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AR-1300-1 (YM-6301D OPTION E) SPECIFICATION

PAGE: 3 OF 13



1. GENERAL

This specification describes the performance characteristic of a 300W ATX power supply module with +3.3V, +5V, +12V, -5V, 12V main DC outputs, and 5V standby outputs.

2. AC INPUT

2.1. INPUT VOLTAGE

The Power supply will operate at either low range or high range sinusoidal input voltage without need a manual voltage select switch, defined in the following table.

Input range	Minimum	Nominal	Maximum	Units
Low range	90	100~120	132	Vac
High range	180	200~240	264	Vac

Table 1 – Input voltage range

2.2. INPUT FREQUENCY

	Minimum	Nominal	Maximum	Units
Range 1	47	60	63	Hz
Range 2	47	50	53	Hz

Table 2 - AC Input Frequency Range

2.3. AC INPUT CURRENT

Ac input	MAX	Units
115V	6.0	Amps
230V	3.5	Amps

Table 3 - Input Steady State and Inrush Current



2.4. INRUSH CURRENT

2.4.1. COLD START

Conditions	Limits
132 / 264Vac, full load 25°C ambient	No components over stress or damage should occur to the power supply. Input fuse shall not blow.

2.4.2. WARM START

Conditions	Limits
Turn off 132 / 264Vac full load for 1 sec then on at the peak of the input voltage cycle at 25°C ambient.	No components over stress or damage should occur to the power supply. Input fuse shall not blow.

2.5. EFFICIENCY

The power supply efficiency shall not be less than 68% at the maximum load of sec. 3.1 and 115/230 VAC input voltage.

2.6. Brownout

The power supply shall not be damaged when AC input voltage is dropped below the minimum specified AC input voltage. Furthermore, when AC input voltage returns to normal, the power supply shall return to normal operation.

2.7. Signal input

The power supply shall have one TTL compatible signal inputs, *PSON.

3. DC OUTPUT

3.1. voltages

The power supply shall provide a total of six DC output voltages. Five of these voltages shall be controlled by the state of *PSON defined in section 3.4. The remaining one is an auxiliary voltage. It is energized whenever AC input within the range specified above is applied. The state of *PSON shall have no effect on this output.



3.2. OUTPUT CURRENT CAPACITY

Output	OUTPUT VOLTAGE	MIN	MAX	Units
1	+5V	3.0	30	Amps
2	+3.3V	0.0	20	Amps
3	+12V	0.5	12	Amps
4	-5V	0.0	0.5	Amps
5	-12V	0.0	0.8	Amps
6*	+5V _{sb}	0.0	2.0	Amps

Table 4 - Output Current Capacity

Note:

- a) The maximum continuous output load limited at 300W
- b) The maximum continuous combined load on +5V and +3.3V outputs shall not exceed 180 Watts.
- c) Output 6 is an auxiliary output (Voltage Standby).

3.3. +5V STANDBY VOLTAGE

The +5V_{sb} is on whenever the AC power is present.

3.4. REMOTE ON/OFF CONTROL

The power supply outputs shall be enabled with an active-low TTL signal.
When TTL signal is low, the DC outputs are to be enabled.
When TTL signal is high or open circuited, the DC outputs are to be disabled.
Electronic means or a mechanical switch may activate the TTL signal.

3.5. OUTPUT REGULATION

Table 5 - Output Voltage Regulation

Output voltage	MIN	Nominal	MAX	Units
+5V	4.80	5.00	5.25	Volts
+12V	11.40	12.00	12.60	Volts
-5V	-4.50	-5.00	-5.5	Volts
-12V	-10.80	-12.00	-13.20	Volts
+3.3V	3.17	3.30	3.46	Volts
+5V _{sb}	4.75	5.00	5.25	Volts

Note:

- 1) The above voltage range should also include ripple and noise.
- 2) The output voltage should be measured at the terminals of output connector.



3.6. DC OUTPUT VOLTAGE RIPPLE AND NOISE

Output voltage	Ripple Max	Ripple & Noise Max	Units
+5V	50	100	mV
+12V	120	180	mV
-5V	120	200	mV
-12V	120	200	mV
+3.3V	50	100	mV
+5V _{sb}	50	100	mV

Table 6 - Output Voltage Ripple

Note: The measurements should be made by crossing a 10uF tantalum and a 0.1uF ceramic capacitor at each output with measuring bandwidth from DC to 20MHz.

3.7. CROSS REGULATION TABLE

	+5V	+3.3V	+12V	-5V	-12V	+5Vsb
1	3	0	0.5	0	0	0
2	15	7	6	0.3	0.3	1
3	14	20	12	0.5	0.5	2
4	30	9	8	0.5	0.8	2

Table 7- Cross Regulation Table

3.8. OUTPUT VOLTAGE RISE TIME

The rise time of all output voltages shall be between 0.1mS to 1sec, measured from 10 % to 90 % on the leading edge of the voltage waveform.

3.9. OUTPUT VOLTAGE HOLD-UP TIME

Upon loss of input voltage (at nominal), the output voltages shall remain in regulation for at least 20 mSec.

3.10. OVERSHOOT

Any output overshoot at turn on shall be less than 10% of the nominal output value. Any overshoot shall recover to within regulation in less than 50mS.



