MESSRS :

PRODUCT DRAWING

CUSTOMER'S PRODUCT NAME:

TDK PRODUCT NAME: DC-AC INVERTER UNIT
CXA-P1212C-WJL

TDK Corporation

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DWG.No.	CTR-0929-D

Precautionary Notes Regarding the Use of This Inverter

When using this product, give due consideration to the precautionary notes described below and ensure a safe design. Inappropriate use may result in electric shock, injury or fire.

⚠ Warning

● This product is subject to high voltage. Do not touch it while the power is on.
Failing to do so may result in electric shock.

⚠ Caution

● This product is designed for the lighting of a Cold Cathode Fluorescent Lamp.
Do not use it with any other load.
● Store this product under the conditions defined in the specification document.
● Do not store this product in an environment where dust, dirt or corrosive gas (salt,acid,base, etc.) is present.
● This product is subject to high voltage. If there is a possibility that the user may touch the product, provide a proper indication in order to draw the user's attention.
● This product is designed for use with general electronic equipment.
If it is to be used with medical equipment that directly affects human life or for the control of transportation equipment to which passengers entrust their lives, provide thorough fail-safe measures.
● Avoid using this product under high temperatures or high humidity or in an environment in which dust, dirt or any corrosive gas (salt,acid,base, etc.) is present.
Also,be careful not to allow the formation of dew condensation. It may result in damage or electric shock.
● If the product does not have a built-in protective circuit (circuit breaker, fuse, etc.), it is recommended that a fuse be used at the input stage to prevent the generation of smoke or fire in the event of a malfunction.
Even when the product has a built-in protective circuit (circuit breaker, fuse, etc.), the circuit may not function properly due to inappropriate operating conditions or power-supply capacity. It is recommended that an appropriate protective circuit (circuit breaker, fuse, etc.) be provided separately from the built-in circuit.
● Use the product only within the specified input voltage, output power, output voltage and operating temperature ranges. Exceeding these values may result in damage, etc.
● Provide a measure for the prevention of surge voltage due to lightning, etc.
Abnormal voltage may result in damage, etc.
● To prevent problems arising from short-circuiting of the high-voltage section, provide appropriate measures to prevent the entry of foreign substances following installation.
● This product is not designed to provide resistance to radiation.

Handling Precautions

● **This product uses thin wires. Observe the following precautions and handle it with care so as not to cause wire breakage. Broken wire may result in damage, etc.**
- **Do not stack multiple products on top of one another.**
- **Do not allow the product to come in contact with tools, etc.**

● **Do not apply excessive stress during installation.**
It may cause chipping and cracking,resulting in damage, etc.
● **Provide a clearance of 2 mm or more between the high-voltage section of this product and the frame body on which the product is installed and also the conductor section (pattern , pad etc.).**
● **Please do not use the product, when dropping it, since there is a possibility of the parts damage. Please confirm abnormality is not found in the product enough when using it by any chance.**

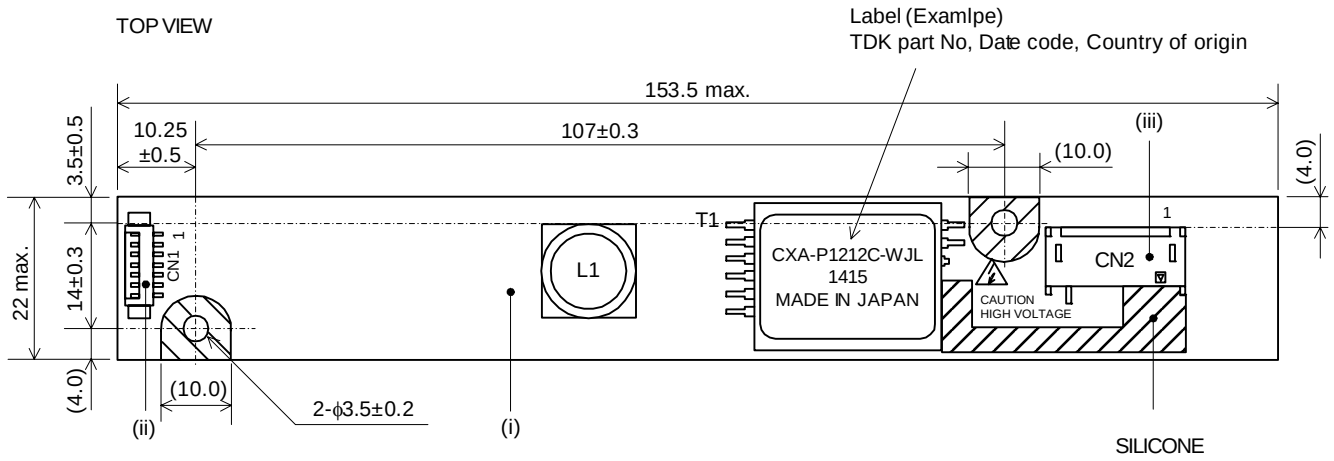
・The specifications may be changed without any notice.
・When placing orders,
please confirm "Specifications" or "Product Drawing" through TDK sales or distributors.

