REV.	Description	Raise by	Date
S0	Release S/M	賀建軍/王澤臣	07/06/'15
S1	Update item 1.9	賀建軍	07/25/'15
S2	Update item 2.2.7(B) &2.4&2.5	賀建軍	07/31/'15
S03	Update item 6 (B)	謝鴻坤	09/09/'20

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台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DESCRIPTION :
電氣規格(Electrical Specification)

MODEL NO.
GPS-750FB A

Date	Drawn	Design(EE)	Design(ME)	DOCUMENT NO. :	REV.
09/09/'20	李蘭珍	賀建軍	王澤臣	ES-750FB A	S03

1. AC Input Characteristics:

1.1 Input Voltage Range: 90Vac-264Vac, Active PFC, single phase.

1.2 Normal Voltage Range: 100Vac-240Vac.

1.3 Input Frequency Range: 47 Hz -63 Hz.

1.4 Normal Frequency Range: 50Hz-60Hz.

1.5 Max. Input AC Current: 14A Max. @ 115Vac, 7A MAX. @ 230Vac.

1.6 Inrush Current:

No hazard or component damage shall be occurred to power supply.

1.7 Efficiency:

The efficiency shall be more than 89% , 92%， 90% at below test condition

Vin= 115Vac/60Hz or 230Vac/50Hz:

Loading	+5V	+3.3V	+12V1	+12V2	-12V	+5Vsb	Eff%
Light Load (20%)	1.91	1.91	5.49	5.49	0.04	0.37	90%
Half Load (50%)	4.78	4.78	13.74	13.74	0.09	0.92	92%
Max Load (100%)	9.56	9.56	27.47	27.47	0.183	1.831	89%

1.8 EUP requirements/Standby Efficiency:

AC input power should be under 0.5W, when +5VSB output is 0.25W and measure at 115V/60Hz and 230V/50Hz

1.9 Power factor : 0.95 min@ AC 115V or 230V at full load。

1.10 Current harmonic: With active PFC function to meet EN61000-3-2 class D harmonic current requirement from 50% load to full load.

2. DC Output Characteristics:

2.1 Static Output Characteristics:

Output Voltage	Load Range		Regulation	Ripple & noise
	Min.	Max.		
1. +5 V	0A	25A	+5% ~ -5%	50mv
2. +3.3V	0A	25A	+5% ~ -5%	50mv
3. +12V1	0A	45A	+5% ~ -5%	120mv
4. +12V2	0A	45A	+5% ~ -5%	120mv
5. -12V	0A	0.3A	+10% ~ -10%	120mv
6. +5Vsb	0A	3A	+5% ~ -5%	50mv

Max. Power Output: 750W

2.2 DC output cross regulation:

	+5V	+3.3V	+12V1	+12V2	-12V	+5Vsb	PO(W)
1	0.2A	0.2A	0.2A	0.2A	0.1A	0.1A	
2	0A	0A	0A	0A	0A	0A	
3	0A	25A	0A	0A	0A	0.1A	
4	25A	0A	0A	0A	0A	0.1A	
5	0A	0A	45A	0A	0A	0.1A	
6	0A	0A	0A	45A	0A	0.1A	
7	25A	1A	21.2A	29.5A	0.3A	2A	
8	7.8A	25A	21.66A	30A	0.3A	1A	
9	5A	5A	45A	12.66A	0.1A	3A	

10	0A	0A	35.4A	27.06A	0A	0.1A	

Note: 1. Noise Test: Noise bandwidth is from 10Hz to 20 MHz.

2. Add a 0.1 μF ceramic disk capacitor and 10μF tantalum capacitor at output connector terminals for Ripple & Noise measurements.
3. Maximum Continuous Dc Output Power shall not exceed 750W at 50℃.
4. +3.3V and +5V total o/p power can not exceed 130W.
5. Main O/P shall be enabled by pulled "remote" pin to TTL low level, and disabled by pulled "remote" pin to TTL high level.
6. When AC line power is applied, the +5VSB will present, and PS -ON signal is in a disable state, the +5VSB o/p shall be within regulation spec limit.
7. Others

A. Load 2 only for PSU startup test no need test other functions.

B. The PG normal output voltage is 5V and regulation: +/-10%.

C. Cross regulations/Ripple &Noise test must with fan cooling and following the defined “DC Output Load.

D. Load 1 is min load for PSU function test.

2.3. Overshoot:

1. Over shoot: any overshoot at turn on or turn off shall be less than 10% of the normal Value(-12V over shoot shall be less than +/-12% of the normal Value).