3.11. TRANSIENT RESPONSE

The following shall apply to the 3.3 V, 5 V, and 12 V outputs:
Output voltage shall recover to within 1 % of its static operating level $\leq 1 \text{ mS}$ under the following conditions:

- a) Load step from 75 % to 100 % to 75 % maximum load
- b) Repetition rate of 10 mS with 50 % duty cycle
- c) Current slew rate $\leq 1\text{A/uS}$.
- d) For capacitive loads see 3.12.

3.12. 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	+12VDC	+5VDC	+3.3VDC	-5VDC	-12VDC	+5V _{sb}
Capacitive load (μF)	1,000	10,000	6,000	350	350	350

Table 8 – Capacitive Loading

3.13. Maximum load change

The power supply shall continue to operate normally when there is a step change $\leq 1 \text{ A} / \mu\text{s}$ from minimum load to maximum load or maximum load to minimum load

3.14. Temperature coefficient

After operating for 30 minutes or longer at 25° C ambient, the output voltages shall change no more than $\pm 0.05 \%$ per degree C.

3.15. OUTPUT PROTECTION CIRCUITS

3.15.1. OVER VOLTAGE PROTECTION

When the DC outputs (+5V, +12V and +3.3V) have over voltage condition, the power supply shall provide latch mode over voltage protection.

DC output	Max	Unit
+12V	15.6	V
+5V	6.8	V
+3.3V	4.6	V

3.15.2. SHORT CIRCUIT PROTECTION

A short circuit placed on any output shall cause no damage or the power supply shall shutdown. (The contact resistance is 0.05 ohm when the outputs short circuit.)



3.15.3. PROTECTION RESET

When the power supply latches into shutdown condition due to a fault on an output (OVP, SCP), the protection shall reset after the fault has been removed, and recycle the AC power again for a typical of 30 seconds.

3.15.4. OVERSHOOT

Any output overshoot at turn on shall be less than 110% of the nominal output value (with resistive load) as described in section 3.1.

3.15.5. RECOVERING FROM FAULT

The latch off state shall be cleared after the fault is removed and switching *PSON to high for \geq one second. It shall also be cleared after the fault is removed and removing AC power for \geq 10 seconds.

4. SIGNAL OUTPUT

4.1. Power good

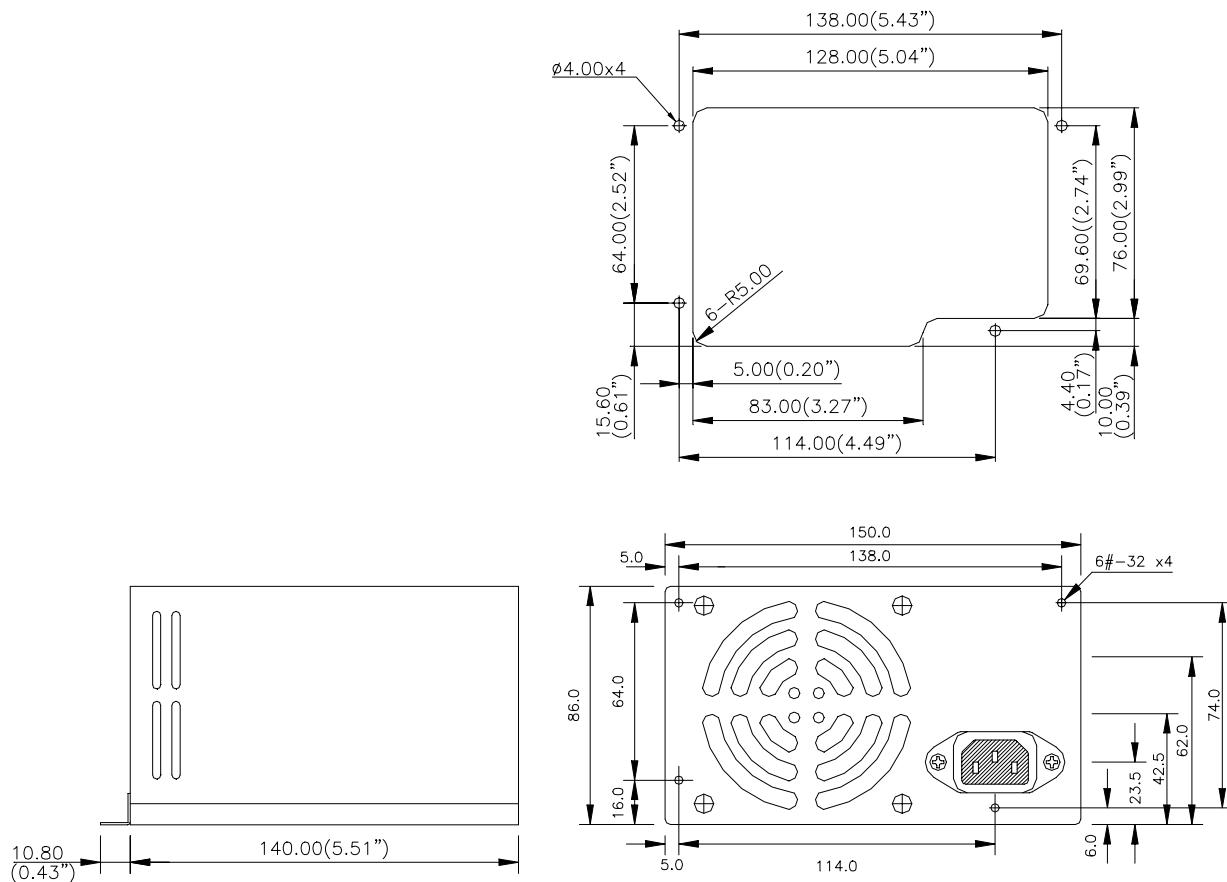
Power good shall be a TTL compatible signal capable of sinking 5 mA and sourcing 100 μ A. Power good low shall be \leq 0.4 V, and high shall be \geq 3.0 V. Power good shall change from low to high between 100 and 500mS after the 5 V and 3.3 V outputs attain a static operating level within their specified regulation parameters. Power good shall change from high to low 1 msec before 5 V or 3.3 V output falls below its specified regulation parameter. Power good rise time shall be less than 10 μ S with capacitive load \leq 47 pF.

