–
A.CF2: Timer Stopped Error in Feed- back Option Module Commu- nications	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	–	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	–
	A failure occurred in the Serial Converter Unit.	–	Replace the Serial Converter Unit.	–
	A failure occurred in the SERVOPACK.	–	Replace the SERVOPACK.	–
A.d00: Position Deviation Overflow (The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.)	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	–
	The position command speed is too fast.	Reduce the position command speed and try operating the SERVOPACK.	Reduce the position reference speed or the reference acceleration rate, or reconsider the electronic gear ratio.	page 5-43
	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVOPACK.	Reduce the acceleration of the position reference using a MECHATROLINK command. Or, smooth the position reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	–
	The setting of Pn520 (Excessive Position Deviation Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Deviation Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	page 8-8
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–

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12.2 Alarm Displays

12.2.2 Troubleshooting Alarms

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d01: Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Optimize the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON).	page 8-8
A.d02: Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded.	–	Optimize the setting of Pn520 (Excessive Position Deviation Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	
A.d10: Motor-Load Position Deviation Overflow	The motor direction and external encoder installation orientation are backward.	Check the motor direction and the external encoder installation orientation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.X□□□ (External Encoder Usage) to reverse the direction.	page 10-6
	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	–
A.d30: Position Data Overflow	The position data exceeded $\pm 1,879,048,192$.	Check the input reference pulse counter.	Reconsider the operating specifications.	–
A.E02: MECHATROLINK Internal Synchronization Error 1	The MECHATROLINK transmission cycle fluctuated.	–	Remove the cause of transmission cycle fluctuation at the host controller.	–
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.E40: MECHATROLINK Transmission Cycle Setting Error	The setting of MECHATROLINK transmission cycle is outside of the specified range.	Check the setting of the MECHATROLINK transmission cycle.	Set the MECHATROLINK transmission cycle to an appropriate value.	–
A.E41: MECHATROLINK Communications Data Size Setting Error	The number of transmission bytes set on DIP switch S3 is not correct.	Check the MECHATROLINK communications data size of the host controller.	Reset DIP switch S3 to change the number of transmission bytes to an appropriate value.	page 5-11

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E42: MECHATROLINK Station Address Setting Error	The station address is outside of the setting range.	Check rotary switches S1 and S2 to see if the station address is between 03 and EF.	Check the setting of the station address of the host controller, and reset rotary switches S1 and S2 to change the address to an appropriate value between 03 and EF.	page 5-11
	Two or more stations on the communications network have the same address.	Check to see if two or more stations on the communications network have the same address.	Check the setting of the station address of the host controller, and reset rotary switches S1 and S2 to change the address to an appropriate value between 03 and EF.	
A.E50* ³ : MECHATROLINK Synchronization Error	The WDT data in the host controller was not updated normally.	Check to see if the WDT data is being updated at the host controller.	Correctly update the WDT data at the host controller.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E51: MECHATROLINK Synchronization Failed	The WDT data at the host controller was not updated correctly at the start of synchronous communications, so synchronous communications could not be started.	Check to see if the WDT data is being updated in the host controller.	Correctly update the WDT data at the host controller.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E60* ³ : Reception Error in MECHATROLINK Communications	MECHATROLINK wiring is not correct.	Check the MECHATROLINK wiring.	Correct the MECHATROLINK Communications Cable wiring. Correctly connect the terminator.	-
	A MECHATROLINK data reception error occurred due to noise.	-	Implement countermeasures against noise. (Check the MECHATROLINK Communications Cable and FG wiring, and implement measures such as attaching a ferrite core to the MECHATROLINK Communications Cable.)	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E61: Synchronization Interval Error in MECHATROLINK Transmission Cycle	The MECHATROLINK transmission cycle fluctuated.	Check the setting of the MECHATROLINK transmission cycle.	Remove the cause of transmission cycle fluctuation at the host controller.	–
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.E63: MECHATROLINK Synchronization Frame Not Received	MECHATROLINK wiring is not correct.	Check the Servomotor wiring.	Correct the MECHATROLINK Communications Cable wiring.	–
	A MECHATROLINK data reception error occurred due to noise.	–	Implement countermeasures against noise. (Check the MECHATROLINK Communications Cable and FG wiring, and implement measures such as attaching a ferrite core to the MECHATROLINK Communications Cable.)	–
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.E72: Feedback Option Module Detection Failure	There is a faulty connection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVOPACK and the Feedback Option Module.	Correctly connect the Feedback Option Module.	–
	The Feedback Option Module was disconnected.	–	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	page 12-43
	A failure occurred in the Feedback Option Module.	–	Replace the Feedback Option Module.	–
	A failure occurred in the SERVOPACK.	–	Replace the SERVOPACK.	–
A.Eb1: Safety Function Signal Input Timing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SERVOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	–
	A failure occurred in the SERVOPACK.	–	Replace the SERVOPACK.	–

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)				
A.Ed1: Command Execution Timeout	A timeout error occurred for a MECHATROLINK command.	Check the motor status when the command is executed.	Execute the SV_ON or SENS_ON command only when the motor is not operating.	–
		- For fully-closed loop control, check the status of the external encoder when the command is executed. - For other types of control, check the status of the linear encoder when the command is executed.	Execute the SENS_ON command only when an external encoder (e.g., a linear encoder) is connected.	–
A.F10: Power Supply Line Open Phase (The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.)	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	page 4-11
	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	Balance the power supply by changing phases.	–
	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	page 4-11
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–