●Features●

・This inverter is for two lamps. It has Dimming function(PWM System) and Remote func tion.
・This product has shutdown function.
It prevents from keeping generating the high voltage when the lamps open.(Refer Note.3-4.)
・With lamp failure dete ctor.
Normal Operation : CN1-8=0V
Some Lamps Open : CN1-8=5V
・Select the way of dimming (between CN1-6 and CN1-7)
1. Insert a potentiometer (0-50kΩ)
2. Apply the voltage (0-2.5V)
・The high-voltage area (terminals and patterns) is coated with silicone so as to avoid the d efects caused by dust.

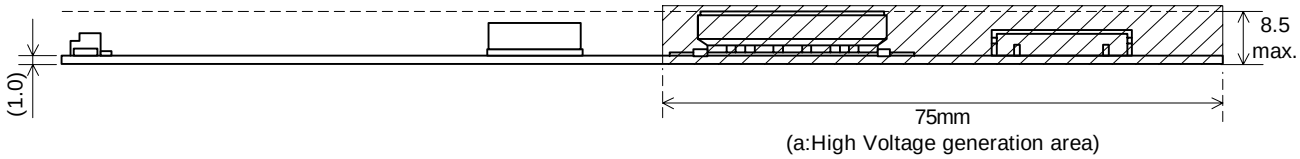
[1] Outline
1-1. Outline

TOP VIEW



No parts and pattern area.(Except GND)

SIDE VIEW



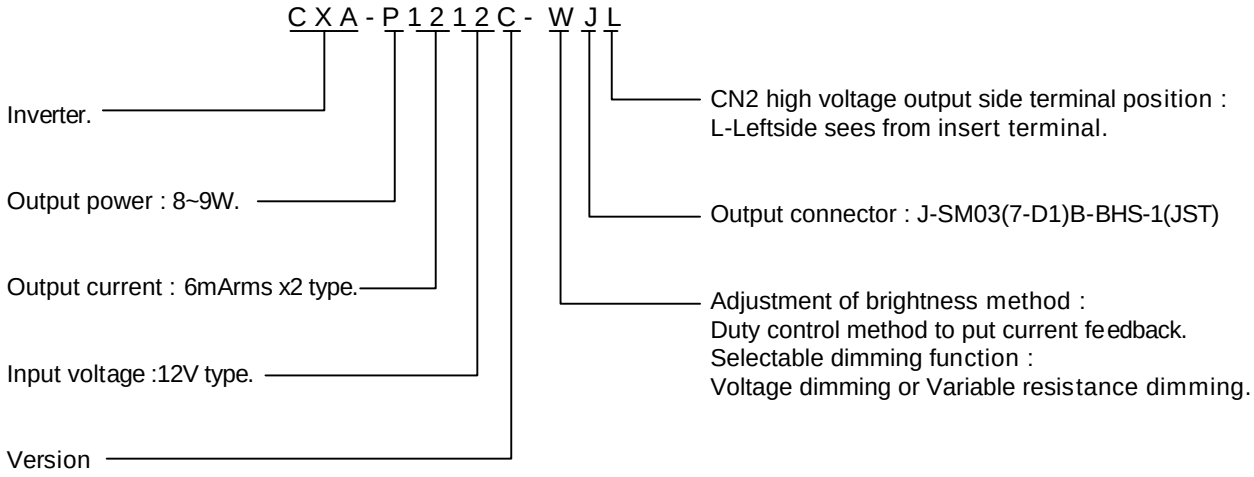
BOTTOM VIEW

Unit:mm
Weight:20.0g.typ.

