

**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-0543**

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**TENTATIVE**

**\*Notice**

Product Drawing is not contract. This is only technical data.

This technical data may change internal description without any notice.

When you design final product please request us specification through our sales or distributors.

After you receive the specification, the contract is effective on signature of the specification.



**TDK-Lambda Corporation**

PREPARED BY	APPROVED BY	AUTHORIZED BY
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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.
- If this product use for in-vehicle or always vibrated place, please consult us before using.
- 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.
- In order to protect the inverter from vibration and shock, be sure to use all the mounting holes when installing the inverter.
- 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".
- Do not use the product after it has been dropped because there is the possibility that components have been damaged.

	No.	MATERIALS NAME	QU	MATERIAL	REMARK
	PRODUCT NAME or MODEL, TITLE				
	DC-AC INVERTER UNIT CXA-0543				
<b>TDK-Lambda</b>	NAME OF DRAWING		DRAWING No.		PAGE
	PRODUCT DRAWING (Technical Documents)		CTR-3842-A		1

1. Product Name

The product name is CXA-0543.

2. Contents

Item	Attached view	Page
1.Appearance, Structure and Dimension		
Outline	refer to [1]	3
Pin configuration	refer to [1]	4
2.Characteristics		
Absolute Maximum Ratings	refer to [2]	5
3.Electrical Characteristics	refer to [3]	5
4.Test circuit	refer to [4]	6
5.Reliability Test	refer to [5]	7
6.Packaging and Marking	refer to [6]	8
7.Other	refer to [7]	8

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- 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 function.

This product has shutdown function and alarm output function .

When any of the load is opened, the alarm output becomes 5V.

When all of the load is opened, inverter will shut down about 3 seconds.

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

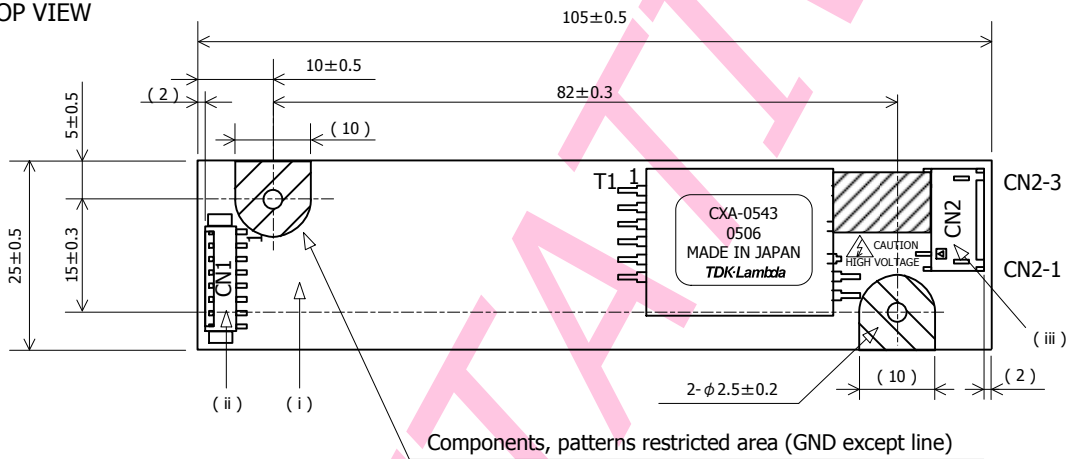
This product is conformity to RoHS directive\*.

\*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.

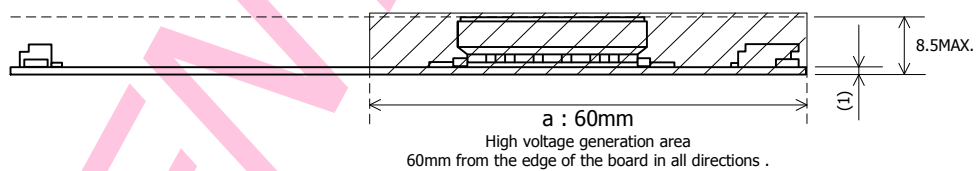
[1] Outline

1-1. Outline

TOP VIEW



SIDE VIEW



Please secure 3mm or longer space distance from the high voltage generating area in all directions. Please see Note 1-2 for the details.

