# SPECIFICATION FOR APPROVAL

| | |
|---|---|
| CUSTOMER: | |
| DESCRIPTION: | 72 Watts, Single Output |
| CUSTOMER Part No.: | |
| UMEC Model No.: | UP0701F-18P02 |
| UMEC Part No.: | UP0701F-18P02G |
| DATE: | 2009-9-1 |
| REV. No.: | 0 |

CUSTOMER

| | | | |
|---|---|---|---|
| | | | |
| | | | |

UMEC

| APPROVE | CHECK | PREPARE |
|---|---|---|
| | | Lansing |

| QA |
|---|
| |

**UMEC SHENZHEN COMPANY LTD.**

HEAD OFFICE: 3,27TH RD., TAICHUNG INDUSTRIAL PARK TAICHUNG,TAIWAN,R.O.C
TEL:(886-4)23590096 FAX:(886-4)23590129 23590063
HAO YE RD.,TONG FU YU INDUSTRIAL PARK ,FU YONG TOWN,BAO AN ,SHENZHEN ,CHINA
Tel:(86-755)27335666 Fax:(86-755)27335888
http://www.umec-web.com/

# UMEC SMPS SPECIFICATION

## 1.0 DESCRIPTION

The power supply that is described by this report is a **single** output **72** watts unit. The model number is **UP0701F-18P02**. This unit will be designed to meet the relevant safety and EMC regulations.

This unit is ready for "Green Product" and meet "Pb-free lead plating" & "RoHS Compliant" requirement.

## 2.0 INPUT REQUIREMENTS

### 2.1 Operating Voltage Ranges

The input working voltage which the power supply will working normally, and meet its specification.

☐ Selectable ☑ Auto-Switching

| | Nominal | Min. | Max. |
|---|---|---|---|
| Low range | VAC | VAC | VAC |
| High range | VAC | VAC | VAC |

☑ Universal ☐ Other ☐ DC-DC

**90** VAC to **264** VAC. ____ VDC to ____ VDC.

### 2.2 Line Frequency Range

The input working frequency which the power supply will working normally, and meet its specification.

☑ **47** Hz to **63** Hz ☐ DC-DC

### 2.3 Steady Current

The maximum input current(Arms) which is occurs when the power supply is operating.

Testing procedure:

Set the outputs at max. load, and the source at the lowest input voltage. Then take down the data of maximum input current.

| | |
|---|---|
| Steady-Current | **0.95** Arms max. |

## 2.4 Inrush Current

The peak input current occurs when the power supply is power up at nominal line.

| | Spec. |
|---|---|
| Inrush-Current ☑ cold star 25 DegC<br>☐ any conditions | **80**Amax. |

## 2.5 Leakage Current (DC-DC exclude)

Testing procedure:

Set the output at rated load, and the source at the highest input voltage. Then take down the data of the maximum current flow to safety ground, according to IEC-950 test set up.

| | |
|---|---|
| Spec.@240VAC/50HZ | **0.75**mAmax. |

## 2.6 Power Factor

| | | |
|---|---|---|
| Input Conditdon | 100VAC/60HZ | 95% min. |
| | 240VAC/50HZ | 90%min. |

## 2.7 Power Saving

Meet CEC Efficiency Level:IV requirement.

| Input | Load | Power saving(max.) |
|---|---|---|
| 100VAC/60Hz&240VAC/50Hz | No Load | 0.5W |

## 2.8 ☑Efficiency ☐None

The ratio of total output power to input power, express in percent.

