



SPECIFICATION FOR REFERENCE

APPROVAL SIGNATURE
DATE:

CUSTOMER: _____

PART NO: _____ **REV:** A.

DESCRIPTION: _____ **Adapter** _____

***PLEASE SIGN AND RETURN ONE COPY.**

***ALL PRODUCTION UNITS WILL BE BUILT ACCORDING TO THIS SPECIFICATIONS.**

PREPARED	CHECKED	APPROVED
DATE:	DATE:	DATE:

MODEL NO: 2AAL090M,1185#18 5.5*2.5*9.5L*180° 音叉,1200mm

CATALOG NO: _____

AGENCY APPROVAL: _____

PRESENTED BY: _____

NO. A151209-02

SPEC. Revision History

Date	Revision No.	Change Information	
		Previous version	Current version
2015/12/09	A	新製作	Initial

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1 SCOPE

This document describes basic electrical characteristics and mechanical characteristic of 90W class I power adapter.

2 ELECTRICAL SPECIFICATION

2.1 INPUT REQUIREMENT

2.1.1 INPUT VOLTAGE AND FREQUENCY RANGE

	Minimum	Nominal	Maximum	Unit
Input Range	90	100-240	264	Vac, rms
	47	50 & 60	63	Hz

2.1.2 AC INRUSH CURRENT

Test Conditions:

1. Inrush current to be measured with bulk Caps discharged.
2. Ambient Temperature =25°C
3. The AC source to be a minimum 3KVA
4. AC input starting phase angle=90°
5. Vin=Vin(max),Frequency=Fin(min.)
6. Current to be measured using a non-saturating current probe or transformer.

Nominal Output Power	Peak Inrush Current (I-peak)
	≤ 130A

2.1.3 INPUT CURRENT

Input Voltage	Input Current (Iin)
90-264Vac	≤ 1.5A

2.1.4 LEAKAGE CURRENT

Input Voltage	Leakage Current
230Vac/50Hz	≤ 3.5mA

2.1.5 INSULATION RESISTANCE

between primary and secondary	Insulation Resistance
500Vdc	≥ 50MΩ

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2.1.6 LOW POWER CONSUMPTION

Vin	Load	Power consumption
230Vac/50Hz 115Vac/60Hz	0A	≤ 0.15 W

2.1.7 POWER FACTOR

Vin	Load	Power factor
230Vac/50Hz 115Vac/60Hz	3.75A	> 0.9

2.1.8 HI-POT TEST

Primary to Secondary	Current
4242Vdc/3000Vac,3Secs	≤ 10 mA

2.2 INPUT PROTECTION

2.2.1 INPUT CURRENT PROTECTION

A fuse shall be installed on the input line side near the input connector.

2.3 OUTPUT REQUIREMENT

2.3.1 OUTPUT VOLTAGE AND CURRENT AND OUTPUT POWER

Peak load for AC start up.

Vout(nom)	Voltage Range	Current Range			Watt(Max)
		Minimum Load	Full load	Peak load	
+24.0V	$\pm 5\%$	0A	3.75A	4.5A	94.5W

2.3.2 RIPPLE AND NOISE

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

Output Voltage	Ripple & Noise(Vp-p)
+24V	≤ 480 mV

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2.3.3 OVER VOLTAGE PROTECTION

Test Conditions:

- 1. Vin=Vin(nominal)
- 2. No load.

Over voltage protection	$\leq 180\%$ Vout Max.
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2.3.4 OVER CURRENT PROTECTION

Test Conditions:

- 1. Vin=Vin(nominal); Frequency=Fin(nominal)
- 2. Iout is ramped using a CC mode load form 0A until current fold back..

Over current protection	Min	Max
	120%	200%

2.3.5 OVERSHOOT AND UNDERSHOOT

Overshoot and Undershoot	10% Max.
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2.3.6 SHORT CIRCUIT PROTECTION

Test Conditions:

- 1. Short is defined as a load resistance<0.1ohms.
- 2. A short circuit load is applied for 10 seconds.