BOTTOM VIEW



Unit:mm  
Weight:20g.typ.

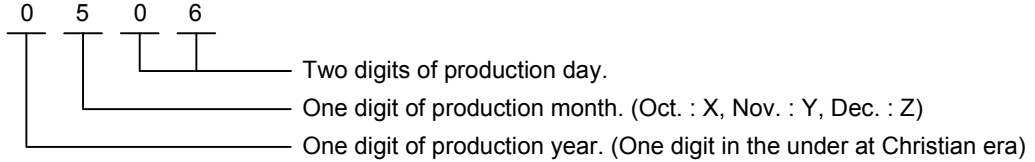
No.	Part Description	Material	QU	REMARK	MATES WITH
(i)	PCB	CEM-3	1	UL94V-0 t=1.0	-
(ii)	Input Connector CN1	53261-0871	1	MOLEX	51021-0800
(iii)	Output Connector CN2	SM03(4.0)B-BHS-1-TB(LF)(SN)	1	JST	BHR-03VS-1

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**TDK-Lambda**

1-2. Marking of TDK part No, Date code, Country of origin.

- 1) They are marked PCB bottom side with label.
- 2) Date code example. (ex. May. 06. 2010)



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

1-3. Connector Configuration

CN1 (Input)

Pin No.	Symbol	Rating	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:ON
CN1-6	Vbr1 / Rbr1	0~2.5V / 0~50kΩ	Control/VR
CN1-7	Vbr2 / Rbr2	GND / 0~50kΩ	Control/VR
CN1-8	Vst	0V / 5V	Alarm output 5V in abnormal circumstances

CN2 (Output)

Pin No.	Symbol	Rating
CN2-1	VLOW	(2V)
CN2-2	VHIGH2	600 Vrms
CN2-3	VHIGH1	600 Vrms

Note1-1. For circuit connection, please refer to test circuit diagram [4]

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

Note1-3. 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 cable



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. 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.

Note1-5. Please check your lamp characteristic for minimum operational current and set the limit point in your design to avoid flickering and/or abnormal operation.

Note1-6. For proper operation of circuit protection (fuse or IC PROTECTOR), Please use minimum of 3A capacity for input power supply.

Note1-7. This product has 1.5A IC protector inside. Please confirm input current within 1.5Aop in any conditions.

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[2] Absolute maximum ratings

Item	記号	規格	単位	備考
Input Voltage	Vin	0 ~ 14	VDC	
	Vrmt	-1 ~ Vin+1		
	Vbr	-1 ~ 16		
Load	RL//CL	105//5	kΩ//pF	
Operation Temp. range	Ta	-20 ~ 80	°C	
Storage Temp. range	Ts	-30 ~ 85	°C	
Humidity range	RH	95	%RH	A maximum wet ball temperature is 38 deg. No dew.