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12.2 Alarm Displays

12.2.2 Troubleshooting Alarms

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.F50: Servomotor Main Circuit Cable Dis- connection (The Servomotor did not operate or power was not supplied to the Servomotor even though the SV_ON (Servo ON) command was input when the Servomotor was ready to receive it.)	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SER- VOPACK.	–
	The wiring is not cor- rect or there is a faulty contact in the motor wiring.	Check the wiring.	Make sure that the Servo- motor is correctly wired.	page 4-23
FL-1*³: System Alarm	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
FL-2*³: System Alarm				
FL-3*³: System Alarm				
FL-4*³: System Alarm				
FL-5*³: System Alarm				
CPF00: Digital Operator Communications Error 1	There is a faulty con- tact between the Digi- tal Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connec- tor and insert it again. Or, replace the cable.	–
	A malfunction was caused by noise.	–	Keep the Digital Operator or the cable away from sources of noise.	–
CPF01: Digital Operator Communications Error 2	A failure occurred in the Digital Operator.	–	Disconnect the Digital Operator and then con- nect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Oper- ator.	–
	A failure occurred in the SERVOPACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–

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*1. Detection Conditions

• Rotary Servomotor

If either of the following conditions is detected, an alarm will occur.

$$\bullet \text{ Pn533 [min}^{-1}\text{]} \times \frac{\text{Encoder resolution}}{6 \times 10^5} \leq \frac{\text{Pn20E}}{\text{Pn210}}$$

$$\bullet \text{ Maximum motor speed [min}^{-1}\text{]} \times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \geq \frac{\text{Pn20E}}{\text{Pn210}}$$

• Linear Servomotor

If either of the following conditions is detected, an alarm will occur.

$$\bullet \frac{\text{Pn585 [mm/s]}}{\text{Linear encoder pitch [\mu m]}} \times \frac{\text{Resolution of Serial Converter Unit}}{10} \leq \frac{\text{Pn20E}}{\text{Pn210}}$$

$$\bullet \frac{\text{Pn385 [100 mm/s]}}{\text{Linear encoder pitch [\mu m]}} \times \frac{\text{Resolution of Serial Converter Unit}}{\text{Approx. } 6.10 \times 10^5} \geq \frac{\text{Pn20E}}{\text{Pn210}}$$

*2. Detection Conditions

• Rotary Servomotor

If either of the following conditions is detected, an alarm will occur.

$$\bullet \text{ Rated motor speed [min}^{-1}\text{]} \times 1/3 \times \frac{\text{Encoder resolution}}{6 \times 10^5} \leq \frac{\text{Pn20E}}{\text{Pn210}}$$

$$\bullet \text{ Maximum motor speed [min}^{-1}\text{]} \times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \geq \frac{\text{Pn20E}}{\text{Pn210}}$$

• Linear Servomotor

If either of the following conditions is detected, an alarm will occur.

$$\bullet \frac{\text{Rated motor speed [mm/s]} \times 1/3}{\text{Linear encoder pitch [\mu m]}} \times \frac{\text{Resolution of Serial Converter Unit}}{10} \leq \frac{\text{Pn20E}}{\text{Pn210}}$$

$$\bullet \frac{\text{Pn385 [100 mm/s]}}{\text{Linear encoder pitch [\mu m]}} \times \frac{\text{Resolution of Serial Converter Unit}}{\text{Approx. } 6.10 \times 10^5} \geq \frac{\text{Pn20E}}{\text{Pn210}}$$

*3. These alarms are not stored in the alarm history. They are only displayed on the panel display.

12.2.3 Resetting Alarms

If there is an ALM (Servo Alarm) signal, use one of the following methods to reset the alarm after eliminating the cause of the alarm.



Be sure to eliminate the cause of an alarm before you reset the alarm.
If you reset the alarm and continue operation without eliminating the cause of the alarm, it may result in damage to the equipment or fire.

Resetting Alarms by Sending the ALM_CLR (Clear Warning or Alarm) Command

Refer to the following manual for details.

📖 Σ -7-Series MECHATROLINK-III Communications Standard Servo Profile Command Manual (Manual No.: SIEP S800001 31)

Resetting Alarms Using the Digital Operator

Press the **ALARM RESET** Key on the Digital Operator. Refer to the following manual for details on resetting alarms.

📖 Σ -7-Series Digital Operator Operating Manual (Manual No.: SIEP S800001 33)

12.2.4 Displaying the Alarm History

The alarm history displays up to the last ten alarms that have occurred in the SERVOPACK.

Note: The following alarms are not displayed in the alarm history: A.E50 (MECHATROLINK Synchronization Error), A.E60 (Reception Error in MECHATROLINK Communications), and FL-1 to FL-5.

Preparations

No preparations are required.

