

MESSRS :

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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-0307

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***TDK-Lambda***

**TDK Corporation**

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DWG.No.	CTR-0689-D
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## 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.
- Ripples could be superimposed on the voltage and the current in the input source connected to the inverter, depending on the impedance in the input source, wiring, etc. When you select an input source, please check waveforms, etc on the final set.

### **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 clearance between the high-voltage section of this product and the frame body on which the product is installed and also the conductor section as per listed on page 2, [1] "Outline".
- 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.

	No.	MATERIALS NAME	QU	MATERIAL	REMARK	
	PRODUCT NAME or MODEL, TITLE					
	DC-AC INVERTER CXA-0307					
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1. Part Name

The part name is CXA-0307

2. Contents

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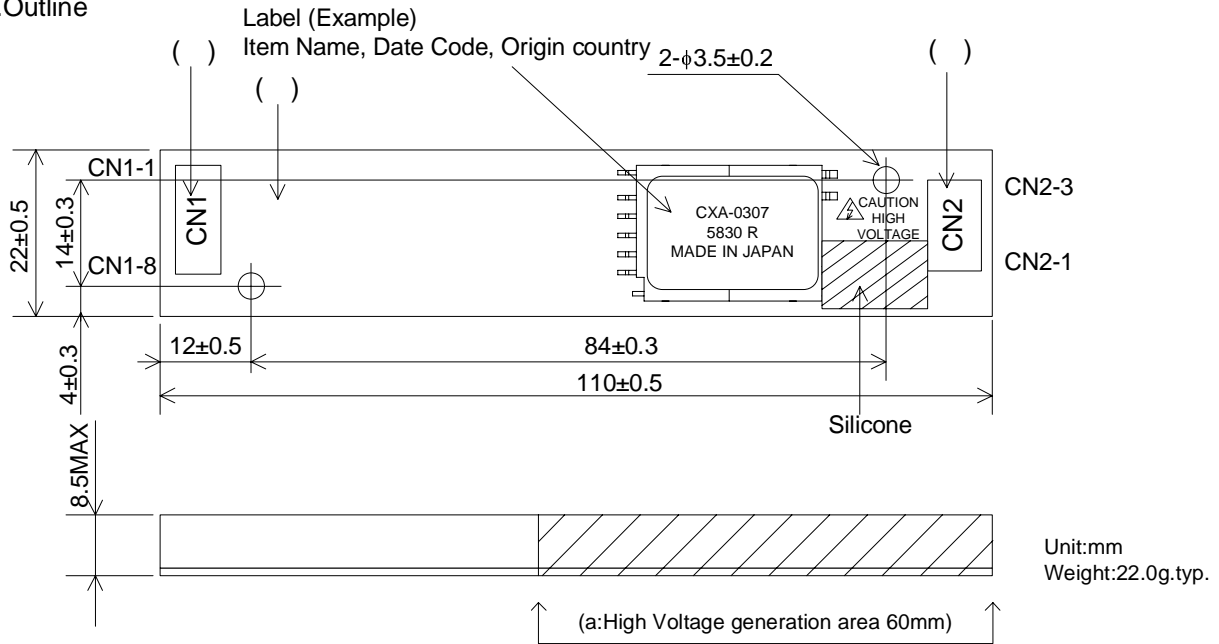
**Listed description are subject to change without notice.**

**Features**

- This inverter is for two lamps. It has Dimming function and Remote function.
- With lamp failure detector.
  - 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 defects caused by dust.
- This product is conformity to RoHS directive. ( )
  - ( ) Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

**[1] Outline**

**1-1. Outline**



No.	Part Description	Material	QU	REMARK
(i)	PCB	Composite (CEM-3)	1	UL94V-0 t=1.0
(ii)	Input Connector CN1	53261-0871	1	MOLEX
(iii)	Output Connector CN2	SM02(8.0)B-BHS-1-TB(LF)(SN)	2	JST

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1-2.Connector Configuration

CN1 (INPUT)

