

ENGINEERING SPECIFICATION

90 WATT POWER SUPPLY

PART NUMBER PA-1900-32P1

EFFECTIVE DATE : Nov. 26, 2012

REV. NO.	ITEM	DESCRIPTIONS OF CHANGE		CHANGED DATE :	REF. DOC. NO.
		BEFORE	AFTER		
A01		Modify from PA-1900-32AD rev.A	INITIAL Update drawing	2012/09/21	DN-
B01			Update OCP Update Surge Load	2012/11/26	DN-

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1. SCOPE

This specification defines the performance characteristics of a grounded, single phase, 90 watt, 3 Pins AC Inlet and 1 outputs power supply. This specification also defines worldwide safety and electromagnetic compatibility requirements for the power supply which is intended for use in note book products. The PSU also meet **RoHS** requirement.

2. INPUT REQUIREMENTS

2.1.INPUT VOLTAGE

	MINIMUM		MAXIMUM		NOMINAL	
LOW RANGE	90	VAC	132	VAC	100-127	VAC
HIGH RANGE	180	VAC	264	VAC	200-240	VAC

2.2.FREQUENCY

	MINIMUM		MAXIMUM		NOMINAL	
SINGLE PHASE	47	Hz	63	Hz	50/60	Hz

2.3.VOLTAGE SELECTION

A full range will be provided to select the appropriate range.

2.4.Stand-by Power Consumption Operation

This model also must meet the below tiny load test requirement.

output(W)	115Vac/60Hz(Pin)	230Vac/50Hz(Pin)
0	≤0.2	≤0.2
0.25	≤0.5W	≤0.5W
0.5	≤1W	≤1W
1	≤1.7W	≤1.7W
1.5	≤2.4W	≤2.4W
11.6	≤14W	≤14W
18.7	≤22W	≤22W

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2.5.INPUT CURRENT

1.5 amps maximum at input voltage within the low range as specified in paragraph 2.1 and at any combination of loading conditions.

0.7 amps maximum at input voltage within the high range as specified in paragraph 2.1 and at any combination of loading conditions.

2.6.Input Power Harmonic Distortion Content

The PSU shall meet EN-61000-3-2.

2.7.INRUSH CURRENT

The adapter inrush current (cold start) shall meet fuse and bridge diode I²t de-rating specified.

2.8.POWER SUPPLY EFFICIENCY

The power supply efficiency meet EPA level 5 ,average efficiency shall not be less than **87%** .The maximum load as specified in paragraph 3.1 with the AC input set at 100Vac to 240Vac, output voltage regulation cannot over 18.55V~19.95V.

3. OUTPUT REQUIREMENTS

3.1.STATIC DC LOAD (CV domain)

NOMINAL VOLTAGE (V)	LOAD CURRENT(A)		REGULATION
	MIN.	MAX.	
19.0	0	4.74	18.55V~19.95V

3.2.Surge LOAD

The adapter must meet the follow the surge load requirement.

AC **100V~240V**,

Io= 4.74A to 6.162A, Ton=10ms, Toff=10ms, and output voltage must be larger than 18.05V. The surge load cycle needs to be limited in order not to cause any over-heated and over-stress concern.

3.3.RIPPLE AND NOISE

The ripple and noise of the outputs shall be measured at the load end if the output cables when terminated to load impedance as specified in paragraph 3.3.

OUTPUT VOLTAGE		RIPPLE & NOISE (P-P)	
19.0	V	380	mV

- Use 20MHz Bandwidth frequency scope.
- Add 0.47uF/47uF capacitors at output connector terminal.

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3.4.LOAD IMPEDANCE

Filter capacitors are connected to each pins of the mating output connector. Capacitance values and material type are listed below.

VOLTAGE NOM.(V)	CAPACITANCE NOM. (uF)		MATERIAL TYPE	
19.0	47	0.47	TAN	CERAMIC.

3.5.RISE TIME

The output rise time (measured from the 10% point to the 90% point on the waveform) shall be less than **100ms** form 0~4.74A.

