SPEC. Revision History

Date	Revision No.	Change Information	
		Previous version	Current version
2012/09/20	1.0		Initial

TABLE OF CONTENTS

1 SCOPE

This document describes basic electrical characteristics and mechanical requirements of Model No. CAD120121 switching power supply.

2 ELECTRICAL SPECIFICATION

2.1 INPUT REQUIREMENT

2.1.1 INPUT VOLTAGE RANGE

Power supply shall operate within specification from 90 to 264Vrms or provide automatic switching in two ranges. The table below shows common input voltage range.

Input Range	Minimum	Nominal	Maximum	Unit
	90	100-240	264	Vac, rms

Table 1 - Input Voltage Range

2.1.2 INPUT FREQUENCY RANGE

The power supply shall operate within specification from 47 to 63 Hz.

2.1.3 AC INRUSH CURRENT

It shall be limited to a level below the I^2t of the fuse and the bridge diode. No damage.

2.1.4 INPUT CURRENT

Maximum steady state input current shall not exceed 2.0 A for any line voltage specified in 2.1.1.

2.1.5 LOW POWER CONSUMPTION

Vin	Load	Power consumption
230Vac / 50Hz	0A	< 0.35 W

2.2 INPUT PROTECTION

2.2.1 INPUT CURRENT PROTECTION

A fuse with rating of 4 A / 250 V(Time Lag) shall be installed on the input line side near the input connector to provided protection to the power supply.

2.2.2 INPUT CURRENT HARMONIC

Input current harmonic of the power supply should meet IEC 61000-3-2 requirement.

2.3 OUTPUT REQUIREMENT

2.3.1 OUTPUT POWER

Unit total output power, under steady state conditions, shall not exceed 120 W.

2.3.2 OUTPUT VOLTAGE AND CURRENT

Under any combination of line and load variation and environmental conditions, all outputs shall remain within tolerance defined in Table 2. Output voltage(s) shall be measured at the load side of output connector.

	Output Voltage	Voltage Range		Current Range	
		Lower Limit	Upper Limit	Minimum Load	Full rated load
1	+12V	11.4V	12.6V	0A	10A

Table 2 - Output Voltage and Current

2.3.3 RIPPLE AND NOISE

Measurements shall be made with an oscilloscope with minimum of 20MHz bandwidth. Output shall be bypassed at the connector with a 0.1μF ceramic disk capacitor and a 10μF electrolytic capacitor for general testing purpose.

Output Voltage	Maximum Ripple & Noise (Vp-p)
+12V	150mV

Table 3 – Ripple and Noise

2.3.4 OVER VOLTAGE PROTECTION

The power supply shall be provided with over voltage protection such that under any single component failure, output channel shall exceed the voltages specified, the first will clamp, second will latch minimum load 0.1A.

Output Voltage	Maximum OVP Trip Voltage
+12V	+16.0V

Table 4 – Over Voltage Protection

Note : In the event of latch an over - voltage condition on output voltage, the power supply shall shutdown and require remove the AC mains.

2.3.5 OVER POWER PROTECTION

After the supply reaches temperature equilibrium, over power protection shall operate at 105~ 160% of rated power, after one hour burn-in and reached temperature equilibrium, defined in section 2.3.1 at 100~240Vac line input or temperature conditions.

2.3.6 OVERSHOOT AND UNDERSHOOT

During turn on, turn off condition, the output overshoot shall not exceed nominal voltage by more than 10 %, and output shall not change its polarity with respect to its return line.

2.3.7 SHORT CIRCUIT POTECTION

Power supply shall have self-limiting protection to protect against short circuit or overload conditions. No damage to the supply shall result from a continuous or intermittent short circuit condition.

2.4 PERFORMANCE REQUIREMENT

2.4.1 EFFICIENCY

Efficiency (watt out / watt in) shall be a minimum of 87 % with average mode at 115 / 230Vac & 50 / 60Hz input.

Shall comply with CEC level 5

2.4.2 TURN ON DELAY TIME

Output shall reach steady state in 3 seconds after turn on.

2.4.3 HOLD-UP TIME

Hold-up time shall be a minimum of 8 ms at 45 degrees, 115Vac / 60Hz of input.

Hold-up time shall be a minimum of 8 ms at 45 degrees, 230Vac / 50Hz of input.

2.4.4 DYNAMIC LOAD

Power supply shall operate within regulation defined at following conditions:

Rated output voltage: +/- 10%

Step load change: from 0A to 5A Load and 5A to 10A on the output.

Dwell Time: 100Hz & 1 KHz 50% duty.

Slew rate: 2.5A/usec

3 ENVIRONMENTAL SPECIFICATION

3.1 TEMPERATURE

Operation within specification: 0 to 40 degrees C.

Storage: -20 to 80 degrees C

3.2 HUMIDITY

Operation: 10% to 90% relative humidity, non-condensation.

Storage: 5% to 95% relative humidity, including condensation.

3.3 VIBRATION

Operating: 10-250Hz, 0.25G peak to peak, 3 axes, 15 min sweep.

Storage: 10-300Hz, 2.0G peak to peak, 3 axes, 15 min sweep.

3.4 ALTITUDE

Power supply shall operate to an altitude of 5000m.

3.5 CALCULATED MEAN TIME BETWEEN FAILURES (MTBF)

Power supply shall have a calculated MTBF of greater than 50,000 hours, calculated utilizing MIL-HDBK-217F with the following assumptions:

Input voltage: 115Vac / 60Hz

Output load: Rated full load

Ambient temperature: 25 degrees C

4 REGULATORY COMPLIANCE

4.1 EMC SPECIFICATION

4.1.1 FCC REQUIREMENTS

Power supply shall comply with the radiated and conducted emission requirements for FCC Class B.

4.1.2 CISPR REQUIREMENTS

Power supply shall comply with the radiated and conducted emission requirements for CISPR 22 Class B.

4.2 IMMUNITY

4.2.1 ELECTROSTATIC DISCHARGE (ESD), EN 61000-4-2

The power supply shall compliance to EN61000-4-2, withstand the following ESD conditions at any point on the power supply enclosure when tested as following condition.

+/- 8KV discharge by air & +/- 4KV discharge by contact, no damage.

The storage capacitance shall be 150 pF and the discharge resistance shall be 330 ohms. The power supply shall meet all discharge requirements for the CE Mark designation.

4.2.2 RADIATED FIELD IMMUNITY, EN 61000-4-3

Power supply shall withstand following condition:

Frequency Range: 80 - 1000MHz

Field Strength: 3 V/m with 80% amplitude modulation of 1 kHz

4.2.3 FAST TRANSIENT IMMUNITY, EN 61000-4-4

Power supply shall withstand EN 61000-4-4 +/-1kV requirements.

4.2.4 SURGE IMMUNITY, EN 61000-4-5

Power supply shall withstand 1kV (L – L) and 2kV (L – PE AND N-PE) without functional failure.

4.2.5 CONDUCTED IMMUNITY, EN 61000-4-6

Power supply shall withstand following condition:

Frequency Range: 0.15 - 80MHz

Field Strength: 3 V/m with 80% amplitude modulation of 1 kHz

4.2.6 VOLTAGE DIPS AND INTERRUPTIONS, EN 61000-4-11

Power supply shall meet EN61000-4-11 requirements.

4.3 AGENCIES CERTIFICATIONS

Unless otherwise specified, the supply is designed to meet IEC 60950-1 and/or equivalent safety standards for use in Information Technology Equipment. For desktop universal adapter, CB certificate will identify and support worldwide deviations. Specific agency certifications will be applied at customer's request and cost.

4.3.1 PRODUCT SAFETY COMPLIANCE

Certification	Certification
Canada	(cUL)
USA	(UL)
Europe	(TUV)

Table 5 - Safety Compliance

4.3.2 LEAKAGE CURRENT

Power supply touch current shall not exceed 3.5 mA at input voltage of 264Vac / 60Hz.

4.3.3 DIELECTRIC STRENGTH

The power supply shall withstand following Hi-pot test without breakdown.

2121 Vdc line to earth ground for 3 seconds.

4242 Vdc input to output for 3 seconds.

Time duration may reduce to 3 second on production.