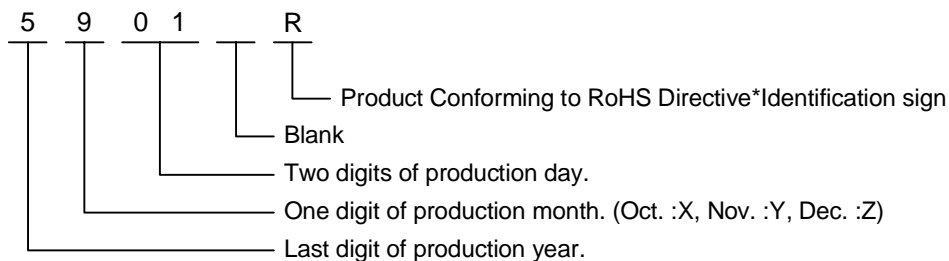
Pin No.	Symbol	Rating	Notes
CN1-1	Vin	9.0 ~ 19.0V	Input Voltage
CN1-2			
CN1-3	GND	0V	GND
CN1-4			
CN1-5	Vrmt	0V / 2.5V~Vin	Remote Terminal 0~0.4V : OFF 2.5V~Vin : ON
CN1-6	Vbr1 / Rbr1	0~2.5V / 0~50kΩ	Brightness Terminal 1
CN1-7	Vbr2 / Rbr2	GND / 0~50kΩ	Brightness Terminal 2
CN01-8 (Output)	Vst	0V / 5V	The warning output (5V in abnormal circumstances)

CN2(OUTPUT)

Pin No.	Symbol	Rating	Notes
CN2-1	VHIGH	400Vrms	Output
CN2-2	-	N.C	-
CN2-3	VLOW	(2V)	Output 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.Sep.1.20005)



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

\* : Conformity to RoHS Directive:This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used,except for exempted applications.

Note1-2. For circuit connection, please refer to test circuit diagram [4].

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.

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[2]Absolute Maximum Ratings

Items	Symbols	Specifications	Unit
Input Voltage	Vin	0~+14	VDC
	Vrmt	-1 ~ Vin+1	VDC
	Vbr	0~16	VDC
Load Resistance	RL1	110	KΩ
Operating Temp.range	Ta	0 ~+70	°C
Storage Temp.range	Ts	-30~+85	°C
Humidities range.	RH	95 A Maximum wet ball temperature is 38°C.	%RH