3.6.HOLD UP TIME

The power supply shall maintain voltage regulation within the specified limits in paragraph 3.1 for at least 5 milliseconds after lost of input voltage measure at 90~264 VAC and at maximum output load.

4. NO LOAD OPERATION

The power supply shall be able to operate under no load condition. No damage to the power supply is allowed and internal component can not be stressed beyond its rating.

5. TEMPERATURE COEFFICIENT

The temperature coefficient of all outputs is 0.05% per degree centigrade maximum.

6. PROTECTION

6.1.OVER VOLTAGE PROTECTION

The power supply should shutdown immediately for any cause of over voltage conditions before any output exceeds its limits below.

NOMINAL OUTPUT VOLTAGE (V)	OVER VOLTAGE	
	MIN	MAX.
19.0	22V	27V

The power supply is latched and power on reset is required.
If the failure condition is disappearing, disconnect AC then after 3seconds connect AC input, PSU will work normally.

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6.2.SHORT CIRCUIT PROTECTION

A short circuit placed on DC output shall cause no damage or shutdown and latch the power supply.

The output power should less than **5W** rms at output load 0~1ohm.

6.3.OVER CURRENT PROTECTION

The power supply shall provide over current protection on output. Maximum current inception point of output shall be limited to the following values:

OUTPUT VOLTAGE (V)	CURRENT LIMIT (A)
19.0	6.2A ~8.5A

The power supply will be shutdown and latch . Output power should less than 5W rms.

6.4.OVER THERMAL PROTECTION

The PSU must be no damage and latched-off after the power supply over thermal protection. Initial ambient set up 25 degree C and no air flow ,and the case temperature must be less than 105 degree C.

7. TURN ON TIME

The turn on time shall be less than **2 sec.** at 100VAC/60Hz for all load conditions. (measured from AC on point to the 90% point of the output voltage)

8. SAFETY REQUIREMENTS

The power supply must comply with the following national standards:

- United States Standard :
- Canadian Standard :
- European Standard :
- Japan Standard :
- Australia Standard :
- North European Standards :

8.1. DIELECTRIC STRENGTH

Primary to Secondary: 4242VDC for 1 sec.

8.2. INSULATION RESISTANCE

Primary to secondary: **20 Meg.** Ohms Min., 500VDC

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8.3. GROUND LEAKAGE CURRENT

The power supply ground leakage current shall be less than **75uA** at 254Vac / 50Hz condition.

9. ELECTROMAGNETIC COMPATIBILITY

Power supply for use with the host system will be tested to confirm the following emission standards.

9.1. FCC REQUIREMENTS

Power supply shall comply with the United States Communication Commission (FCC) Rules and Regulations, Part 15, Subpart J, Computing Devices "Class B limits".

9.2. VDE REQUIREMENTS

Power supply shall conform to the "Class B" requirements of CISPR 22.

9.3. VCCI REQUIREMENTS

Power supply shall conform to the "Class II" requirements of VCCI.

9.4. CE MARK

LVD : EN 60 950 : 1992/A1:1993/A2:1993/A3:1995
 EMC: EN 50 082-1 : 1992
 : EN 50 081-1 : 1992
 : IEC 801-2 : 1994
 : EN 55 022 : 1994
 : IEC 801-3 : 1984
 : EN 60 555-2&3: 1981
 : IEC 801-4 : 1988
 : EN 61000(IEC801)

9.5. LIGHTNING SURGE

A 1K volt (applied differential mode), and a 2K volt (applied common mode) by IEC 801-5:1992 Draft 7/92.

9.6. ESD

- . No miss-operation under **±8KV** by contact \ air.
 - . No damage under **±15KV** by contact \ air
- The power supply is operating at maximum load condition.

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9.7. Acoustic noise

The PSU set up measured should be made at 5cm distance between adapter and microphone.

acoustic noise at 100Hz~15kHz < 25db and at 15kHz~20kHz <31db with 100 Vac / 240Vac input voltage, test load is 0.1A,0.2A,0.3A,....,1A,2A, 3A,4A and Full load.

10. ENVIRONMENT

10.1. OPERATING

Temperature : 0 to 40 degrees centigrade.