5 MECHANICAL

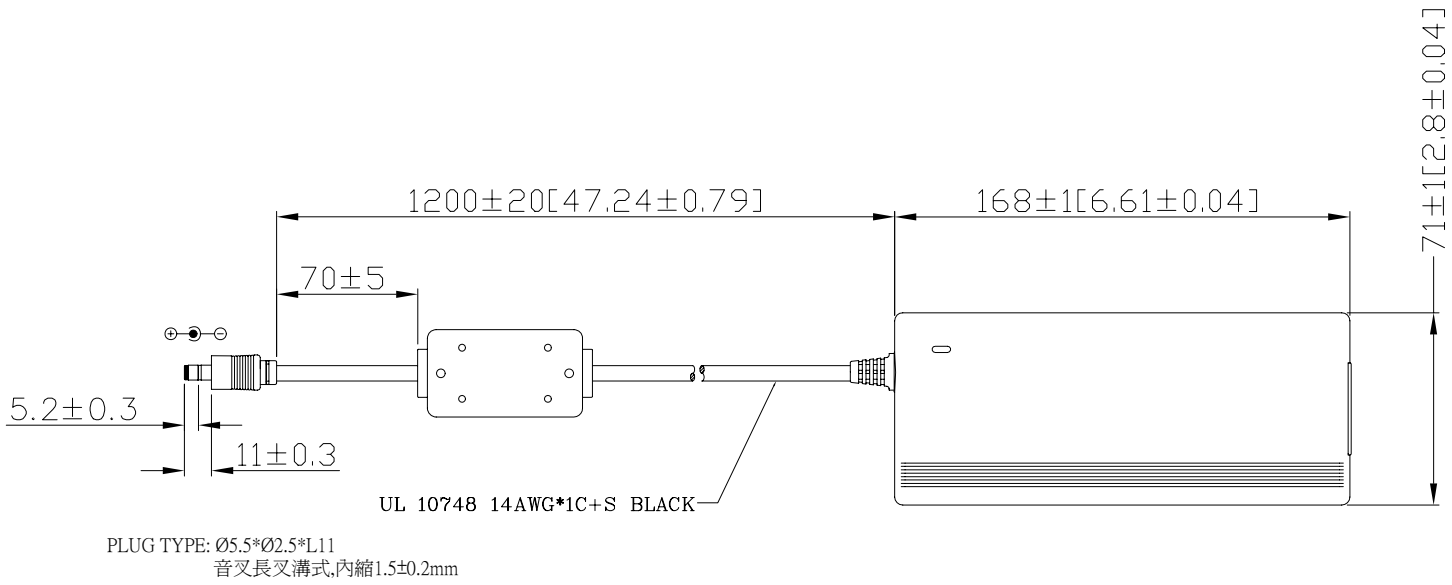
5.1 INPUT CONNECTOR AND OUTPUT CABLE

5.1.1 INPUT CONNECTOR

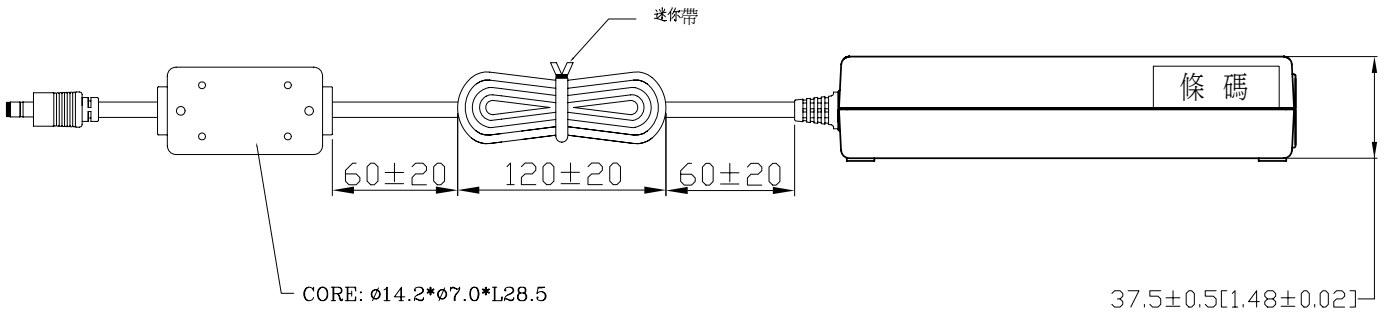
AC Input connector shall be an IEC60320 C14 power connector (International Class I Plug Style).

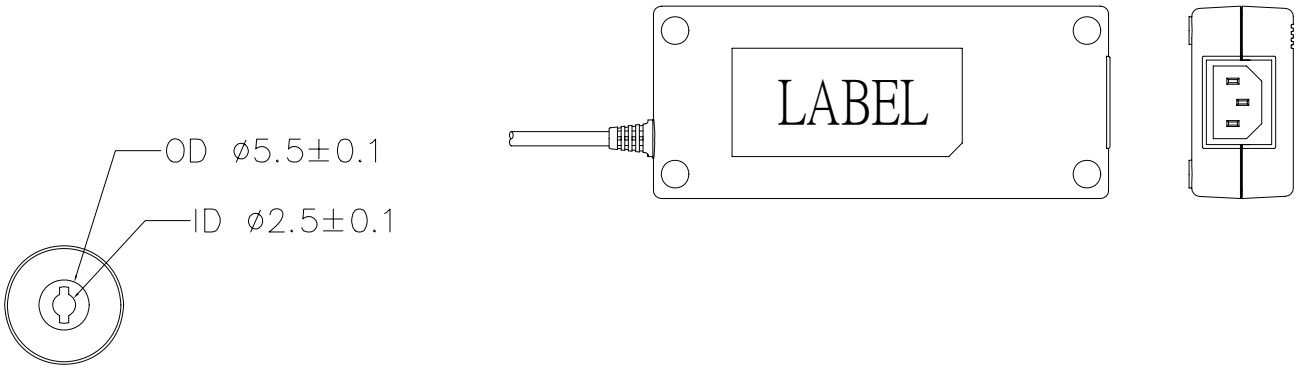
5.1.2 OUTPUT CABLE:

Refer to Refer to drawing.



PLUG TYPE: Ø5.5*Ø2.5*L11
音叉長叉溝式,內縮1.5±0.2mm



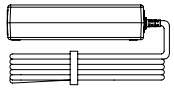


NOTES:

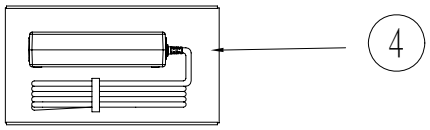
1. CASE & CABLE COLOR : BLACK
2. INLET:
3. CABLE SPEC.:CABLE ARE UL 10748 14AWG*1C+S BLACK
4. MODEL:G99-CAD120F-N033
5. PART NO.:G18-B3W112A-M400

CWT Channel Well Technology CO., LTD.	APPROVED JH HUANG	DRAWING NO. CA-D-C14-020	UNIT INCHES(MM)	REV. A
TITLE Desktop Switching Adapter	DATE 2012.10.30	MODEL NO. CAD120	TOLERANCES:	SHEET 1/1

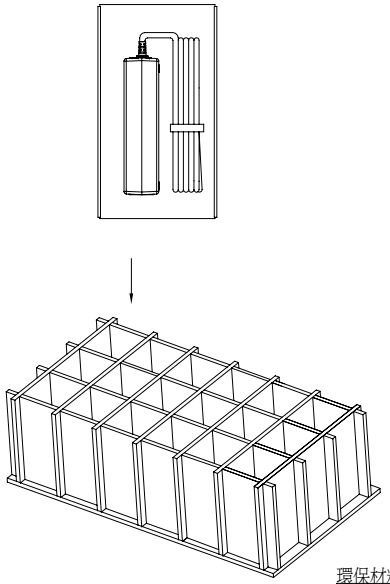
STEP1:將成品及線材整理如下圖,

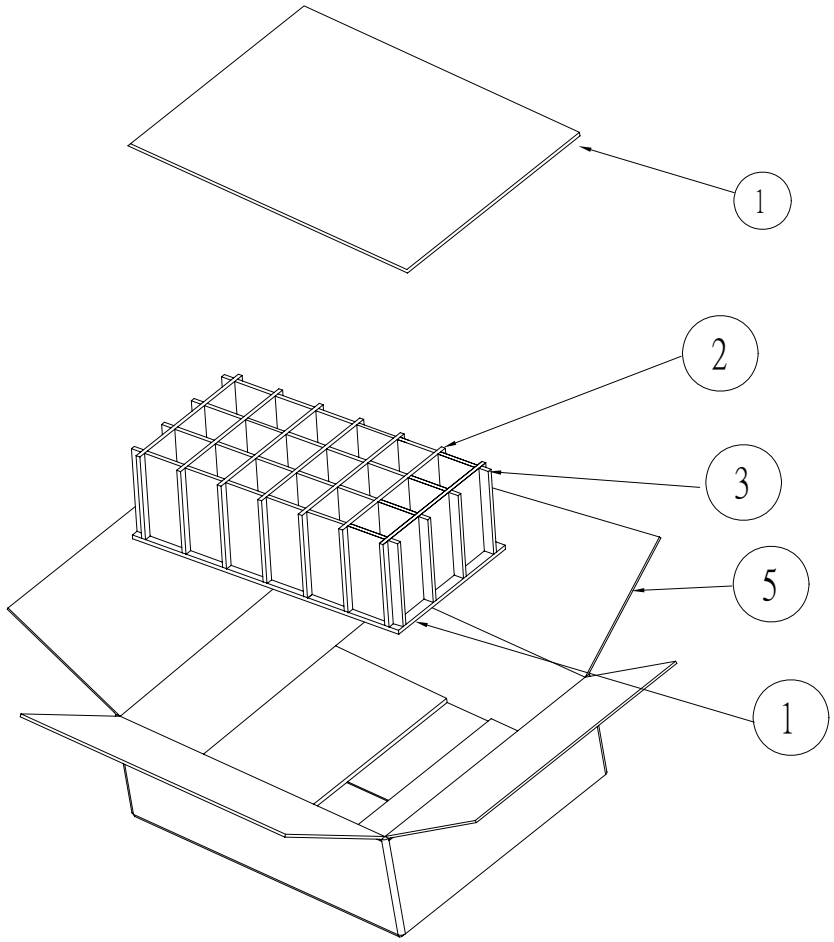


STEP2:將成品放入汽泡袋內如下圖,



STEP3:將成品如圖般放入格板內





1.組件:
- 1.1.:天地板:436*386mm
  用量:2PCS
- 1.2.:四刀卡: 436*204mm
  用量:7PCS
- 1.3.:七刀卡: 386*204mm
  用量:4PCS
- 1.4.:汽泡袋:190*250+40mm
  用量:18PCS
- 1.5.:外箱:450*400*240mm
  用量:1PCS

外箱尺寸 450*400*240mm
Q'TY.: 18PCS

環保材料標準:

No	有害物質名稱	含量標準
1	鎘 (Cd)	<75ppm
2	鉛 (Pb)	<800ppm
3	汞 (Hg)	<800ppm
4	六價鉻 (Cr)	<800ppm
5	多溴聯苯 (PBB)	<800ppm
6	多溴二苯醚 (PBDE)	<800ppm
7	鎘,鉛,汞,六價鉻,(包裝材料)	總含量<100ppm

SHEET METAL TOLERANCE (UNLESS OTHERWISE SPECIFIED)

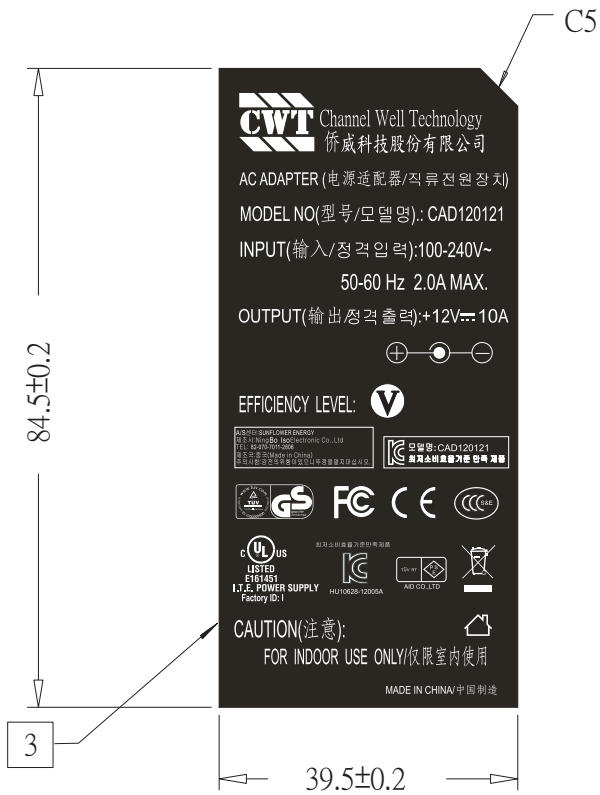
DIMENSION	PIERCING	BENDING	ANGULAR
X < 8	±0.1	±0.15	±0.3°
8 ≤ X < 25	±0.1	±0.2	±0.5°
25 ≤ X < 100	±0.15	±0.25	±0.5°
100 ≤ X < 300	±0.2	±0.3	±1°
300 ≤ X < 800	±0.3	±0.5	±1.5°

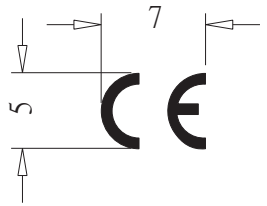
REV.	DESCRIPTION
0.1	

CWT 僑威科技

APPROVED	CHECKED	DESIGNED
	xq wu	JH HUANG
DATE:	DATE: 2012.07.13	DATE: 2012.07.13

UNIT: mm
MATERIAL: ******
MODEL NO.: CAD
PART NO.: 450-400-240-01
DRAWING NO.:
SCALE:
THIRD ANGLE PROJECTION
SHEET 1 OF 1
M/A4L





MIN. DIMENSIONS OF MARKS
ON LABEL

NOTES:

1. MATERIAL:
   ENVIRONMENT PROTECTION SYNTHESIS PAPER #50(FOGGY)
   WITH ADHESIVE ON THE BACK.
   THE BACK ADHESIVE MUST CONFORM TO THE UL REQUIREMENT.
   THE LABEL IS NOT ALLOWED TO CURL UPWARDS OR WINKLE
   AT 100 C FOR 24 HOURS.
2. PRINTED:
   BLACK BACKGROUND WITH WHITE CHARACTERS.
3. Factory ID: X
   X: I for 冠碩廠
   X: G for 貴冠廠

材質：50#環保合成紙+霧P

尺寸：39.5*84.5mm

顏色：黑底白字

環保材料標準:

No	有害物質名稱	含量標準
1	鎘 (Cd)	< 75 ppm
2	鉛 (Pb)	< 800 ppm
3	汞 (Hg)	< 800 ppm
4	六價鉻 (Cr)⁶	< 800 ppm
5	多溴聯苯 (PBB)	< 800 ppm
6	多溴二苯醚 (PBDE)	< 800 ppm
7	鎘,鉛,汞,六價鉻,(包裝材料)	總含量 < 100 ppm

SHEET METAL TOLERANCE
(UNLESS OTHERWISE SPECIFIED)

DIMENSION	PIERCING	BENDING	ANGULAR
X < 8	± 0.1	± 0.15	± 0.3°
8 ≦ X < 20	± 0.1	± 0.2	± 0.5°
25 ≦ X < 100	± 0.15	± 0.25	± 0.5°
100 ≦ X < 300	± 0.2	± 0.3	± 1°
300 ≦ X < 800	± 0.3	± 0.5	± 1.5°

REV.	DESCRIPTION
D04	Nov.05,2012追加"韓國代理商"
D03	Sept. 19, 2011 追加" AC ADAPTER" . JASON
D02	June 22, 2012 追加安規標誌. JASON
D01	新製

CWT 僑威科技

APPROVED	SAFETY	CHECKED	DESIGNED
ZY CHEN		ZY CHEN	DM WU
DATE: Oct. 27, 2011	DATE: Oct. 27, 2011	DATE: Oct. 27, 2011	DATE: Oct. 27, 2011

UNIT: mm | MATERIAL: 1

MODEL NO.: CAD120121
PART NO.: 4335.1002301.P100
DRAWING NO.: LABEL-CAD120121(CWT)
NAME PLATE

SCALE: 1 : 1 | SHEET 1 OF 1 | M A4 L
THIRD ANGLE PROJECTION

[별지 제2호서식]

접수번호 :20120903 - 0019

전 기 용 품 안 전 인 증 서

Electrical Appliances Safety Certificate

안전인증번호: (Certificate No.) HU10628-12005A

제조업자명: (Manufacturer) Ningbo ISO Electronics Co., Ltd.

대표자명: (President) Peter

제조공장의소재지: (Factory Address) 10, Chuang-ye Rd., The West of Ningbo Free Trade Zone, Ningbo, Zhejiang, China

제품명: (Product) 직류전원장치 (AC/DC Adapter)

기본모델명: (Basic Model) CAD120121

정격: (Rating) AC 100-240 V~, 50-60 Hz, 2.0 A (O/P: 12 Vdc, 10 A)

파생모델명 (Series Model):

안전인증 시의 조건 : 동 제품의 생산 시 자체검사를 실시하고 안전인증 시 등록된 부품누락 및 임의 변경하지 말 것.

적용기준: (Standard) K 60950-1(2006-12)

「전기용품안전 관리법 시행규칙」 제6조제2항에 따라 위의 전기용품에 대하여 안전인증서를 발급합니다.

We issue this Electrical Appliances Safety Certificate for the above electrical appliance in accordance with the Article 6(2) of the Enforcement Rule of the Electrical Appliances Safety Control Act.

2012 년 (Year) 9 월 (Month) 25 일 (Day)

한국기계전기전자시험연구원장

Korea Testing Certification

※ 본 인증서는 「전기용품안전 관리법」에 따른 전기제품 안전성확인에 한정된 것이며, 그 밖의 다른 법률이 적용되는 제품의 경우에는 해당 법률에 따라 추가적으로 인증·허가 등을 받아야 합니다.

첨부서류 1. 안전관리부품 및 재질목록 (List of Critical Components)
2. 기본모델·파생모델의 내용 (General Descriptions of Certified Products)
3. 전기용품안전인증의 변경현황 (Status of Certificate Revisions)

기 술 문 서
Technical Document

안전인증번호: HU10628-12005A
(Certificate No)

접수번호: 20120903 - 0019
(Receipt No)

1.기본모델 · 파생모델의 내용(General Descriptions of Certified Products)

1.1 제품의 설명 (Product description)

인증제품의 개요는 다음과 같다.
(Information on certified basic model product is as follow)

구분(Section)	내 용 (Description)
용도 (Normal use)	The apparatus designed to be used for converting AC main voltage to DC low voltage.
내부구조 (Internal construction)	The apparatus consists of switching transformer, rectifying part etc..
외부구조 (External construction)	Internal enclosure for SMPS use metal, materials of parts outside fire enclosure are HB or better and appliance inlet.
기타(Others)	Class I.

1.2 전기용품의 표시: 전기용품안전 관리법 시행규칙 제15조(안전인증의 표시)에 따라 표시한다.
(Marking of KC Mark: Marking shall comply with enforcement rule Article 15 of the Electrical Appliances Safety Control Law)

1.3 등록모델 (Registered Models)

구 분 (Class)	모 델 명 및 정 격 (Model / Rating)		기본모델과의 차이점 (Difference between basic model and series model)
기본모델 (Basic model)	CAD120121	AC 100-240 V~, 50-60 Hz, 2.0 A (O/P: 12 Vdc, 10 A)	

기 술 문 서
Technical Document

안전인증번호: HU10628-12005A
(Certificate No)

접수번호: 20120903 - 0019
(Receipt No)

2.안전관리 부품 및 재질목록(List of Critical Components)

