

MESSRS :

Product Drawing

CUSTOMER'S PRODUCT NAME:

TDK PRODUCT NAME: DC-AC INVERTER UNIT
CXA-0490

TDK-Lambda

TDK Corporation

Corporate Headquarters
13-1, Nihonbashi 1-chome, Chuo-ku,
Tokyo 103, JAPAN
Telephone : 81-3-3278-5111

PREPARED BY	APPROVED BY	AUTHORIZED BY
<i>Apr 3, 2007 T.Sato</i>	<i>Apr 3, 2007 N.Suzuki</i>	<i>Apr 3, 2007 Y.Kimura</i>

DWG.No.	CTR-2445-A
---------	------------

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 a clearance of 4 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.

	No.	MATERIALS NAME	QU	MATERIAL	REMARK
	PRODUCT NAME or MODEL,TITLE				
	DC-AC INVERTER UNIT CXA-0490				
TDK CORPORATION	NAME OF DRAWING		DRAWING No.		PAGE
	PRODUCT DRAWING		CTR-2445-A		1

1. Part Name

The part name is CXA-0490.

2. Contents

Item	Attached view	Page
[1] Outline		
1-1. Outline	[1] section	3
1-2. Connector Configuration	[1] section	4
[2] Absolute Maximum Ratings	[2] section	5
[3] Electrical specifications	[3] section	5
[4] Test Circuit	[4] section	6
[5] Reliability Test	[5] section	7
[6] Packaging and Marking	[6] section	8
[7] Others		
7-1 Test Cond.	[7] section	8
7-2 Std Warranty	[7] section	8
7-3. Disposition for non-conforming lots	[7] section	8
7-4 Others	[7] section	8

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0490				
NAME OF DRAWING		DRAWING No.		PAGE
PRODUCT DRAWING		CTR-2445-A		2

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

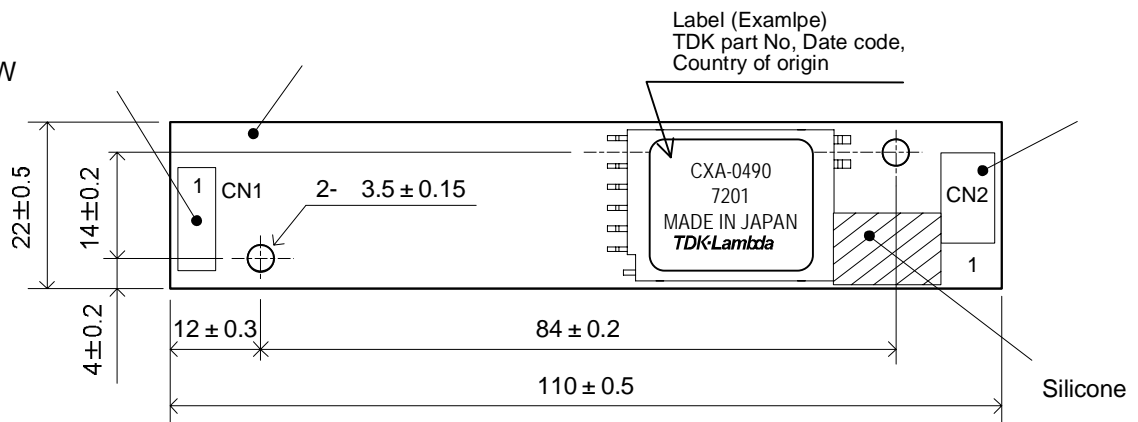
•Features•

- This is the single output (one 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.(note4-3)
- With lamp failure detector.
Normal Operation : CN1-8=0V
Lamp Open : CN1-8=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.

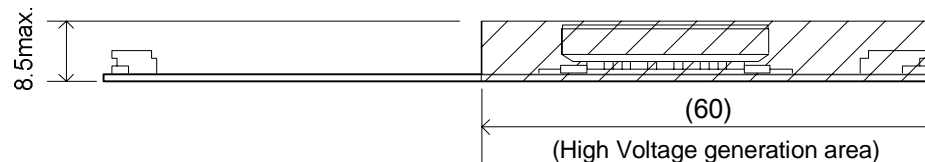
[1] Outline

1-1. Outline

TOP VIEW



SIDE VIEW



BOTTOM VIEW



Unit:mm
Weight:22.0g.typ.