Applicable Tools

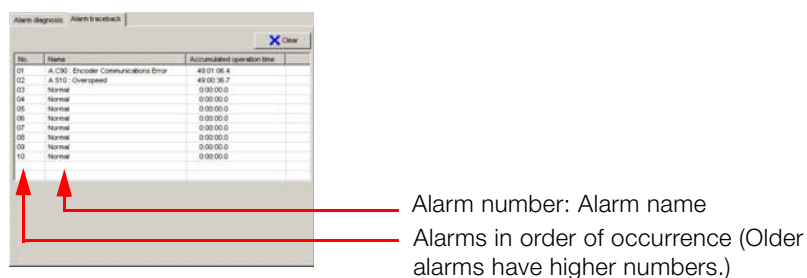
The following table lists the tools that you can use to display the alarm history and the applicable tool functions.

Tool	Function	Reference
Digital Operator	Fn000	Σ -7-Series Digital Operator Operating Manual (Manual No.: SIEP S800001 33)
SigmaWin+	<i>Alarm – Display Alarm</i>	<i>Operating Procedure</i> on page 12-41

Operating Procedure

Use the following display procedure.

1. Select **Alarm - Display Alarm** from the menu bar of the Main Window of the SigmaWin+. The Alarm Display Dialog Box will be displayed.
2. Click the **Alarm History Tab**. The following display will appear and you can check the alarms that occurred in the past.



Information

1. If the same alarm occurs consecutively within one hour, it is not saved in the alarm history. If it occurs after an hour or more, it is saved.
2. You can clear the alarm history by clicking the **Clear** Button. The alarm history is not cleared when alarms are reset or when the SERVOPACK main circuit power is turned OFF.

12.2.5 Clearing the Alarm History

You can clear the alarm history that is recorded in the SERVOPACK.
The alarm history is not cleared when alarms are reset or when the SERVOPACK main circuit power is turned OFF. You must perform the following procedure.

Preparations

Check the following setting before you clear the alarm history.

- The parameters must not be write prohibited.

Applicable Tools

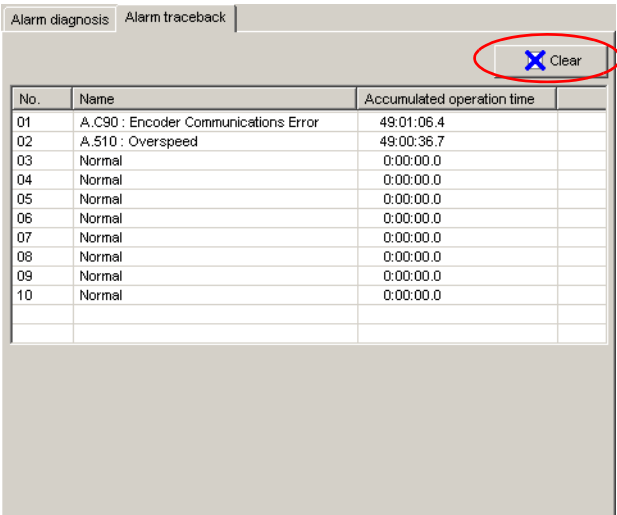
The following table lists the tools that you can use to clear the alarm history and the applicable tool functions.

Tool	Function	Reference
Digital Operator	Fn006	 Σ -7-Series Digital Operator Operating Manual (Manual No.: SIEP S800001 33)
SigmaWin+	Alarm – Display Alarm	 Operating Procedure on page 12-42

Operating Procedure

Use the following procedure.

1. Select **Alarm - Display Alarm** from the menu bar of the Main Window of the SigmaWin+.
The Alarm Display Dialog Box will be displayed.
2. Click the **Alarm History** Tab.
3. Click the **Clear** Button.
The alarm history will be cleared.



12.2.6 Resetting Alarms Detected in Option Modules

If any Option Modules are attached to the SERVOPACK, the SERVOPACK detects the presence and models of the connected Option Modules. If it finds any errors, it outputs alarms.

You can delete those alarms with this operation.

Information

- This operation is the only way to reset alarms for Option Modules. The alarms are not reset when you reset other alarms or when you turn OFF the power supply to the SERVOPACK.
- Always remove the cause of an alarm before you reset the alarm.

Preparations

Confirm the following condition before you clear alarms that were detected in Option Module.

- The parameters must not be write prohibited.

Applicable Tools

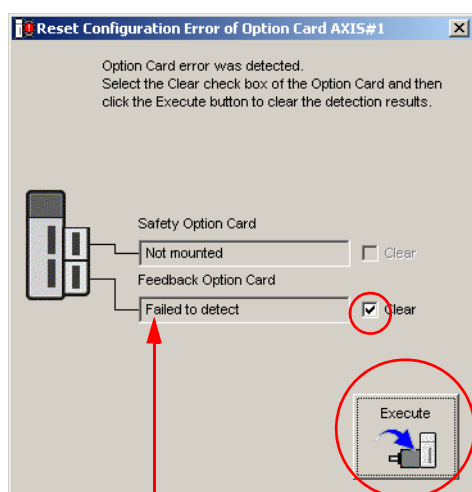
The following table lists the tools that you can use to reset Option Module configuration errors and the applicable tool functions.