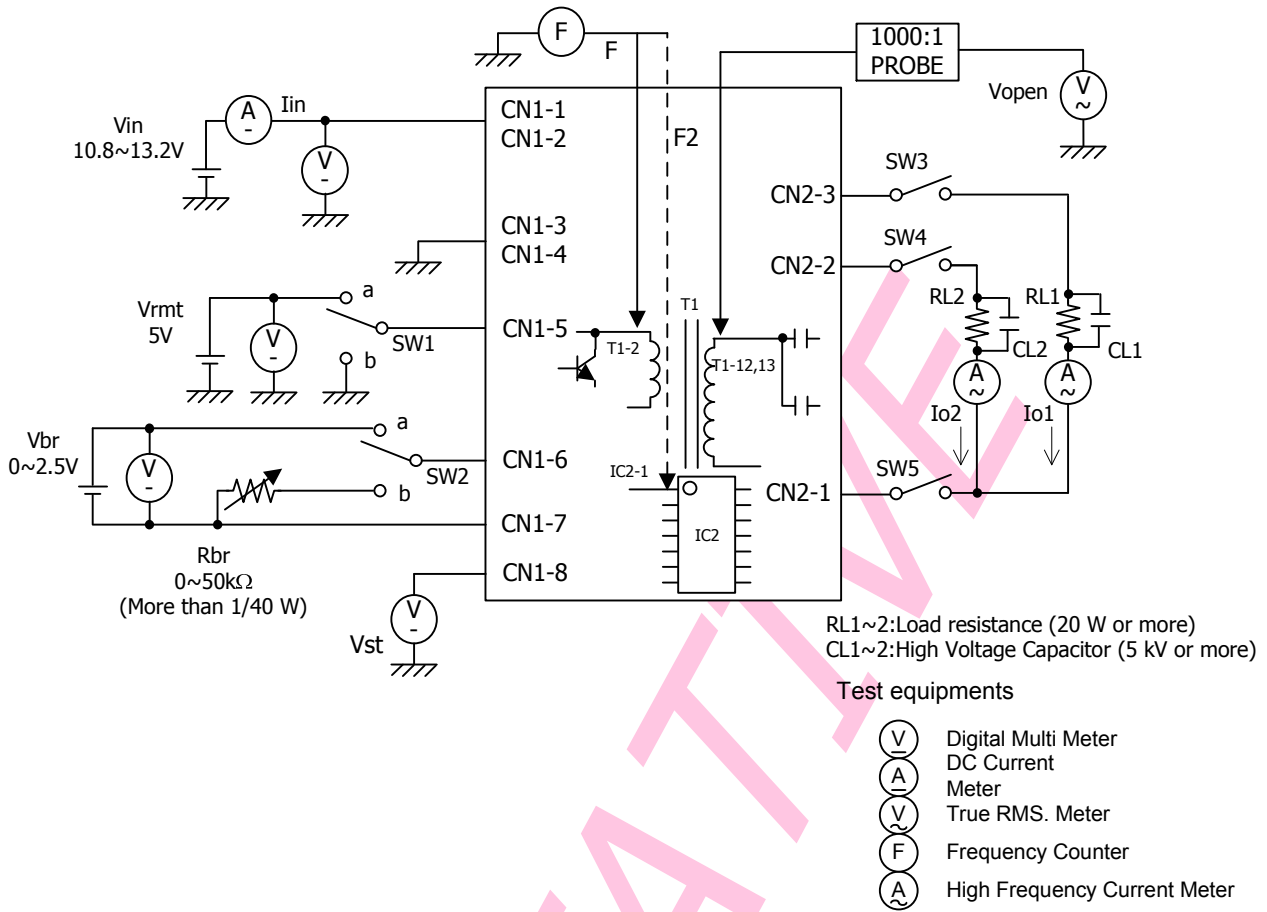
[3] Electrical specifications

Item	Symbol	Conditions					Specifications			Unit
		Vin(V)	Vrmt(V)	Rbr(kΩ)/ Vbr(V)	Ta(°C)	RL1,2(kΩ)//CL1(pF) RL2(kΩ)//CL2(pF)	MIN.	TYP.	MAX.	
Output Current (max.)	Io1/2	12±1.2	5±0.25	0 / 0	-20 ~ 80	100//5 100//5	4.3	5.0	5.7	mArms
		12±0.6	5±0.25	0 / 0	23±5	100//5 100//5	4.5	5.0	5.5	
Output Current (min.)	Io1/2	12±1.2	5±0.25	50 / 2.5	-20 ~ 80	100//5 100//5	1.2	2.0	3.0	
		12±0.6	5±0.25	50 / 2.5	23±5	100//5 100//5	1.3	2.0	2.7	
Input Current1	Iin1	12±0.6	5±0.25	0 / 0	-20 ~ 80	100//5 100//5	—	0.55	0.8	A
Input Current2	Iin2	12±0.6	0±0.25	0 / 0	-20 ~ 80	100//5 100//5	—	—	1	mA
Frequency	F1	12±0.6	5±0.25	0 / 0	-20 ~ 80	100//5 100//5	50	55	60	kHz
Frequency (duty)	F2	12±0.6	5±0.25	50 / 2.5	-20 ~ 80	100//5 100//5	220	250	280	Hz
Open Circuit Voltage	Vopen	10.8 min.	5±0.25	0 / 0	-20 ~ 80	∞ ∞	1.2	1.25	1.5	kVrms
Alarm Output (Note4-3)	Vst	12±1.2	5±0.25	0 / 0	-20 ~ 80	100//5 ∞	4.5	5.0	5.5	V
		12±1.2	5±0.25	0 / 0	-20 ~ 80	∞ 100//5	4.5	5.0	5.5	
		12±1.2	5±0.25	0 / 0	-20 ~ 80	100//5 100//5	—	0	0.5	