No.	Part Description	Material	QU	REMARK	MATES WITH
(i)	PCB	Composite (CEM-3)	1	UL94V-0 t=1.0	-
(ii)	Input Connector CN1	53261-0871	1	MOLEX	51021-0800
(iii)	Output Connector CN2	SM02(8.0)B-BHS-1-TB(LF)(SN)	1	JST	BHR-03VS-1

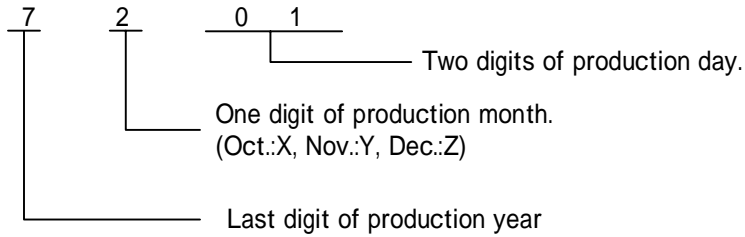
No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL,TITLE				
DC-AC INVERTER UNIT CXA-0490				
NAME OF DRAWING		DRAWING No.		PAGE
PRODUCT DRAWING		CTR-2445-A		3

TDK CORPORATION

Note1-1. Marking of TDK part No., date code, and Origin country.

1) TDK part No., date code, country of origin, is marked on the transformer.

2) Date code example. (ex. Feb. 1 2007)



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

1-2. Connector Configuration

CN1: 53261-0871 (Molex)

Pin No.	Connection		Note
	Symbols	Ratings	
CN1-1	Vin	10.8 ~ 13.2V	Input Voltage
CN1-2			
CN1-3	GND	0V	GND
CN1-4			
CN1-5	Vrmt	0V/5.0V ~ Vin	0 ~ 1.5V : OFF 2.5 ~ Vin : ON
CN1-6	Vbr1 / Rbr1	0 ~ 3.0V / 0 ~ 10kΩ	CONTROL / VR1
CN1-7	Vbr2 / Rbr2	GND / 0 ~ 10KΩ	GND / VR2
CN1-8	Vst	0V / 5V	The warning signal 5V in abnormal circumstances

CN2: SM02(8.0)B-BHS-1-TB(LF)(SN) (JST)

CN2-1	VHIGH	720Vrms	6mA rms
CN2-2	NC	-	NC
CN2-3	VLOW	(2V)	Output1 Return

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

Note1-3. Please use minimum of 4mm clearance (all directions) between inverter high voltage area and any conductors. Please refer to mechanical drawing for marking of high voltage area.

Note1-4. VLOW terminal of CN2(CN2-1) is different from GND terminal of CN1(CN1-3,4). Please be not connected.

Note4-5. For proper operation of circuit protection (FUSE or IC PROTECTOR), please use minimum of 3.0A capacity for input power supply.

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0490				
TDK CORPORATION	NAME OF DRAWING		DRAWING No.	PAGE
	PRODUCT DRAWING		CTR-2445-A	4

[2] Absolute Maximum Ratings

Items	Symbols	Specifications	Unit
Input Voltage	Vin	0 ~ +14	VDC
	Vrmt	-1 ~ Vin + 1	VDC
	Vbr / Rbr	0 ~ 4V/0 ~ 30kΩ	VDC / kΩ
Load Resistance	RL	130	KΩ
Operating Temp.range	Ta	-30 ~ +85	°C
Storage Temp.range	Ts	-40 ~ +85	°C
Humidities range.	RH	95 A Maximum wet ball temperature is 39°C. (Non-condensing)	%RH

