



ACBEL POLYTECH INC.



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Specification For 90 Watts
Adapter Power Supply
Model No: ADB002
Customer ID: 000G
Revision: 4.0

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E. C. List

1.0	Original		
2.0	Modify 8.3 Weight		
3.0	Modify 5.2 CE Mark		
	Add 7.3 RoHS Requirement		
4.0	Modify 5.1 FCC Requirement		



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1. Scope

This specification defines electronic performance and characteristic PFC 90W power supply.

2. Input Requirement

2.1. Input Voltage Range

	MINIMUM	TYPICAL	MAXIMUM
LOW RANGE	90VAC	120VAC	132VAC
HIGH RANGE	180VAC	240VAC	264VAC

2.2. Frequency

	MINIMUM	TYPICAL	MAXIMUM
SINGLE PHASE	47Hz	50-60Hz	63Hz

2.3. Power Factor Correction

The power factor must be larger than 0.9 at 100Vac / 240Vac.

2.4. No Load / Tiny Load Requirement

In addition, the device must meet the No Load/Light Load requirements as specified below (measure at 115Vac/60Hz and 230Vac/50Hz).

output(W)	115Vac/60Hz(Pin)	230Vac/50Hz(Pin)
0	<=0.2W	<=0.2W
0.5	<=1W	<=1W
1	<=1.7W	<=1.7W
1.5	<=2.4W	<=2.4W
11.6	<=14W	<=14W
18.7	<=22W	<=22W



2.5. Energy Star 2.0 Requirement

The Adaptor shall be designed to meet EPS requirement, No Load Power Loss shall be less than 0.5W at both 115VAC and 230VAC. And Average Efficiency value of 25%, 50%, 75%, 100% load condition shall be more than 87% at 115Vac / 230Vac.

2.6. Input Current

1.6 Amps maximum at input voltage within the low range as specified in paragraph 2.1 and at any combination of loading conditions.

0.9 Amps maximum at input voltage within the high range as specified in paragraph 2.1 and at any combination of loading conditions.

2.7. Inrush Current

Cold Start, meets I^2t rating for fuse and bridge at 264Vac and maximum load. Please use Chroma 6560 AC source to test.

2.8. Power Supply Efficiency

The power supply efficiency shall not be less than 87% measure at the maximum load as specified in paragraph 3.1 with the AC input set at the typical voltage.

3. OUTPUT REQUIREMENTS

3.1. Static DC Load (CV domain)

Output Voltage	Load Current			Regulation (V)
	MIN.	MAX	Peak Load	
19V	0.05A	4.74A	6.162A	18.55V ~ 19.95V

Note: Peak load test condition: 100Vac/240Vac input, 25°C, $T_{on}=2ms$, $T_{off}=98ms$, slope=1, V_{out} shall over than 17V.

3.2. Dynamic Load

Typical Voltage	Load Current		Regulation (V)
	MIN.	MAX.	
19V	0.00A	4.74A	18.55V ~ 19.95V

Note:

- 1). Freq.: 100Hz
- 2). Slew Rate : 1A/us
- 3). Duty : 0~50% and 50%~100% load Ripple And Noise

The ripple and noise of the outputs shall be measured at the load end if the output cables when terminated to a load impedance as specified in paragraph

3.3.

Output Voltage	Ripple & Noise (P-P)
19 V	380 mV

Note:

- 1). Use 20MHz Bandwidth frequency scope.
- 2). Add 0.47uF/47uF (CERAMIC/ALU.) at output connector terminal for Ripple & Noise test.

3.3. System Capacitive Load

The system load capacitance is 220uF at full load. Plugging a live AC Adapter into the system capacitance shall not cause the adapter to shut down and output voltage shall over 17V within 1ms.

3.4. Rise Time

The output rise time (measured from the 10% point to the 90% point on the waveform) shall be less than 100ms.

3.5. Turn On Time

The turn on time shall be less than 3 sec for all line and load conditions.

