

# CERTIFICATE OF COMPLIANCE

**Certificate Number** 20131213-E100527  
**Report Reference** E100527-19890524  
**Issue Date** 2013-DECEMBER-13

**Issued to:** VICOR CORP  
25 FRONTAGE RD  
ANDOVER MA 01810

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



COMPONENT - POWER SUPPLIES, DATA-PROCESSING  
EQUIPMENT, ELECTRONIC/ POWER SUPPLIES, INFORMATION  
TECHNOLOGY EQUIPMENT INCLUDING ELECTRICAL BUSINESS  
EQUIPMENT/ POWER SUPPLIES, TELEPHONE  
See Addendum Page

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

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

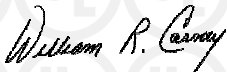
**Additional Information:** See the UL Online Certifications Directory at  
[www.ul.com/database](http://www.ul.com/database) for additional information

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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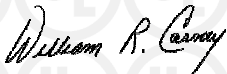


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**Certificate Number** 20131213-E100527  
**Report Reference** E100527-19890524  
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This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Component Power Supply, Flat Pac Series, Model Nos. VI-abccc-deee-ff-xx. The power supplies are for use with data processing equipment, and office appliances and business equipment.



William R. Carney, Director, North American Certification Programs

UL LLC

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File E100527  
Project 91EK524

Issued: May 24, 1989

REPORT

on

COMPONENT - POWER SUPPLIES

Vicor Corp.  
Andover, MA

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## DESCRIPTION

PRODUCT COVERED:

\* Component Power Supply, Flat Pac Series, Model Nos. **VI-abccc-deee-ff-xx**. The power supplies are for use with data processing equipment, and office appliances and business equipment. Refer to Ill. 14 **for nomenclature breakdown**.

GENERAL CHARACTER AND USE:

The Flat Pac Series is built using up to three Recognized (QQBK2) Vicor dc-dc output voltages of the modules which provide primary to secondary isolation. It can be configured by selecting the desired output voltages of the modules and paralleling of similar outputs to provide the output configuration described in the nomenclature section of this report (up to three outputs). Units with the same number of modules share the same front end primary circuitry. They are intended to be factory wired within electronic data processing equipment.

The power supplies were investigated for compliance with the Standard for Information Technology Equipment Including Electrical Business Equipment, UL 60950-1, 2nd Edition, 2007-03-27 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03 (Information Technology Equipment - Safety - Part 1: General Requirements). Based on the March 15, 1991 Industry Review and per the manufacturer's request, this section of this report was transferred to the category for Power Supplies For Use In Electronic Data Processing Equipment, and Power Supplies For Use In Information Technology Equipment, including Electrical Business Equipment.

NOMENCLATURE BREAKDOWN:

Refer to Ill. 14.

ELECTRICAL RATINGS:

Refer to Ill. 14.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

For use only in or with electronic data processing equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

Conditions of Acceptability - When installed in the end-use equipment, the following are among the considerations to be made.

\*1. These components have been judged on the basis of the required spacings in **UL 60950-1, 2nd Edition, 2007-03-27 (Information Technology Equipment - Safety - Part 1: General Requirements)** CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03 (**Information Technology Equipment - Safety - Part 1: General Requirements**) which covers the end-use product for which the component was designed.

2. The power supply should be installed in compliance with the enclosure, mounting, spacings, temperature, casualty, and segregation requirements of the ultimate application.

3. The baseplate temperature should be measured in the end-use, and should not exceed 85°C.
4. The component power supply may be used in still air at 25°C if the output is derated; and the baseplate is maintained at or less than 85°C.
5. Secondary circuits have not been investigated for secondary interconnection or user accessibility.
6. The input and output terminals are not acceptable for field connections and are only intended for connection to mating connectors of internal wiring inside the end-use machine. The acceptability of these and the mating connectors relative to secureness, insulating materials, and temperature should be considered.
7. The "Gate In" and "Gate Out" terminals are in low voltage primary connected circuits.
8. Based on Paragraph 35A.1 of the Standard for Telephone Equipment, UL 1459; these products are acceptable for use with telephone equipment.
9. These units have an earth leakage current which exceeds 3.5 mA at high frequency inputs.

For units which operate at input frequencies higher than 63 Hz the end-product must be provided with industrial type sockets or plugs and the cross-sectional area of the internal protective earthing conductor may not be less than 1.0 mm<sup>2</sup>, or the end-product must be additionally evaluated to determine acceptability with respect to leakage current requirements of UL 1950.

10. If the end-product input frequency exceeds 63 Hz, the following marking must be provided:

"WARNING - HIGH LEAKAGE CURRENT - EARTH CONNECTON ESSENTIAL BEFORE CONNECTING SUPPLY."

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**Company:** Vicor Corporation, 25 Frontage Road Andover, MA 01810 USA

## VI - a b c c c - d e e e - f f - x x

### FlatPAC Family Tree

#### VI Product Type

VI = VI (Vicor), VI = VE (Vicor RoHs), VI = IP (VJCL), VI = IE (VJCL RoHs)

#### a Module Configurations

L = 1 module, 1 output	5.0 / 2.5 A
M = Up to 2 modules, 1 output	9.5 / 6.0 A
N = Up to 3 modules, 1 output	13.5 / 8.0 A
P = Up to 2 modules, 2 outputs	9.5 / 6.0 A
Q = Up to 3 modules, 2 outputs	13.5 / 8.0 A
R = Up to 3 modules, 3 outputs	13.5 / 8.0 A

#### Input Current (Max)

#### b Input Type

F = Strappable  
A = AutoRanging  
U = Universal

#### d Product Grade

C = Commercial	-20C to 85C
I = Industrial	-40C to 85C
M = Military	-55C to 85C
E = Economy	0C to 85C

#### Input Voltage

100-120 / 200-240 V, 47-63 Hz
100-120 / 200-240 V, 47-440 Hz
100-120 / 200-240 V, 47-440 Hz
100-120 / 200-240 V, 47-63 Hz

#### eee Output Power

$V_{out} \geq 5V$	$V_{out} \leq 5V$
M = 600W	120A
P = 450W	90A
Q = 400W	80A
S = 300W	60A
U = 200W	40A
V = 150W	30A
W = 100W	20A
X = 75W	15A
Y = 50W	10A
Z = 25W	5A

#### ccc Output voltage (Vdc) Nominal

Z = 2.0	2 = 15.0
Y = 3.3	N = 18.5
O = 5.0	3 = 24.0
X = 5.2	L = 28.0
W = 5.5	J = 36.0
V = 5.8	K = 40.0
T = 6.5	4 = 48.0
R = 7.5	H = 52.0
M = 10.0	F = 72.0
1 = 12.0	D = 85.0
P = 13.8	B = 95.0

#### ff Customer Options (optional)

BC = BatMOD/Conduction Cooled  
BM = BatMOD  
CC = Conduction Cooled  
LL = Low Leakage version

#### xx Customer Specials (optional)

00-99 = unique customer labels, testing, or non-safety related component changes (d and eee are optional when xx is used)

#### Example

VI-PU01-CUX-23

P = Up to 2 modules, 2 outputs, U = Universal, 0 = 5Vdc, 1 = 12Vdc, C = Commercial product Grade

U = Output 1 @ 200W, X = Output 2 @ 75W, 23 = Customer Label