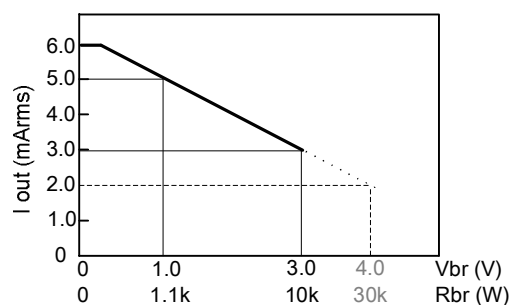
[3] Electrical specifications

Items	Symbols	Condition					Specifications			Unit
		Vin(V)	Vrmt(V)	Vbr/Rbr	Ta()	RL1(k)	MIN.	TYP.	MAX.	
Output Current1	Io1	12 ± 1.2	5 ± 0.25	0V/0	-30 ~ 85	120	5.5	6.0	6.5	mArms
Output Current2	Io1	12 ± 1.2	5 ± 0.25	3V/10k	-30 ~ 85	120	2.5	3.0	3.5	mArms
Input Current1	Iin1	12 ± 1.2	5 ± 0.25	0V/0	-30 ~ 85	120	-	500	800	mA DC
· Input Current2	Iin1	12 ± 1.2	0	0V/0	-30 ~ 85	120	-	0	1	mA DC
Input Current3	Iin1	12 ± 1.2	5 ± 0.25	0V/0	-30 ~ 85		-	10	30	mA DC
· Frequency	F1	12 ± 1.2	5 ± 0.25	0V/0	-30 ~ 85	120	50	55	60	kHz
Open Circuit Voltage	Vo	12 ± 1.2	5 ± 0.25	3V/10k	-30 ~ 85		2,200	2,300	2,500	Vrms
Warning Signal	Vst1	12 ± 1.2	5 ± 0.25	0 / 0V	-30 ~ 85		4.5	5.0	5.5	V DC
Note3-2	Vst2	12 ± 1.2	5 ± 0.25	0 / 0V	-30 ~ 85	120	-	0	0.5	V DC

Note3-1 If the inverter detects open circuit lamp for more than 3 ~ 10 seconds it will shut down.
Input current 3 is an input current after operation stops.

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

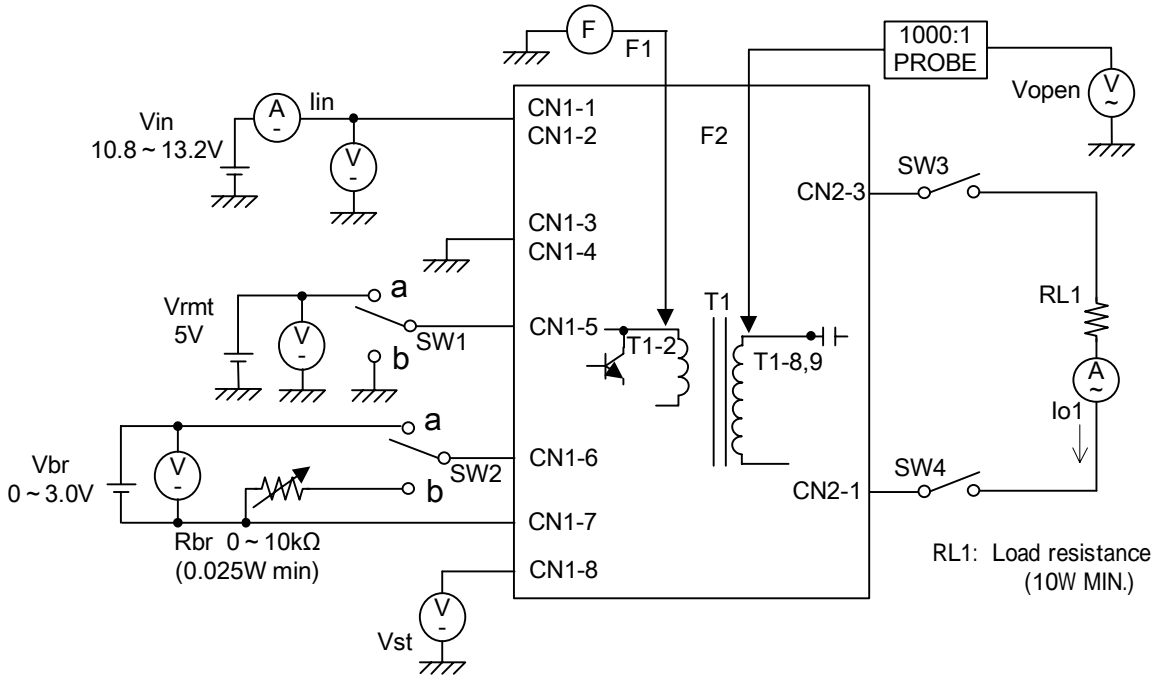
Output current value(reference)
※Please confirm it with a real machine because the reference value.