No.	Part Description	Material	QU	REMARK	MATES WITH
(i)	PCB	Conposite (CEM-3)	1	UL94V-0 t=1.0	-
(ii)	Input Connector CN1	53261-0790	1	MOLEX	51021-0700
(iii)	Output Connector CN2	SM03(7-D1)B-BHS-1	1	JST	BHR-04VS-1

<The specifications may be changed without any notice.>

Example of naming product



1-2. Connector Configuration

Input side CN1

Pin No.	Symbols	Ratings	Notes
CN1-1	Vin	10.8-13.2V	Input Voltage
CN1-2			
CN1-3	GND	0V	GND
CN1-4			
CN1-5	Vrmt	0-0.4V:OFF 2.5-Vin V:ON	Remote Input Voltage
CN1-6	Vst	0V / 5V	The warning output 5V in abnormal circumstances
CN1-7	Vbr/Rbr	0-2.5V/0-50kΩ	Control/VR

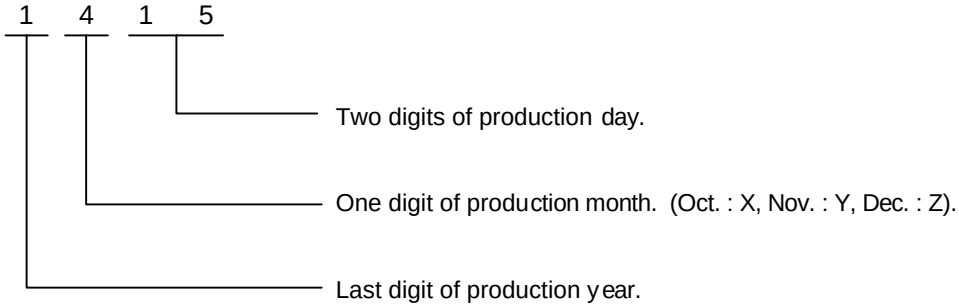
Output side CN2

Pin No.	Symbols	Ratings	Notes
CN2-1	V_{HIGH1}	600Vrms	Output1
CN2-2	V_{HIGH2}	600Vrms	Output2
CN2-3	NC	-	-
CN2-4	V_{LOW}	(2V)	Output1 Return

Note1-1. Marking of TDK part No, Date code, Country of origin.

1) TDK part No., Date code, Country of origin, is marked on the transformer.

2) Date code example. (ex. APR. 15. 2001)



3) Country of origin code example. (ex. MADE IN JAPAN. MADE IN CHINA).

<The specifications may be changed without any notice.>

Note1-2. For circuit connection, please prefer to test circuit diagram [3].

Note1-3. Please use minimum of 2mm clearance (all directions) between inverter high voltage area and any conductors. Please refer to mechanical drawing for marking of high voltage area.

Note1-4. Open voltage (strike voltage) is measured across the transformer secondary winding at no load as the reading at the output connector would be less than the actual value.

Note1-5. If the start up voltage falls below Cold Cathode Tube strike voltage, the CCFL will not light up easily specially at lower ambient temperature. Please review mounting instruction to avoid any abnormal operation due to coupling/leakage capacitance of inverter high voltage area to any surrounding conductor.

Note1-6. Please check your lamp characteristic for minimum operational current and set the limit point in your design to avoid flickering and/or abnormal operation.

Note1-7. For proper operation of circuit protection (fuse or IC PROTECTOR),Please use minimum of 2A capacity for input power supply.

