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## PRODUCT DRAWING

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CUSTOMER'S PRODUCT NAME:

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TDK PRODUCT NAME: DC/AC INVERTER UNIT  
CXA-P1212B-WJL

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DWG.No.	CTR-0749-B
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## Precautionary Notes Regarding the Use of This Inverter

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



### Warning



- . This product generates high voltage. Make sure the power is removed before performing any work. Avoid touching the unit while the power is on as it may result in electric shock.



### Caution

- . This product is designed to power and light Cold Cathode Fluorescent Lamp.
  - Do not use any other type of load.
- . Store this product per specification documents,
- . Do not store this product in an environment where dust, dirt or corrosive gas (saline, acid, alkali, etc.) is present.
- . Danger: Provide proper indication to draw users attention to presence of High Voltage and discourage any body contact and touching of the product.
- . Avoid using this product in high temperatures, high humidity and/or in an environment where dust, dirt or any corrosive gas (saline, acid, alkali, etc.) is present.
- . Formation of dew condensation may result in damage to the product and/or electric shock.
- . External Fuse;
  - 1) It is recommended to use external circuit protection (circuit breaker, fuse, etc.) to prevent smoke and/or fire in case of malfunction.
  - 2) For units with internal circuit protection, make sure to size your power supply properly or use external fuse to prevent smoke and/or fire in case of malfunction.
- . Use of product out of indicated spec. limit (input voltage, output power, output voltage and operating temperature ranges) will damage the unit and void all factory warranty.
- . Surge voltage protection needs to be added externally in order to prevent abnormal operation and/or damage to the unit by lightning and /or other abnormal voltage,
- . Foreign object or substance in high voltage area could cause short circuit and damage the unit when operated. Take appropriate measures to prevent introduction of any foreign object or substance to the unit after the installation in the system.
- . Life Support Policy; TDK products are not authorized for use as critical components in life support devices or systems without express written approval.
- . This product is not designed to provide resistance to radiation.
- . This product is designed for use with general electronic equipment.
- . A detailed fail-safe measures must be provided if this product is used in medical and/or transportation control equipment that could directly effect human life.

## Handling Precautions

- . This product uses fine wires that could easily get broken and damaged when mishandled. Following precautions have to be taken to avoid such problems.
  - . Do not stack multiple products on top of one another.
  - . Do not allow the product to come in contact with any tools, sharp objects , and etc.
- . Avoid excessive stress on the unit during installation as It may cause chipping, cracking, and damage to the unit.
- . Provide minimum of 2 mm clearance between the high-voltage section of this product and any conductors such as the frame body, PCB traces and pads.

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<The specifications may be changed without any notice.>



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

.Features.

.This is the double output (two CCFL) inverter. It has Dimming function and Remote function.

.This product has shutdown function.

It prevents from keeping generating the high voltage when the lamps open.(Refer Note.3-4.)

.With lamp failure detector.