Relative Humidity : 8 to 90 percent, non-condensing.

10.2. SHIPPING AND STORAGE

Temperature : -20 to +85 degrees centigrade.

Relative Humidity : 5 to 90 percent, non-condensing.

11. CASE TEMPERATURE RISE (ΔT)

The case temperature of AC adaptor shall not exceed (ΔT) 45 degree C for the top case and (ΔT) 50 degree C for bottom case with ambient 25°C/no air flow/ 100VAC/50Hz/full load, and amb. sensor*2 at A3 size board (10mm thickness) diagonal location.

12. MECHANICA

12.1. CASE DIMENSION

126.5mm * 50mm * 30.6mm (For reference)

12.2. DC CABLE

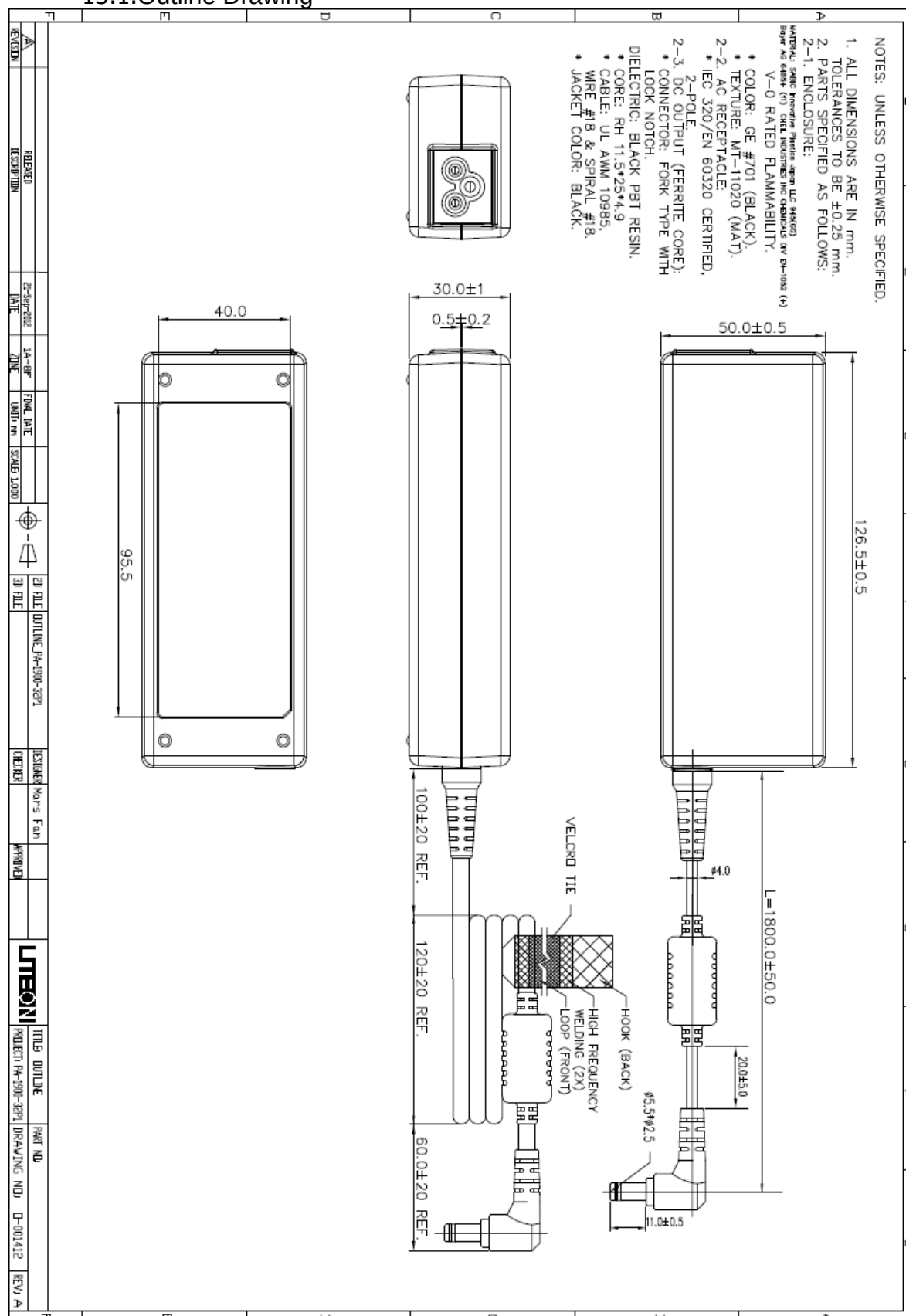
Length: 1800mm (For reference)

