

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	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)
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	AC-DC Converter
<b>Model:</b>	VI Brick AC Front End
<b>Rating:</b>	See Miscellaneous Enclosure for model matrix. Input: 85-264Vac 47-63Hz  Output Voltage: 48Vdc Output Power 330Wmax  See Miscellaneous Enclosure for model details.
<b>Applicant Name and Address:</b>	VICOR CORP 25 FRONTAGE RD ANDOVER MA 01810-5499 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.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

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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 AC-DC front end modules are isolated AC-DC converters for building-in. The modules provide power factor correction (PFC), operate over a wide input voltage range and provide SELV output.

### Model Differences

See Miscellaneous Enclosure for model nomenclature.

### Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : not directly connected to mains
- Operating condition : continuous
- Access location : building-in
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : 85-264
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : -
- Class of equipment : Class I (earthed)
- Considered current rating of protective device as part of the building installation (A) : 6.3 A or less
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : 5000
- Altitude of test laboratory (m) : less than 2000
- Mass of equipment (kg) : 0.11
- The product was submitted and evaluated for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of: case temperature of 100°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:

- An external VDR and fuse are required in the end application. The VI Brick AC Front End was evaluated with an external Littelfuse TMOV (VDR).
- The VI Brick AC Front End was evaluated with an external fast acting fuse rated 6.3A. Littelfuse 216P series, Bussmann S501 series, and Schurter SA series.
- The VI Brick AC Front End provides 1500 Vac / 2121 Vdc of isolation from input/output to EMI GND/Heatsink (BI), 3000 Vac/ 4242 Vdc from Input to Output (RI), and 1500 Vac / 2121 Vdc of isolation from Output to Heatsink (SI).
- The maximum baseplate / heatsink temperature is 100°C. The heatsink may be grounded or floating in the end application.
- 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
- An investigation of the protective bonding terminals has: Not been conducted
- The following end-product enclosures are required: Mechanical, Fire, Electrical
- The following secondary output circuits are SELV: all.

**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 AC Front End Model Number:** FEbbbDcccsxxxzy-aa

Example: FE175D480C033FP-00

FE = Constant	Front End
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bbb = Input Voltage (range) Vac	
175 (85-264)	Universal
115 (85-132)	Low Range
230 (170-265)	High Range

D = Constant	Package size (Double)
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ccc = Output Voltage Designator (can be any three digits from 000 to 480) non-inclusive list of examples below	
480	48 Vdc

s =	Product Grade	Temp Range
C	Commercial	-20 - 100 C
T	Telecom	-40 - 100 C
M	Military	-55 - 100 C

xxx = Output Power Designator, non-inclusive list of examples below			
020	200 W	003	300 W
025	250 W	033	330 W

y = Baseplate Style, any alphanumeric character, non-safety related, non-inclusive list below	
F	Slotted Flange

z = Pin Style, any alphanumeric character, non-safety related, non-inclusive list below	
P	Standard Length Through Hole

aa = Customer Reference or Revision, non-safety related, any alphanumeric character	
00	Standard Product