부품명 (Components)	번호 (Part No)	특 성 (Technical Data)	제조자 (Manufacturer)	인증규격 (Certification)
Plastic Enclosure	-	Type: LN-1250G , Rated minimum V-0, minimum 1.5 mm thickness, 115 ℃	TEIJIN	UL - -
PWB	-	Type: V-0 or better, 130 ℃	Various	UL - -
Mylar sheet	-	Type: FORMER GK-(a)(b)(f2), Min.0.4 ㎜ thickness	FORMER, DIV OF IL TOOL WORKS INC	UL - -
AC Inlet	-	Type: SC-14 C, , 10 A, 250 V, 70 ℃	Supercom Electronics Co., Ltd	IEC UL,VDE -
Mylar sheet	- (alt)	Type: FORMER GK-(a)(b)(f2), Min.0.4 ㎜ thickness	FRMRLY FASTEX, DIV OF IL TOOL WORKS INC	UL - -
AC Inlet	- (alt)	Type: SC-8R, 2.5 A, 250 V, 70 ℃	Supercom Electronics Co., Ltd	IEC UL,VDE -
AC Inlet	- (alt)	Type: TU-301-S, 10 A, 250 V, 70 ℃	Tecx-Unions Technology Corp	IEC UL,VDE -
AC Inlet	- (alt)	Type: TU-333, 2.5 A, 250 Vac., 70 ℃	Tecx-Unions Technology Corp	IEC UL,VDE -
AC Inlet	- (alt)	Type: ST-03, 2.5 A, 250 V, 70 ℃	Solteam	IEC UL,VDE -
AC Inlet	- (alt)	Type: SS-7B, , 10 A, 250 V, 70 ℃	Rong Feng Industrial Co., Ltd.	IEC UL,VDE -
AC Inlet	- (alt)	Type: SS-120, , 10 A, 250 V, 70 ℃	Rong Feng Industrial Co., Ltd.	IEC UL,VDE -
Electrolytic Capacitor	C14	Type: Electrolytic Type, 100-150 ㎌, 400 V Min, 105 ℃	-	- - -
X-Capacitor	CX1,	Type: CKX, Max. 0.47 ㎌, 250 V min. 100 ℃	Chiefcon Components Co Ltd	IEC UL,VDE -
X-Capacitor	CX1, (alt)	Type: CTX, Max. 0.47 ㎌, 250 V min. 100 ℃	Cheng Tung Industrial Co Ltd	IEC UL,VDE -
X-Capacitor	CX1, (alt)	Type: KNB 1530, Max. 0.47 ㎌, 250 V min. 100 ℃	Iskra Kondenzatorji DD	IEC UL,VDE -
X-Capacitor	CX1, (alt)	Type: HQX, Max. 0.47 ㎌, 250 V min. 100 ℃	Ultra Tech Xiphi Enterprise Co Ltd	IEC UL,VDE -

기 술 문 서
Technical Document

안전인증번호: HU10628-12005A
(Certificate No)

접수번호: 20120903 - 0019
(Receipt No)

부품명 (Components)	번호 (Part No)	특 성 (Technical Data)	제조자 (Manufacturer)	인증규격 (Certification)	
X-Capacitor	CX1, (alt)	Type: MKP, Max. 0.47 ㎌, 250 V min. 100 ℃	Hua Jung Components Co Ltd	IEC UL,VDE	- -
X-Capacitor	CX1, (alt)	Type: PCX2 337, Max. 0.47 ㎌, 250 V min. 100 ℃	Pilkor Electronics Co Ltd	IEC UL,VDE	- -
X-Capacitor	CX1, (alt)	Type: R.46, Max. 0.47 ㎌, 250 V min. 100 ℃	KEMET ELECTRONICS ITALIA SRL	IEC UL	- ENEC
X-Capacitor	CX1, (alt)	Type: MPX, Max. 0.47 ㎌, 250 V min. 100 ℃	Europtronic(Taiwan) Industrial Corp	IEC UL,VDE	- -
X-Capacitor	CX1, (alt)	Type: KNB 1533, Max. 0.47 ㎌, 250 V min. 100 ℃	Iskra Kondenzatorji DD	IEC UL,VDE	- -
X-Capacitor	CX1, (alt)	Type: KNB 1532, Max. 0.47 ㎌, 250 V min. 100 ℃	Iskra Kondenzatorji DD	IEC UL,VDE	- -
X-Capacitor	CX2	Type: HQX, Max. 0.22 ㎌, 250 V min. 100 ℃	Ultra Tech Xiphi Enterprise Co Ltd	IEC UL,VDE	- -
X-Capacitor	CX2, (alt)	Type: CKX, Max. 0.22 ㎌, 250 V min. 100 ℃	Chiefcon Components Co Ltd	IEC UL,VDE	- -
X-Capacitor	CX2, (alt)	Type: KNB 1532, Max. 0.22 ㎌, 250 V min. 100 ℃	Iskra Kondenzatorji DD	IEC UL,VDE	- -
X-Capacitor	CX2, (alt)	Type: MKP, Max. 0.22 ㎌, 250 V min. 100 ℃	Hua Jung Components Co Ltd	IEC UL,VDE	- -
X-Capacitor	CX2, (alt)	Type: PCX2 337, Max. 0.22 ㎌, 250 V min. 100 ℃	Pilkor Electronics Co Ltd	IEC UL,VDE	- -
X-Capacitor	CX2, (alt)	Type: R.46, Max. 0.22 ㎌, 250 V min. 100 ℃	KEMET ELECTRONICS ITALIA SRL	IEC UL	- ENEC
X-Capacitor	CX2, (alt)	Type: MPX, Max. 0.22 ㎌, 250 V min. 100 ℃	Europtronic(Taiwan) Industrial Corp	IEC UL,VDE	- -
X-Capacitor	CX2, (alt)	Type: KNB 1533, Max. 0.22 ㎌, 250 V min. 100 ℃	Iskra Kondenzatorji DD	IEC UL,VDE	- -
X-Capacitor	CX2, (alt)	Type: KNB 1530, Max. 0.22 ㎌, 250 V min. 100 ℃	Iskra Kondenzatorji DD	IEC UL,VDE	- -
X-Capacitor	CX2, (alt)	Type: CTX, Max. 0.22 ㎌, 250 V min. 100 ℃	Cheng Tung Industrial Co Ltd	IEC UL,VDE	- -
Bridge Capacitor	CY3, CY4, Y1 type,	Type: AH, Min. 250 V, Max. 3300 ㎊, 125 ℃	WALSIN TECHNOLOGY CORP	IEC UL,VDE	- -

기 술 문 서
Technical Document

안전인증번호: HU10628-12005A
(Certificate No)

접수번호: 20120903 - 0019
(Receipt No)

부품명 (Components)	번호 (Part No)	특 성 (Technical Data)	제조자 (Manufacturer)	인증규격 (Certification)
Bridge Capacitor	CY3, CY4, Y1 type, (alt)	Type: CD, Min. 250 V, Max. 3300 pF, 125 ℃	TDK Corp	IEC UL,VDE -
Bridge Capacitor	CY3, CY4, Y1 type, (alt)	Type: KH, Min. 250 V, Max. 3300 pF, 125 ℃	Murata Mfg Co. Ltd	IEC UL,VDE -
Bridge Capacitor	CY3, CY4, Y1 type, (alt)	Type: KX, Min. 250 V, Max. 3300 pF, 125 ℃	Murata Mfg Co. Ltd	IEC UL,VDE -
Bridge Capacitor	CY3, CY4, Y1 type, (alt)	Type: WD, Min. 250 V, Max. 3300 pF, 125 ℃	Welson industrial Co Ltd.	IEC UL,VDE -
Bridge Capacitor	CY3, CY4, Y1 type, (alt)	Type: SE, Min. 250 V, Max. 3300 pF, 125 ℃	Success Electronics Co. Ltd	IEC UL,VDE -
Y-Capacitor	CY5, CY6, Y1 or Y2 type,	Type: CS, Min. 250 V, Max. 3300 pF, 125 ℃	TDK-EPC CORP	IEC UL,VDE -
Y-Capacitor	CY5, CY6, Y1 or Y2 type, (alt)	Type: KL, Min. 250 V, Max. 3300 pF, 125 ℃	Welson industrial co Ltd.	IEC UL,VDE -
Y-Capacitor	CY5, CY6, Y1 or Y2 type, (alt)	Type: KY, Min. 250 V, Max. 3300 pF, 125 ℃	Murata Mfg Co. Ltd	IEC UL,VDE -
Y-Capacitor	CY5, CY6, Y1 or Y2 type, (alt)	Type: SB, Min. 250 V, Max. 3300 pF, 125 ℃	Success Electronics Co. Ltd	IEC UL,VDE -
Y-Capacitor	CY5, CY6, Y1 or Y2 type, (alt)	Type: SF, Min. 250 V, Max. 3300 pF, 125 ℃	Success Electronics Co. Ltd	IEC UL,VDE -
Fuse	FS1	Type: 215, T4A, 250 V	LITTELFUSE INC	IEC UL,VDE -
Fuse	FS1 (alt)	Type: 677, T4A, 250 V	LITTELFUSE INC	IEC UL,VDE -
Fuse	FS1 (alt)	Type: ICP, T4A, 250 V	Walter Electronic.,Ltd	IEC UL,VDE -
Fuse	FS1 (alt)	Type: PDU, , T4A, 250 V	CONQUER ELECTRONICS CO LTD	IEC UL,VDE -
Fuse	FS1 (alt)	Type: TSC, T4A, 250 V	Walter Electronic.,Ltd	IEC UL,VDE -
Fuse	FS1 (alt)	Type: UDA-A, T4A, 250 V	CONQUER ELECTRONICS CO LTD	IEC UL,VDE -
Fuse	FS1 (alt)	Type: PTU, T4A, 250 V	CONQUER ELECTRONICS CO LTD	IEC UL,VDE -

기 술 문 서
Technical Document

안전인증번호: HU10628-12005A
(Certificate No)

접수번호: 20120903 - 0019
(Receipt No)