No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0490				
NAME OF DRAWING		DRAWING No.		PAGE
PRODUCT DRAWING		CTR-2445-A		5

TDK CORPORATION

[4] Test Circuit



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

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

Note4-2. SW2(ON/OFF) Operation is as following;

SW2	Operation of unit
a	Voltage dimming Vbr=0 ~ 3.0V 0V: Brightness MAX
b	Variable resistance dimming VR=0 ~ 10kΩ 0Ω: Brightness MAX

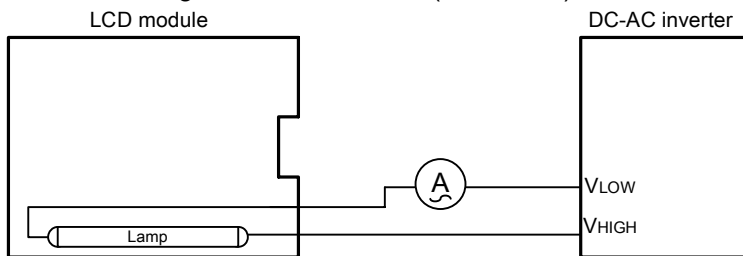
Note4-3. SW3,4(Open/Close) Operation is as following;

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

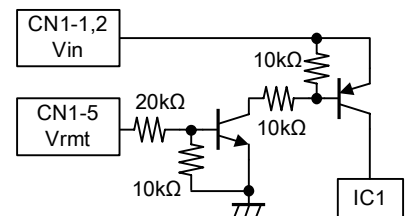
Note4-4. Test Equipments

- Ⓧ Digital Multiple Meter(ADVANTEST R6452A or equivalent)
- Ⓐ DC Current Meter(ADVANTEST R6452A or equivalent)
- Ⓣ Frequency Countor(HP 5316A or equivalent)
- Ⓜ True RMS Meter(ADVANTEST R6452A or equivalent.)
- Ⓐ High Frequency Current Meter(YEW2016 or equivalent)
- 1000:1 : High Voltage Probe(Tektronix P6015A or equivalent)

Connection diagram of LCD module (Reference)



Remote terminal circuit (Reference)



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

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0490				
NAME OF DRAWING		DRAWING No.		PAGE
PRODUCT DRAWING		CTR-2445-A		6

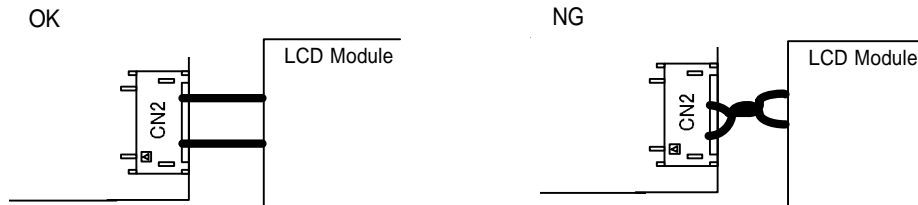
TDK CORPORATION

Note4-5. 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.

Note4-6. 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. Please refer to fig1.

Fig1.High Voltage Area



Note4-7. Please check your lamp characteristic for minimum operational current and set the limit point in your design to avoid flickering and/or abnormal operation.

[5]Reliability Test

Following test items are assured.