Tool	Function	Reference
Digital Operator	Fn014	Σ-7-Series Digital Operator Operating Manual (Manual No.: SIEP S800001 33)
SigmaWin+	<i>Setup – Reset Configuration Error of Option Module</i>	Operating Procedure on page 12-43

Operating Procedure

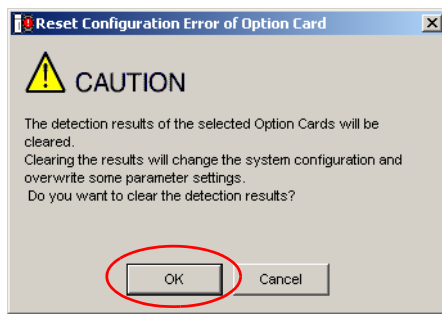
Use the following procedure.

1. Select **Setup – Reset Configuration Error of Option Module** from the menu bar of the Main Window of the SigmaWin+.
The Reset Configuration Error of Option Module Dialog Box will be displayed.
This dialog box will be displayed automatically when you start the SigmaWin+ if there is an error in an Option Module.
2. Select the **Clear Check Box** for the Option Modules from which to clear alarms and the click the **Execute Button**.

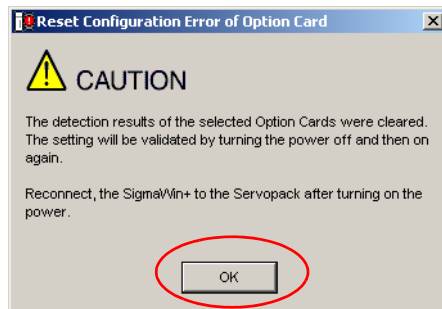


You cannot clear the **Error detected** detection result. Remove the Option Module, or check to see if the Option Module is correctly mounted.

3. Click the OK Button.



4. Click the OK Button.



5. Turn the power supply to the SERVOPACK OFF and ON again.

12.2.7 Resetting Motor Type Alarms

The SERVOPACK automatically determines the type of motor that is connected to it. If the type of motor that is connected is changed, an A.070 alarm (Motor Type Change Detected) will occur the next time the SERVOPACK is started. If an A.070 alarm occurs, you must set the parameters to match the new type of motor.

An A.070 alarm is reset by executing the Reset Motor Type Alarm utility function.

- Information**
1. This utility function is the only way to reset an A.070 alarm (Motor Type Change Detected). The errors are not reset when you reset alarms or turn OFF the power supply to the SERVOPACK.
 2. If an A.070 alarm occurs, first set the parameters according to the newly connected motor type and then execute the Reset Motor Type Alarm utility function.

Preparations

Check the following setting before you execute the Reset Motor Type Alarm utility function.

- The parameters must not be write prohibited.

Applicable Tools

The following table lists the tools that you can use to clear the motor type alarm and the applicable tool functions.

Tool	Function	Reference
Digital Operator	Fn021	 Σ -7-Series Digital Operator Operating Manual (Manual No.: SIEP S800001 33)
SigmaWin+	Setup – Reset Motor Type Alarm	 Operating Procedure on page 12-45

Operating Procedure

Use the following procedure.

1. Select **Setup - Reset Motor Type Alarm** from the menu bar of the Main Window of the SigmaWin+.
The Reset Motor Type Alarm Dialog Box will be displayed.
2. Click the **Clear** Button.
The alarm will be cleared.

12.3 Warning Displays

If a warning occurs in the SERVOPACK, an alarm number will be displayed on the panel display. Warnings are displayed to warn you before an alarm occurs.

This section provides a list of warnings and the causes of and corrections for warnings.

12.3.1 List of Warnings

The list of warnings gives the warning name, warning meaning in order of the warning numbers.

Warning Number	Warning Name	Meaning	Resetting
A.900 ^{*1}	Position Deviation Overflow	The position deviation exceeded the parameter settings (Pn520 × Pn51E/100).	Required.
A.901 ^{*1}	Position Deviation Overflow Alarm at Servo ON	The position deviation exceeded the parameter settings (Pn526 × Pn528/100) when the servo was turned ON.	Required.
A.910 ^{*1}	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.911 ^{*1}	Vibration	Abnormal vibration was detected during motor operation. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Switch).	Required.
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Required.
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Required.
A.920 ^{*1}	Regenerative Overload	This warning occurs before an A.320 alarm (Regenerative Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.921 ^{*1}	Dynamic Brake Overload	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Required.
A.930	Absolute Encoder Battery Error	This warning occurs when the voltage of absolute encoder's battery is low.	Required.
A.942	Speed Ripple Compensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SERVOPACK.	Required.
A.94A ^{*2}	Data Setting Warning 1 (Parameter Number Error)	There is an error in the parameter number for a Data Setting Warning 1 (Parameter Number) command.	Automatically reset.
A.94b ^{*2}	Data Setting Warning 2 (Out of Range)	The command data is out of range.	Automatically reset.
A.94C ^{*2}	Data Setting Warning 3 (Calculation Error)	A calculation error was detected.	Automatically reset.
A.94D ^{*2}	Data Setting Warning 4 (Parameter Size)	The data sizes do not match.	Automatically reset.