[3]Electrical specifications

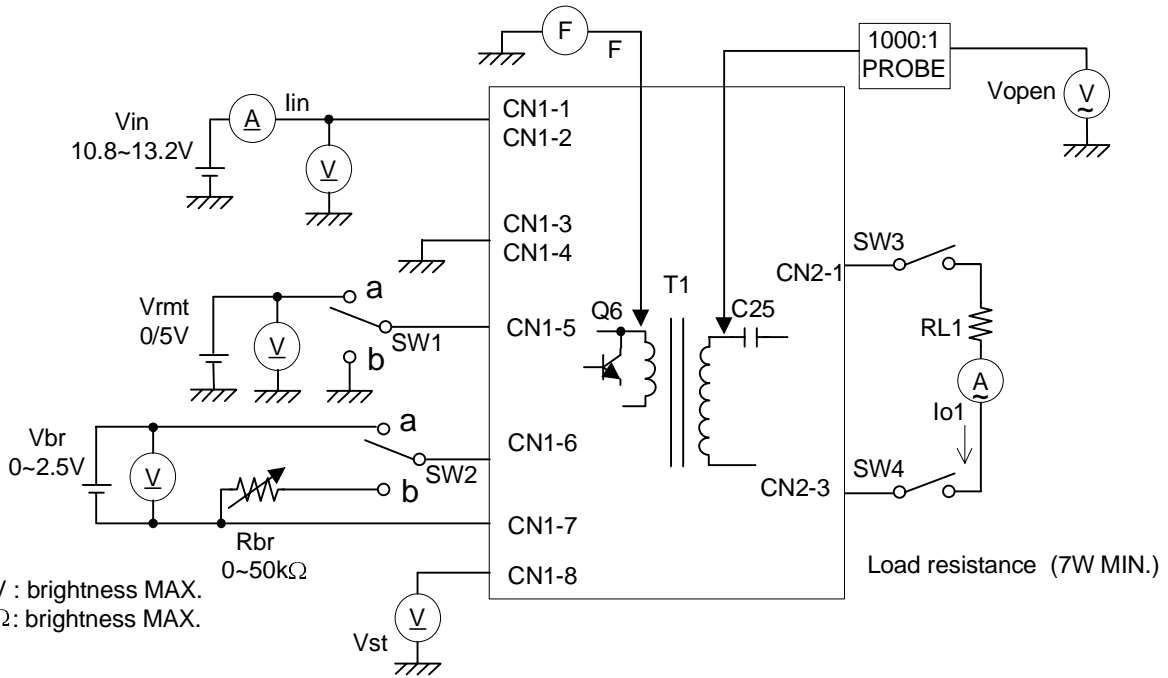
Items	Symbols	Condition					Specifications			Unit
		Vin(V)	Vrmt(V)	Rbr/Vbr	Ta(°C)	RL1(KΩ)	MIN.	TYP.	MAX.	
Output Current	Io1	12±1.2	5±0.25	0Ω/0V	0~60	90~100	5.3	6.0	6.7	mA rms
		12±0.6	5±0.25	0Ω/0V	23±5	95	5.5	6.0	6.5	
Input Current1	Iin1	12±0.6	5±0.25	0Ω/0V	0~60	95	-	0.45	0.65	A
Input Current2	Iin2	12±0.6	0±0.25	0Ω/0V	0~60	90~100	-	-	1	mA
Frequency	F1	12±0.6	5±0.25	0Ω/0V	0~60	90~100	45	50	55	kHz
Frequency(Duty)	F2	12±0.6	5±0.25	50kΩ/2.5V	0~60	90~100	215	270	325	Hz
Open Circuit Voltage	Vopen	10.8	5±0.25	0Ω/0V	0~60	∞	1,400	1,500	-	Vrms
Dimming Function	Io1	12±1.2	5±0.25	50kΩ/2.5V	0~60	90~100	1.7	2.5	3.3	mA rms
		12±0.6	5±0.25	50kΩ/2.5V	23±5	95	1.8	2.5	3.2	
Warning Signal Note3-2	Vst	12±1.2	5±0.25	0Ω/0V	0~60	∞	4.5	5.0	5.5	V
		12±1.2	5±0.25	0Ω/0V	0~60	95	-	0	0.5	

Note3-1 If the inverter detects open circuit lamp for more than 2-3 seconds it will shut down.

Note3-2 In test circuit[4] ,If anyone of switches SW3~SW4 opens, then the warning signal will be activated (+5V).

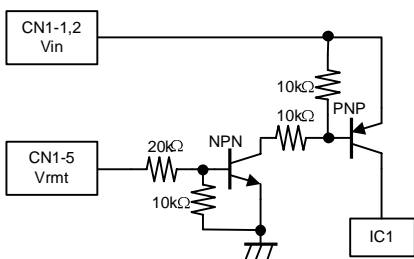
No.	MATERIALS NAME	QU	MATERIAL	REMARK
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[4]Test Circuit



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

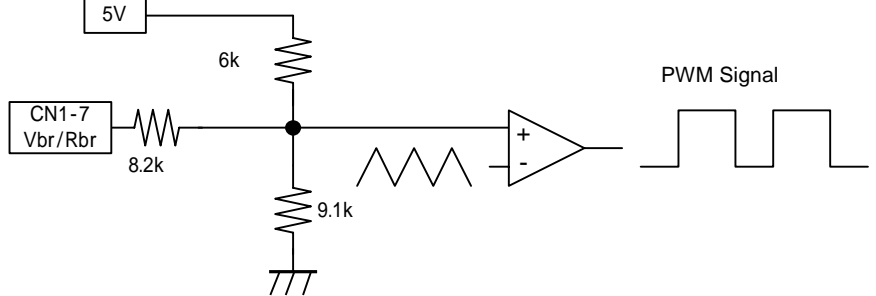
Remote terminal circuit (Reference)