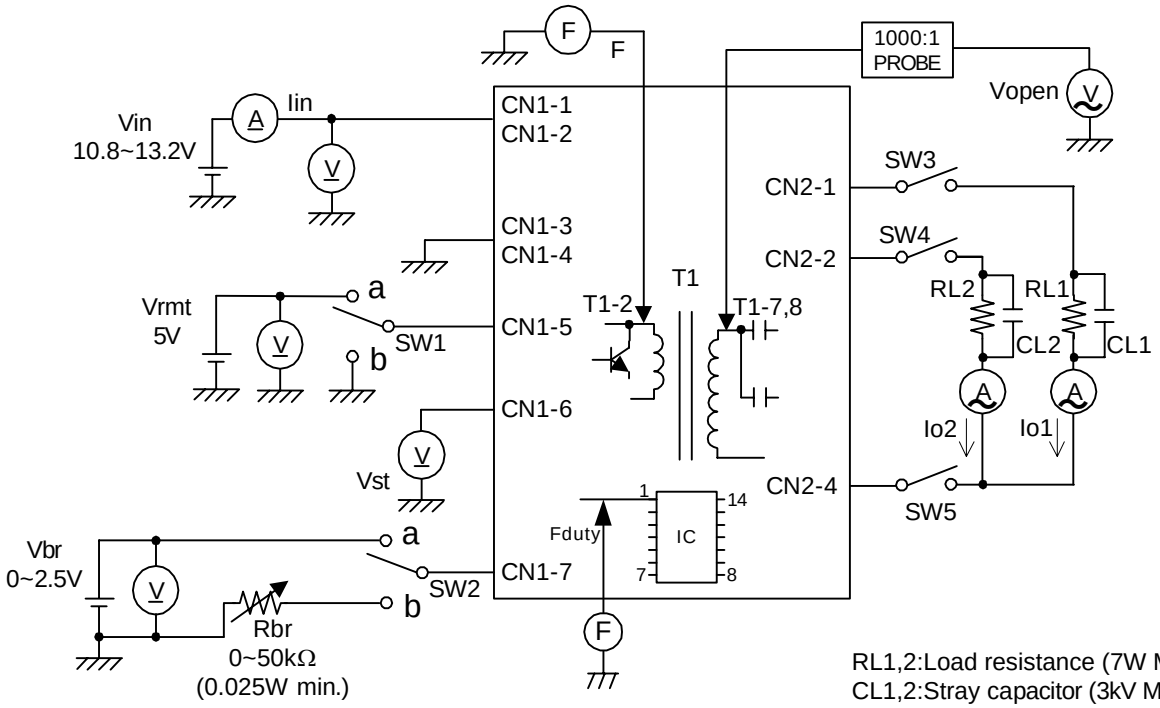
Note1-8. For proper operation: Don't connect the out put VLOW(CN2-4) terminal to the input GND(CN1-3,4).

[2]Absolute maximum ratings

Items	Symbols	Specification	Unit	Notes
Input Voltage	Vin	0~15	V	
	Vrmt	-1~Vin+1		
	Vbr	0~16		
Load Resistance	RL//CL	100 // 5	kΩ // pF	
Operating Temp. range	Ta	-10~70	°C	
Storage Temp. range	Ts	-30~85	°C	
Humidity range	RH	95	%RH	A maximum wet ball temperature is 38°C No dew.

Note2-1.The test circuits added 5pF capacitor across the load resistor for LCD back light stay capacitor.

[3] Test circuit



RL1,2:Load resistance (7W MIN.)
CL1,2:Stray capacitor (3kV MIN.)

*For the number ofthe component's positon, please refer to Outline diagram [1].

Note.3-1.SW1(ON/OFF) Operation is as following;

SW1	Operation of unit
a	Operation
b	Non operation
Open	Non operation

Note.3-2.SW2(ON/OFF) Operation is as following;

SW2	Operation of unit
a	*Voltage dimming Vbr=0~2.5V
b	*Variable resistance dimming VR=0~50kΩ

*Vbr=0V:brightness MAX.
Rbr=0Ω:brightness MAX.

Note3-3.Test Equipments

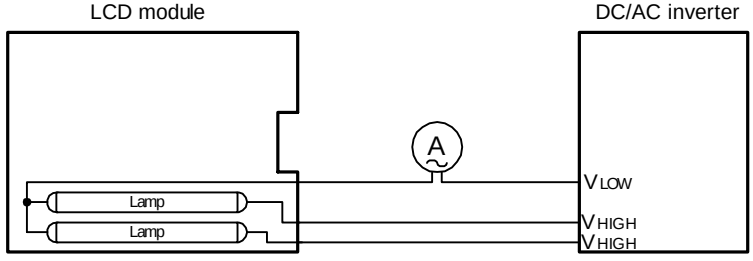
- Ⓥ Digital Multiple Meter(ADVANTESTR6451A or equivalent)
- Ⓐ DC Current Meter(ADVANTEST R6451A or equivalent)
- Ⓕ Frequency Courtor(ADVANTEST R6451A or equivalent)
- Ⓥ~ True RMS Meter(KEITHLEY 2001 or equivalent.)
- Ⓐ~ High Frequency Current Meter(KEITHLEY 2001 or equivalent)
- 1000:1 High Voltage Probe(Tektronix P3000 or equivalent)

Note3-4.Safety Function

Load Condition	*1Alarm Signal (CN1-6)	*2Shutdown Operation
Normal Operation	0.5V max.	Normal
1 Lamp Open	4.75~5.25V	Normal
2 Lamps Open	4.75~5.25V	Shutdown

*1.If the inverter detects open circuit all lamps for more than 3 seconds it will shut down.
*2.In test circuit[3] ,If anyone of switches SW3~SW5 opens, then the warning signal will be activated (+5V).