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[4] Terminal connection diagram



Note. 4-1

SW1	Operation
a	Work
b	Doesn't work
OPEN	

Note. 4-2

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

\*Vbr=0V : Brightness max.  
Rbr=0W : Brightness max.

Note. 4-3

Load Condition	Alarm Output (CN1-8)**	Shutdown Operation***
Normal Operation	0.5V max.	Normal
1 Lamp Open	4.0~5.5V	Normal
2 Lamps Open	4.0~5.5V	Shutdown

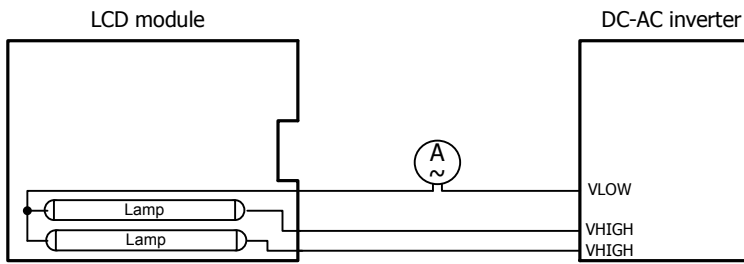
\*\* When any of the load is opened, the alarm output becomes 5V.

\*\*\* When all of the load is opened, inverter will shut down about 3 seconds.

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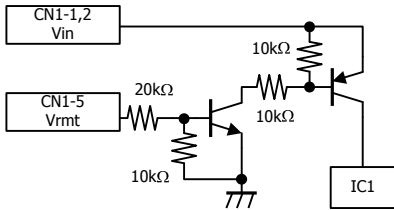
**TDK-Lambda**

Connection diagram of LCD module (Reference)

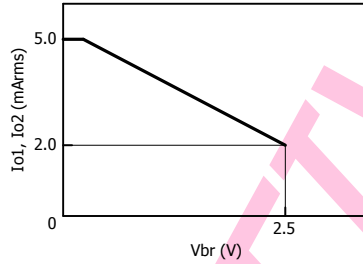


Connect the High Frequency Current Meter to the Low-Voltage (VLOW) side.

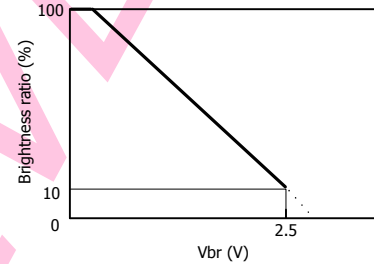
Vrmt terminal circuit (Reference)



Dimming characteristics (Reference)



Luminance characteristics (Reference)



[5]Reliability Test

Following test items are assured.