5. MECHANICAL

5.1. Dimension

The outside dimension, not including handle and output connector, shall be W150mm x H86mm x D140mm.

[Click here for larger \(printer friendly\) view of mechanical drawing](#)



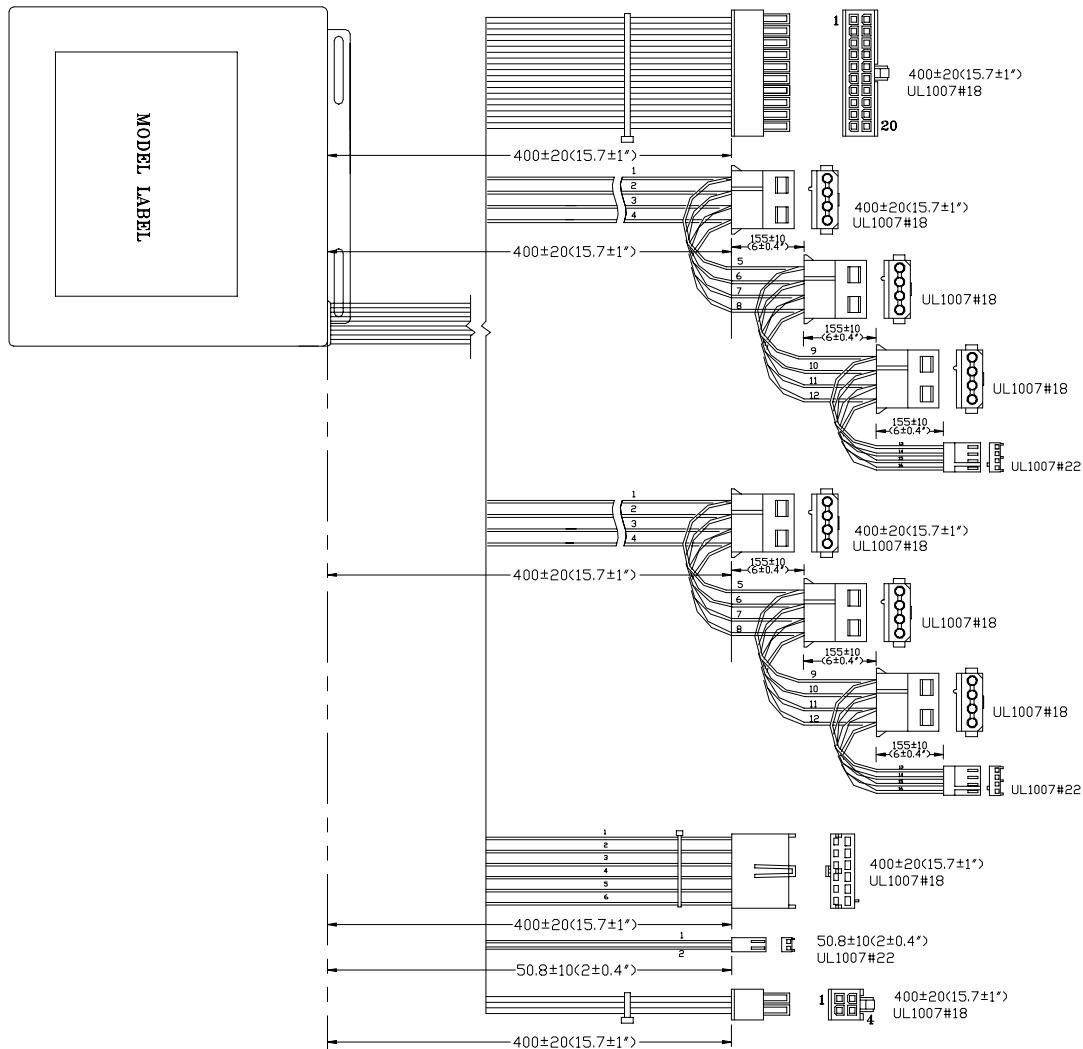
5.2. AC input connector

The power supply shall have an internal IEC320 AC inlet.

5.3. Output and signals connectors

There are 6 sets of output cable, 20-pin for motherboard, a 6-pin for motherboard and one 4-pin 12V cable. Two drive cables for three HDD and one FDD. There is also 2-pin connector for disabling the fan control circuit.

