


REV.	Description	Date
00	ECN:102A-15A077 SPEC ISSUE(ADP-130DB DA/DB modify from ADP-130DB FA)	10/16'15
01	ECN:102A-15A187 ADD MODEL:ADP-130DB DC	12/31'15
02	ECN:102A-162087 ADD MODEL:ADP-130DB DA9	02/19'16
03	ECN:102A-163082 ADD MODEL:ADP-130DB DD	03/10'16
04	ECN: 102A-166092 ADD MODEL: ADP-130DB DE/DF	06/22'16
05	ADD MODEL: ADP-130DB DG	11/09'16
06	ECN:102A-16C223 ADD MODEL: ADP-130DB DD8	12/29'16
07	ECN:102A-18C061 ADD MODEL: ADP-130DB DE12 & 備註 PSID IC 料號及位置，區別不同廠家燒錄設備與程式(ITEM 4)	12/17'18
08	ECN: 102A-198063 ADD MODEL: ADP-130DB DH	08/14'19
09	ECN: 102A-19A061 1. Add item 3. 測試注意事項 d. 廠內 ISN 測試 under 3~under4 兩台樣品，搭配系統於認證實驗室測試，全條件滿足 under 20 以上，故廠內 ISN 以 under limit line (under 0 以上) 為判定標準	10/16'19
10	102A-203230/102A-204034 Update item 4 燒錄 IC	04/08'20
11	102A-206059 ADD MODEL: ADP-130DB DK/DL	06/12'20
12	102A-218034 ADD MODEL: ADP-130DB DM	08/09'21
13	102A-222132 1. Change item 6. Average efficiency 熱機 from 87% to 89%.	02/23'22
14	102A-225225 1.Item 5.c add OVP then AC ON 只看 latch 功能不看電壓.	05/26'22

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Date	Drawn	Design (EE)	Design (ME)	DOCUMENT NAME. :	REV.
01/31'24	王玉玲	陳嘉佑	曾映澍	<b>TS-130DB D SERIES</b>	17



FOR MODEL: ADP-130DB DA/DB/DC/DA9/DD/DE/DF/DG/DD8/DE12/DH/DK/DL/DM/DM8

1 測試注意事項內容，未經工程師許可，不可任意變更。

Test Notice contents shall not be changed or revised without engineer permission.

2 此測試規格用於主線測試，所有項目均需被測試，因設備或線速限制無法全數測試時，需測試 worst case, QC 需按抽樣標準做抽樣測試。

The production line shall perform all or worst test items/conditions, and QC shall follow the sampling plan to perform the sampling test

3 測試注意事項：

- 所有 ATS 測試時，需偵測 CONNECTOR 端之電壓。
- EMI 測試需熱機 30 分鐘。
- 測試轉接頭需並聯 10uF/50V and 0.1uF(小黃豆)，限用日系電容。
- 廠內 ISN 測試 under 3~under4 兩台樣品，搭配系統於認證實驗室測試，全條件滿足 under 20 以上，故廠內 ISN 以 under limit line (under 0 以上) 為判定標準

4 燒錄 IC：

4.1 Firmware 燒錄

此機種無須燒錄 Firmware.

4.2 PSID 燒錄

4.2.1 此機種需燒錄 PSID,於流完線貼完 LABEL 後燒錄。

4.2.2 燒錄 IC 之 Location Name=IC101, IC 種類如下表格勾選:

選取	DELTA P/N	Description	Vender P/N	Vender
V	2610711008	IC MCU OTP 1K TO-92-3P	BQ2022ALPR	TEXAS INSTRUMENTS
	2610711108	IC MCU OTP 1K SOT-23-3P SMD	BQ2022ADBZR	
	2610560052	IC EPROM 512 120uS TO-92-3P	DS2501+T&R	MAXIM INTEGRATED
	2610560152	IC EPROM 512 120uS SOT-23-3P SMD	DS2501R+T&R	
V	261071112G	IC MCU OTP 1K SOT-23-3P SMD	OB1022MDP	On-Bright Electronics
	2640522900	IC XX2510000021+90W_QCI SMD	MAX28500GSA-W21+2T	MAXIM INTEGRATED
	2640522800	IC XX2510000021+65W_QCI SMD	MAX28500GSA-W21+1T	
	XX2510000021	IC ADAPTER MONITOR SO-8P SMD	MAX28500GSA+T	



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MODEL NO.：

ADP-130DB D SERIES

Date

Drawn

Design (EE)

Design (ME)

DOCUMENT NAME.：

REV.