2.4. Dynamic Output Characteristics:

TABLE
TRANSIENT VOLTAGE TOLERANCE

NOM. OUTPUT VOLTAGE (VDC)	Current Imin (ADC)	CURRENT Imax (ADC)	Step Load Change (%)	TRANSIENT TOLERANCE (%)	OUTPUT LOAD CAPACITANCE (μF)
5.0V	0.2	25	50	±6	10000
12.0V1	0.2	45	50	±5	10000
12.0V2	0.2	45	50	±5	10000
3.3V	0.2	25	50	±6	10000
5.0Vsb	0.1	3	16.7	±5	4700
-12V	0.1	0.3	33.3	±10	350
PG	NA	NA	NA	±10	NA

- Load change repetition rate: 50Hz to 10KHz
- Load slew rate: 1A/us
- The audible noise level of the power supply shall not increase during transient loading.

Capacitors for dynamic Tests:

For cross and dynamic testing please refer to the sections above to see the max step load and max slew rate. During dynamic testing the output voltages will remain within their specified regulation tolerances.

Step load repetition rate: 50Hz - 10kHz

For dynamic tests connect below capacitors:

NOM. OUTPUT VOLTAGE (VDC)	CAPS	Impedance Z at 100KHz/25°C
5.0V	10000μF	NA
12.0V1	10000μF	NA
12.0V2	10000μF	NA
3.3V	10000μF	NA

5.0Vsb	4700µF	NA
-12V	350µF	NA

2.5 Capacitive Loads

The power supply should be able to power up and operate normally with the following capacitances simultaneously present on the DC outputs.

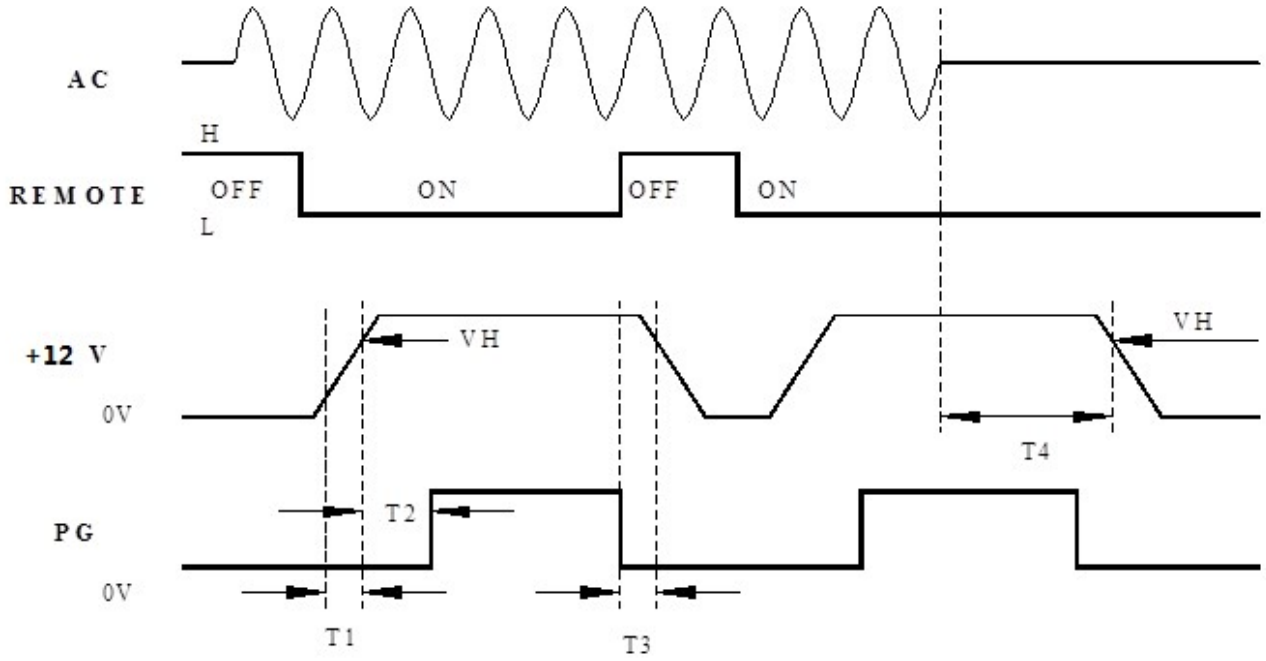
Output Capacitive Loads:

Output	Capacitive Loads(µ F)
+12V1DC	10000Mf
+12V2DC	10000µF
+5VDC	10000µF
+3.3VDC	10000µF
-12VDC	350µF
+5VSB	4700µF

2.6 Loop Stability

The power supply shall be unconditionally stable while operating within its normal operating specification. The power supply shall maintain a minimum of 45 deg Phase margin and 10dB gain across valid load condition.