Testing procedure:

Set the output at rated load and nominal input voltage (unless otherwise specified) condition. The ratio of total output power to input power, express in percent is efficiency.

| | |
|---|---|
| Spec. | Meet CEC Efficiency Level :IV |

# 3.0 OUTPUT REQUIREMENTS

## 3.1 Output Load and Current

In this section describe the output voltage, and minimum, rated, maximum, peak output current of each output channel; The voltage multiple rated current value come out the output power of each output channel.

| | Specified O/P Voltage | Accuracy Voltage | Output Current | | | | Total Power |
|---|---|---|---|---|---|---|---|
| | | | Min. | Rated | Max. | Peak* | |
| ☑CH1 | **+18**V | 17.1V to 18.9V | 0A | 4A | 4A | A | 72W |

Accuracy voltage is conducted at **100** % rated load, and nominal input voltage.

*Peak output current lasting less than one minute with duty cycle less than 5%. During peak loading output voltage may exceed total regulation limits.

## 3.2 Ripple & Noise

The magnitude of AC voltage on the output of a power supply, expressed in millivolt peak-to-peak, at a specified bandwidth. Which is include line noise, switching noise and random noise.

Testing procedure:

Testing is conducted under the condition of rated load, and nominal line, nominal ambient temperature, and connected a 0.1 uF ceramic, and 10 uF EL capacitor at the output connector. Measuring is done with a 20MHz bandwidth (unless otherwise specified) oscilloscope, on the output connector.

| | Spec. |
|---|---|
| ☑CH1 | **180**mV |

## 3.3 ☐ Line Regulation ☑None

## 3.4 ☐Load Regulation ☑None

## 3.5 ☑Dynamic Response ☐None

The maximum deviation of output voltage and the time required for the output voltage to settle within specified output accuracy limits following a step change in output load.

Testing procedure:

Set the input voltage at nominal voltage (test on both input ranges), and the other outputs at rated load. Step the load of the testing CH with specified range, 50Hz to 333Hz, less than 0.2A per second slew rate, then take down the maximum deviation

voltage, and the time required for the output voltage to settle within specified output accuracy, with a 100MHz band width oscilloscope.

| | Over/under shoot and Recovery time Spec. |
|---|---|
| ☑CH1 | **+/-0. 6 V, 1 ms** |

## 3.6 ☑Total Regulation ☐None

The maximum deviation of output voltage in percent, including line, load, cross regulation, and temperature coefficient.

Testing procedure:

Set testing CH at maximum, and the other output at minimum load to get the Low-V of the testing CH. Set testing CH at minimum, and the other output at maximum load to get the High-V of the testing CH. Take down the worst case data.

| | Spec. |
|---|---|
| ☑CH1 | 18V +/-5% |

# 4.0 PROTECTION REQUIREMENT

## 4.1 ☑ Over-Voltage Protection

A protection feature which shuts down the output, when the output voltage of specific channel exceed an internally threshold point.

Testing procedure:

Set the input voltage at nominal, and 20% rated load, inject a higher voltage from the output connector, increase the inject voltage gradually until the power supply is shut down, then take down the trip voltage.

| | Spec. |
|---|---|
| ☑CH1 | Shut down and Auto recovery mode |

## 4.2 ☐Over-Temperature Protection ☑None

### 4.3 ☑Over-Current Protection

A protection feature, which shuts down the output, when the output loads, excesses the preset point.

Testing procedure:

Set the input voltage at nominal, and other outputs at rated load condition. Then increase the load current of the testing CH gradually from rated load until the power supply is shut down, then take down the V-I curve of each testing CH. The test should be conducted under Low and High nominal line.

| | Spec. |
|---|---|
| ☑CH1 | shut down and auto recovery mode |

### 4.4 ☑No Load Operation ☐None

The power supply will operate under no load condition.

Testing procedure:

Set the power supply at no load condition, the output voltage may not stay within the regulation limits. Test should be conducted at low and high line with both input ranges.

### 4.5 ☑Short Circuit Protection

The power supply will be protected from short circuit at any outputs with no damage.

Testing procedure:

Set the power supply at rated load condition, then short circuit all the output itself individually or each other for at lest one minute with no damage.