[Click here for larger \(printer friendly\) view of mechanical drawing](#)





MOLEX 8981-4P (PZA) AWG18 UL1007 style wires followed by MOLEX 8981-4P (PZB) AWG 18 UL 1007 style wires to 171822-4 S4P (PZC) or equiv AWG22 UL 1007 style wires.			
Pin	Output	Color	Comments
PZA-1	+12V	YELLOW	
PZA-2	COM	BLACK	
PZA-3	COM	BLACK	
PZA-4	+5V	RED	
PZB-1	+12V	YELLOW	
PZB-2	COM	BLACK	
PZB-3	COM	BLACK	
PZB-4	+5V	RED	
PZC-1	+12V	YELLOW	
PZC-2	COM	BLACK	
PZC-3	COM	BLACK	
PZC-4	+5V	RED	

Table 9 – Drive cables connector Pin out

20P:MOLEX 20pin receptacle, PN 39-01-2200, MOLEX female terminals PN 39-00-0039.			
Pin	Output	Pin	Output
1	+3.3V	11	+3.3V +3.3VS(22#)
2	+3.3V	12	-12V
3	COM	13	COM
4	+5V +5VS(22#)	14	ON/OFF
5	COM COM (22#)	15	COM
6	+5V	16	COM
7	COM	17	COM
8	PG	18	-5V
9	+5V _{sb}	19	+5V
10	+12V +12VS(22#)	20	+5V

Table 10 - 20P Connector Pin out



Connector: MOLEX 90331-0010 (keyed pin 6) or equivalent		
Pin	Signal	18 AWG Wire
1	COM	Black
2	COM	Black
3	COM	Black
4	+3.3VDC	Gray
5	+3.3VDC	Gray
6	+5VDC	Red

Table 11 - 6P Connector Pin out

Connector: MOLEX 39-01-2040 or equivalent (Mating motherboard connector is Molex 39-29-9042 or equivalent)		
Pin	Signal	20AWG Wire
1	COM	Black
2	COM	Black
3	+12VDC	Yellow
4	+12VDC	Yellow

Table 12 - +12V Power Connector Pin out

Connector: MOLEX 22-01-3027 or equivalent (Mating motherboard connector is Molex 08-70-0056 or equivalent)		
Pin	Signal	20AWG Wire
1	Fan Control on/off	Red
2	Jumper = fan control off.	Red

Table 13 - +12V Power Connector Pin out

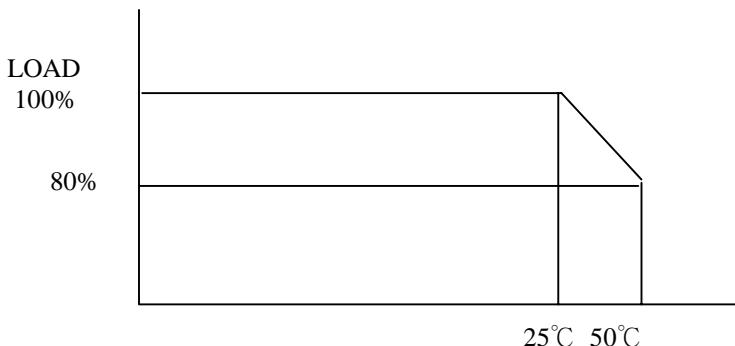
5.4. COOLING AND ACOUSTICS

The power supply should provide forced air-cooling for the host system by internal fan speed control. It shall not generate audible noise in excess of 46 dBA maximum at a distance of 1 meter from any point on the equipment's surface.

6. ENVIRONMENTAL

6.1. Temperature

Operating: 0 to 50° C
Non-operating: -40 to 70° C



6.2. Humidity

Operating: 5 % to 90 % non-condensing
Non-operating: 5 % to 90 % non-condensing

6.3. Altitude

Operating: Sea level to 7,000 feet
Non-operating: Sea level to 40,000 feet

6.4. Shock

Operating: 5 g for 11 ms with a ½ sine wave for each of the perpendicular axes X, Y, and Z.
Non-operating: 30 g for 11 ms with a ½ sine wave for each of the perpendicular axes X, Y, and Z.

6.5. Vibration

Operating: 10 Hz to 500 Hz sweep at 0.5 g constant acceleration for one hour on each of the perpendicular axes X, Y, and Z.
Non-operating: 10 Hz to 300 Hz sweep at 2 g constant acceleration for one hour on each of the perpendicular axes X, Y, and Z.

7. Power line disturbance

7.1.1. OVER VOLTAGE

The power supply shall function with no interruption when line input is surged 15 % above nominal for one second. The verification of this shall be done 10 times with a 10 % duty cycle.



7.1.2. UNDER VOLTAGE

The power supply shall function with no interruption when line input is sagged 20 % below nominal for one second. The verification of this shall be done 10 times with a 10 % duty cycle.

7.1.3. SURVIVING SURGE AND SAG

Power supply shall survive a surge voltage to 147 VAC for 0.5 second and sag to 80 VAC for 0.5 second without damage.

8. REGULATORY

8.1. Safety certification

The power supply shall have the certification approval for affixing [UL](#), [C-UL](#), and [TUV](#) safety logos on power supply model label. UL 1950, C-UL to CSA 22.2 No. 950-95, TUV to EN 60950. A [CB](#) report is also available. Click on links for certificates.

8.2. Leakage current

Leakage current from power supply AC input to safety ground shall not exceed 1.25 mA at 240VAC/50Hz.