01/31'24

王玉玲

陳嘉佑

曾映澍

TS-130DB D SERIES

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\*請於選取欄 Key in "V"以代表選取。

4.2.3 EE 需編輯燒錄檔 INI 上傳 SAP 申請料號,並將料號附加於 BOM 表中.產線作業人員得於上線前按照 BOM 表所列之料號於 PLM 下載燒錄檔 INI 以進行燒錄作業.燒錄檔內容如下表格所示:

MODEL	起始碼	DELL P/N	Family code	INI File (*****為 INI 檔的十碼料號,須與 BOM 相符)
ADP-130DB DA/DA9/DB	DELL00AC130195067	WRHKW	-	[Model] 1 = 5062968902,1  [Parameter] 1 = DELL00AC130195067,1  [Customer] 1 = WRHKW,1  [Family] 1 =
ADP-130DB DC	DELL00AC130195067	7CWK7	-	[Model] 1 = 5062970302,1  [Parameter] 1 = DELL00AC130195067,1  [Customer] 1 = 7CWK7,1  [Family] 1 =
ADP-130DB DD/DD8	DELL00AC130195067	FCD8H	-	[Model] 1 = 5062970102,1  [Parameter] 1 = DELL00AC130195067,1  [Customer] 1 = FCD8H,1  [Family] 1 =



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ADP-130DB DE/DE12/DH	DELL00AC130195067	M55GJ	-	[Model] 1 = 5062970802,1  [Parameter] 1 = DELL00AC130195067,1  [Customer] 1 = M55GJ,1  [Family] 1 =
ADP-130DB DF	DELL00AC130195067	MHYXR	-	[Model] 1 = 5062970402,1  [Parameter] 1 = DELL00AC130195067,1  [Customer] 1 = MHYXR,1  [Family] 1 =
ADP-130DB DG	DELL00AC130195067	CTE04	-	[Model] 1 = 5062971102,1  [Parameter] 1 = DELL00AC130195067,1  [Customer] 1 = CTE04,1  [Family] 1 =
ADP-130DB DK/DL	DELL00AC130195067	G7KMG	-	[Model] 1 = *****1  [Parameter] 1 = DELL00AC130195067,1  [Customer] 1 = G7KMG,1  [Family] 1 =



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ADP-130DB DM/DM8	DELL00AC130195067	169K6	-	[Model] 1 = 5060387900,1  [Parameter] 1 = DELL00AC130195067,1  [Customer] 1 = 169K6,1  [Family] 1 =
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4.2.4 燒錄內容規則與範例如下表格說明:

**Table Contents of ID Chip**  
The contents of the ID memory chip are described in the table below.

Field	Byte Length	Byte Offset	Example
Header	4	00h	DELL
Revision Number	2	04h	00
Class of Product	5	06h	AC130
Output Voltage	3	0Bh	195
Output current	3	0Eh	067
PPID & Model Rev	23	11h	***** (See Barcode Printing Format DELTA DOC:10000-0173-3d)
Checksum	2	28h	*** (See below table description)
Total	42		

**EXAMPLE OF CONTENTS**

<b>DELL</b>	<b>00</b>	<b>AC130</b>	<b>195</b>	<b>067</b>	<b>*****</b>	<b>***</b>	
↓	↓	↓	↓	↓	↓	↓	
Header	Revision Number	Class of Product	Output Voltage	Output current	PPID & Model Rev	Checksum	

Note that there will be no spaces in between the characters. The spaces shown are for clarification purposes only.