3.Timing:



Note:

(1) T1: Rise time (0.2ms<T1<20ms).
(2) T2: Power good signal turn on delay time (100ms<T2<500ms).
(3) T3: Power good signal turn off delay time (T3≧1ms ;DC on/off).
(4) T4: Power hold-up time (T4≧15ms, 115Vac/60Hz input ,at 80% full load, respect to +12V).
(5) Turn-On Delay Time: 500mS max. at nominal line . AC input with respect to +5V.
(6) Rise Time: Any outputs rise time from 10% to 90% of normal voltage should be < 20 ms.

4. Protections:

4.1 Over Voltage Protection: +5V,+5VSB output set at 7V maximum.
+12V1 set at 16V maximum.
+12V2 set at 16V maximum.
+3.3V set at 4.5V maximum.

4.2 Short Circuit Protection:
The power supply shall shut down and latch off for shorting +5V,+12V, -12V or +3.3v rails to GND and shorting +5VSB to GND P/S can latch down or automatically recovery when the fault condition is removed. Short resistor need less than 0.03ohm.

4.3 Over Current Prorection: +5V:30A min to 47A max
+12V1:47A min to 70A max;
+12V2: 47A min to 70A max;
+3.3V: 35A min to 50A max.
+5Vsb:4A min to 8A max

4.4 No Load Operation: No Damage Or Hazardous Condition Will Occur.

4.5 Over Temperature Protection:
The power supply shall automatically shut down in the event of a fan failure, an airflow failure, or any other abnormal condition that results in excessive temperatures within the power supply.

5. Dielectric Withstand Voltage:

5.1 Dielectric Strength (HI-POT):
(a)Primary To Secondary: 2100Vac 1sec.

(b)Primary To F.G: 2100Vac 1sec.

(c) Voltage ramp time: 500 V/Second ramp Minimum

(d) Cut off current: 15mA Max.

5.2 Insulation Resistance: Primary To Safety Ground: 500Vdc, 5MΩ Min.

5.3 Ground continuity test: Less than 0.1ohm for 25A current

5.4 Leakage Current: Measured At 240Vac/50Hz and 2.5mA Max.

6. Conducted EMI: Internal Filter Can Meet

A. FCC PART 15J CLASS B 6dB

B. CISPR 32(EN55032) CLASS B 6DB

C Test condition 100% dummy load.

7. EMS

7.1 **Electrostatic Discharge IEC 61000-4-2**:

Contact Discharge: +/- 8KV

Air Discharge: +/-15KV

7.2 **PLD:** The power supply shall operate within specifications.

Surge Immunity IEC 61000-4-5:

Common Mode: 2KV

Difference Mode: 1KV

EFT IEC61000-4-4：1KV

8. Safety requirement

8.1 CB
8.2 BSMI (With Power Cord)
8.3 TUV
8.4 CCC (With Power Cord)
8.5 CE
8.6 UL+CUL
8.7 GOST-R (Customer Apply)
8.8 FCC
8.9 C-Tick (Customer Apply)

9. Environment:

9.1 Operating Temperature: 0℃ TO 50 ℃ .

9.2 Operating Relative Humidity: 5% TO 85%.

9.3 Storage Temperature: -40 TO + 70 ℃ .

9.4 Storage Relative Humidity: 5% TO 95%.

9.5 Altitude: Operate Properly At Any Altitude Between 0 to 16404.2 Feet. Storage: 50,000 Feet

9.6 MECHANICAL SHOCK

9.7 Non-operating shock:

Half sine shock
Duration 11ms by 50G acceleration
Minimum 3 shocks on each of six faces.

9.8Non-Operating Random Vibration:

0.015G^2/Hz	5	to	100Hz
-6dB/octave	100	to	137Hz
0.008G^2/Hz	137	to	350Hz
-6dB/octave	350	to	500Hz
0.0039^2/Hz	500Hz		
2.09Grms	20 minutes/axis along all three axes.		

10.Burn-IN:

Unit Shall Be Burn In Under 45℃ ± 5℃, With 115Vac And Outputs At 90% Of Max. Load.

11. M.T.B.F:

100K Hours Min At Max. Load 115Vac, And 25℃ Ambient Conditions.