Note4-1. SW1(ON/OFF) Operation is as following;

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

Vbr terminal circuit(Reference)



Note4-2. 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

Note4-3. SW3~4(Open/Close) Operation is as following;

SW3~4	Operation of warning signal
Open	Operation (5V output)
Close	Non operation (0V output)

Note4-4. Test Equipments

- (V) Digital Multiple Meter(ADVANTEST R6452A or equivalent)
- (A) DC Current Meter(ADVANTEST R6452A or equivalent)
- (F) Frequency Countor(ADVANTEST R6452A or equivalent)
- (V) True RMS Meter(NF Circuit M2170r or equivalent)
- (A) High Frequency Current Meter(FLUKE187or equivalent)
- 1000:1 High Voltage Probe(Tektronix P6015A or equivalent)

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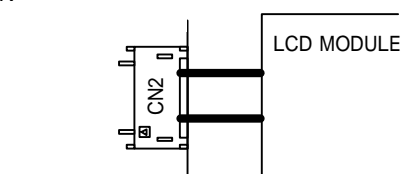
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Note4-5: Because the voltage measured when the voltage of output connector CN2 at no-load (before the cold-cathode tube lights) is measured decreases by high voltage capacitor and high voltage probe capacity, etc. which the inside of the circuit of the DC-AC inverter includes, it is measured lower than the actual output by the use probe capacity and method of the measurement.

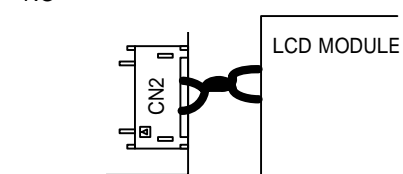
Note4-6: The voltage impressed to the load comes to fall more than the output open circuit voltages (for leakage of current by distributed capacitance) occasionally and not to light easily especially when cold-cathode tube is driven at low temperature when distributed capacitance in state of mounting is large. Please not mounting so that distributed capacitance may decrease as much as possible. (For instance, do shorten as much as possible and never do high voltage wiring to the stranded wire about high voltage wiring to the cold-cathode tube)

fig.1

OK



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[5]Reliability Test

Following test items are assured.

