UMEC SMPS SPECIFICATION

1.0 DESCRIPTION

The power supply that is described by this report is a **dual** output with active PFC **90** watts unit. The model number is **UP0902A-01** . This unit will be designed to meet the relevant safety and EMC regulations.

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

85 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 Inrush Current

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

	Spec.
Inrush-Current ☑ cold star 25 DegC	**40**A max. **115** VAC
☐ any conditions	**40**A max. **230** VAC

2.4 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.	**3** mA max.

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.	
☑CH1	**3.3** V	**3.25** V to **3.40** V	**3.0** A	**25** A	A	**90** W Max.
☑CH2	**12** V	**11.4** V to **12.6** V	**0** A	**0.5** A	A	

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

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	**50** mV
☑CH2	**120** mV

3.3 ☑ Line Regulation ☐None

The deviation of the output voltage in percent as the input voltage is varied over its specified limits, with load and temperature unchanged.

Testing procedure:

Set the output load at rated, and varied the input voltage from low line to high line (on both input ranges or full range for universal input). Then take down the deviation of the output voltage in percent.

	Spec.
☑CH1	+ **0.5** % to – **0.5** %
☑CH2	+ **0.5** % to – **0.5** %

3.4 ☐Load Regulation ☑None

3.5 ☐Dynamic Response ☑None

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	**3.3 V** +/- **3**%
☑CH2	**12 V** +/- **3**%

4.0 PROTECTION REQUIREMENTS

4.1 ☑Over-Voltage Protection ☐None

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	**3.7** V ~ **4.8** V

The OVP is reset ☑ by recycling the input power.

☐ automatically.

4.2 ☐Over-Temperature Protection ☑None

4.3 ☑Over-Current Protection ☐None

A protection feature, which shuts down & latch off 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	**120% ~ 200%**

The OCP is reset by recycling the input power.

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 ☐None

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 lease one minute with no damage.

5.0 GENERAL REQUIREMENTS

5.1 ☑Turn-On Delay ☐None

The delay time for all output rises within regulation limits after the input power turn on.

Testing procedure:

Set the power supply at rated load, and nominal input voltage (unless otherwise specified) condition. Then turn on the input power, measuring the time between input power is turn on and all output voltage go within regulation limits.

CH1, CH2	Spec.	**3** S max.

5.2 ☑Turn-On overshot/undershot ☐None

The deviation of output voltage expresses in percent, when power on.

Testing procedure:

Set the power supply at rated load, and nominal input voltage (unless otherwise specified) condition. Then turn on the input power, measuring the deviation which over the specific limit of output voltage.

CH1, CH2	Spec.	+\- **2**%

5.3 ☑Rise Time ☐None

The rise up speed of the output voltage.

Testing procedure:

Set the power supply at rated load, and 85VAC input voltage (unless otherwise specified) condition. Then turn on the input power, measuring the time between 10% to 90% of output voltage.

CH1	Spec.	**30**mS max.

5.4 ☑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.	**70**% ☑ typical ☐min.

5.5 ☑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 nominal 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.	**16** mS ☐typical ☑min.

5.6 ☐Time Sequence ☑None

5.7 ☑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.	**0.03** %/•max.

6.0 EMC REQUIREMENTS

6.1 ☑EMI Requirements ☐None

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

(Only power line conducted emission part)

☑ CISPR 22 level **B** ☑ EN55022 level **B**

☐ VFG 243 ☑ VCCI class •

☑ FCC parts 15 class **B** ☐ EN60555-2

☑ IEC-1000-3-2

☐ Other _____.

☐ Other _____.

☐ Other _____.

6.2 ☑EMS Requirements ☐None

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

☑ IEC-1000-4-2 level **3** ☐ IEC-1000-4-3 level _____.

☑ IEC-1000-4-4 level **3** ☑ IEC-1000-4-5 level **4**.

☐ IEC-1000-4-11 level ___

☐ Other _____.

☐ Other _____.

☐ Other _____.

7.0 SAFTY REQUIREMENTS

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

☑ U.L 1950 ☐ CSA 22.2-234,level 3

☑ CSA 22.2-M950 ☑ EN60950

☐ NEMKO ☐ DEMKO

☐ MITI "S" -MARK ☐ SEMKO

☐ Other _____

☐ Other _____.
☐ Other _____.

8.0 RELIABILITY REQUIREMENTS

8.1 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 **50,000** hours per MIL-HDBK-217 at **25** DegC and **100** % of rated load.

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 **50** DegC
Derating, 50• to 70• 2%/•

9.1.2 Storage Temperature Range **-40** to **85** DegC

9.1.3 Humidity Range, Operating/Non-Operating

10 to **95** %RH, non-condensing(operating).
10 to **95** %RH, non-condensing(storage).

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 50,000 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

No packing, power on, 1 Grms, 5 Hz to 500 Hz, random vibration, 30 minutes along X, Y, Z axis.

9.3.2 Non-Operating Vibration

No packing, power off, 2 Grms, 5 Hz to 500 Hz, random vibration, 30 minutes along X, Y, Z axis.

9.3.3 Package 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

No packing, power on, 10 G maximum, 1/2 sine wave, 11 msec in any axis.

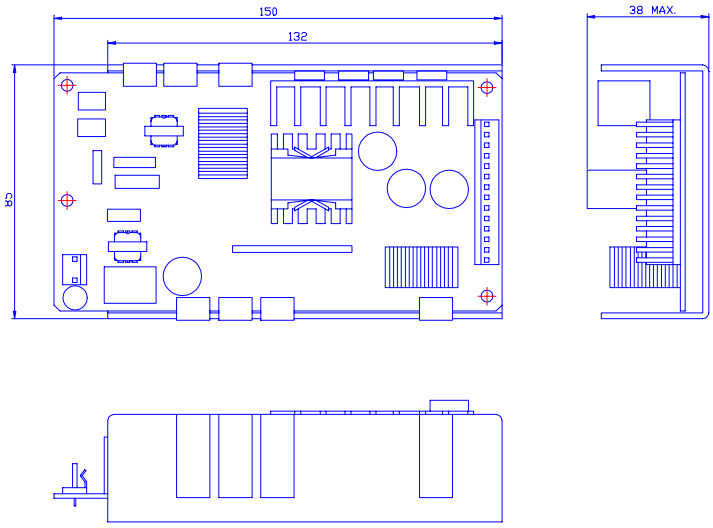
9.4.2 Non-operating Shock

No packing, power off, 20 G maximum, 1/2 sine wave, 11 msec in any axis.

9.4.3 Package Shock

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

10.0 Mechanical Requirements



CN2 input connector Molex 09-65-2058 with second and fourth pin removed	
Pin	Input voltage
L&N	90-264 VAC
Molex mating connector Molex 5195 series housing with 5194 series crimp terminals	

CN4 output connector Molex pin 09-65-2068	
Model	
Pin	UP0902A-01
1 2 3 4 5 6	+3.3V
7 8 9 10 11 12 13	COM
14	+12V
Molex mating connector Molex 5195 series housing with 5194 series crimp terminals	

CN5 remote sense connector Housing with 8160-NG series	
1	+SENSE
2	+SENSE

NOTE:
1.All dimensions in inches (mm).
2.Tlerance .xx=±0.05, .xxx=±0.020