부품명 (Components)	번호 (Part No)	특 성 (Technical Data)	제조자 (Manufacturer)	인증규격 (Certification)
Optical Isolator	IC1	Type: EL817, di=0.5 ㎜, int. dcr.=6.0 ㎜, ext. dcr.=7.7 ㎜ 5000 Vac, 100 ℃	Everlight Electronics Co., Ltd	IEC UL,VDE -
Optical Isolator	IC1 (alt)	Type: K1010, di=0.5 ㎜, termal cycling, ext. dcr.=8.0 ㎜ 5000 Vac, 100 ℃	Cosmo Electronics Corp	IEC UL,VDE -
Optical Isolator	IC1 (alt)	Type: PC817, di=0.9 ㎜, int. dcr.=6.5 ㎜, ext. dcr.=8.0 ㎜ 5000 Vac, 100 ℃	Sharp Corp Electronic Components Group	IEC UL,VDE -
Line Choke	LF2	Type: T22*14*8, minimum 105 ℃	Channel Well Technology Co., Ltd.	- - -
Line Choke	LF3	Type: T14*8.4*5, minimum 105 ℃	Channel Well Technology Co., Ltd.	- - -
Line Choke	LF61, CAD120121	Type: T12.7*7.9*4.7, minimum 105 ℃	Channel Well Technology Co., Ltd.	- - -
Line Choke	LF61, CAD120191	Type: T16*10*5, minimum 105 ℃	Channel Well Technology Co., Ltd.	- - -
Line Choke	LF61, CAD120241	Type: T16*10*5, minimum 105 ℃	Channel Well Technology Co., Ltd.	- - -
Transistor	Q2	Rated, minimum 500 V, 8.5-20 A	-	- - -
Transistor	Q3	Rated, minimum 650 11-20 A	-	- - -
Bleeder Resistor	R1, R2	Rated, Min.6A, min. 600 V	-	- - -
Bleeder Resistor	R1, R2 (alt)	Type: SMD Type, SMD type, each rated 910 ㏀ maximum, 1/4 W minimum, R1 and R2 in series connection.	-	- - -
Gas Tube	SA1,SA2, optional	Type: BK3200xxx2, Min.200 V	Brightking	- - -
Gas Tube	SA1,SA2, optional (alt)	Type: BLKSxxxxK-E, Min.200 V	Solomon Group	- - -
Gas Tube	SA1,SA2, optional (alt)	Type: SPG-xxxM-LF, Min.200 V	SINNAGGATA	- - -
Line Choke	T1	Type: CS166125, minimum 105 ℃	Channel Well Technology Co., Ltd.	- - -
Line Choke	T1 (alt)	Type: RM-10, minimum 105 ℃	Channel Well Technology Co., Ltd.	- - -

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접수번호: 20120903 - 0019
(Receipt No)

부품명 (Components)	번호 (Part No)	특 성 (Technical Data)	제조자 (Manufacturer)	인증규격 (Certification)
Main Transformer	T2, CAD120121	Type: G09-PQ32056-M100, Class B	Channel Well Technology Co., Ltd.	- -
Varistor	ZNR1, Optional	Type: CNR10D471K, AC 50-680 V, DC 69-895 V	CENTRA SCIENCE CORP	IEC UL VDE
T.I.W	in T2	Type: TRW(B), 130 ℃	Great Leoflon	IEC UL,VDE -

기 술 문 서
Technical Document

안전인증번호: HU10628-12005A
(Certificate No)

접수번호: 20120903 - 0019
(Receipt No)

3.전기용품안전인증의 변경현황(Status of Certificate Revisions)

일자(Date)	발급현황(Status of issues)
	변경내용(Modification of Contents)
2012/09/25	기본모델(Basic Model)

4.기타(Carefully Informed Note)

1) 안전관리부품 및 재질목록에 기재된 사항은 전기적인 안전에 직접적인 영향을 주는 부분이므로 내용을 변경 또는 복수등재를 원하는 경우 안전인증변경신청을 하여야 합니다. 안전인증변경신청을 하지 않고 제조자가 임의로 변경하는 경우에는 전기용품안전 관리법 제8조제1항제2호에 의거 안전인증이 취소될 수 있습니다.
(Certificate holder should apply for the revision of certificate issued from Issuing Certification Body if registered critical components would be changed, modified or alternated. Should the contents of Certificate are altered without Safety Certification Modification Application by Certificate holder, Safety Certification(KC Mark) may be withdrawn under Section 2, Paragraph 1, Article 8 of the Electrical Appliances Safety Control Law)

2) 정기검사(시료채취포함)를 거부, 방해 또는 기피하는 경우에는 전기용품안전 관리법 제8조제1항제4호에 의거 안전인증이 취소될 수 있습니다.
(If Annual Follow-up Factory Inspection, including sampling representative model by 11 categories of the certified product at factory-site for re-testing, should not has been arranged by Certificate holder, Safety Certification(KC Mark) may be withdrawn under Section 4, Paragraph 1, Article 8 of the Electrical Appliances Safety Control Law)

3) 공장주소(전화번호포함), 대표자, 상호 및 부품변경 등 전기용품 안전인증서의 내용이 변경되었을 때 제조자가 안전인증변경신청을 하지 않을 경우에는 전기용품안전 관리법 제8조제1항제3호에 의거 안전인증이 중지 또는 취소될 수 있습니다.
(If Safety Certification Modification Application by Certificate holder should not has been made to Issuing Certification Body, when Factory Address, including telephone/facsimile no., Manufacturer Name, Registered Critical Components, etc would be changed, Safety Certification(KC Mark) may be suspended or withdrawn under Section 3, Paragraph 1, Article 8 of the Electrical Appliances Safety Control Law)

4) 조건부 인증사항 (Conditional certification items):

IEC IECEE CB SCHEME

Ref. Certif. No.

JPTUV-043819

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product Produit	AC ADAPTER
Name and address of the applicant Nom et adresse du demandeur	Channel Well Technology Co., Ltd. No.222, Sec. 2, Nankan Rd., Lujhu Township, Taoyuan Hsien, 33855 Taiwan
Name and address of the manufacturer Nom et adresse du fabricant	Channel Well Technology Co., Ltd. No.222, Sec. 2, Nankan Rd., Lujhu Township, Taoyuan Hsien, 33855 Taiwan
Name and address of the factory Nom et adresse de l'usine	See additional page(s)
Rating and principal characteristics Valeurs nominales et caractéristiques principales	Input : AC 100-240V; 50-60Hz; 2.0A MAX.; Class I Output: 1) DC +12V; 10A 2) DC +19V; 6.32A 3) DC +24V; 5.0A
Trade mark (if any) Marque de fabrique (si elle existe)	CWT
Model/type Ref. Ref. de type	1) CAD120121, CAM120121, 2) CAD120191, CAM120191, 3) CAD120241, CAM120241
Additional information (if necessary) Information complémentaire (si nécessaire)	For model differences, refer to the test report.
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	IEC 60950-1:2005+A1 National differences see test report
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue une partie de ce Certificat	11028512 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

TÜVRheinland®

TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku
Yokohama 224-0021 Japan
Phone + 81 45 914-3888
Fax + 81 45 914-3354
Mail: info@jpn.tuv.com
Web: www.tuv.com

Date: 23.05.2012

Signature: Dipl.-Ing. [illegible]

IEC IECEE CB SCHEME	Ref. Certif. No.
	JPTUV-043819

1. Ningbo Iso Electronic Co., Ltd.
   10, Chuange-ye Rd.,
   The West of Ningbo Free Trade Zone
   Ningbo, Zhejiang
   P.R. China

2. Channel Well Technology (Guangzhou) Co., Ltd.
   Bld. B, Eastern Hi-tech Industrial Base
   Zengjiang Street, Zengcheng, Guangzhou, Guangdong 511300, P.R. China

Additional information (if necessary)
Information complémentaire (si nécessaire)

Date: 23.05.2012

Signature: Dipl.-Ing. F. Stoelzel

CERTIFICATE OF CONFORMITY

Equipment	:	AC Adapter
Brand Name	:	CWT
Test Model No.	:	CAD120121
Multiple Listing	:	CAM120121, CAD120241 CAM120241, CAD120191, CAM120191
Applicant	:	CHANNEL WELL TECHNOLOGY CO., LTD
Test Report No.	:	CE120517D02

We, **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, declare that the equipment above has been tested in our facility and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

EN 55022:2010, Class B	**EN 55024:2010**
CISPR 22:2008, Class B	IEC 61000-4-2:2008 ED.2.0
AS/NZS CISPR 22:2009, Class B	IEC 61000-4-3:2010 ED.3.2
EN 61000-3-2:2006 +A1:2009 +A2:2009, Class D	IEC 61000-4-4:2011 ED.2.1
EN 61000-3-3:2008	IEC 61000-4-5:2005 ED.2.0
	IEC 61000-4-6:2008 ED.3.0
	IEC 61000-4-8:2009 ED.2.0
	IEC 61000-4-11:2004 ED.2.0

Notes: The above IEC basic standards are applied with latest version if customer has no special requirement

In accordance with the council directive 2004/108/EC

Kenny Meng / Assistant Manager
May 31, 2012

No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)
Tel: 886-2-26052180 Fax: 886-2-26051924
http://www.adt.com.tw E-Mail: service.adt@tw.bureauveritas.com

CERTIFICATE OF CONFORMITY

Equipment	:	AC Adapter
Brand Name	:	CWT
Test Model No.		CAD120121
Multiple Listing	:	CAM120121, CAD120241, CAM120241, CAD120191, CAM120191
Applicant	:	CHANNEL WELL TECHNOLOGY CO., LTD
Test Report No.	:	FV120517D02

We, **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, declare that the equipment above has been tested in our facility and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