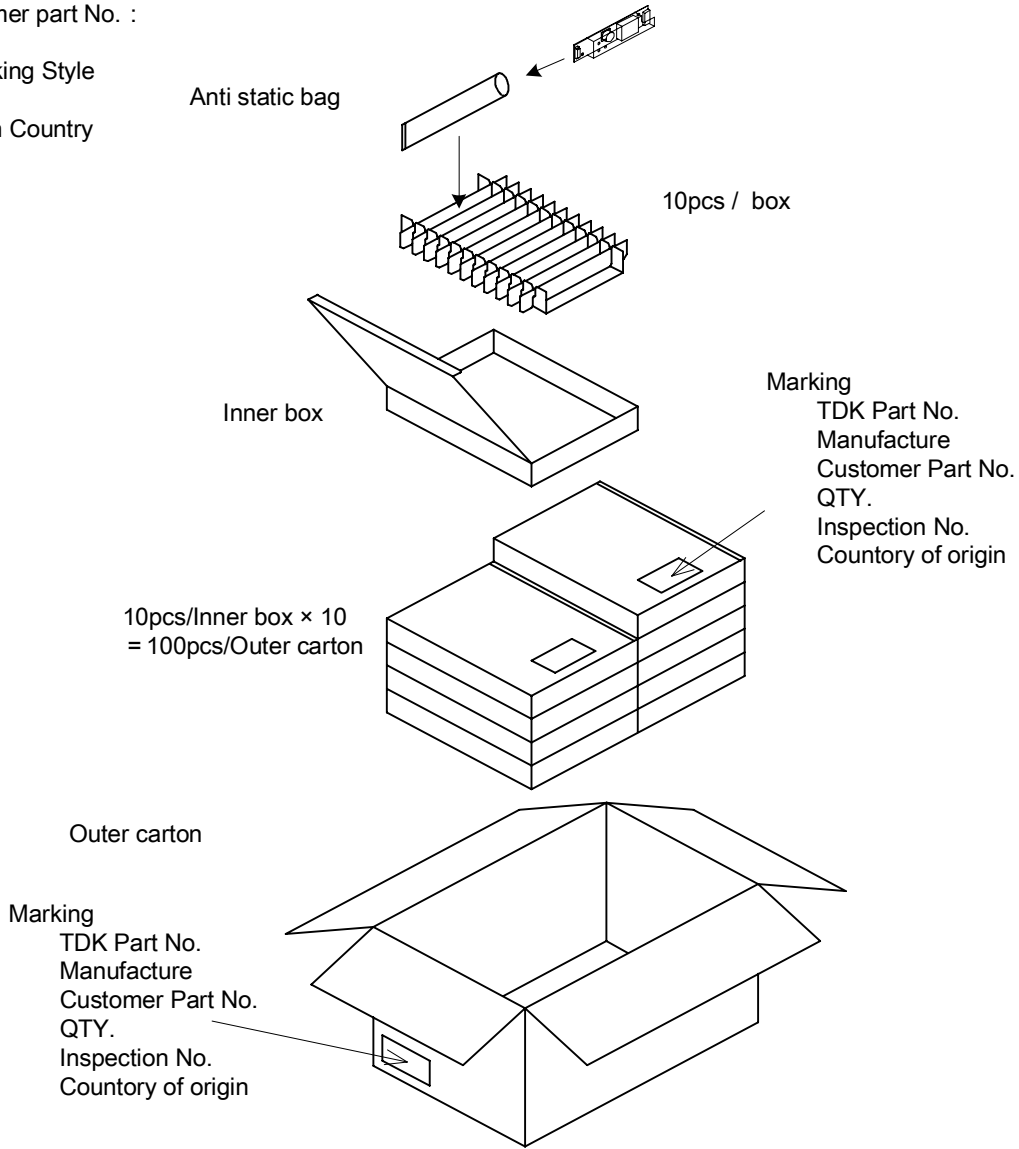
Items	Conditions	Judgement
Low Temp.Non operational	-40 500h	Electrical and appearance should be in the specifications.
Low Temp.operational	-30 500h Load Cond.: TYP.	
High Temp.Non operational	85 500h	
High Temp.operational	85 500h Load Cond.: TYP.	
Heat Shock	-40 ↔ 85 30min. Each 100 Cycles	
Humidity (Non operational)	60 90 ~ 95% R H 500h	
Humidity operational	60 90 ~ 95% R H 500h Load Cond.: TYP.	
Vibration	10 ~ 55Hz Amplitude 0.75mm 58 ~ 500Hz 9.8m/s ² Sweep:11min X,Y,Z 60min each axis X,Y,Z	
Shock	980m/s ² 11msHalf-Sine Pulse 1 times each axis ± X, ± Y, ± Z	

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL,TITLE				
DC-AC INVERTER UNIT CXA-0490				
NAME OF DRAWING			DRAWING No.	PAGE
PRODUCT DRAWING			CTR-2445-A	7

[6] Packing and Marking

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

- 6-1 TDK part No. : CXA-0490
- 6-2 Manufacture : T D K
- 6-3 Customer part No. :
- 6-4 Packing Style
- 6-5 Origin Country
- 6-6 QTY.



[7] Others

7-1. Test conditions

Unless otherwise specified, the temperature to be (20±15)°C and humidity to be (65±20) %RH.

7-2. Warranty

Warranty shall be for one year after delivery, and those products causing failure during the warranty period and which failures are attributed to the manufacturer's responsibility shall be replaced at no charge.

7-3. Disposition for non-conforming lots

Non-conforming lots, when occurred, shall be discussed and decided upon between both parties.

7-4. Others

When any doubt arises about this specification, it shall be discussed and decided upon between both parties.

No.	MATERIALS NAME	QU	MATERIAL	REMARK
PRODUCT NAME or MODEL, TITLE				
DC-AC INVERTER UNIT CXA-0490				
TDK CORPORATION	NAME OF DRAWING		DRAWING No.	PAGE
	PRODUCT DRAWING		CTR-2445-A	8