Normal Operation : CN1-6=0V

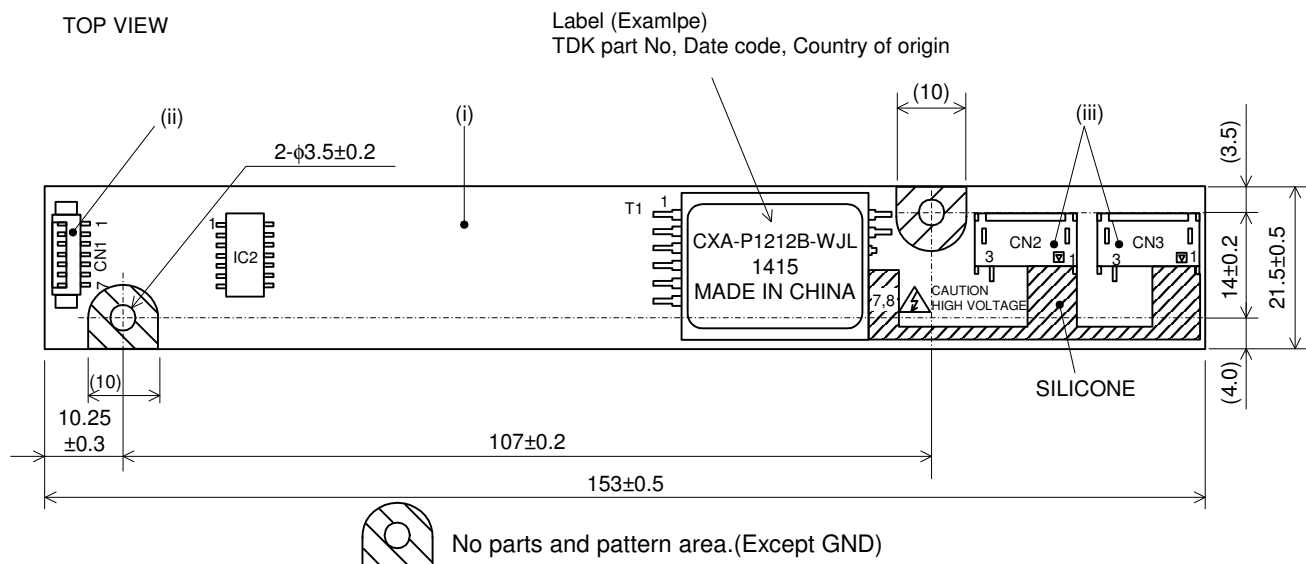
Some Lamps Open : CN1-6=5V

.The high-voltage area (terminals and patterns) is coated with silicone so as to avoid the defects caused by dust.

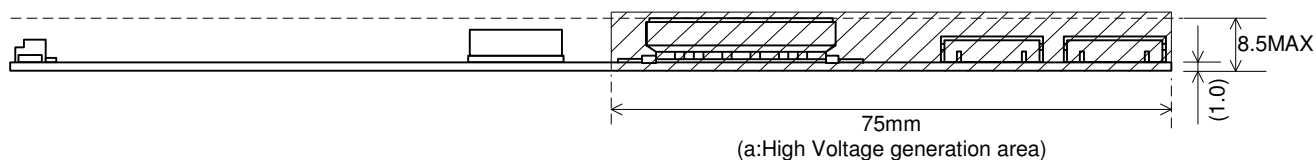
[1] Outline

1-1. Outline

TOP VIEW



SIDE VIEW



BOTTOM VIEW



Unit:mm

Weight:21.2g.typ.

No.	Part Description	Material	QU	REMARK	MATES WITH
(i)	PCB	Composite (CEM-3)	1	UL94V-0 t=1.0	-
(ii)	Input Connector CN1	53261-0790	1	MOLEX	51021-0700
(iii)	Output Connector CN2,CN3	SM02(8.0)B-BHS-1	2	JST	BHR-03VS-1

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## Example of naming product

C X A - P 1 2 1 2 B - W J L

Inverter.

Output power : 8~9W.

Output current : 6mAmps X 2 lamps type.

Input voltage :12V type.

Version

CN2 high voltage output side terminal position :  
L-Leftside sees from insert terminal.

Output connector : J-SM02(8.0)B-BHS-1(JST)

Adjustment of brightness method : Duty control method  
to put current feedback.  
Selectable dimming function : Voltage dimming or  
Variable resistance dimming.

## 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	0V/2.5V-Vin	0-0.4V:OFF 2.5-Vin V:ON
CN1-6 (Output)	Vst	0V/5V	The warning output 5V in abnormal circumstances
CN1-7	Vbr/Rbr	0-2.5V/0-50kΩ	Control/VR

### Output side CN2

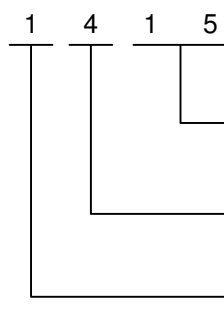
Pin No.	Symbols	Ratings	Notes
CN2-1	VHIGH1	600Vrms	Output1
CN2-2	NC	-	-
CN2-3	VLOW1	(2V)	Output1 Return

### Output side CN3

Pin No.	Symbols	Ratings	Notes
CN3-1	VHIGH2	600Vrms	Output2
CN3-2	NC	-	-
CN3-3	VLOW2	(2V)	Output2 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)



Two digits of production day.