12.3. WEIGHT

400g maximum (For reference)

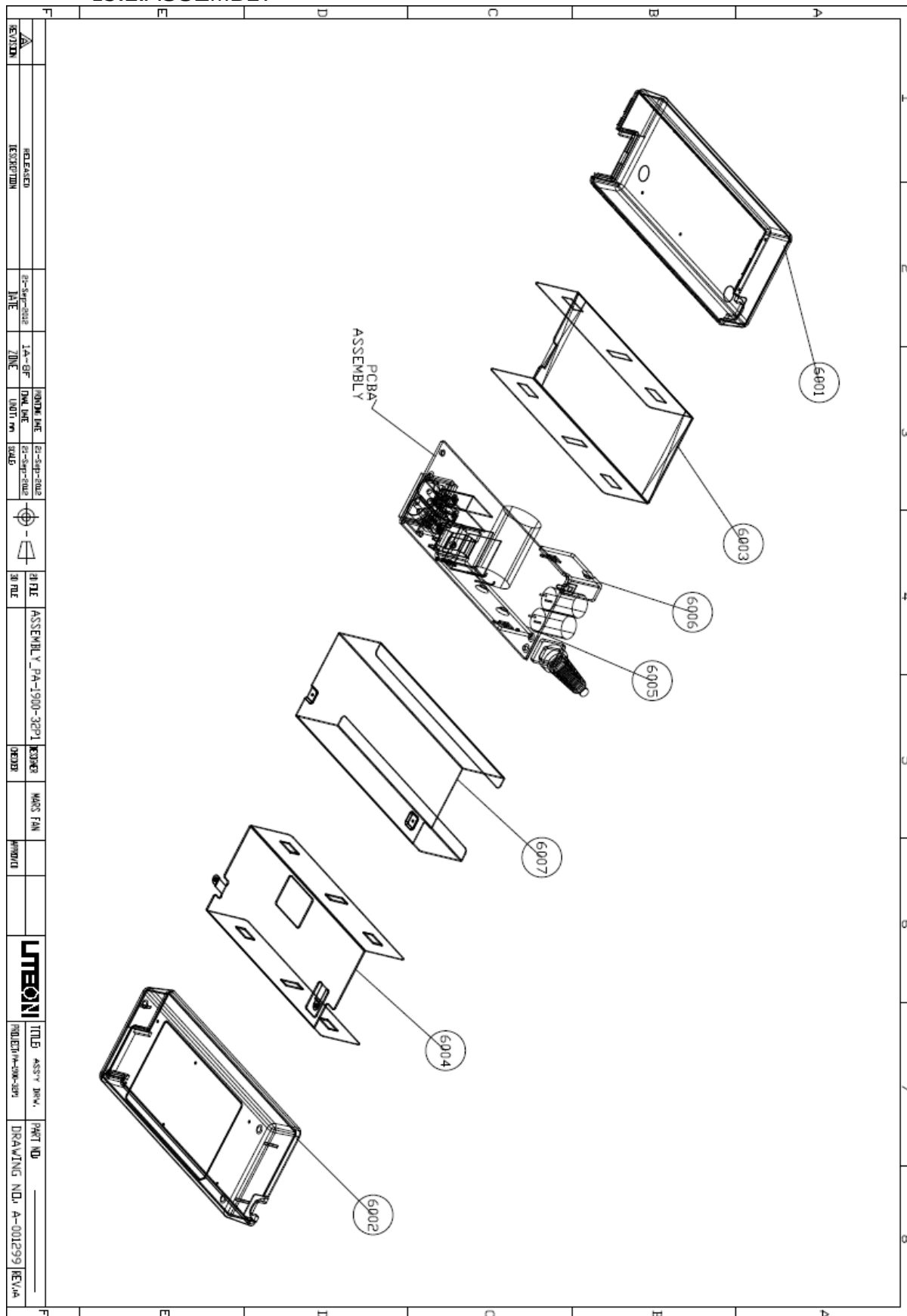
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13.1.Outline Drawing