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Warning Number	Warning Name	Meaning	Resetting
A.94E ^{*2}	Data Setting Warning 5 (Latch Mode Error)	A latch mode error was detected.	Required.
A.95A ^{*2}	Command Warning 1 (Unsatisfied Command Conditions)	A command was sent when the conditions for sending a command were not satisfied.	Automatically reset.
A.95b ^{*2}	Command Warning 2 (Unsupported Command)	An unsupported command was sent.	Automatically reset.
A.95D ^{*2}	Command Warning 4 (Command Interference)	There was command interference, particularly latch command interference.	Automatically reset.
A.95E ^{*2}	Command Warning 5 (Subcommand Not Possible)	The subcommand and main command interfere with each other.	Automatically reset.
A.95F ^{*2}	Command Warning 6 (Undefined Command)	An undefined command was sent.	Automatically reset.
A.960 ^{*2}	MECHATROLINK Communications Warning	A communications error occurred during MECHATROLINK communications.	Required.
A.971 ^{*3}	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.97A ^{*2}	Command Warning 7 (Phase Error)	A command that cannot be executed in the current phase was sent.	Automatically reset.
A.97b ^{*2}	Data Clamp Out of Range	The set command data was clamped to the minimum or maximum value of the allowable setting range.	Automatically reset.
A.9A0 ^{*1}	Overtravel	Overtravel was detected while the servo was ON.	Required.
A.9b0	Preventative Maintenance Warning	One of the consumable parts has reached the end of its service life.	Required.

*1. Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection.

*2. Use Pn800 = n.□□X□ (Warning Check Mask) to control warning detection.

*3. Use Pn008 = n.□□X□ (Lowered Battery Voltage Alarm/Warning Selection) to control warning detection.

*4. If using the commands for the MECHATROLINK-III standard servo profile, the warning will automatically be cleared after the correct command is received. If you use MECHATROLINK-II-compatible profile commands, send an ALM_CLR (Clear Warning or Alarm) command to clear the warning.

Note: 1. A warning code is not output unless you set Pn001 to n.1□□□ (Output both alarm codes and warning codes).

2. If you sent Pn008 to n.□1□□ (Do not detect warnings), no warnings will be detected except for A.971 warnings (Undervoltage).

12.3.2 Troubleshooting Warnings

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

12.3 Warning Displays

12.3.2 Troubleshooting Warnings

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.900: Position Deviation Overflow	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	–
	A SERVOPACK gain is too low.	Check the SERVO-PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	page 8-23
	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference using a MECHATROLINK command. Or, smooth the position reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	–
	The setting of Pn520 (Excessive Position Error Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Error Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	page 8-8
	A failure occurred in the SERVO-PACK.	–	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.901: Position Deviation Overflow Alarm at Servo ON	The position deviation exceeded the parameter settings (Pn526 × Pn528/100) when the servo was turned ON.	–	Optimize the setting of Pn528 (Excessive Position Error Warning Level at Servo ON).	–
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servomotor and encoder are correctly wired.	–
	Operation was performed that exceeded the overload protection characteristics.	Check the motor overload characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	–
	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	–
	A failure occurred in the SERVO-PACK.	–	The SERVOPACK may be faulty. Replace the SERVO-PACK.	–

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.911: Vibration	Abnormal vibration was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	page 8-42
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	–
A.912: Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	–
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	–
	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	–
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	page 3-3, page 3-5
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.913: Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	–
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	–
	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	–
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	page 3-3, page 3-5
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.920: Regenerative Overload (warning before an A.320 alarm occurs)	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	–
	There is insufficient external regenerative resistance, regenerative resistor capacity, or SERVOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	–
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	–

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.921: Dynamic Brake Overload (warning before an A.731 alarm occurs)	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	–
	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power con- sumed by the DB resis- tor to see how frequently the DB is being used.	Reconsider the following: • Reduce the Servomotor command speed. • Decrease the moment of inertia or mass. • Reduce the frequency of stopping with the dynamic brake.	–
	A failure occurred in the SERVO- PACK.	–	The SERVOPACK may be faulty. Replace the SERVO- PACK.	–
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign mat- ter inside the SERVO- PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	–
A.930: Absolute Encoder Battery Error (The absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso- lute encoder is con- nected.)	The battery con- nection is faulty or a battery is not connected.	Check the battery con- nection.	Correct the battery connec- tion.	page 4-24
	The battery volt- age is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	page 12-3
	A failure occurred in the SERVO- PACK.	–	The SERVOPACK may be faulty. Replace the SERVO- PACK.	–
A.942: Speed Ripple Com- pensation Informa- tion Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensa- tion information stored in the SER- VOPACK.	–	Reset the speed ripple compensation value on the SigmaWin+.	page 8-61
		–	Set Pn423 to n.□□1□ (Do not detect A.942 alarms). However, changing the set- ting may increase the speed ripple.	–
		–	Set Pn423 to n.□□□0 (Disable torque ripple com- pensation). However, changing the setting may increase the speed ripple.	–
A.94A: Data Setting Warn- ing 1 (Parameter Number Error)	An invalid param- eter number was used.	Check the command that caused the warn- ing.	Use the correct parameter number.	page 12- 54
A.94b: Data Setting Warn- ing 2 (Out of Range)	The set com- mand data was clamped to the minimum or maxi- mum value of the setting range.	Check the command that caused the warn- ing.	Set the parameter within the setting range.	page 12- 54
A.94C: Data Setting Warn- ing 3 (Calculation Error)	The calculation result of the set- ting is not correct.	Check the command that caused the warn- ing.	Set the parameter within the setting range.	page 12- 54