Connection diagram of LCD module (Reference)



*Connect the High Frequency Current Meter to the Low-Voltage (VLOW) side.

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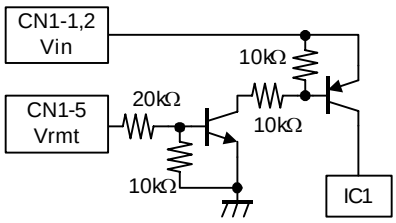
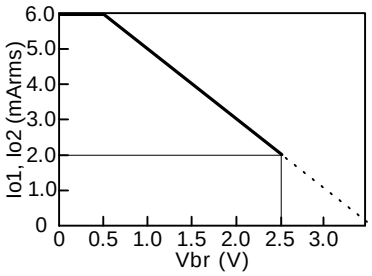
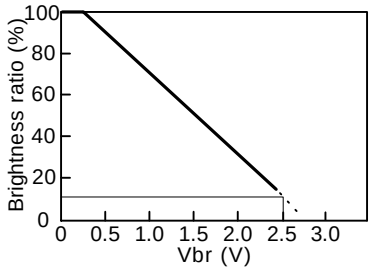
Remote terminal circuit (Reference)



Dimming characteristic (Reference)



Brightness ratio characteristic (Reference)



[4] Electrical specifications

Item	Symbol	Conditions					Specifications			Unit
		Vin(V)	Vrmt(V)	Vbr(V)/ VR(kΩ)	Ta(°C)	RL1(kΩ)//CL1(pF) RL2(kΩ)//CL2(pF)	MIN.	TYP.	MAX.	
Output Current (Brightness MAX.)	Io1/2	12±1.2	5±0.25	0 / 0	-10~70	85~95 // 5 85~95 // 5	5.3	6.0	6.7	mA rms
		12±0.6	5±0.25	0 / 0	23±5	90 // 5 90 // 5	5.5	6.0	6.5	
Output Current (Brightness MIN.)	Io1/2	12±1.2	5±0.25	2.5 / 50	-10~70	85~95 // 5 85~95 // 5	1.1	2.0	2.9	
		12±0.6	5±0.25	2.5 / 50	23±5	85~95 // 5 85~95 // 5	1.2	2.0	2.8	
Input Current1	Iin1	12±0.6	5±0.25	0 / 0	-10~70	90 // 5 90 // 5	-	0.8	1.0	A
Input Current2	Iin2	12±0.6	0±0.25	0 / 0	-10~70	85~95 // 5 85~95 // 5	-	-	1	mA
Frequency	F1	12±0.6	5±0.25	0 / 0	-10~70	85~95 // 5 85~95 // 5	38	43	48	kHz
Frequency(Duty)	F2	12±0.6	5±0.25	2.5 / 50	-10~70	85~95 // 5 85~95 // 5	220	250	280	Hz
Open Circuit Voltage	Vopen	10.8	5±0.25	0 / 0	-10~70	∞ ∞	1.5	1.7	-	kVrms
Warning Signal (Note7)	Vst	12±1.2	5±0.25	0 / 0	-10~70	85~95 // 5 ∞	4.5	5.0	5.5	V
		12±1.2	5±0.25	0 / 0	-10~70	∞ 85~95 // 5	4.5	5.0	5.5	
		12±1.2	5±0.25	0 / 0	-10~70	85~95 // 5 85~95 // 5	-	0	0.5	