## 5.0 GENERAL REQUIREMENTS

### 5.1 ☐Turn-On Delay ☑None

### 5.2 ☐Turn-On overshot/undershot ☑None

### 5.3 ☐Rise Time ☑None

### 5.4 ☑Hold-Up Time ☐None

The time duration of the output voltage stay within regulation after the input power is removed.

Testing procedure:

Set the output at rated load and 115VAC input voltage (unless otherwise specified) condition. Then measuring the time between input power is removed and all the output voltage stay within regulation.

| | | |
|---|---|---|
| Main CH | Spec. | **10**mS ☑ typical ☐min. |

## 5.5 ☐Time Sequence ☑None

## 5.6 ☑Temperature Coefficient ☐None

The ratio of variation of output voltage to temperature change, express in percent.

Testing procedure:

Keep the power supply at rated load , and nominal input voltage, then change the ambient temperature, take down the variation of the output voltage of main channel. Test should be conducted after 1/2 hour warm-up. For full operating temperature range, at lease two step range should be checked, and at least ten minutes per each step range. Then take down the worse case data.

| | | |
|---|---|---|
| Main CH | Spec. | +-0.02%/DegC |

# 6.0 RELIABILITY REQUIREMENTS

## 6.1 MTBF

Mean Time between Failure. The failure rate of the power supply, express in hours, established by the actual operation or calculation from a known standard.

☑ The power supply shall calculate an MTBF of greater than **100K** hours per MIL-HDBK-217 at **25** DegC and **100** % of rated load.

# 7.0 EMC REQUIREMENTS

## 7.1 ☑EMI Requirements ☐None

The power supply will design to meet the following International Regulations:

☑ CISPR 22 class **B** ☑ EN55022 class **B**

☑ EN61204-3 class ___ ☑ VCCI class **B**

☑ FCC parts 15 class **B** ☐ EN61000-3-2/-3 class ___

☐ IEC-60555-2/-3 class ___ ☑ CNS13438

☑ Other CE MARK

☐ Other _____.

☐ Other _____

### 7.2 ☑EMS Requirements ☐None

The power supply will design to meet the following International Regulations:

☑ EN55024 ☑ IEC-61000-4-2 ☑ IEC-61000-4-3

☑ IEC-61000-4-4 ☑ IEC-61000-4-5 ☑ IEC-61000-4-6

☑ IEC-61000-4-8 ☑ IEC-61000-4-11 ☑ IEC-61000-3-2

☐ Other _____ .

☐ Other _____.

☐ Other _____.

## 8.0 SAFETY REQUIREMENTS

The power supply will design to meet the following International Regulations:.

☐ U.L 60950 ☐ IEC 60950 ☑ EN60950 ☑ UL/CSA

☑ TUV ☐ CCC ☑ CE ☐ AUSTRALIA ☐ K-Mark

☐ NOM ☐ PSB ☐ BSMI ☑ FCC ☐ Argentina

☑ Other **HI-POT(L,N TO DC OUTPUT):4242VDC,1 minute, I.R.: 50MΩ( min. at room temperature)**.

☐ Other _____

_____.

## 9.0 ENVIROMENTAL REQUIREMENTS

### 9.1 Operating Temperature/humidity

The power supply shall operate in its normal operating mode or be capable of operation after being exposed to the non-operational specified environment for an indefinite period of time throughout the following temperature/humidity ranges specific to the type of equipment.

9.1.1 Operating Temperature Range 0 to +55 DegC ,
Derating +40DegC to +55DegC-----2%/DegC

9.1.2 Storage Temperature Range -40 to 70 DegC

9.1.3 Humidity Range, Operating/Non-Operating
0 to 95 %RH, non-condensing.

## 9.2 Altitude

The power supply shall operate at operating altitudes and be capable of operation after being exposed to an indefinite period of time at specified non-operational altitude ranges.

9.2.1 Operating Altitude Range 0 Ft. to 10,000 Ft.

9.2.2 Non-Operating Altitude Range 0 Ft. to 40,000 Ft.

## 9.3 Vibration

The power supply will function properly during normal product operating and non-operating vibration situations. It will also assure that the product will meet its performance specifications upon receipt by the customer.