FCC Part 15, Subpart B, Class B

ICES-003: 2004, Class B

ANSI C63.4-2009

Kenny Meng / Assistant Manager

May 31, 2012

No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

Tel: 886-2-26052180 Fax: 886-2-26051924

http://www.adt.com.tw E-Mail: service.adt@tw.bureauveritas.com

Zertifikat *Certificate*

TÜVRheinland®

Zertifikat Nr. *Certificate No.*
S 50229299

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0001

Ihr Zeichen *Client Reference*	**Unser Zeichen** *Our Reference*	**Längstens gültig bis**	*Latest expiration date (day/mo/yr)*
RD120302emc00000614	ZTW1-WYP- 10036709 001	23.05.2017	

Genehmigungsinhaber *License Holder*
Channel Well Technology Co., Ltd.
No.222, Sec. 2, Nankan Rd.,
Lujhu Township, Taoyuan Hsien
33855
Taiwan

Fertigungsstätte *Manufacturing Plant*
Ningbo Iso Electronic Co., Ltd.
10, Chuange-ye Rd.,
The West of Ningbo Free Trade Zone
Ningbo, Zhejiang
P.R. China

Prüfzeichen *Test Mark*

www.tuv.com TÜVRheinland ID:7000000000 GS geprüfte Sicherheit

Geprüft nach *Tested acc. to*
EN 60950-1:2006+A11+A1+A12
ZEK 01.4-08/11.11

Zertifiziertes Produkt *Certified Product*	**(Geräteidentifikation)** *(Product Identification)*	**Lizenzentgelte - Einheit** *License Fee - Unit*
Schaltnetzteil (AC ADAPTER)		
Bezeichnung (Type Designation)	: CAD120121 (CWT)	10
Nennspannung (Rated Voltage)	: AC 100-240V, 50-60Hz	
Nennstrom (Rated Current)	: 2.0A MAX.	
Ausgang (Output)	: DC +12V/10A	
max. Umgebungstemperatur (max. Ambient Temperature)	: 40°C (120W power load) 60°C (60W power load)	
max. Betriebshöhe (max. Operating Altitude)	: 5000m	
Schutzklasse (Protection Class)	: I	
		10

ANLAGE (Appendix): 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde. Produkt und Fertigungsstätte erfüllen § 20 und § 21 des Produktsicherheitsgesetzes.
This certificate is based on our Testing and Certification Regulation. Product and production fulfill par § 20 and § 21 of the Product Safety Law.

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg
Tel.: (+49/221)8 06 - 13 71 e-mail: cert-validity@de.tuv.com
Fax: (+49/221)8 06 - 39 35 http://www.tuv.com/safety

Zertifizierungsstelle

TÜV Rheinland LGA Products GmbH TÜVRheinland® Zertifizierungsstelle

Dipl.-Ing. F. Stoelzel

Ausstellungsdatum *Date of Issue* : 24.05.2012 **(day/mo/yr)**

Zertifikat *Certificate*

TÜVRheinland®

Zertifikat Nr. *Certificate No.*
S 50229299

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0002

Ihr Zeichen *Client Reference*	**Unser Zeichen** *Our Reference*	**Längstens gültig bis**	*Latest expiration date (day/mo/yr)*
RD120302emc00000614	ZTW1-WYP- 10036709 001	23.05.2017	

Genehmigungsinhaber *License Holder*
Channel Well Technology Co., Ltd.
No.222, Sec. 2, Nankan Rd.,
Lujhu Township, Taoyuan Hsien
33855
Taiwan

Fertigungsstätte *Manufacturing Plant*
Ningbo Iso Electronic Co., Ltd.
10, Chuange-ye Rd.,
The West of Ningbo Free Trade Zone
Ningbo, Zhejiang
P.R. China

Prüfzeichen *Test Mark*

www.tuv.com TÜVRheinland ID:1000000000 GS geprüfte Sicherheit

Geprüft nach *Tested acc. to*
EN 60950-1:2006+A11+A1+A12
ZEK 01.4-08/11.11

Zertifiziertes Produkt (Geräteidentifikation)
Certified Product *(Product Identification)*

Lizenzentgelte - Einheit
License Fee - Unit

Schaltnetzteil (AC ADAPTER)

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Ergänzung
(Addition)

Bezeichnung (Type Designation)	: 1)	CAM120121 (CWT)	1
	2)	CAD120191, CAM120191 (CWT)	2
	3)	CAD120241, CAM120241 (CWT)	2
Ausgang (Output)	: 1)	DC +12V/10A	
	2)	DC +19V/6.32A	
	3)	DC +24V/5.0A	

5

ANLAGE (Appendix): 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde. Produkt und Fertigungsstätte erfüllen § 20 und § 21 des Produktsicherheitsgesetzes.
This certificate is based on our Testing and Certification Regulation. Product and production fulfill par § 20 and § 21 of the Product Safety Law.

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg
Tel.: (+49/221)8 06 - 13 71 e-mail: cert-validity@de.tuv.com
Fax: (+49/221)8 06 - 39 35 http://www.tuv.com/safety

Zertifizierungsstelle

TÜV Rheinland LGA Products GmbH TÜVRheinland Zertifizierungsstelle

Dipl.-Ing. F. Stoelzel

Ausstellungsdatum *Date of Issue* : 24.05.2012 **(day/mo/yr)**

Zertifikat *Certificate*

TÜVRheinland®

Zertifikat Nr. *Certificate No.*
S 50229299

Blatt *Page*
0003

Ihr Zeichen *Client Reference*	**Unser Zeichen** *Our Reference*	**Längstens gültig bis** *Latest expiration date (day/mo/yr)*
RD120302emc00000614	ZTW1-WYP- 10036709 001	23.05.2017

Genehmigungsinhaber *License Holder*
Channel Well Technology Co., Ltd.
No.222, Sec. 2, Nankan Rd.,
Lujhu Township, Taoyuan Hsien
33855
Taiwan

Fertigungsstätte *Manufacturing Plant*
Channel Well Technology (Guangzhou)
Co., Ltd.
Bld. B, Eastern Hi-tech
Industrial Base
Zengjiang Street, Zengcheng
Guangzhou, Guangdong 511300
P.R. China

Prüfzeichen *Test Mark*

Geprüft nach *Tested acc. to*
EN 60950-1:2006+A11+A1+A12
ZEK 01.4-08/11.11

Zertifiziertes Produkt (Geräteidentifikation) *Certified Product* *(Product Identification)*

Lizenzentgelte - Einheit *License Fee - Unit*

Schaltnetzteil (AC ADAPTER)

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Ergänzung
(Addition)

Fertigungsstätte: siehe oben
(Factory) (see above)

ANLAGE (Appendix): 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.
Produkt und Fertigungsstätte erfüllen § 20 und § 21 des Produktsicherheitsgesetzes.
This certificate is based on our Testing and Certification Regulation.
Product and production fulfill par § 20 and § 21 of the Product Safety Law.

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg
Tel.: (+49/221)8 06 - 13 71 e-mail: cert-validity@de.tuv.com
Fax: (+49/221)8 06 - 39 35 http://www.tuv.com/safety

Zertifizierungsstelle

TÜV Rheinland LGA Products GmbH TÜVRheinland® Zertifizierungsstelle

Dipl.-Ing. F. Stoelzel

Ausstellungsdatum *Date of Issue* : 24.05.2012 **(day/mo/yr)**

NOTICE OF AUTHORIZATION TO APPLY THE UL MARK

2012/06/05

Channel Well Technology Co Ltd
Ms. Vivi Liu
222 Sec 2 Nankan Rd
Lujhu Township
Taoyuan Hsien 33855, Tw

Our Reference:	File E161451, Vol. X1	Project Number	12CA20365
Your Reference:	CWFA1212		
Project Scope:	AC Adapter, MODEL: CAD120121,CAM120121,CAD120191,CAM120191,CAD120241,CAM120241 ; E161451-A81-UL New		

Dear Ms. Vivi Liu:

UL's investigation of your product(s) has been completed under the above Reference Number and the product was determined to comply with the applicable requirements.

This letter temporarily supplements the UL Follow-Up Services Procedure and serves as authorization to apply the UL Mark only at authorized factories under UL's Follow-Up Service Program.

To provide the manufacturer with the intended authorization to use the UL Mark, the addressee must send a copy of this notice to each manufacturing location currently authorized in File E161451, Vol. X1.

This authorization is effective 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 in the near future. Until then, this letter authorizes application of the UL Mark for 90 days from the date of this letter.

Products that bear the UL Mark shall be identical to those that were evaluated by UL and found to comply with UL's requirements. If changes in construction are discovered, appropriate action will be taken for products not in conformance with UL's requirements and continued use of the UL Mark may be withdrawn. UL may elect to withdraw use of the UL Mark if the Applicant or Manufacturer fails to comply with UL's requirements including ongoing compliance of the product, under UL's Follow-Up Service.

Any information and documentation provided to you involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

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Very truly yours,

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TPIDF05-302D45

適合証明書
Certificate of Conformity

TÜVRheinland®

証明書番号 Certificate No.	ページ Page
JD 50145938	1

申請者照会番号 Applicant Reference	検査機関照会番号 Our Reference	発行年月日 Date of Issue
NIT-113113240	ZTW1-RC-11015504 001	2009 年 02 月 10 日

申請者 Applicant

Ningbo Iso Electronic Co., Ltd.

10, Chuange-ye Rd., The West of Ningbo
Free Trade Zone Ningbo, Zhejiang P.R. China

製造工場 Factory

Ningbo Iso Electronic Co., Ltd.