Requirement:

- 1. At the end of the test cycle, the short is replaced with a load equal to Iout (max.).Output voltage must return to limits defined in section 2.3.1.
- 2. Output must recover automatically within 3 seconds when short is removed.
- 3. While the output is shorted, output current must not exceed Iout(max) X4.

2.4 PERFORMANCE REQUIREMENT

2.4.1 EFFICIENCY

Meet: Level 6

Active average efficiency	89.00% min.
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2.4.2 TURN ON DELAY TIME

Test Conditions:

- 1. CC mode load =100% Iout(max) .
- 2. Power adapter is connected to load before AC power is applied.

Turn on delay time	3secs max.
Rise time	50ms max.

2.4.3 HOLD-UP TIME

Test Conditions:

- 1. CC mode load =100% Iout(max) .
- 2. Vin 115V/60Hz & 230Vac/50Hz.

Hold up time	Vin 115Vac/60Hz	Vin 230Vac/50Hz
	8ms min.	16ms min.

2.4.4 DYNAMIC LOAD (LOAD TRANSIENT)

Test Conditions:

- 1. CC Load cycling between 100% Iout(max) and 50% Iout(max.).
- 2. Cycling frequency is 120Hz
- 3. Load slew rate is 500mA/uS

Dynamic	±10% (Vout)
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3 ENVIRONMENTAL SPECIFICATION

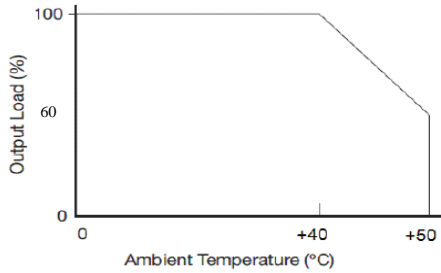
3.1 TEMPERATURE

PARAMETER	OPERATING	NON-OPERATING
Ambient temp	0 to 40°C	-40 to 70°C

***Note: High Temperature Test**

Evaluate the maximum percentage of output load at 50°C and create derating curve.

Derating curve template



Test condition

Ambient Temperature from 40°C to 50°C

Requirement: Find out the maximum percentage of output load at 50°C Required

E-CAP and componets derating are same as the table

Component Type	Component Rated Value
E-Cap Ripple Current	100%
Magnetics (Temperature Only)	100%
Input bulk and XC capacitors, switching MOSFET, Output Rectifier Diode	95%
All Others	90%

3.2 HUMIDITY

PARAMETER	OPERATING	NON-OPERATING
Humidity	5-95% non condensing	0-95% non condensing

3.3 VIBRATION AND SHOCK

PARAMETER	OPERATING	NON-OPERATING
VIBRATION	0.25G RMS, 1Hour	MIL-STD-810D, method 514 and procedure X1
SHOCK	0.5G RMS, 5 repetitions	30G 1/2 sine, 30mS, 6sides

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3.4 ALTITUDE

PARAMETER	OPERATING	NON-OPERATING
Altitude	Sea level to 5000M	Sea level to 12,300M

3.5 CALCULATED MEAN TIME BETWEEN FAILURES (MTBF)

Test Conditions:

- Operational temperature=25°C
- Altitude=5000m
- Confidence level =90%
- Predictive standard=MIL-HDBK-217F
- Load current is =0.8*Iout(max)
- Vin(nom)

MTBF	100,000 hours min.
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3.6 DROP TEST

PARAMETER	OPERATING	NON-OPERATING
Drop test	N/A	IEC-60068-2-32 ED, 100cm UNBOXED

4 APPLICATION STANDARD & RELATED SPECIFICATION

4.1 STANDARD & SAFETY CERTIFICATION

4.1.1 SAFETY STANDARD(MEET)

COUNTRY CODE	STANDARD	TEST REPORTS
NA	UL60950	UL60950
GE	EN60950-1:2006	CB,LVD
JP	J60950	CB,PSE
AU	AS/NZS 60950-1	CB
UK	EN 60950-1:2006	CB,LVD
KO	IEC60950-1:2006	CB
PR	IEC 60950-1:2006	CB,CCC
BZ	IEC 60950-1:2006	CB
NJ	J60950,UL60950	CB,PSE,UL60950

4.1.2 EMI

FCC CFR 47 Part 15, Subpart J, Class B, resistive load.