8.3. DIELECTRIC VOLTAGE WITHSTAND (HI-POT)

The power supply shall withstand for 1 minute without breakdown the application of a 1800Vax supply voltage applied between both input line and chassis (20mA AC Cutoff current). Isolating transformers shall similarly withstand 4242Vdc applied between both primary and secondary windings for a minimum of one minute.

9. Electromagnetic compatibility

9.1.1. EMI

The power supply, operating with resistive load, shall meet FCC Part 15, class B and EN55022 class B conducted limit.

9.1.2. AC LINE TRANSIENTS

The power supply shall comply with the surge voltage requirements of EN61000-4-5 level 3 (2 kV peak open circuit voltage from line/neutral to GND, and 1 kV from line to neutral).

9.1.3. LINE NOISE DISTURBANCE

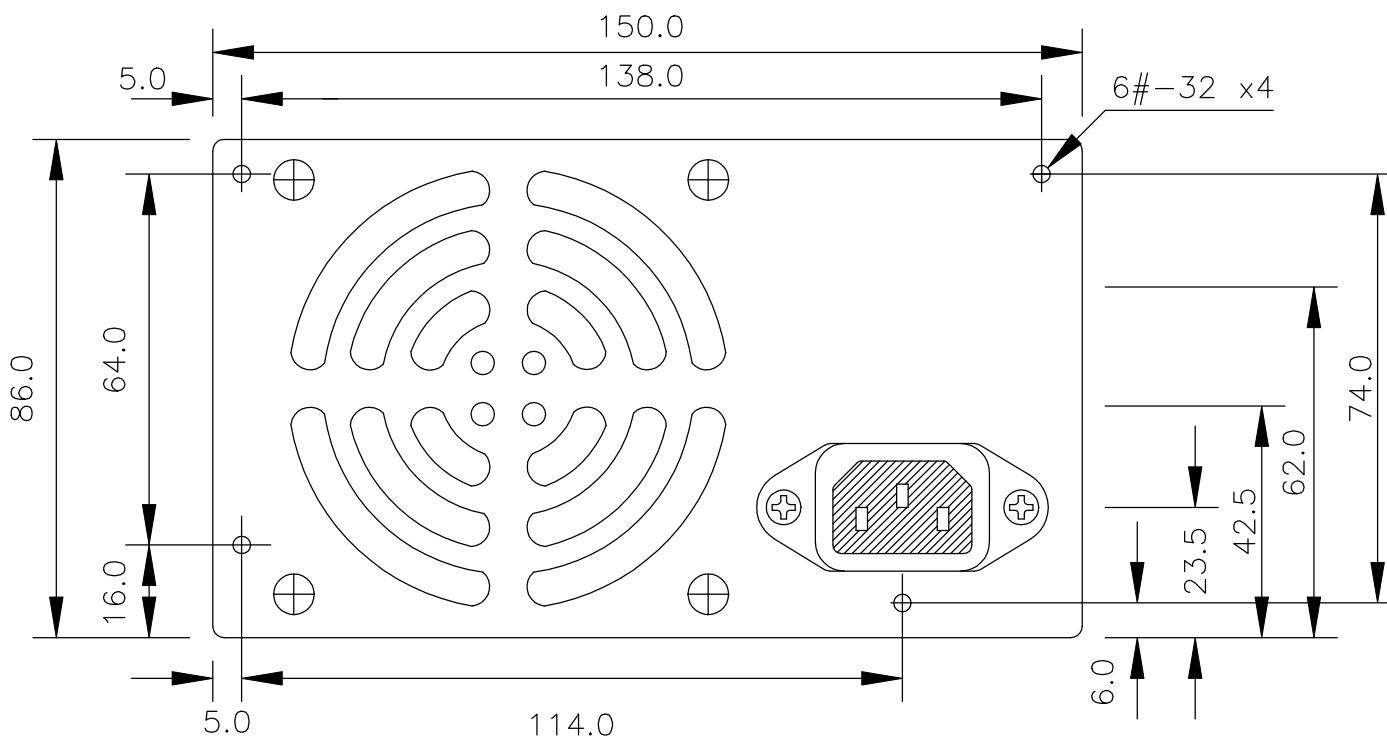
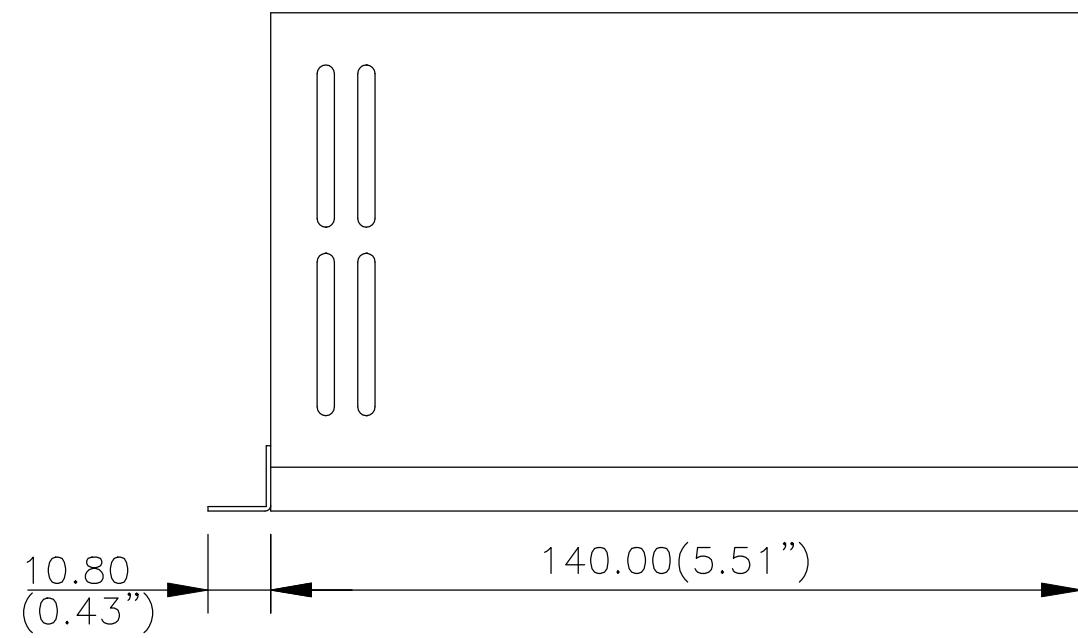
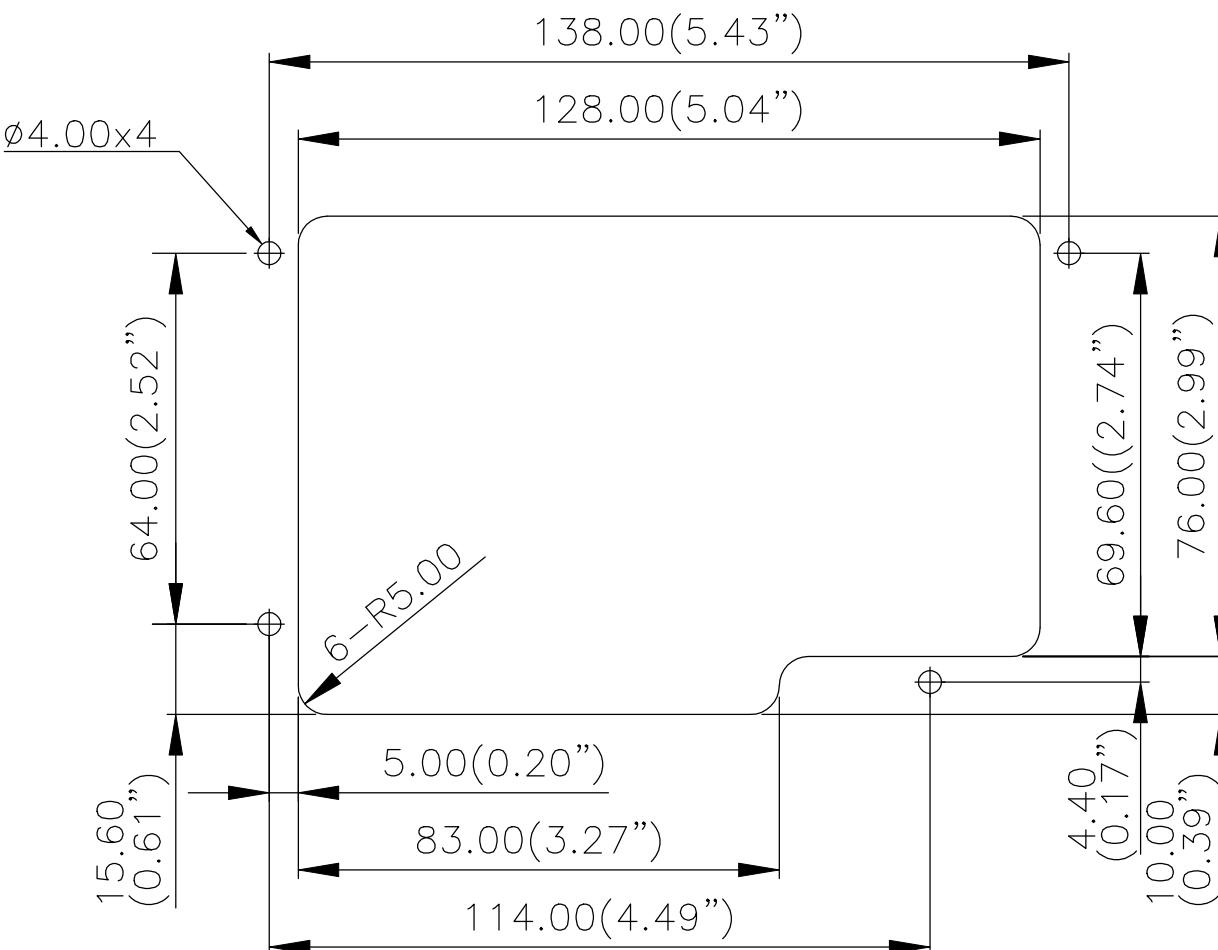
The power supply shall operate normally when installed in a computer system and subjected to power line noise described in EN61000-4-4, level 3 (2 kV open circuit voltage). The power supply shall not cause any failure in the host computer system during line noise testing.



10. MISCELLANEOUS

10.1. BURN-IN

Applying cycling AC of 110 +/-10 Vac or 220 +/-20 Vac input voltage and maximum load for this product at 40 $\pm 5^{\circ}\text{C}$ chamber for 4 hours minimum, 30 minutes on, 30 minutes off.