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12.3 Warning Displays

12.3.2 Troubleshooting Warnings

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.94D: Data Setting Warning 4 (Parameter Size)	The parameter size set in the command is not correct.	Check the command that caused the warning.	Set the correct parameter size.	page 12-54
A.94E: Data Setting Warning 5 (Latch Mode Error)	A latch mode error was detected.	Check the command that caused the warning.	Change the setting of Pn850 or the LT_MOD data for the LTMOD_ON command sent by the host controller to an appropriate value. (The applies when using the MECHATROLINK-II-compatible profile.)	page 12-54
A.95A: Command Warning 1 (Unsatisfied Command Conditions)	The command conditions are not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	page 12-54
A.95b: Command Warning 2 (Unsupported Command)	An unsupported command was received.	Check the command that caused the warning.	Do not send unsupported commands.	page 12-54
A.95D: Command Warning 4 (Command Interference)	The command sending conditions for latch-related commands was not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	page 12-54
A.95E: Command Warning 5 (Subcommand Not Possible)	The command sending conditions for subcommands was not satisfied.	Check the command that caused the warning.	Send the command after the conditions are satisfied.	page 12-54
A.95F: Command Warning 6 (Undefined Command)	An undefined command was sent.	Check the command that caused the warning.	Do not send undefined commands.	page 12-54
A.960: MECHATROLINK Communications Warning	The MECHATROLINK Communications Cable is not wired correctly.	Check the wiring conditions.	Correct the MECHATROLINK communications cable wiring.	page 4-39
	A MECHATROLINK data reception error occurred due to noise.	Confirm the installation conditions.	Implement the following countermeasures against noise. • Check the MECHATROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering. • Attach a ferrite core to the MECHATROLINK Communications Cable.	–
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.971: Undervoltage	For a 200-V SERVOPACK, the AC power supply voltage dropped below 140 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	–
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	–
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	page 6-15
	The SERVOPACK fuse is blown out.	–	Replace the SERVOPACK and connect a reactor.	page 4-22
	A failure occurred in the SERVOPACK.	–	The SERVOPACK may be faulty. Replace the SERVOPACK.	–
A.97A: Command Warning 7 (Phase Error)	A command that cannot be executed in the current phase was sent.	–	Send the command after the command conditions are satisfied.	–
A.97b: Data Clamp Out of Range	The set command data was clamped to the minimum or maximum value of the setting range.	–	Set the command data within the setting ranges.	–
A.9A0: Overtravel (Overtravel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions. • Do not specify movements that would cause overtravel from the host controller. • Check the wiring of the overtravel signals. • Implement countermeasures against noise.	–
A.9b0: Preventative Maintenance Warning	One of the consumable parts has reached the end of its service life.	–	Replace the part. Contact your Yaskawa representative for replacement.	–

12.4 Monitoring Communications Data during Alarms or Warnings

You can monitor the command data that is received when an alarm or warning occurs, such as a data setting warning (A.94□) or a command warning (A.95□) by using the following parameters. The following is an example of the data when an alarm or warning has occurred in the normal state.

Command Data during Alarms and Warnings: Pn890 to Pn8A6

Response Data during Alarms and Warnings: Pn8A8 to Pn8BE

Command Byte Sequence	Command Data Storage When an Alarm or Warning Occurs	
	CMD	RSP
0	Pn890 = n.□□□□□□XX	Pn8A8 = n.□□□□□□XX
1	Pn890 = n.□□□□XX□□	Pn8A8 = n.□□□□XX□□
2	Pn890 = n.□□XX□□□□	Pn8A8 = n.□□XX□□□□
3	Pn890 = n.XX□□□□□□	Pn8A8 = n.XX□□□□□□
4 to 7	Pn892	Pn8AA
8 to 11	Pn894	Pn8AC
12 to 15	Pn896	Pn8AE
16 to 19	Pn898	Pn8B0
20 to 23	Pn89A	Pn8B2
24 to 27	Pn89C	Pn8B4
28 to 31	Pn89E	Pn8B6
32 to 35	Pn8A0	Pn8B8
36 to 39	Pn8A2	Pn8BA
40 to 43	Pn8A4	Pn8BC
44 to 47	Pn8A6	Pn8BE

Note: 1. Data is stored in little endian byte order and displayed in the hexadecimal.

2. Refer to the following manual for command details.

📖 Σ -7-Series MECHATROLINK-III Communications Standard Servo Profile Command Manual (Manual No.: SIEP S800001 31)

12.5 Troubleshooting Based on the Operation and Conditions of the Servomotor

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Turn OFF the Servo System before troubleshooting the items shown in bold lines in the table.