EN55022/CISPR 22, Class B , resistive load.

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4.1.3 EMS

The Supplier must confirm compliance to the following standards:

EN55024: Immunity

EN61000-3-2: Harmonic Current Emission.

EN61000-3-3: Voltage fluctuations and Flicker.

EN61000-4-2: Electrostatic Discharge, level 4: $\geq 8KV$, contact $\geq 15KV$ air discharge.

EN61000-4-3: Radiated Electromagnetic field, 3V/m.

EN61000-4-4: Electrical Fast Transient, $\geq 1KV$. Criterion B.

EN61000-4-5: Surge $\geq 2KV$ common mode (Class I only), $\geq 1KV$ differential mode. Criterion B.

EN61000-4-6: Conducted Immunity, 3A/m

EN61000-4-11: Voltage dips and interruption.

4.1.4 LPS

Meet IEC60950-1

4.1.5 ENVIRONMENT STANDARDS

RoHS & REACH regulation

4.1.6 ENERGY SAVING

European CoC – EPS Version 5 Tier2

U.S. DOE – Level VI

5 MECHANICAL

5.1 INPUT CONNECTOR AND OUTPUT CABLE

5.1.1 INPUT CONNECTOR

See mechanical drawing

5.1.2 OUTPUT JACK AND CABLE

See mechanical drawing

5.2 AC ADAPTER EXTERNAL DIMENSION

See mechanical drawing

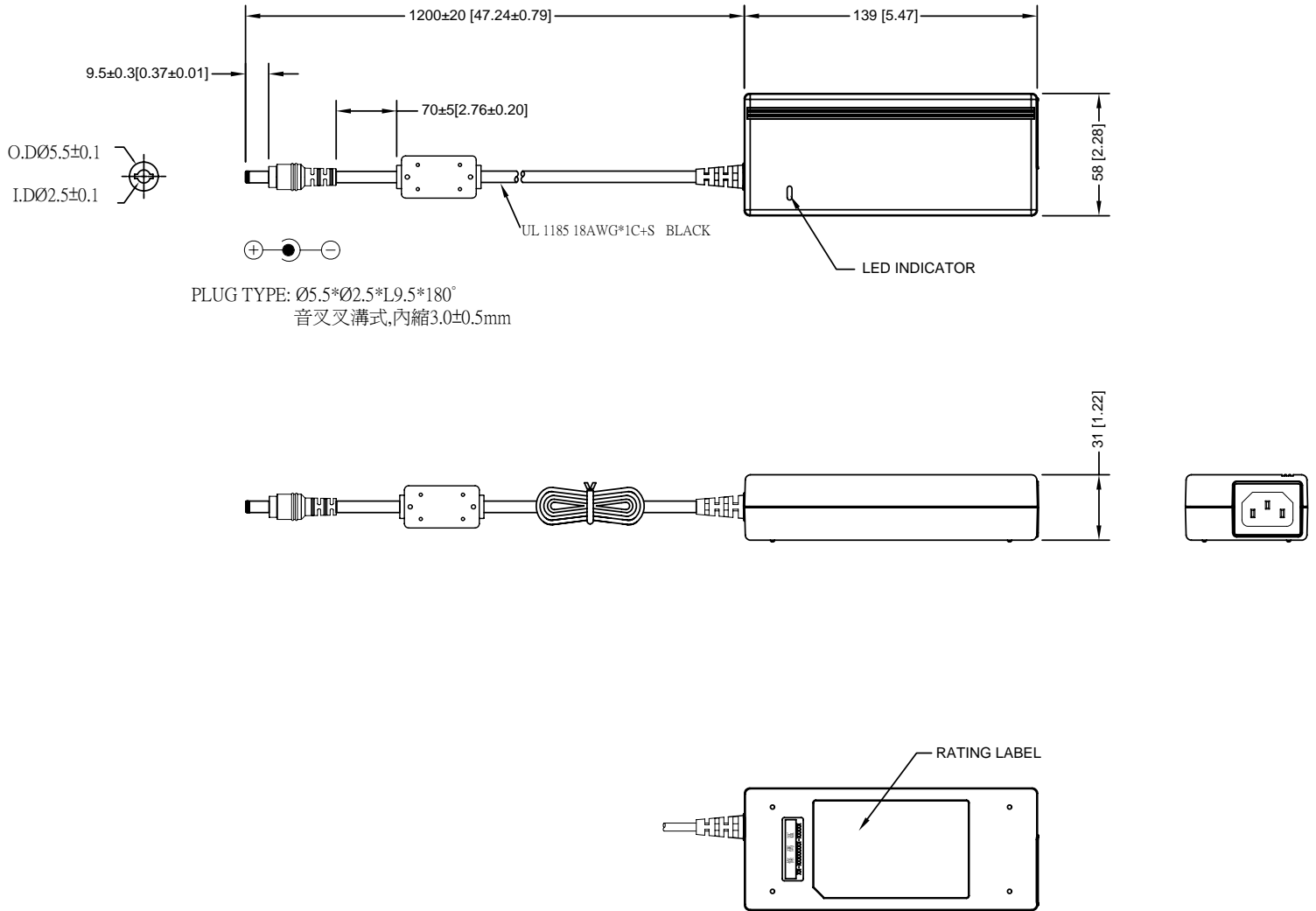
5.3 LABEL DRAWING

See mechanical drawing

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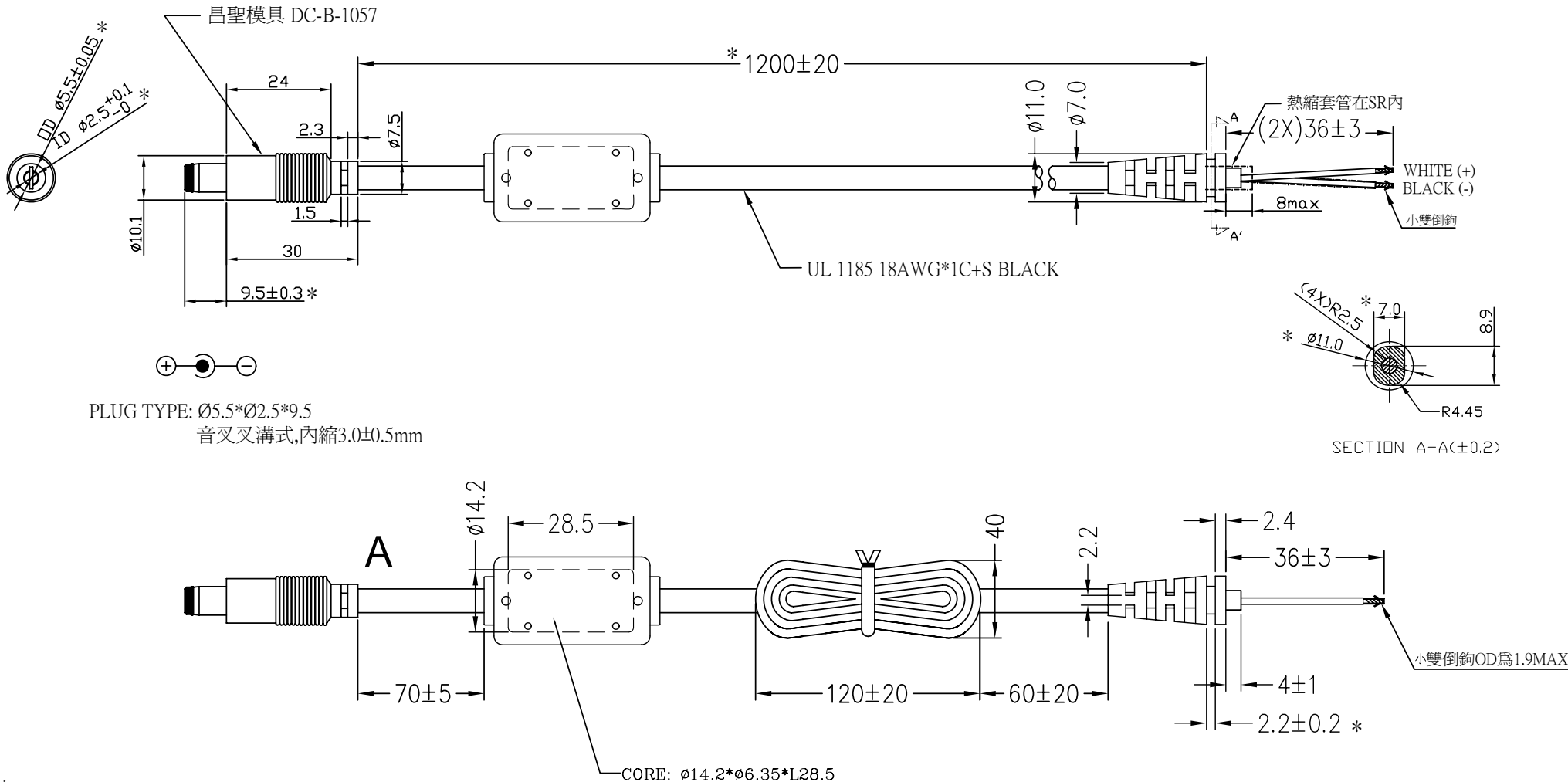
版本	修訂內容	修訂者	日期
A01	新製	wb.liao	2015-12-09