3.6. Hold Up Time

The power supply shall maintain voltage regulation within the specified limits in paragraph 3.1 for at least 5 milliseconds at 115Vac/240Vac and at maximum output load.

3.7. Switching Frequency of Operation

To keep audible noise to a minimum, power supply shall be switched at frequencies higher than 20 KHz (except no load operation).

3.8. Temperature Coefficient

The temperature coefficient of all output conditions are 0.05% per degree centigrade maximum.

3.9. Output Protection

3.9.1. Over Voltage Protection

The power supply should shut down for any cause of over voltage conditions before any output exceeds its' limits below:

Nominal Output Voltage	Over Voltage	
	MIN.	MAX.
19V	22.0V	27.0V

The power supply will latch-off and power on reset is required.

Note: The load condition is set from 0A to 4.74A.

3.9.2. Short Circuit Protection

A short circuit is placed on DC output shall shutdown without damage and latch-off. Output power should less than 5W rms.

3.9.3. Output Current Protection

The power supply shall provide over current protection on output. Maximum current inception point of output shall be limited to the following values:



Output Voltage	Current Limit
(V)	(A)
19V	6.162(Max)

The power supply will shutdown and latch-off. Output power should less than 5W rms.

3.9.4. Over Temperature Protection

The adaptor shall provide over temperature protection, the PSU shall shutdown without damage and latch-off.

3.10. Case Temperature Rise

All points on the surface of the adaptor case's rise temperature shall be less than 45 °C on top and 50°C on bottom of the case at 100Vac / 50Hz with full load. The adaptor shall be placed on A3 size of wood board.

4. SAFETY REQUIREMENTS

4.1. Dielectric Strength

Primary to Secondary : 3000Vac for 1 min.

4.2. Insulation Resistance

Primary to secondary : 30MΩ min., 500VDC.

4.3. Ground Leakage Current

The power supply ground leakage current shall be less than 75µA @240Vac.

5. ELECTROMAGNETIC COMPATIBILITY

Power supply for use with the host system will be tested to conform the following emission standards.

5.1. FCC Requirement

Power supply shall comply with the United States Communication



Commission (FCC) Rules and Regulations, Part 15, Subpart B, Computing Devices “Class B”. 0dB margin to both radiated and conducted limits are required.

5.2. CE Mark

LVD : EN 60950-1 : 2006/A12 : 2011

EMC: EN 55022:2006/A1:2007 (Class B)

AS/NZS CISPR 22:2009 (Class B)

EN 61000-3-2 : 2006+A1: 2009+A2: 2009, Class D

EN 61000-3-3 : 2008

EN 55024 : 1998/A1 : 2001/A2 : 2003

IEC 61000-4-2 : 2008

IEC 61000-4-3 : 2010

IEC 61000-4-4 : 2010

IEC 61000-4-5 : 2005

IEC 61000-4-6 : 2008

IEC 61000-4-8 : 2009

IEC 61000-4-11 : 2004

5.2.1. Lightning Surge

A 1K volt (applied differential mode), and a 2K volt (applied common mode) refer to IEC 61000-4-5.

1.2*50us each 5 times. Source impedance = 2.7 Ohm.

5.2.2. ESD

The power supply shall meet Contact discharge $\pm 8KV$ and Air discharge $\pm 15KV$ requirement, when power supply is operating at maximum load condition.

6. RELIABILITY

6.1. Calculation MTBF

The PSU should not less than 100K hrs at 25°C at 115VAC / 60Hz full load.

6.2. Operation Life

The Adaptor shall be designed for a min. life of 8760hrs (Power-ON Hour) at 115 / 60Hz , ambient temperature at 25°C.

7. ENVIRONMENT

7.1. Operating

Temperature: 0 to 40 °C.

Relative Humidity: 20 to 80 percent, non-condensing.

7.2. Shipping and Storage

Temperature: -20 to 80 °C.