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13.2.ASSEMBLY



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NOTES: UNLESS OTHERWISE SPECIFIED:
1. MATERIAL:
a. CABLE:
UL 1571, WM-1 80° 30V, 16AWG TIN PLATED
(WIRE) 72C/0.12 & SPIRAL 72C/0.12(COUBLE INSULATOR),
SHIELD WIRE TIN PLATED WIRE, SPIRAL 90C MIN.
PVC HARDNESS SHORE A75-95,
CABLE JACKET COLOR: BLACK.

b. PLUG:
BARREL TYPE WITH RECESS
SLEEVE BRASS WITE-NI-P(3U MIN)
DIELECTRIC RESIN, COLOR BLUE
(FLAN P/N3525T/M230-1726-02)
c. STRAIN RELF: PVC
OVERMOLD: PVC
d. COLOR/PER CABLE JACKET:
HEAT SHRINKABLE TUBE SUITOMO FZ2(125C)
e. HOOK TYPE/JMT B18(BTP)-2e or MST H1181BFS-2#
f. EMI CODE VENDOR-TYPE :
EMI CODE VER-453/RE-453A
MIN. CONDUCTIVE THICKNESS
G CHEN RHN-C08/CARPUL-F2-BP

2. ELECTRICAL CHARACTERISTICS:
a. DIELECTRIC WITHSTANDING VOLTAGE:
600VAC/5SEC(PROV WIRE TO WIRE)
b. D.C.R.: 100m ohm (MAX)
c. IMPEDANCE Z=128 ohmmin./25 MHz
Z=200 ohmmin./100 MHz)

3. TOLERANCES TO BE ±0.25 mm

GREEN MATERIAL SECTION

WHITE(+)
SPIRAL(-)
WIRING DIAGRAM

BLACK PVC JACKET
WHITE PVC JACKET
SPIRAL
WHITE INSULATION
CONDUCTOR

綠材截面圖

P1

15.5
10
1.3
16
2.5
10.0±0.1
30±0.5
4x1
2.98
11.0
34.5
12.0±2.0
5±1
5±1
H/S TUBE
WHITE (+)
SPIRAL (-)
P2

MOLDED OVER FERRITE :
RH14.2P28.5X6.35

HEAT-SHRINK FIRST
THEN MOLDING

BRASS PLUG FASTENER
EPOXY RESIN
WITH PASTE
THE SNA INSULATOR
TO MAKE THE SNA
WORK TO LOCK

124
150±3
100±20
60±20
120±20

DC cable bending test and plug insert withdraw force:

Bending test:
(1) Environment temperature: 25°C, 100% load 0.50kg ± 50g degree, 2000 times, 10 cycle/min for DC plug
(2) 50kg, 0 to 180 degree and 0 to -180 degree, 2000 times, 10 cycles/min, for SR of adaptor body.
(3) Pulling 2.0~3kg/2000 cycle
(4) Removal: 1.0~2.0kg/2000 cycle

Criteria :
(1) Disconnected rate of the wire shall be 50% or less
(2) Without damage to the insulation, etc.
(3) The test refer to DAJ RC-5320A requirement.
(4) Removal: 1.0~2.0kg/2000 cycle

DC-plug Insert & withdraw force = 1.0~3.0kg for each 5000 times.
load = 19dc, 0.2A/25v/XTR, 20cycle/min, defn TC = 30C.

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TITLE: DC CORD PART NO: (796690) Q4-PN1003213-80MS PROLETYP-190-32CL DRAWING NO: 796690 REV: A

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