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E142723, 01SC05821

April 20, 2001

3Y Technology Inc.
c/o SPC Inc.
Taipei, Taiwan

Fax No.: 011-886-2-2918-4517

Attention: Mr. Frank Hsu

Subject: Authorization for Component - Power supply, Model YM-6301P

Dear Mr. Frank Hsu:

NOTICE OF AUTHORIZATION TO APPLY THE USR AND CNR MARKS

UL investigation of your product has been completed under project number 01SC03095 and the product was determined to comply with the applicable requirements.

This fax temporarily supplements the UL Follow-Up Services Inspection Procedure and serves as authorization to apply the USR and CNR Recognition Marks only at the factory under UL Follow-Up Service Program to the above product which is constructed as described below:

Identical to samples submitted to UL for investigation. The UL records covering the product will be in the Follow-Up Services Inspection Procedure, File E142723, Vol.1, Sec. (new).

To provide the manufacturer with the intended authorization to use the UL Mark, the addressee must send a copy of this Notice and all attached material to each manufacturing location as currently authorized in File E142723, Volume 1.

This authorization is effective for 90 days only from the date of this Notice and only for products at the indicated manufacturing locations. Records in the Follow-Up Services Procedure covering the product are now being prepared and will be sent to the indicated manufacturing locations in the near future. Please note that the Follow-Up Services Procedures are sent to the

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committed to quality
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manufacturers only unless the Applicant specifically requests this document.

Products which bear the UL Mark shall be identical to those which were evaluated by UL and found to comply with UL's requirements.

Within Canada, there are federal and local statutes and regulations such as the Consumer Packaging and Labeling Act, requiring the use of bilingual product markings on products intended for the Canadian market. It is the responsibility of the manufacturer (or distributor) to comply with this law. The UL Follow-Up Service Procedures will only include the English version of the markings.

If changes in construction are discovered, the authorization to use the UL Mark may be withdrawn and products that bear the UL Mark may have to be revised (in the field or at the manufacturer's facility) to bring them into compliance with UL's requirements.

Regards,

Orpheus J. Allen
Orpheus J. Allen
Associate Project Engineer
Conformity Assessment Services
Section 3013E

Reviewed by:

Robert E. Warren

Robert Warren
Senior Project Engineer
Conformity Assessment Services
Section 3013E

A not-for-profit
organization
dedicated to public
safety and
committed to quality
service

Superior Product Consulting, Inc.
Mr. Frank Hsu, President
-
3F, No. 10, Alley 6
Lane 235, Pao Chiao Rd.
HSIN TIEN, TAIPEI HSIEN 231
TAIWAN, R.O.C.

Date : 11.06.2001
Our ref. : JPE ZTW1
Your ref.: FH/SPC

Ref : TÜV-Mark Approval

Type of Equipment : (Switching Power Supply (built-in))
Model Designation : See Certificate
Certificate No. : R 3-50004590 0001
Report No. : 10000662 001

Dear Mr. Frank Hsu,

Enclosed please find above certification documents.
Please forward these originals to the certificate holder.

If you contact our office, please quote our reference above.

We thank you for your cooperation.

The certificate holder is: 3Y Power Technology Inc.

With kind regards,

Certification Body


Dipl.-Ing. A. Klinker

Enclosure

TÜV RHEINLAND TAIWAN LTD.

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Quality Assurance and Control, Industrial Safety, Consumer Product Safety,
Environmental Protection, Nuclear Safety, Road Traffic Safety

3Y Power Technology Inc.
Mr. S. Lin, R&D Manager
-
80 Bunsen
IRVINE, CA 92618
USA

Date : 11.06.2001
Our ref. : JPE ZTW1
Your ref.: FH/SPC

Ref : TÜV-Mark Approval

Type of Equipment : (Switching Power Supply (built-in))
Model Designation : See Certificate
Certificate No. : R 3-50004590 0001
Report No. : 10000662 001

Dear Mr. S. Lin,

The above specified technical equipment has been tested and found to be in accordance with the relevant requirements.

Enclosed you will find the certificate of approval.

If cancellation of the certificate is submitted by November 15 in a given year, no fee will be charged for the following year.

We appreciate your kind support and would like to offer our assistance and continuous services in the future.

Please contact our office for approval of your new products.

With kind regards,

Certification Body


Dipl.-Ing. A. Klinker

CC: Superior Product Consulting, Inc.

Enclosure

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<http://www.twn.tuv.com>

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Fax (07) 331-1734

Zertifikat

Certificate



Zertifikat Nr. Certificate No.
R 3-50004590

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0001

Ihr Zeichen Client Reference
FH/SPC

Unser Zeichen Our Reference
ZTW1-JPE- 10000662 001

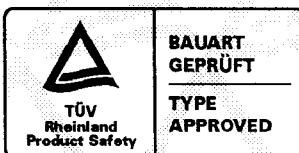
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Dong Guan Acbel Telecom Co., Ltd.
No. 13-16-1, 11th Road, Hor Yeh
138 Ind. District, Tang Xia Town

DONGGUAN, GUANGDONG
CHINA

Prüfzeichen Test Mark



Geprüft nach Tested acc. to
EN 60950:1992+A1+A2+A3+A4+A11

Zertifiziertes Produkt (Geräteidentifikation)
Certified Product (Product Identification)