One digit of production month. (Oct. : X, Nov. : Y, Dec. : Z).

Last digit of production year.

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

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[illegible]



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.

[2] Absolute maximum ratings

Item	Symbol	Specification	Unit	Notes
Input Voltage	Vin	0~15	V	
	Vrmt	0~Vin		
	Vbr	0~16		
Load Resistance	RL1//CL1 RL2//CL2	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

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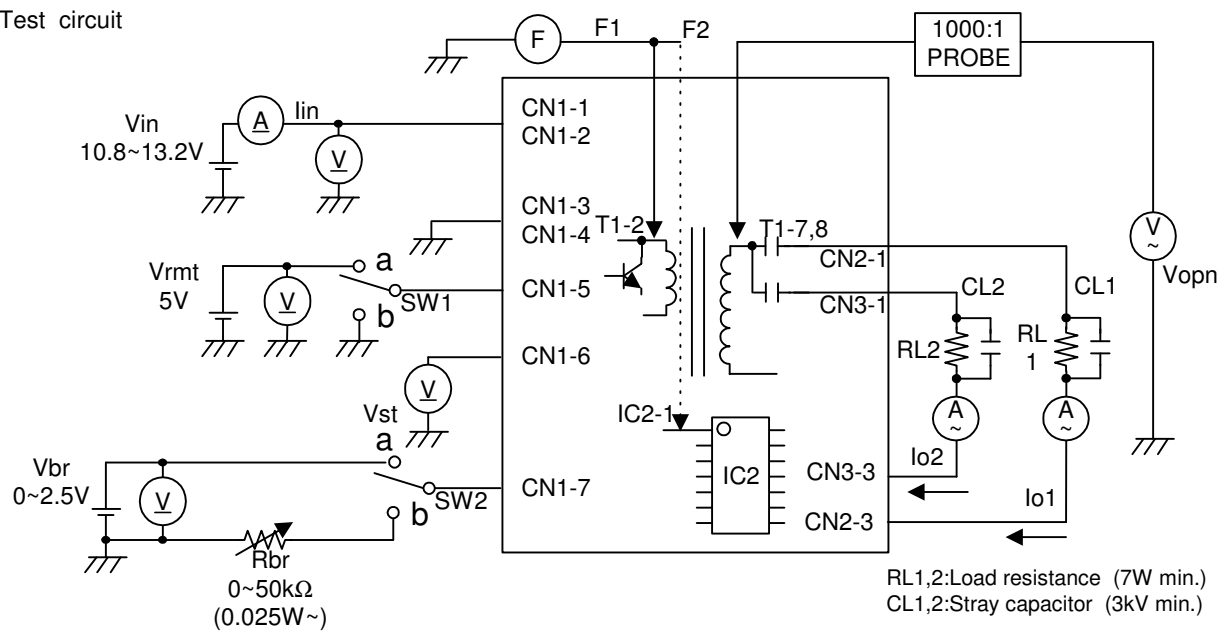
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[3] Test circuit



\*For the number of the component's position, please refer to Outline diagram [1].

Note3-1. SW1(ON/OFF) Operation is as following;

SW1	Operation of unit
a	Operation
b	Non operation

Note3-2. 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

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

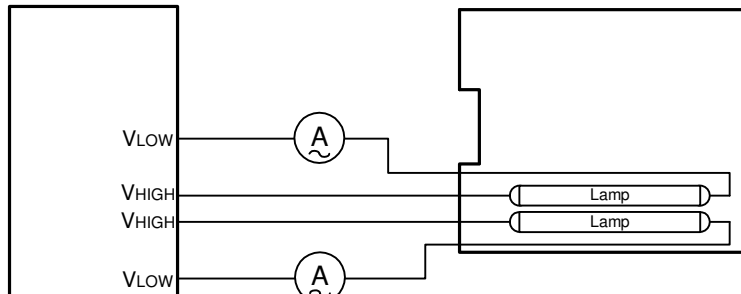
Note3-4. Safety Function

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

\*1. In test circuit[3], if CN2 or CN3 opens, then the warning signal will be activated (+5V).