Problem	Possible Cause	Confirmation	Correction	Reference
Servomotor Does Not Start	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Correct the wiring so that the control power supply is turned ON.	–
	The main circuit power supply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Correct the wiring so that the main circuit power supply is turned ON.	–
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	page 4-30
	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Wire the cable correctly.	–
	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	–
	The type of encoder that is being used does not agree with the setting of Pn002 = n.□X□□ (Encoder Usage).	Check the type of the encoder that is being used and the setting of Pn002 = n.□X□□.	Set Pn002 = n.□X□□ according to the type of the encoder that is being used.	page 6-32
	There is a mistake in the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Check the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Correctly allocate the input signals (Pn50A, Pn50B, Pn511, and Pn516).	page 6-4
	The SV_ON command was not sent.	Check the commands sent from the host controller.	Send the SV_ON command from the host controller.	–
	The SENS_ON (Turn ON Sensor) command was not sent.	Check the commands sent from the host controller.	Send the commands to the SERVOPACK in the correct sequence.	–
	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N-OT signals.	Turn ON the P-OT and N-OT signals.	–
	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	Turn ON the /HWBB1 and /HWBB2 input signals. If you are not using the safety function, connect the Safety Jumper Connector (provided as an accessory) to CN8.	–
	The FSTP (Forced Stop Input) signal is still OFF.	Check the FSTP signal.	• Turn ON the FSTP signal. • If you will not use the function to force the motor to stop, set Pn516 = n.□□□X (FSTP (Forced Stop Input) Signal Allocation) to disable the signal.	–

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Problem	Possible Cause	Confirmation	Correction	Reference
Servomotor Does Not Start	A failure occurred in the SERVOPACK.	–	Replace the SERVO-PACK.	–
	The polarity detection was not executed.	Check the setting of Pn080 = n.□□□X (Polarity Sensor Selection).	Correct the parameter setting.	page 5-23
		Check the inputs to the SV_ON (Servo ON) command.	- If you are using an incremental linear encoder, send the SV_ON command from the host controller. - If you are using an absolute linear encoder, execute polarity detection.	page 5-24
Servomotor Moves Instantaneously, and Then Stops	There is a mistake in the Servomotor wiring.	Check the wiring.	Wire the Servomotor correctly.	–
	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Check the wiring.	Wire the Serial Converter Unit correctly.	–
	There is a mistake in the linear encoder wiring.	Check the wiring.	Wire the cable correctly.	–
	The setting of Pn282 (Linear Encoder Pitch) is not correct.	Check the setting of Pn282.	Correct the setting of Pn282.	page 5-16
	The count-up direction of the linear encoder does not match the forward direction of the Moving Coil in the motor.	Check the directions.	Change the setting of Pn080 = n.□□X□ (Motor Phase Selection). Place the linear encoder and motor in the same direction.	page 5-21
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between $\pm 10^\circ$.	Correct the settings for the polarity detection-related parameters.	–
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	–
Servomotor Moves without a Reference Input	A failure occurred in the SERVOPACK.	–	Replace the SERVO-PACK.	–
	The count-up direction of the linear encoder does not match the forward direction of the Moving Coil in the motor.	Check the directions.	Change the setting of Pn080 = n.□□X□ (Motor Phase Selection). Match the linear encoder direction and Servomotor direction.	page 5-21
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between $\pm 10^\circ$.	Correct the settings for the polarity detection-related parameters.	–

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Problem	Possible Cause	Confirmation	Correction	Reference
Dynamic Brake Does Not Operate	The setting of Pn001 = n.□□□X (Servo OFF or Alarm Group 1 Stopping Method) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	–
	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resistance may be disconnected.	Replace the SERVO-PACK. To prevent disconnection, reduce the load.	–
	There was a failure in the dynamic brake drive circuit.	–	There is a defective component in the dynamic brake circuit. Replace the SERVO-PACK.	–

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Problem	Possible Cause	Confirmation	Correction	Reference
Abnormal Noise from Servomotor	The Servomotor vibrated considerably while performing the tuning-less function with the default settings.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio or mass ratio is within the allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings.	page 8-11
	The machine mounting is not secure.	Check to see if there are any loose mounting screws.	Tighten the mounting screws.	–
	The machine mounting is not secure.	Check to see if there is misalignment in the coupling.	Align the coupling.	–
		Check to see if the coupling is balanced.	Balance the coupling.	–
	The bearings are defective.	Check for noise and vibration around the bearings.	Replace the Servomotor.	–
	There is a vibration source at the driven machine.	Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	–
	Noise interference occurred because of incorrect I/O signal cable specifications.	Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	–
	Noise interference occurred because an I/O signal cable is too long.	Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	–
	Noise interference occurred because of incorrect Encoder Cable specifications.	Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	–
	Noise interference occurred because the Encoder Cable is too long.	Check the length of the Encoder Cable.	• Rotary Servomotors: The Encoder Cable length must be 50 m max. • Linear Servomotors: Make sure that the Serial Converter Unit cable is no longer than 20 m and that the Linear Encoder Cable and the Sensor Cable are no longer than 15 m each.	–
	Noise interference occurred because the Encoder Cable is damaged.	Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation environment.	–

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Problem	Possible Cause	Confirmation	Correction	Reference
Abnormal Noise from Servomotor	The Encoder Cable was subjected to excessive noise interference.	Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable layout so that no surge is applied by high-current lines.	–
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	–
	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Implement counter-measures against noise for the encoder wiring.	–
	The encoder was subjected to excessive vibration or shock.	Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment). Check the linear encoder installation (mounting surface precision and securing method).	Reduce machine vibration. Improve the mounting state of the Servomotor or linear encoder.	–
	A failure occurred in the encoder.	–	Replace the Servomotor.	–
	A failure occurred in the Serial Converter Unit.	–	Replace the Serial Converter Unit.	–
	A failure occurred in the linear encoder.	–	Replace the linear encoder.	–
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	page 8-23
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	–
	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	–
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	–
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropriate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	–