10, Chuange-ye Rd., The West of Ningbo
Free Trade Zone Ningbo, Zhejiang P.R. China

TÜV RT PSE

検査の方法 Inspection Method

- 技術基準 省令第２項：J60950(H19), J55022(H20)
  Technical Requirements Clause 2: J60950 (H19): 2007, J55022 (H20): 2008
- 施行規則別表第四（交流用電気機械器具）
  Appendix 4 of the Enforcement Regulations (AC Electric Appliances)

特定電気用品名 Name of Specified Electrical Appliance and Material	:	直流電源装置 DC Power Supply Unit
型式の区分 Type Classification	:	（「添付 1.0」参照） (Refer to "Attachment 1.0")
海外製造事業者 Overseas Manufacturer	:	**Ningbo Iso Electronic Co., Ltd.** 10, Chuange-ye Rd., The West of Ningbo Free Trade Zone Ningbo, Zhejiang P.R. China
客先名 Client	:	**Channel Well Technology Co., Ltd.** 3rd Fl-2, 888 Jing-Gwo Rd. Taoyuan City 330 Taiwan, R.O.C.
証明書の有効期間 Validity of Certificate	:	本証明書は、施行令で規定された期間である 2014 年 02 月 09 日まで有効です。 This certificate is effective until 09 February, 2014, being the period stipulated by the Enforcement Ordinance.

これは、上記申請者より申請のあった上記特定電気用品及び製造工場が、電気用品安全法第八条第一項に規定する技術基準及び同法第九条第二項の経済産業省令で定める基準に適合していることを証明するものです。

This is to certify that the above-mentioned Specified Electrical Appliances and Materials and the factory which the above-mentioned applicant applied for have been complied with the Technical Requirements stipulated by Article 8, Paragraph 1 of the Electrical Appliance and Material Safety Law and the requirements stipulated by the METI Ordinance specified in Article 9, Paragraph 2 of the said law.

テュフ　ラインランド　台湾リミテッド
TÜV Rheinland Taiwan Ltd.

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発行者 Issued by

氏名 Name René Charton

TÜV Rheinland Taiwan Ltd. TÜVRheinland® Certification Body

添付 Attachment：1.0　　発行日 Date of Issue：2009 年 02 月 10 日

【型式の区分 Type Classification】

型式区分管理 No: (Type Classification Control No:) ： CL-04

証明書番号 (Certificate No.) ： JD 50145938

特定電気用品名 (Name of Specified Electrical Appliance and Material) ： 直流電源装置 DC Power Supply Unit

申請者 (Applicant) ： **Ningbo Iso Electronic Co., Ltd.**

海外製造事業者 (Overseas Manufacturer/factory) ： **Ningbo Iso Electronic Co., Ltd.**

客先名 (client) ： **Channel Well Technology Co., Ltd.**

要素 Factor	区分 Classification
定格入力電圧 (Rated input voltage)	125V 以下のもの 及び 125V を超えるもの (125V or less, and exceeding 125V)
入力側の定格容量 (Rated capacity on input side)	100VA を超え 200VA 以下のもの (Exceeding 100VA, and less than or equal to 200VA)
定格周波数（変圧器を有するものの場合に限る。） (Rated frequency (limited to those with transformer)	50Hz のもの 及び 60Hz のもの (50Hz, and 60Hz)
交流用端子 (AC terminal)	ないもの (Without AC terminal)
直流定格電圧 (Rated DC voltage)	15V 以下のもの (15V or less)
変圧器 (Transformer)	あるもの (With transformer)
変圧器の巻線の絶縁の種類 (Transformer winding insulation class)	E 種のもの (Class E)
直流電圧の調整装置 (DC voltage adjusting mechanism)	ないもの (Without adjusting mechanism)
回路の保護機構 (Circuit protection device)	あるもの (With circuit protection device)
器体スイッチ (Body switch)	ないもの (Without body switch)
外郭の材料 (Outer case material)	合成樹脂のもの (Plastic)
用途 (Application)	その他のもの (Others)
電源電線と器体との接続の方式 (Method of attaching power supply cord)	接続器利用のもの (Coupling device)
二重絶縁 (Double insulation)	施してないもの (Without double insulation)

テュフ ラインランド 台湾リミテッド
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発行者 Issued by

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TÜV Rheinland Taiwan Ltd. Certification Body

Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies

Channel Well Technology

Cord Length:		Tester Signatures:		Test Date:	
Temperature:		Approved :	Mickey Hsiung		

Model Number	Nameplate AC Input Voltage (V)	Nameplate AC Input Frequency (Hz)	Nameplate DC Output Voltage (VDC)	Nameplate DC Output Power (W)	Nameplate DC Output Current (mA)	No-Load Input Power 115V @ 60Hz (W)	No Load Input Power 230V @ 50Hz (W)	Average Active Efficiency 115V @ 60Hz (W)	Average Active Efficiency 230V @ 50Hz (W)
CAD120121	100-240	50-60	12	120.00	10000	0.172	0.205	88.538	89.500

MEASURED AND CALCULATED DATA AT 115V 60Hz FOR SAMPLE 1

Mode										Level IV Evaluation		Two years after ErP Evaluation		Level V Evaluation		CoC Evaluation	
115V / 60Hz	Percent of nameplate current	VTHD (%)	Ture PF (W/VA)	Input Power(W)	Output Current(mA)	Output Voltage(V)	Output Power(W)	Power Consumed(W)	Efficiency(%)	Level IV Efficiency(%)	Judgement (OK/NG)	ErP Efficiency(%)	Judgement (OK/NG)	Level V Efficiency(%)	Judgement (OK/NG)	CoC Efficiency(%)	Judgement (OK/NG)
Active mode	100%	0.132	0.998	133.460	10000.000	11.762	117.620	15.840	88.131		OK		OK		OK		OK
	75%	0.123	0.996	99.767	7500.000	11.845	88.838	10.930	89.045								
	50%	0.305	0.498	67.782	5000.000	11.922	59.610	8.172	87.944								
	25%	0.201	0.478	33.696	2500.000	12.000	30.000	3.696	89.031								
	Average								88.538	≧ 84.000		≧ 87.000		≧ 87.000		≧ 87.000	
No Load mode	VTHD (%)		Ture PF (W/VA)		Pin(W)					Level IV Pin(W)	Judgement (OK/NG)	ErP Pin(W)	Judgement (OK/NG)	Level V Pin(W)	Judgement (OK/NG)	CoC Pin(W)	Judgement (OK/NG)
	0.108		0.051		0.172					≦ 0.500	OK	< 0.500	OK	≦ 0.500	OK	≦ 0.500	OK

MEASURED AND CALCULATED DATA AT 230V 50Hz FOR SAMPLE 1

Mode										Level IV Evaluation		Two years after ErP Evaluation		Level V Evaluation		CoC Evaluation	
230V / 50Hz	Percent of nameplate current	VTHD (%)	Ture PF (W/VA)	Input Power(W)	Output Current(mA)	Output Voltage(V)	Output Power(W)	Power Consumed(W)	Efficiency(%)	Level IV Efficiency(%)	Judgement (OK/NG)	ErP Efficiency(%)	Judgement (OK/NG)	Level V Efficiency(%)	Judgement (OK/NG)	CoC Efficiency(%)	Judgement (OK/NG)
Active mode	100%	0.084	0.982	131.760	10000.000	11.762	117.620	14.140	89.268		OK		OK		OK		OK
	75%	0.074	0.971	99.932	7500.000	11.840	88.800	11.132	88.860								
	50%	0.195	0.434	65.921	5000.000	11.907	59.535	6.386	90.313								
	25%	0.138	0.408	33.462	2500.000	11.987	29.968	3.495	89.557								
	Average								89.500	≧ 84.000		≧ 87.000		≧ 87.000		≧ 87.000	
No Load mode	VTHD (%)		Ture PF (W/VA)		Pin(W)					Level IV Pin(W)	Judgement (OK/NG)	ErP Pin(W)	Judgement (OK/NG)	Level V Pin(W)	Judgement (OK/NG)	CoC Pin(W)	Judgement (OK/NG)
	0.062		0.187		0.205					≦ 0.500	OK	< 0.500	OK	≦ 0.500	OK	≦ 0.500	OK

Channel Well Technology

Model Number	Nameplate AC Input Voltage (V)	Nameplate AC Input Frequency (Hz)	Nameplate DC Output Voltage (VDC)	Nameplate DC Output Power (W)	Nameplate DC Output Current (mA)	No-Load Input Power 115V @ 60Hz (W)	No Load Input Power 230V @ 50Hz (W)	Average Active Efficiency 115V @ 60Hz (W)	Average Active Efficiency 230V @ 50Hz (W)
CAD120121	100-240	50-60	12	120.00	10000	0.181	0.244	88.153	89.193

MEASURED AND CALCULATED DATA AT 115V 60Hz FOR SAMPLE 2

Mode										Level IV Evaluation		Two years after ErP Evaluation		Level V Evaluation		CoC Evaluation	
115V / 60Hz	Percent of nameplate current	VTHD (%)	Ture PF (W/VA)	Input Power(W)	Output Current(mA)	Output Voltage(V)	Output Power(W)	Power Consumed(W)	Efficiency(%)	Level IV Efficiency(%)	Judgement (OK/NG)	ErP Efficiency(%)	Judgement (OK/NG)	Level V Efficiency(%)	Judgement (OK/NG)	CoC Efficiency(%)	Judgement (OK/NG)
Active mode	100%	0.133	0.998	133.820	10000.000	11.772	117.720	16.100	87.969		OK		OK		OK		OK
	75%	0.121	0.996	100.130	7500.000	11.852	88.890	11.240	88.775								
	50%	0.312	0.496	68.123	5000.000	11.932	59.660	8.463	87.577								
	25%	0.201	0.477	34.007	2500.000	12.010	30.025	3.982	88.291								
	Average								88.153	≧ 84.000		≧ 87.000		≧ 87.000		≧ 87.000	
No Load mode	VTHD (%)		Ture PF (W/VA)		Pin(W)					Level IV Pin(W)	Judgement (OK/NG)	ErP Pin(W)	Judgement (OK/NG)	Level V Pin(W)	Judgement (OK/NG)	CoC Pin(W)	Judgement (OK/NG)
	0.115		0.053		0.181					≦ 0.500	OK	< 0.500	OK	≦ 0.500	OK	≦ 0.500	OK