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Field	Description
Header	The header shall be four ASCII characters, which will be DELL. 標頭必須是四個 ASCII 字符"DELL"
Revision Number	Two ASCII characters, which represent the code revision number. This will enable Dell to keep track of the contents of BQ2022 after it has been revised. Initially the code revision number will be 00. Should the data that is programmed on the BQ2022 IC be revised then the code revision number will be updated accordingly. 此區為兩個 ASCII 字符,此區代表燒錄內容修訂的版本代碼.主要是為了讓 Dell 在修訂燒錄內容後能夠對其進行跟蹤.最初代碼修訂版號為"00".如果之後對燒錄內容有變更,則版本代碼將進行相應的更新。
Class of Product	Five ASCII characters assigned by DELL to identify the product. The first two characters will identify the product type followed by the nominal output power of the product. The first two characters will be AC for all adapters. For power supplies the first two characters will be PS. In the event that the nominal output power is two characters, a zero shall be used to fill the third character. DELL 分配了五個 ASCII 字符來標識產品類型與功率.前兩個字符標識產品類型,後跟產品的標稱輸出功率.對於所有的 Adapter 而言,前兩個字符均為"AC"。對電源供應器而言,前兩個字符為"PS".如果標稱輸出功率是兩個字符,則應使用"0"填充第三個字符,如 65W 的 Adapter,應標為"AC065";如為 240W 的 Adapter 應標為"AC240".
Output Voltage	Three ASCII characters that provides the nominal output voltage of the product. It will be assumed that the last digit represent a tenth of a volt. For example 195 will represent 19.5V and 125 will represent 12.5V. 標示輸出電壓的三個 ASCII 字符.其中前兩位為整數位,而最後一位代表小數第一位.例如 19.5V 應標示為"195",而 12.5V 應標示為"125".
Output current	Three ASCII characters that provides the full load continuous current of the product. It will be assumed that the last digit is a tenth of an amp. For example 145 will represent 14.5A. In the event that the full load output current is two characters, a zero shall be used to fill the first character e.g. 025 will represent 2.5A. If the output current is for example 9.23A then the three ASCII characters for this field will be 092, thus the full load continuous current will have to be correct to the first decimal. 標示滿載輸出電流的三個 ASCII 字符.其中前兩位為整數位,而最後一位代表小數第一位.例如"145"代表 14.5A,如果滿載輸出電流是兩個字符則應使用"0"來填充第一個字符,例如"025"代表 2.5A.例如,輸出電流為 9.23A 則此字段的三個 ASCII 字符將為"092".因此滿載連續電流必須正確標示到小數點第一位。
PPID & Model Rev	23 Digit Bar code that will contain the country of Origin ISO code, DELL Part Number, supplier identification code, date of manufacture, unique sequence number and part revision. See below for detail explanation. 標示來自 LABEL 條碼的 23 個 ASCII 字符,其中包含產地 ISO 代碼/DELL part number/Vender 識別碼/生產日期/唯一序列號/零件版本.範例共列了 23 個*,每個*可為 0~9 或 A~Z 的任一字,全部取決於條碼資訊的資訊. 有關係碼的格式與資訊請參考 DELTA DOC:10000-0173-3d
Checksum	Two bytes checksum. CRC will be used to verify that the data transmitted to the ID chip and read from it, is correct. The CRC will be generated using the polynomial $X^{16} + X^{15} + X^2 + 1$ . 標示 check sum 的兩個字節.CRC 用於驗證傳輸到 ID 芯片並從中讀取的數據是否正確.此 CRC 使用多項式 $X^{16} + X^{15} + X^2 + 1$ 生成.由於此兩字節無法以 ASCII 字符顯示,故以一個括號[]來代表一個字節.而括號中的*為 0~9 或 A~F 的任一字,一個括號內應有兩個 0~9 或 A~F 的任一字,全看 CRC 的計算結果.另外,第一字節應為 CRC 計算的低位數,第二字節應為 CRC 計算的高位數.例如:燒錄內容"DELL00AC240195123CN0RYJJ9DES009C10001A02",CRC 計算結果為 81B2,則應標示為"[B2][81]" 燒錄內容"DELL00AC330195169CN0GMT0MDES009C10001A01",CRC 計算結果為 0F70,則應標示為"[70][0F]" CRC 計算請參考 <a href="https://crccalc.com/">https://crccalc.com/</a> 中的"CRC-16/ARC".
Family Code (僅部分機種適用)	For some models, three ASCII characters assigned by DELL to identify the product of family. For E4 series the three characters will be "E04"or"E4A". For E5 series the three characters will be "E05". If the family code have no define of spec, the system will default to E4 series. 對部分機種來說 DELL 分配了三個 ASCII 字符來標識系列產品,對於 E4 系列,三個字符將是 "E04" 或"E4A".對於 E5 系列,三個字符為 "E05".如機種規格未定義 Family code,則系統端將直接認為 E4 系列.