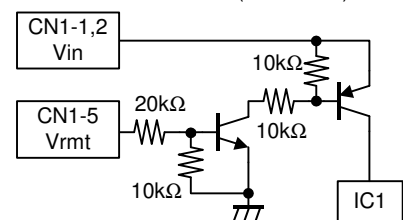
\*2. If the inverter detects open circuit all of the lamps for more than 3 seconds it will shut down.

Connection diagram of LCD module (Reference)  
DC/AC inverter



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

Remote terminal circuit (Reference)



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[4] Electrical specifications

Item	Symbol	Conditions					Specifications			Unit
		Vin(V)	Vrmt(V)	Rbr(kΩ)/ Vbr(V)	Ta(°C)	RL1(kΩ)//CL1(pF) RL2(kΩ)//CL2(pF)	MIN.	TYP.	MAX.	
Output Current (Brightness max.)	Iout1/ Iout2	12±1.2	5±0.25	0 / 0	-10~70	85~95//5±0.25 85~95//5±0.25	5.3	6.0	6.7	mArms
		12±0.6	5±0.25	0 / 0	23±5	90//5±0.25 90//5±0.25	5.5	6.0	65	
Output Current (Brightness min.)	Iout1/ Iout2	12±1.2	5±0.25	50 / 2.5	-10~70	85~95//5±0.25 85~95//5±0.25	1.1	2.0	2.9	
		12±0.6	5±0.25	50 / 2.5	23±5	90//5±0.25 90//5±0.25	1.2	2.0	2.8	
Input Current1	Iin1	12±0.6	5±0.25	0 / 0	-10~70	90//5±0.25 90//5±0.25	-	0.8	1.0	A
Input Current2	Iin2	12±0.6	0±0.25	0 / 0	-10~70	85~95//5±0.25 85~95//5±0.25	-	-	1	mA
Frequency	F	12±0.6	5±0.25	0 / 0	-10~70	85~95//5±0.25 85~95//5±0.25	35	40	45	kHz
Open Circuit Voltage	Vopen	12±1.2	5±0.25	0 / 0	-10~70	∞ ∞	1.5	1.7	-	kVrms
Warning Output	Vst	12±1.2	5±0.25	0 / 0	-10~70	85~95//5±0.25 ∞	4.5	5.0	5.5	V
		12±1.2	5±0.25	0 / 0	-10~70	∞ 85~95//5±0.25	4.5	5.0	5.5	
		12±1.2	5±0.25	0 / 0	-10~70	85~95//5±0.25 85~95//5±0.25	-	0	0.5	

[5] Reliability test

Following test items are assured.

Item	Condition	Judgement
Low Temp.Non operational	-40℃ 500h	Electrical and apperance should be in the spec.
Low Temp.operational	-20℃ 500h Load cond.:TYP	
High Temp.Non operational	85℃ 500h	
High Temp.operational	70℃ 500h Load cond.:TYP	
Heat shock	-20℃↔75℃ 30min.Each 100 Cycles	
Humidity (Non operational)	60℃ 90~95%RH 500h	
Vibration	10~57Hz Amplitude0.75mm 58~500Hz 1G Sweep:11min 60min each axis X,Y,Z	
Shock	100G 11ms Harf-sine pulse 1 time each axis ±X,Y,Z	