<The specifications may be changed without any notice.>

[5] Reliability test

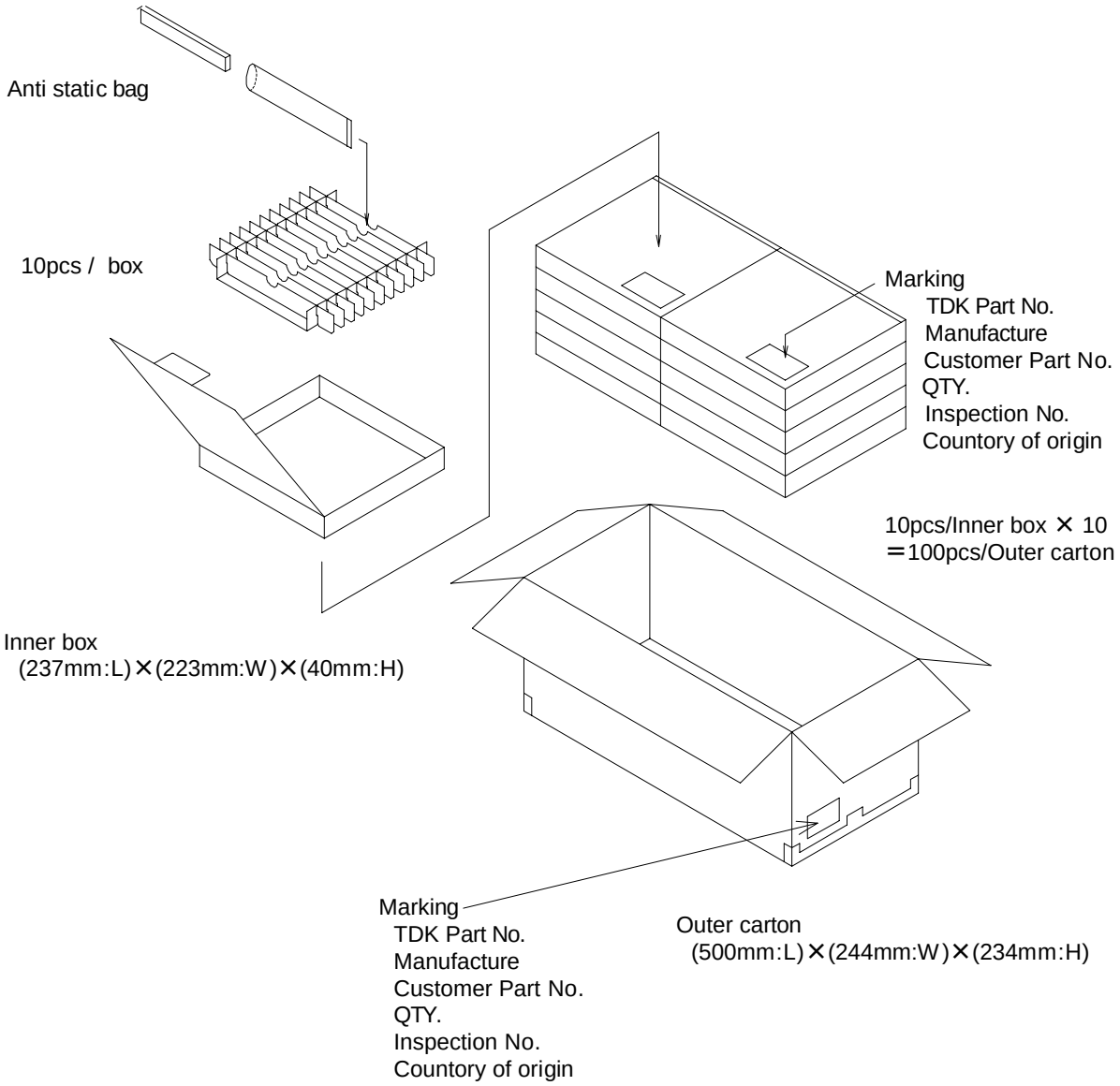
Following test items are assured.

Items	Conditions	Judgement
Low Temp.Non operational	-30°C 500h	Electrical and apperrance should be in the spec.
Low Temp.operational	-10°C 500h Load cond.:TYP	
High Temp.Non operational	85°C 500h	
High Temp.operational	70°C 500h Load cond.:TYP	
Heat shock	-20°C to 75°C 30min.Each 100 Cycles	
Humidity (Non operational)	60°C 90~95%RH 500h	
Vibration	10~57Hz Amplitude 0.75mm 58~500Hz 1G Sweep:11min 60min each axis X,Y,Z	
Shock	100G 11ms Harf-sine pulse 1 time each axis ±X,Y,Z	

[6] Packing and Marking

A shipping box is packaged to avoid from water or damage. Following items are printed on th e box.

6-1. TDK part No. CXA-P1212C-WJL
6-2. Manufacture TDK
6-3. Customer part No.
6-4. QTY.
6-5. Inspection No.
6-6. Country of origin



[7] Others

7-1. Test cond.
A normal test condition :Temperature (20±15°C), Humidity (65±20%RH).

7-2. Std warrantry
One year after shipment.This covers any defects in material or workmanship.
Defective units will be replaces at no charge.

7-3. Others
TDK and customer are to discuss changes,problems, and modifications and etc, when needed.

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