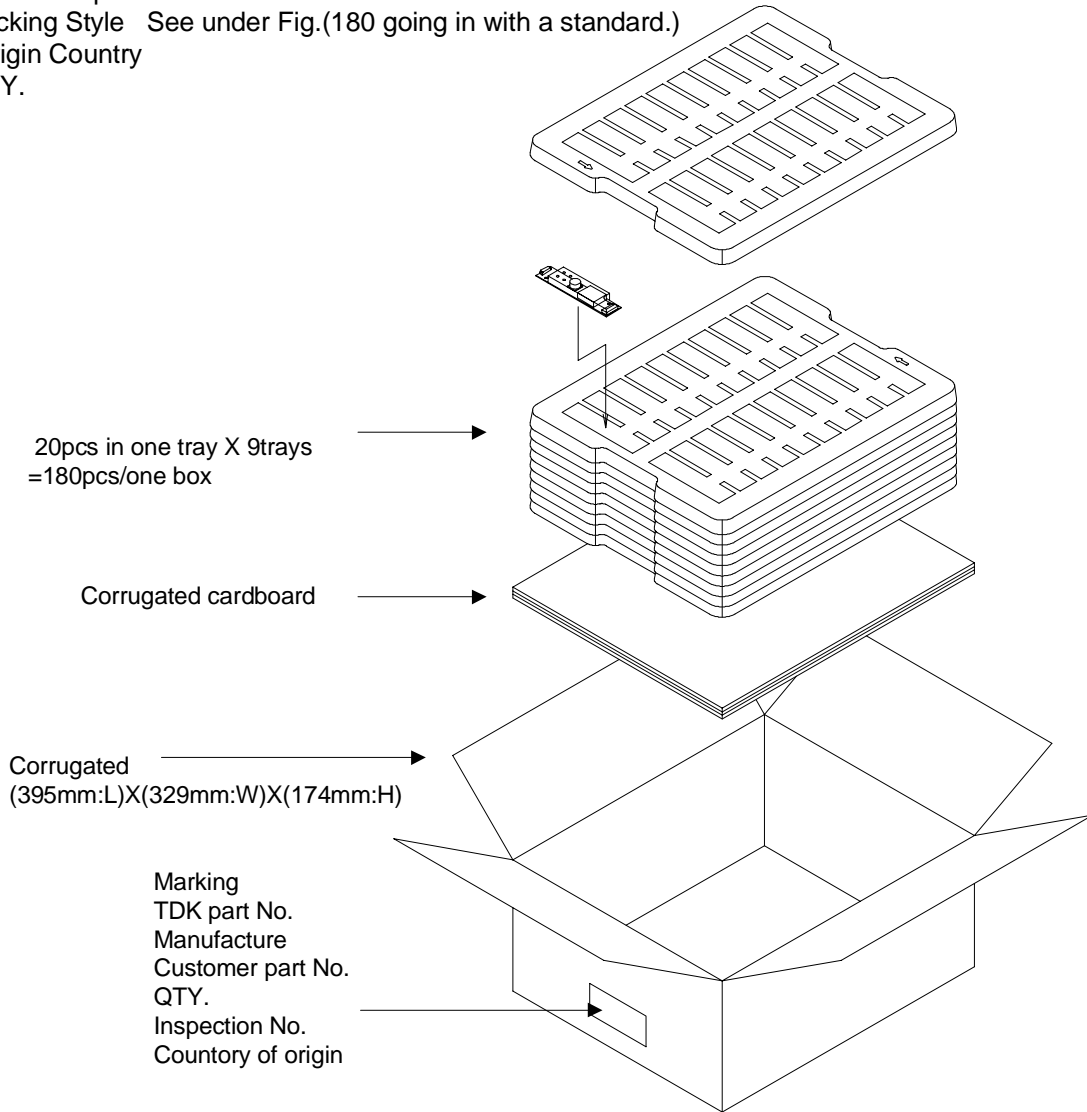
Items	Conditions	Judgement
Low Temp.Non operational	-30°C 500h	Electrical and appearance should be in the specifications.
Low Temp.operational	-10°C 500h Load Cond.: TYP.	
High Temp.Non operational	85°C 500h	
High Temp.operational	70°C 500h Load Cond.: TYP.	
Heat Shock	-20°C to 75°C 30min. Each 100 Cycles	
Humidity (Non operational)	60°C 90~95%RH 500h	
Humidity operational	60°C 90~95%RH 500h Load Cond.: TYP.	
Vibration	10~57Hz 58~500Hz 9.8m/s <sup>2</sup> Sweep: 11min 60min each axis X,Y,Z	
Shock	980m/s <sup>2</sup> 11ms Half-Sine Pulse 1 times each axis ±X,±Y,±Z	

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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.
- 6-2 .Manufacture
- 6-3. Customer part No.
- 6-4.Packing Style See under Fig.(180 going in with a standard.)
- 6-5 .Origin Country
- 6-6 QTY.



[7] Others

7-1. Test cond.

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

7-2. Std warantry

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

7-3. MTTF

MTTF which calculated according to MIL-HDBK-217-F is as follows.

TEMPERATURES 25  
MTTF 2180000 hours or more

7-4. Others

TDK and customer are to discuss changes,problems, and modifications and etc, when needed.

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