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Problem	Possible Cause	Confirmation	Correction	Reference
Large Motor Speed Overshoot on Starting and Stopping	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	page 8-23
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	—
	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	—
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	—
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropriate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	—
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	—
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits and Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	page 6-27
Absolute Encoder Position Deviation Error (The position that was saved in the host controller when the power was turned OFF is different from the position when the power was next turned ON.)	Noise interference occurred because of incorrect Encoder Cable specifications.	Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	—
	Noise interference occurred because the Encoder Cable is too long.	Check the length of the Encoder Cable.	- Rotary Servomotors: The Encoder Cable length must be 50 m max. - Linear Servomotors: Make sure that the Serial Converter Unit cable is no longer than 20 m and that the Linear Encoder Cable and the Sensor Cable are no longer than 15 m each.	—
	Noise interference occurred because the Encoder Cable is damaged.	Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation environment.	—
	Replace the Encoder Cable and correct the cable installation environment.	Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable layout so that no surge is applied by high-current lines.	—
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	—

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Problem	Possible Cause	Confirmation	Correction	Reference
Absolute Encoder Position Deviation Error (The position that was saved in the host controller when the power was turned OFF is different from the position when the power was next turned ON.)	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter-measures against noise for the encoder or Serial Converter Unit wiring.	—
	The encoder was subjected to excessive vibration or shock.	Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment). Check the linear encoder installation (mounting surface precision and securing method).	Reduce machine vibration. Improve the mounting state of the Servomotor or linear encoder.	—
	A failure occurred in the encoder.	—	Replace the Servomotor or linear encoder.	—
	A failure occurred in the SERVOPACK.	—	Replace the SERVOPACK.	—
	Host Controller Multiturn Data or Absolute Encoder Position Data Reading Error	Check the error detection section of the host controller.	Correct the error detection section of the host controller.	—
		Check to see if the host controller is executing data parity checks.	Perform parity checks for the multiturn data or absolute encoder position data.	—
		Check for noise interference in the cable between the SERVOPACK and the host controller.	Implement counter-measures against noise and then perform parity checks again for the multiturn data or absolute encoder position data.	—
	Overtravel Occurred	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was input.	Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.
Check the operating condition of the overtravel limit switches.			Make sure that the overtravel limit switches operate correctly.	—
Check the wiring of the overtravel limit switches.			Correct the wiring of the overtravel limit switches.	page 5-27
Check the settings of the overtravel input signal allocations (Pn50A/ Pn50B).			Set the parameters to correct values.	page 5-27
The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal malfunctioned.		Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	—
		Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the overtravel limit switches.	—
		Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	—

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Problem	Possible Cause	Confirmation	Correction	Reference
Overtravel Occurred	There is a mistake in the allocation of the P-OT or N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal in Pn50A = n.X□□□ or Pn50B = n.□□□X.	Check to see if the P-OT signal is allocated in Pn50A = n.X□□□.	If another signal is allocated in Pn50A = n.X□□□, allocate the P-OT signal instead.	page 5-27
		Check to see if the N-OT signal is allocated in Pn50B = n.□□□X.	If another signal is allocated in Pn50B = n.□□□X, allocate the N-OT signal instead.	
	The selection of the Servomotor stopping method is not correct.	Check the servo OFF stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	page 5-29
		Check the torque control stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	
Improper Stop Position for Overtravel (OT) Signal	The limit switch position and dog length are not appropriate.	–	Install the limit switch at the appropriate position.	–
	The overtravel limit switch position is too close for the coasting distance.	–	Install the overtravel limit switch at the appropriate position.	–
Position Deviation (without Alarm)	Noise interference occurred because of incorrect Encoder Cable specifications.	Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	–
	Noise interference occurred because the Encoder Cable is too long.	Check the length of the Encoder Cable.	- Rotary Servomotors: The Encoder Cable length must be 50 m max. - Linear Servomotors: Make sure that the Serial Converter Unit cable is no longer than 20 m and that the Linear Encoder Cable and the Sensor Cable are no longer than 15 m each.	–
	Noise interference occurred because the Encoder Cable is damaged.	Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation environment.	–
	The Encoder Cable was subjected to excessive noise interference.	Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable layout so that no surge is applied by high-current lines.	–
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	–
	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter-measures against noise for the encoder wiring or Serial Converter Unit wiring.	–

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Problem	Possible Cause	Confirmation	Correction	Reference
Position Deviation (without Alarm)	The encoder was subjected to excessive vibration or shock.	Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment). Check the linear encoder installation (mounting surface precision and securing method).	Reduce machine vibration. Improve the mounting state of the Servomotor or linear encoder.	–
	The coupling between the machine and Servomotor is not suitable.	Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	–
	Noise interference occurred because of incorrect I/O signal cable specifications.	Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm ² .	Use cables that satisfy the specifications.	–
Position Deviation (without Alarm)	Noise interference occurred because an I/O signal cable is too long.	Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	–
	An encoder fault occurred. (The pulse count does not change.)	–	Replace the Servomotor or linear encoder.	–
	A failure occurred in the SERVOPACK.	–	Replace the SERVOPACK.	–
Servomotor Overheated	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	–
	The surface of the Servomotor is dirty.	Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	–
	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Servomotor with larger capacities.	–
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between $\pm 10^\circ$.	Correct the settings for the polarity detection-related parameters.	–

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