MEASURED AND CALCULATED DATA AT 230V 50Hz FOR SAMPLE 2

Mode										Level IV Evaluation		Two years after ErP Evaluation		Level V Evaluation		CoC Evaluation	
230V / 50Hz	Percent of nameplate current	VTHD (%)	Ture PF (W/VA)	Input Power(W)	Output Current(mA)	Output Voltage(V)	Output Power(W)	Power Consumed(W)	Efficiency(%)	Level IV Efficiency(%)	Judgement (OK/NG)	ErP Efficiency(%)	Judgement (OK/NG)	Level V Efficiency(%)	Judgement (OK/NG)	CoC Efficiency(%)	Judgement (OK/NG)
Active mode	100%	0.085	0.981	132.080	10000.000	11.775	117.750	14.330	89.151		OK		OK		OK		OK
	75%	0.075	0.97	100.220	7500.000	11.852	88.890	11.330	88.695								
	50%	0.197	0.433	66.215	5000.000	11.920	59.600	6.615	90.010								
	25%	0.139	0.407	33.731	2500.000	11.997	29.993	3.739	88.917								
	Average								89.193	≧ 84.000		≧ 87.000		≧ 87.000		≧ 87.000	
No Load mode	VTHD (%)		Ture PF (W/VA)		Pin(W)					Level IV Pin(W)	Judgement (OK/NG)	ErP Pin(W)	Judgement (OK/NG)	Level V Pin(W)	Judgement (OK/NG)	CoC Pin(W)	Judgement (OK/NG)
	0.064		0.021		0.244					≦ 0.500	OK	< 0.500	OK	≦ 0.500	OK	≦ 0.500	OK

Channel Well Technology

Model Number	Nameplate AC Input Voltage (V)	Nameplate AC Input Frequency (Hz)	Nameplate DC Output Voltage (VDC)	Nameplate DC Output Power (W)	Nameplate DC Output Current (mA)	No-Load Input Power 115V @ 60Hz (W)	No Load Input Power 230V @ 50Hz (W)	Average Active Efficiency 115V @ 60Hz (W)	Average Active Efficiency 230V @ 50Hz (W)				
CAD120121	100-240	50-60	12	120.00	10000	0.170	0.202	88.556	89.197				

MEASURED AND CALCULATED DATA AT 115V 60Hz FOR SAMPLE 3

Mode										Level IV Evaluation		Two years after ErP Evaluation		Level V Evaluation		CoC Evaluation	
115V / 60Hz	Percent of nameplate current	VTHD (%)	Ture PF (W/VA)	Input Power(W)	Output Current(mA)	Output Voltage(V)	Output Power(W)	Power Consumed(W)	Efficiency(%)	Level IV Efficiency(%)	Judgement (OK/NG)	ErP Efficiency(%)	Judgement (OK/NG)	Level V Efficiency(%)	Judgement (OK/NG)	CoC Efficiency(%)	Judgement (OK/NG)
Active mode	100%	0.107	0.998	134.010	10000.000	11.775	117.750	16.260	87.867		OK		OK		OK		OK
	75%	0.105	0.996	100.070	7500.000	11.855	88.913	11.158	88.850								
	50%	0.105	0.992	67.431	5000.000	11.927	59.635	7.796	88.439								
	25%	0.233	0.481	33.715	2500.000	12.012	30.030	3.685	89.070								
	Average								88.556	≧ 84.000		≧ 87.000		≧ 87.000		≧ 87.000	

No Load mode	VTHD (%)	Ture PF (W/VA)	Pin(W)	Level IV Pin(W)	Judgement (OK/NG)	ErP Pin(W)	Judgement (OK/NG)	Level V Pin(W)	Judgement (OK/NG)	CoC Pin(W)	Judgement (OK/NG)
	0.11	0.049	0.17	≦ 0.500	OK	< 0.500	OK	≦ 0.500	OK	≦ 0.500	OK

MEASURED AND CALCULATED DATA AT 230V 50Hz FOR SAMPLE 3

Mode										Level IV Evaluation		Two years after ErP Evaluation		Level V Evaluation		CoC Evaluation	
230V / 50Hz	Percent of nameplate current	VTHD (%)	Ture PF (W/VA)	Input Power(W)	Output Current(mA)	Output Voltage(V)	Output Power(W)	Power Consumed(W)	Efficiency(%)	Level IV Efficiency(%)	Judgement (OK/NG)	ErP Efficiency(%)	Judgement (OK/NG)	Level V Efficiency(%)	Judgement (OK/NG)	CoC Efficiency(%)	Judgement (OK/NG)
Active mode	100%	0.06	0.981	131.960	10000.000	11.777	117.770	14.190	89.247		OK		OK		OK		OK
	75%	0.058	0.969	99.892	7500.000	11.852	88.890	11.002	88.986								
	50%	0.058	0.938	67.288	5000.000	11.915	59.575	7.713	88.537								
	25%	0.169	0.412	33.326	2500.000	12.000	30.000	3.326	90.020								
	Average								89.197	≧ 84.000		≧ 87.000		≧ 87.000		≧ 87.000	

No Load mode	VTHD (%)	Ture PF (W/VA)	Pin(W)	Level IV Pin(W)	Judgement (OK/NG)	ErP Pin(W)	Judgement (OK/NG)	Level V Pin(W)	Judgement (OK/NG)	CoC Pin(W)	Judgement (OK/NG)
	0.055	0.018	0.202	≦ 0.500	OK	< 0.500	OK	≦ 0.500	OK	≦ 0.500	OK

MEASURED AND CALCULATED DATA AT 115V 60Hz (Average of three test units)						
	NO load	Active power values				
Percent of nameplate current	0%	25%	50%	75%	100%	Average
DC output current(mA)	0.000	2500.000	5000.000	7500.000	10000.000	
DC output voltage(V)		12.007	11.927	11.851	11.770	
DC output power(W)	0.000	30.018	59.635	88.880	117.697	
AC intput voltage(V)	115.000	115.000	115.000	115.000	115.000	
AC input power(W)	0.174	33.806	67.779	99.989	133.763	
VTHD(%)	0.111	0.212	0.241	0.116	0.124	
True Pf(W/VA)	0.051	0.479	0.662	0.996	0.998	0.637
Power consumed(W)	0.174	3.788	8.144	11.109	16.067	
Efficiency		88.797	87.986	88.890	87.989	88.416

MEASURED AND CALCULATED DATA AT 230V 50Hz (Average of three test units)						
	NO load	Active power values				
Percent of nameplate current	0%	25%	50%	75%	100%	Average
DC output current(mA)	0.000	2500.000	5000.000	7500.000	10000.000	
DC output voltage(V)		11.995	11.914	11.848	11.771	
DC output power(W)	0.000	29.987	59.570	88.860	117.713	
AC intput voltage(V)	230.000	230.000	230.000	230.000	230.000	
AC input power(W)	0.217	33.506	66.475	100.015	131.933	
VTHD(%)	0.060	0.149	0.150	0.069	0.076	
True Pf(W/VA)	0.075	0.409	0.602	0.970	0.981	0.607
Power consumed(W)	0.217	3.520	6.905	11.155	14.220	
Efficiency		89.498	89.620	88.847	89.222	89.297

Class IV		*Two years after ErP*		*Class V*		CoC Evaluation	
Criteria for Active Mode(吃載模式)		**Criteria for Active Mode(吃載模式)**		**Criteria for Active Mode(吃載模式)**		**Criteria for Active Mode(吃載模式)**	
Pno(輸出Wa	**Efficiency 100%+75%+50%+25%的最小平均值**	**Pno(輸出Watt)**	**Efficiency 100%+75%+50%+25%的最小平均值**	**Pno(輸出Watt)**	**Efficiency 100%+75%+50%+25%的最小平均值**	**Pno(輸出Watt)**	**Efficiency 100%+75%+50%+25%的最小平均值**
Pno≦1	≧0.5*Pno	Pno≦1	≧0.48*Pno+0.14	Pno≦1	≧0.48*Pno+0.14	Pno≦1	≧0.48*Pno+0.14
1<Pno≦51	≧[0.09*Ln(Pno)]+0.5	1<Pno≦51	≧[0.063*Ln(Pno)]+0.622	1<Pno≦49	≧[0.0626*Ln(Pno)]+0.622	1<Pno≦49	≧[0.0626*Ln(Pno)]+0.622
51<Pno≦250	≧0.85	51<Pno	≧0.87	49<Pno≦250	≧0.87	49<Pno≦250	≧0.87
Criteria for No-Load Mode(無載模式)		**Criteria for No-Load Mode(無載模式)**		**Criteria for No-Load Mode(無載模式)**		**Criteria for No-Load Mode(無載模式)**	
Pno(輸出Wa	**無載的最大Watt**	**Pno(輸出Watt)**	**無載的最大Watt**	**Pno(輸出Watt)**	**無載的最大Watt**	**Pno(輸出Watt)**	**無載的最大Watt**
Pno<10	≦0.5	Pno≦51	<0.3	Pno<50	≦0.3	Pno<50	≦0.3
10≦Pno≦25	≦0.5	51<Pno≦250	<0.5	50≦Pno≦250	≦0.5	50≦Pno≦250	≦0.5