Items	Conditions	Judgement
Low Temp. Non operational	-30°C 500h	Electrical and apperance should be in the spec.
Low Temp.operational	-20°C 500h Load cond.:TYP	
High Temp. Non operational	85°C 500h	
High Temp.operational	80°C 500h Load cond.:TYP	
Heat shock	-20°C ~ 80°C 30min.Each 100 Cycles	
Humidity (Non operational)	60°C 90~95%RH 500h	
Vibration	10~500Hz Half Amplitude 0.75mm or 9.8m/s <sup>2</sup> Sweep:11min 60min each axis X,Y,Z	
Shock	980m/s <sup>2</sup> 11ms Harf-sine pulse 3 time each axis ±X,Y,Z	

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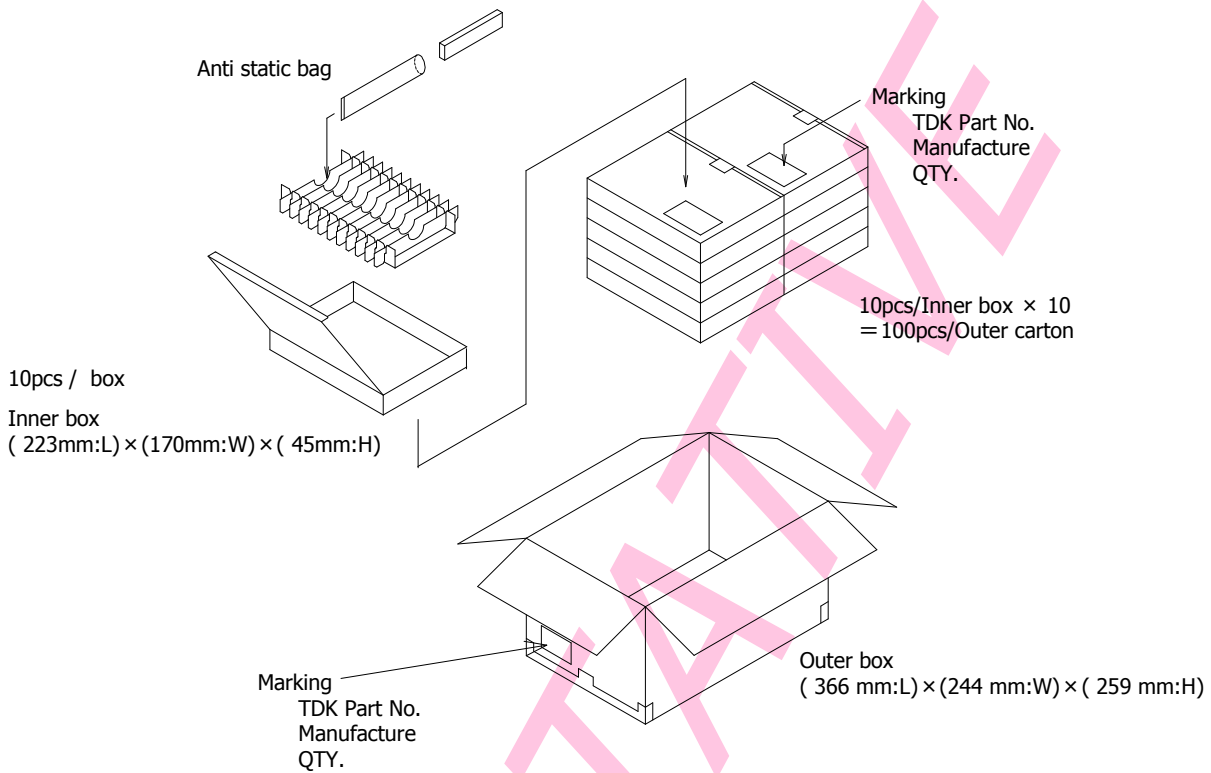


[6]Packing and Marking

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

- 6-1. TDK-Lambda part No.
- 6-2. Manufacture
- 6-3. QTY.

Packing style as under Fig. (100 going in with a standard.)



[7]Others

- 7-1. Test Cond.  
 A normal test condition :Temperature (15~35°C) , Humidity (25~75 %RH)
- 7-2. Std Warrantry  
 One year after shipment. This covers detects in material or workmanship.  
 Defects units will be replaces at no charge.
- 7-3. Others  
 TDK-Lambda and customer are to discuss changes,problems,and modifications when needed.

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