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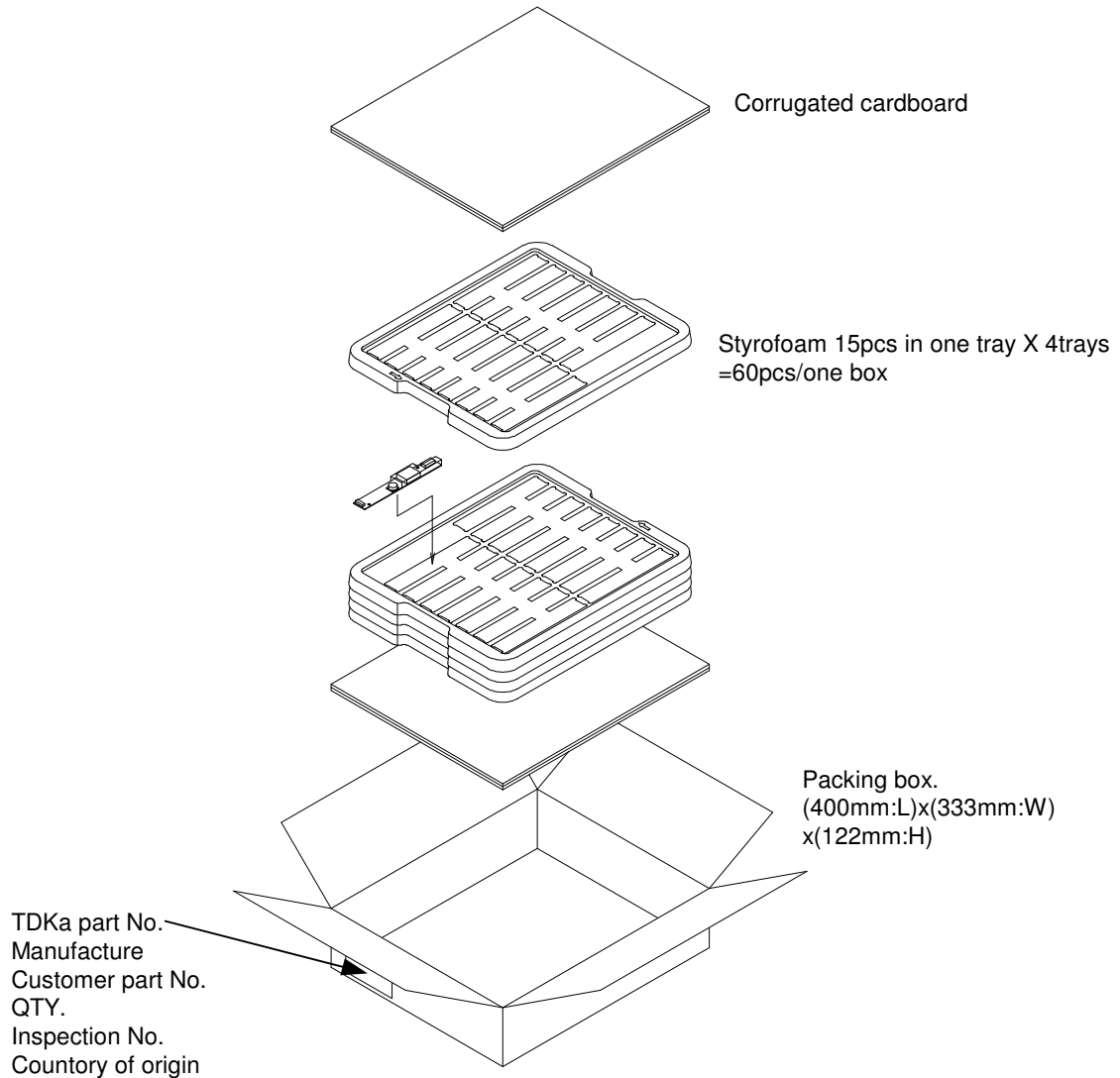
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[6] Packing and Marking

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

- 6-1. TDK part No. CXA-P1212B-WJL
- 6-2. Manufacture TDK
- 6-3. Customer part No.
- 6-4. QTY.
- 6-5. Inspection No.
- 6-6. Country of origin

Packing style as under Fig. (60 going in with a standard.)



[7] Others

7-1. Test cond.

A normal test condition :Temperature (20±15 °C), Humidity (65±20%RH).

7-2. Std warrentry

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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