Lizenzzentgelte - Einheit
License Fee - Unit

Einbau-Schaltnetzteil (Switching Power Supply (built-in))

Bezeichnung : YM-6301P
(Type Designation)

10

Nennspannung : AC 115/230V, 50/60Hz
(Rated Voltage)

Nennstrom : 8/4A
(Rated Current)

max. Umgebungstemperatur : 60°C
(max. Ambient Temperature)

Schutzklasse : I
(Protection Class)

Verschmutzungsgrad : 2
(Pollution Degree)



Fortsetzung Blatt (continued on page) 02

10

ANLAGE (Appendix) : 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.
Das Produkt entspricht den o.g. Anforderungen, die Herstellung wird überwacht.
This certificate is based on our Testing and Certification Regulation. The product
fulfills above-mentioned-requirements, the production is subject to surveillance.

Zertifizierungsstelle

TÜV Rheinland Product Safety GmbH, Am Grauen Stein, D-51105 Köln

Dipl.-Ing. A. Klinker

Zertifikat

Certificate



Zertifikat Nr. Certificate No.
R 3-50004590

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0002

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Unser Zeichen Our Reference
ZTW1-JPE- 10000662 001

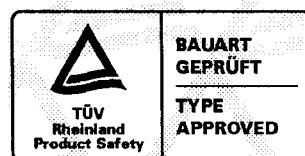
Ausstellungsdatum Date of Issue
11.06.2001

Genehmigungsinhaber License Holder
3Y Power Technology Inc.
80 Bunsen
IRVINE, CA 92618
USA

Fertigungsstätte Manufacturing Plant
Dong Guan Acbel Telecom Co., Ltd.
No. 13-16-1, 11th Road, Hor Yeh
138 Ind. District, Tang Xia Town

DONGGUAN, GUANGDONG
CHINA

Prüfzeichen Test Mark



Geprüft nach Tested acc. to
EN 60950:1992+A1+A2+A3+A4+A11

Zertifiziertes Produkt (Geräteidentifikation)
Certified Product (Product Identification)

Lizenztgelte - Einheit
License Fee - Unit

Einbau-Schaltnetzteil (Switching Power Supply (built-in))

wie Blatt (as page) 01
Fortsetzung (Continuation)

Ausgangsspannungen : DC +5V +3.3V +12V -5V -12V +5Vsb
(Output Voltages)

Ausgangsströme : 30A 20A 12A 0.5A 0.5A 2.0A
(Output Currents)

max. Ausgangsleistung für +5V & +3.3V : 180W
(max. Output Power for +5V & +3.3V)

max. Ausgangsleistung : 300W
(max. Output Power)

Vermerke : Primär- und Sekundärkreise sind gemäß
Verfahren 1 und 2 nach Abschnitt 2.3 getrennt.

Der Einbau muß gemäß der zugehörigen Einbauanweisung
erfolgen. (Remarks : Primary-and secondary circuits are
separated according to method 1 and 2 of clause 2.3.)

The installation has to be carried out according to the
attached installation instruction.)



ANLAGE (Appendix) : 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.
Das Produkt entspricht den o.g. Anforderungen, die Herstellung wird überwacht.
This certificate is based on our Testing and Certification Regulation. The product
fulfills above-mentioned-requirements, the production is subject to surveillance.

TÜV Rheinland Product Safety GmbH, Am Grauen Stein, D-51105 Köln

Zertifizierungsstelle

Dipl.-Ing. A. Klinker

**IEC SYSTEM FOR CONFORMITY TESTING
AND CERTIFICATION OF ELECTRICAL
EQUIPMENT (IECEE)
CB SCHEME**

**SYSTÈME CEI D'ESSAIS DE CONFORMITÉ
ET DE CERTIFICATION DES EQUIPEMENTS
ELECTRIQUE (IECEE)
METHODE OC**

**CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC**

Product

Produit

Name and address of the applicant

Nom et adresse du demandeur

Name and address of the manufacturer

Nom et adresse du fabricant

Name and address of the factory

Nom et adresse de l'usine

Rating and principal characteristics

Valeurs nominales et caractéristiques principales

Trade mark (if any)

Marque de fabrique (si elle existe)

Model/type Ref.

Ref. de type

Additional information (if necessary)

Information complémentaire (si nécessaire)

A sample of the product was tested and found
to be in conformity with

Un échantillon de ce produit a été essayé et a été
considéré conforme à la

as shown in the Test Report Ref. No.

which form part of this certificate

comme indiqué dans le Rapport d'essais numéro
de référence

qui constitue une partie de ce certificat

This CB Test Certificate is issued by the National Certification Body

Ce Certificat d'essai OC est établi par l'Organisme National de Certification

Switching Power Supply

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80 Bunsen
IRVINE, CA 92618, USA

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Input rating : AC 115V/230V, 50/60Hz, 8A/4A
Output rating : refer to the test report
Protection class : I

YM-6301P

PUBLICATION

IEC 60950:1991+A1+A2+A3+A4
inclusive CENELEC Common Modifications
National differences see test report

EDITION

12000001 001



TÜV Rheinland Japan Ltd.
3-19-5 Shin-Yokohama
222-0033 Japan

Date 13.06.2001

Signature

Dipl.-Ing. W. Herlitschke