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## 5 手調測試站：

a. **Full Load Test:** 檢查滿載輸出是否符合規格

b. **Min. Load Test:** 檢查輕載輸出是否符合規格

### c. OVP Test :

Load Condition : 19.5V/6.67A

測試方法: Short R124 檢查輸出電壓是否介於 21.2V~25V, OVP 動作模式為 Latch mode .

Pre-OVP base on latch only **OVP then AC turn on** 只看 latch function 無需看電壓.

### d. OTP Test :

Load Condition : 19.5V/6.67A

測試方法: 短路 NTC31,檢查輸出電壓是否 Latch off.

### e. LED 狀態:

Power supply 開機後 LED 必須亮燈, 關機後 LED 會自動熄滅。

### f. AC On/Off:

Power supply 連續開關機 On= 1 秒, Off= 1 秒, 5 次後, 必須無損壞情形。



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## 6. Function test (ATS) procedure :

**Input Specification Table:**

INPUT VOLTAGE	MINIMUM	MAXIMUM	NOMINAL(RATED)
LOW RANGE	90 VAC	132 VAC	100 VAC
HIGH RANGE	180V AC	264V AC	240V AC

**Output Specification Table:**

OUTPUT	MINIMUM	MAXIMUM	NOMINAL(RATED)
Voltage (Vdc)	18.5	20.5	19.5
Loading (Amp)	0	6.67	6.67

Test Item	Vin	Load	Spec	Remark
Inrush Current	264V/50Hz; Phase 90°	19.5V/6.67A	< 140A	Cold start
Switch On Time	90V/50Hz	19.5V/6.67A	<3Sec	在系統輸出增加 0.1uF//10uF
LED turn on	90V/50Hz	19.5V/6.67A	<4Sec	在系統輸出增加 0.1uF//10uF
Rise Time	90V/50Hz	19.5V/6.67A	2~400mS	From 10 to 90% voltage, monotonic
Fall Time	90V/50Hz	19.5V/6.67A	<350mS	From 90 to 10% voltage, monotonic
Line Regulation	90/180/264V 47/63Hz	19.5V/0A	18.5~20.5V	需量測 cable end 電壓
Line Regulation	90/180/264V 47/63Hz	19.5V/6.67A	18.5~20.5V	需量測 cable end 電壓
Load/Combine Regulation	90V/264V 47/63Hz	19.5V-0A, 3.335A, 6.67A	18.5~20.5V	需量測 cable end 電壓
Ripple & Noise	90V/47Hz	19.5V/6.67A	<500mVp-p	在系統輸出增加 0.1uF//10uF
Ripple & Noise	264V/63Hz	19.5V/6.67A	<500mVp-p	在系統輸出增加 0.1uF//10uF
Sync Dynamic	90V/50Hz	19.5V/0.05A ~ 6A	overshoot & undershoot of Vo less than 1.5V	S/R:0.25A/uS, 50Hz/100Hz/1KHz/10KHz 在系統輸出增加 0.1uF//100uF 需量測 cable end 電壓