Doc. EA-0382



NOTES:

1. CASE & CABLE COLOR : BLACK
2. CABLE SPEC.:CABLE ARE UL 1185 #18AWG*1C+S BLACK
4. MODEL:G99-AAL090M-N024
5. PART NO.:G18-BCA312A-MP00



PLUG TYPE: Ø5.5*Ø2.5*9.5
音叉叉溝式,內縮3.0±0.5mm

SECTION A-A(±0.2)

註:

- 一.電性測試:
 - 1.耐電壓:AC 500V/秒,測試無異常.
 - 2.絕緣抵抗:DC 500V 50MΩ以上.
 - 3.導通測試:無斷線、短路、極性反(芯線接內極).

- 二.拉力測試:電線與S/R間吊重 9Kg經過1分鐘無斷線脫落等異常.

- 三.折曲測試:
電線吊重300g,左右各 60°往復搖擺,30回/分,A處往復1,500 回後,SR 端無損,不完全斷線,且外觀無脫落、斷裂等異常.

標註 "*" 為 IQC 必須檢驗的尺寸或內容.

環保材料標準:

No	有害物質名稱	含量標準	SHEET METAL TOLERANCE (UNLESS OTHERWISE SPECIFIED)				0.1 REV	新繪製,在G18-B7A312A-M500基礎上修改DC頭為5.5*2.5*9.5mm				
1	鎘 (Cd)	<75ppm						DESCRIPTION				
2	鉛 (Pb)	<800ppm	DIMENSION	PIERCING	BENDING	ANGULAR		UNIT: mm	MODEL NO.: 2AAL090M			
3	汞 (Hg)	<800ppm	X < 8	±0.1	±0.15	±0.3°	VP VP ELECTRONIQUE	MATERIAL	PART NO.: G18-BCA312A-MP00			
4	六價鉻 (Cr)	<800ppm	8 ≤ X < 25	±0.1	±0.2	±0.5°		DRAWING NO.:				
5	多溴聯苯 (PBB)	<800ppm	25 ≤ X < 100	±0.15	±0.25	±0.5°	APPROVED	CHECKED	DESIGNED			
6	多溴二苯醚 (PBDE)	<800ppm	100 ≤ X < 300	±0.2	±0.3	±1°	rz.zeng	q.liu	wb.liao	SCALE: 1:1	SHEET 1 OF 1	M/A3
7	鎘,鉛,汞,六價鉻, (包裝材料總含量<100ppm)	800 ≤ X < 800	±0.3	±0.5	±1.5°	DATE:2015.12.01	DATE:2015.12.01	DATE:2015.12.01	THIRD ANGLE PROJECTION			