

CERTIFICATE OF COMPLIANCE

Certificate Number 20130104-E135493
Report Reference E135493-A14-UL
Issue Date 2013-JANUARY-04

Issued to: VICOR CORP
25 FRONTAGE RD
ANDOVER MA 01810

**This is to certify that
representative samples of**

COMPONENT - POWER SUPPLIES, INFORMATION
TECHNOLOGY EQUIPMENT INCLUDING ELECTRICAL
BUSINESS EQUIPMENT.



DC/DC Converter
IBaaaEfffGwwxy-zz
Intermediate Bus Converter (IBC)

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 60950-1 and CSA C22.2 No. 60950-1-07, (Information
Technology Equipment - Safety - Part 1: General
Requirements).

Additional Information: See the UL Online Certifications Directory at
www.ul.com/database for additional information

Only those products bearing the UL Recognized Component Marks for the U.S. and Canada should be considered as being covered by UL's Recognition and Follow-Up Service and meeting the appropriate U.S. and Canadian requirements.

The UL Recognized Component Mark for the U.S. generally consists of the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark: , may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual recognitions. The UL Recognized Component Mark for Canada consists of the UL Recognized Mark for Canada:  and the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Recognized Component Mark on the product.



William R. Carney, Director, North American Certification Programs

UL LLC

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UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2011-12 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Component Recognition
CCN:	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	DC/DC Converter
Model:	IBaaaEfffGwwxy-zz Intermediate Bus Converter (IBC)
Rating:	See Miscellaneous Enclosure for model matrix Input: 48Vdc Output Voltage: 9.6 or 12Vdc max Output Power 62Amax or 570Wmax See Miscellaneous Enclosure for model details.
Applicant Name and Address:	VICOR CORP 25 FRONTAGE RD ANDOVER MA 01810 UNITED STATES

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

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Prepared by: Gerard Soprych

Reviewed by: Daniel Pirozzi

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
 - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
 - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The VI Brick IBC 1/8th Brick family of DC-DC converters are designed for building-in. The IBC converters provide Basic Insulation from Input to Output. The IB048 models provide a dielectric withstand rating of 1500Vdc while the IB050 and IB054 provide a dielectric withstand rating of 2250Vdc. The IB054 models are IB050 variants that can withstand input transients of 75Vdc for 100mS.

Model Differences

See Miscellaneous Enclosure for model nomenclature.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : -
- Operating condition : continuous
- Access location : building-in
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : N/A
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : -
- Class of equipment : Not classified
- Considered current rating of protective device as part of the building installation (A) : -
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : 2000
- Altitude of test laboratory (m) : 150
- Mass of equipment (kg) : 0.02kg
- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: max. allowed PCB temperature of 130°C under normal operating conditions

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- Input Voltage: Both a nominal input voltage and an input voltage range are specified. Operation over the entire range was evaluated. The output voltage is a fixed turns ratio of the input voltage.
- Max Output: The IBC has both a maximum current and a maximum power rating. The end use application shall not exceed the lower limit of either maximum power or maximum current.
- Max Temperature: The maximum allowable PCB temperature is 130°C under normal operation and should be evaluated in the end use product.
- Fusing Requirements: The IBCs were evaluated with an external fast acting fuse. Littelfuse Nano2 rated 30A or less or BEL Fuse SSQ Series rated 15A or less.
- The IB048 models provide 1500Vdc of isolation from input to output.
- The IB050 and IB054 models provide 2250Vdc of isolation from input to output.
- The output is separated from the input by Basic Insulation.
- The following secondary output circuits are SELV: All
- The following secondary output circuits are at hazardous energy levels: All
- The power supply terminals and/or connectors are: Not investigated for field wiring
- The investigated Pollution Degree is: 2
- Proper bonding to the end-product main protective earthing termination is: Required
- An investigation of the protective bonding terminals has: Not been conducted
- The following end-product enclosures are required: Mechanical, Fire, Electrical

Additional Information

N/A

Markings and instructions

Clause Title	Marking or Instruction Details
1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
1.7.1 Power rating - Model	Model Number

Special Instructions to UL Representative

N/A

VI Brick Intermediate Bus Converter Model Number: IBaaaEfffGwwxy-zz

Example: IB048E096T48N1-00

IB = Constant	Intermediate Bus
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aaa = Nominal Input Voltage (range, may be narrowed)	
048	48 Vdc (38-55)
050	48 Vdc (36-60)
054	48 Vdc (36-60)

E = Constant	Eighth Brick Package
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fff = Output Voltage Designator	
096	9.6Vdc
120	12.0Vdc

G = Product Grade	
T =	-40°C to 125°C

ww = Output Current / Power Designator			
9.6Vdc Output		12Vdc Output	
40	40A or 300W	32	32A or 300W
48	48A or 500W	40	40A or 500W
52	52A or 480W		
62	62A or 570W		

x = Enable Port (non-safety related) referenced to (-) In	
N =	Negative bias
P =	Positive bias

y = Pin Style (non-safety related)	
Any alphanumeric character	

zz = Revision / Option Designator (non-safety related)	
Any alphanumeric character	

Customer Special Models:

Customer Special Model Numbers	Equivalent Standard Model Numbers
IBC030E01-zz	IB048E096T40N1-zz
IBC036E01-zz	IB048E096T48N1-zz
IBC030E02-zz	IB054E096T40N1-zz
IBC045E01-zz	IB050E096T52N1-zz
IBC054E01-zz	IB050E096T62N1-zz
Customer special model numbers also use the zz non-safety related alphanumeric revision designator.	