Relative Humidity: 10 to 90 percent, non-condensing.

7.3. RoHS Requirement

The Adaptor shall be designed to meet RoHS requirement.

8. MACHANICAL

8.1. Dimension

127mm * 51mm * 30.5mm (For reference)

8.2. DC Cable

DC output connector: 1800mm (For reference).

8.3. Weight (TBC)

Weight: 310 grams (max).

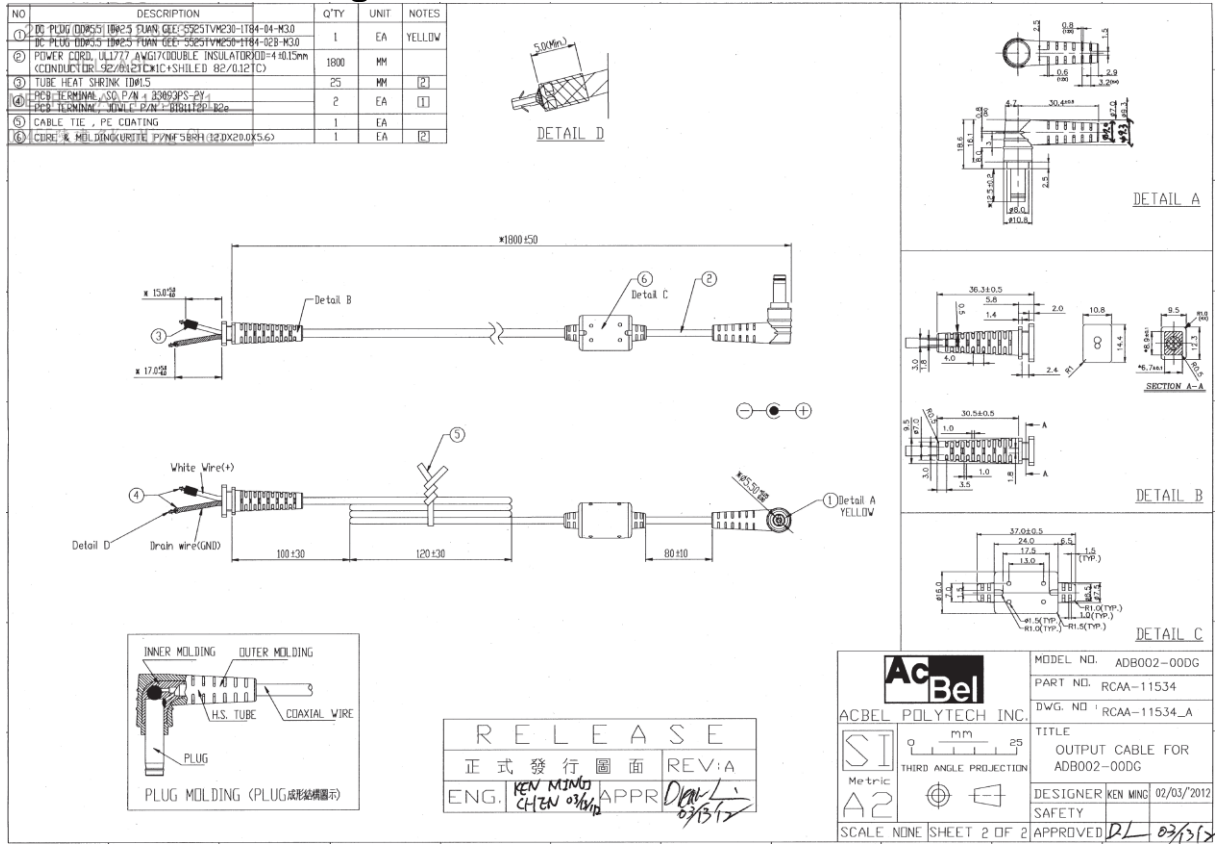


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8.4. MO Drawing



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