9.3.1 Operating vibration

**1** Grms, **5** Hz to **500** Hz, random vibration, **30** minutes along X, Y, Z axis.

9.3.2 Non-Operating Vibration

**2** Grms, **5** Hz to **500** Hz, random vibration, **30** minutes along X, Y, Z axis.

## 9.4 Shock

The power supply will function properly during normal product operating and non-operating shock situations. It will also assure that the product will meet performance specifications upon receipt by the customer.

9.4.1 Operating Shock

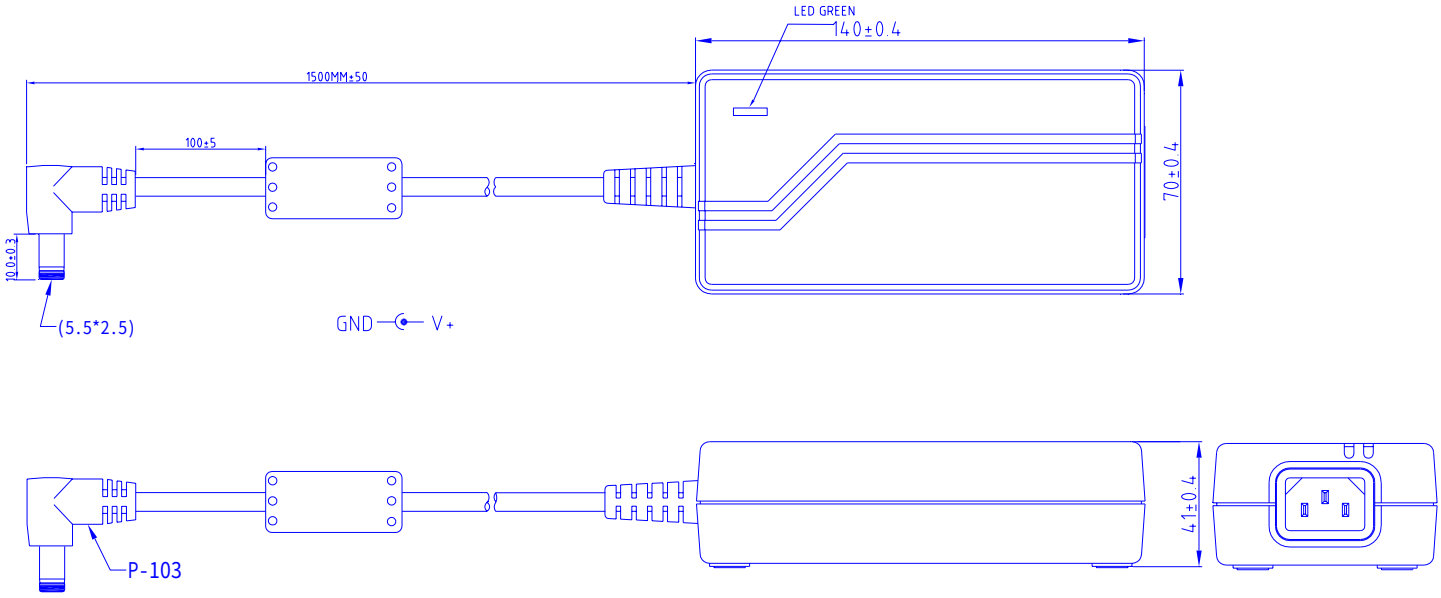
**10** G maximum, 1/2 sine wave, 11 msec in any axis.

9.4.2 Non-operating Shock

**20** G maximum, 1/2 sine wave, 11 msec in any axis.

# 10 Mechanical Requirements

**DC plug & pin assignment (CUSTOM DESIGN IS AVAILABLE)**




NOTES:
1. All dimensions in milimeter.