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Sync Dynamic	264V/50Hz	19.5V/0.05A ~ 6A	overshoot & undershoot of Vo less than 1.5V	S/R:0.25A/uS, 50Hz/100Hz/1KHz/10KHz 在系統輸出增加 0.1uF//100uF 需量測 cable end 電壓
Short Circuit Protection	90V/60Hz	Output load 0 ohm Turn on then short	Latch off	
Short Circuit Protection	264V/50Hz	Output load 0 ohm Turn on then short	Latch off	
Over Current Protection	90/264Vac	19.5V/6.67A-Trip	10.5A > OCP > 8A Latch off	the protection delay time shall be less than 650mS
Over Voltage Protection	90/264Vac	19.5V/6.67A-Trip	25V > OVP > 21.2V Latch off	Pre-OVP base on latch only 只看 latch function 無需看電壓.
Input Current	90V/50Hz	19.5V/6.67A	<1.8A	
Input Current	180V/50Hz	19.5V/6.67A	<0.9A	
25% Load Efficiency	230V/50Hz	19.5V/1.6675A	>86%	冷機, 需量測 cable end 電壓
Average Efficiency	115V/60Hz , 230V/50Hz	25%, 50%, 75% & 100% Load	>86%	冷機, 需量測 cable end 電壓, For 產線判定
Average Efficiency	115V/60Hz , 230V/50Hz	25%, 50%, 75% & 100% Load	>89%	熱機 30mins, 需量測 cable end 電壓, 產線不需判定
Pin at No Load	115V/60Hz	No Load	<0.21W	輸出端不可接到負載
Pin at standby Load	230V/50Hz	(1)0.25W (2)0.5W (3)1W (4)1.5W	(1) Pin<0.48W (2) Pin<1W (3) Pin<1.7W (4) Pin<2.4W	
Peak Load	90/264Vac	7.7A(4 second duration and duty cycle 10%)	18.5~20.5V	需量測 cable end 電壓
Extended Frequency Range	100/240Vac	400Hz	18.5~20.5V	需量測 cable end 電壓
Brown Out	100/240Vac	Input voltage less than 85Vac and more than 65Vac	The Adapter shall turn off	
Full Load Efficiency	90V/50Hz	19.5V/6.67A	>87%	熱機 30mins
Harmonic current IEC-61000-3-2	100/230Vac	6.67A	Meet Class D	
Active PFC	115/230Vac	6.67A 2.668A	>0.92 >0.6	
Loop Gain	100/240Vac	6.67A	Gain margin< -12dB Phase margin> 45deg	

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Overshoot and Undershoot	90/264Vac	6.67A	< 21V	需量測 cable end 電壓
System Capacitor Load	90/264Vac	6.67A (system load capacitance is <b>100uF</b> and ESR is <b>30mohm</b> )	shall not cause the adapter to shut down	

Note 1: After completes required DVT test matrix, identifies and selects the worst case condition for the Production MTR. It is not required that all test conditions be tested. Example: If worst case condition for Output Ripple is minimum input voltage and maximum dc load, then that is the test condition to be used.

## 7. Safety

### 7.1 Hi-POT test :

PRIMARY to SECONDARY use 3000+10% Vac test , (上昇時間: DC=1Sec, AC=0.1Sec) 。  
Test time=2sec 。 Arcing current=(EVT1: 5mA, EVT2,3/DVT: 8mA, PVT/MP: 10mA)  
Hi-Limit current=5mA 。 Lo-Limit current=0.01mA 。

### 7.2 Insulation Resistance (IR) test :

PRIMARY to SECONDARY use 500Vdc test ; Insulation resistance limit: >30M ohm 。

### 7.3 Leakage Current test :


Applied by measurement of IEC 60950; 80uA rms or less (264Vac/50Hz)

## 8. Burn-in 測試作業規範

Ambient is 40°C , 80% rated load ,24hours

## 9. Note:

- 9.1 漏電流測試輸入電壓條件： Vin=264V/50Hz
- 9.2 測試接頭的電容(10uF)請使用日系電解電容(NCC/Rubycon)測試 。
- 9.3 DQA 及出貨流程，各抽十台樣品做 ON/OFF 1000 Times I/P:110Vac and 220Vac.
- 9.4 EMI test: Burn in 時，需以 19.5A/6.67A Burn in 30 分鐘後測試.
- 9.5 Common mode noise
  - 1). The peak-to-peak voltage measured in the frequency range of 10 KHz to 40 KHz shall not exceed 400mVp-p.

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- 2). The peak-to-peak voltage measured in the frequency range of 40 KHz to 80 KHz shall not exceed 200mVp-p.
- 3). The peak-to-peak voltage measured in the frequency range of 80 KHz to 400 KHz shall not exceed 200mVp-p.

9.6 手機干擾測試 follow 工廠端 bench EMC 測試標準

9.7  $P_o=0W$ ,  $P_{in}<0.23W$  (for 產線判定)

9.8  $P_o=0.25W$ ,  $P_{in}<0.5W$  (for 產線判定)


9.9 Full load efficiency > 86.5% (for 產線判定)

9.10 OVP then AC Turn On spec :  $V_o<25V$

9.11 帶載測試需設置  $V_{on}$  點 18V

9.12 此機種不需做 OCP 點溫測試

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