

# CERTIFICATE OF COMPLIANCE

**Certificate Number** 20160914-E135493  
**Report Reference** E135493-A33-UL  
**Issue Date** 2016-SEPTEMBER-14

**Issued to:** VICOR CORP  
25 FRONTAGE RD  
ANDOVER MA 01810-5424  
UNITED STATES


**This is to certify that representative samples of** Component - Power Supplies for Information Technology Equipment Including Electrical Business Equipment  
See Addendum Page for Model

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

**Standard(s) for Safety:** UL 60950-1 and CAN/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](http://www.ul.com/database) for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

The UL Recognized Component Mark 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.

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 Certification Mark on the product.



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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**Certificate Number** 20160914-E135493  
**Report Reference** E135493-A33-UL  
**Issue Date** 2016-SEPTEMBER-14

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

DC-DC Converter - 3414 VIA DCM Series, Model DCM3414bccdwwxyzz



Bruce Mahrenholz, Director North American Certification Program

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## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (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>	DC-DC Converter
<b>Model:</b>	3414 VIA DCM Series, Model DCM3414bccdwwxyzz
<b>Rating:</b>	See Miscellaneous Enclosure for model details. Rated Input Voltage: 50 Vdc; or 75 Vdc  Rated Output Voltage: Max 48 Vdc  Rated Output Power: 320 W max  See Miscellaneous Enclosure for model details.
<b>Applicant Name and Address:</b>	VICOR CORP 25 FRONTAGE RD ANDOVER MA 01810-5424 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: Mengis Tesfay

Reviewed by: Gregory Ray

### 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 3414 VIA DCM series of DC-DC Converters are a family of low profile component power supplies that are designed for building-in and can be chassis or PCB mounted. The output can be considered SELV and is isolated from the input by basic insulation. Basic Insulation is also provided from the input to the case and Functional Insulation is provided from the output to the case.

### Model Differences

See Miscellaneous Enclosure for model nomenclature.

### Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : not directly connected to the mains
- Operating condition : continuous
- Access location : for building-in
- Over voltage category (OVC) : Other: DC-DC for building in, see end use
- Mains supply tolerance (%) or absolute mains supply values : No direct connection
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Not classified
- Considered current rating of protective device as part of the building installation (A) : N/A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : Up to 5000 meters
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : 0.102

**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:

- The following secondary output circuits are SELV: All
- The following secondary output circuits are at hazardous energy levels: Above 240W
- The investigated Pollution Degree is: 2
- The following end-product enclosures are required: Electrical, Mechanical, Fire, ,
- The output is separated from the input by basic insulation.
- See De-rating Curves for maximum output power vs. case temperature in Miscellaneous Enclosure.
- The VIA DCM's were evaluated with external fuse, EATON (Cooper/Bussmann) ABC series or Littelfuse Nano2 series, rated 30A or less.
- The output is considered SELV.
- Outputs above 240VA are considered to be at a hazardous energy level.

**Additional Information**

Testing of the DC-DC Converter, 3414 VIA DCM Series was not considered necessary based upon previous evaluation under the CB scheme. The CB Scheme Test Certificate DE 3 - 502000 and Report Ref. No. 72106922-000 dated 2016-07-05 was prepared by TÜV SUD Product Service GmbH, Ridlerstr. 65, D-80339 Munich, Germany. As a result the clause verdicts and test results for this report were noted as N/A and have been referred to the TUV CB Report for details.

**Markings and instructions**

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

**Special Instructions to UL Representative**

Optional - UR logo may appear on packaging.

**VIA DCM Model Number Matrix:** DCMaaaabccdwxyz

Example: DCM3414V50M13C2T09

DCM = Constant

Product Function	
DCM	DC-DC Converter Module

aaaa = 3414

Package Size (Length x Width)	
3414	3.4 in x 1.4 in

b = V

Package Type	
V	Chassis mount
B	Board mount

cc = 50

Max Input Voltage	
50	50 Vdc
75	75 Vdc

d = M

Range Ratio (Vin high / Vin low), used to define low line Vin							
A	1.10	D	1.46	G	1.95	K	2.59
B	1.21	E	1.61	H	2.14	L	2.85
C	1.33	F	1.77	J	2.36	M	3.14

ww = 13

Maximum Output Voltage rounded to the nearest Volt (Vout nominal + 10% trim), any 2 digits from 00 to 60, non-inclusive list of examples below				
04	3.6 Vdc	(3.3 Vdc + 10%)	26	26.4 Vdc (24.0 Vdc + 10%)
06	5.5 Vdc	(5.0 Vdc + 10%)	31	30.8 Vdc (28.0 Vdc + 10%)
13	13.2 Vdc	(12.0 Vdc + 10%)	40	39.6 Vdc (36.0 Vdc + 10%)
17	16.5 Vdc	(15.0 Vdc + 10%)	53	52.8 Vdc (48.0 Vdc + 10%)

xx = C2

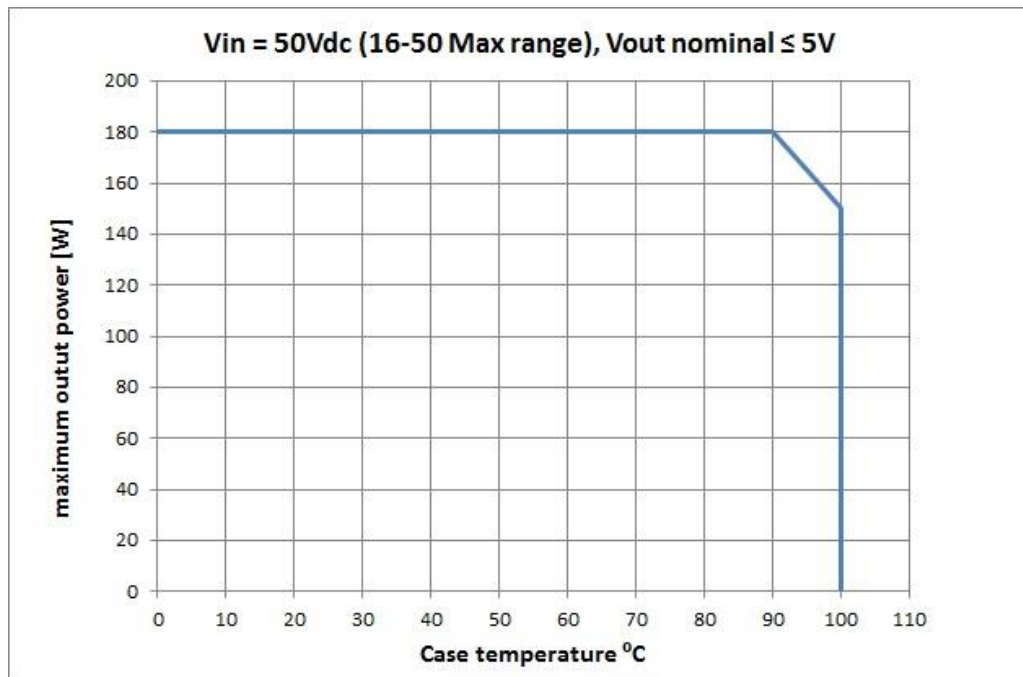
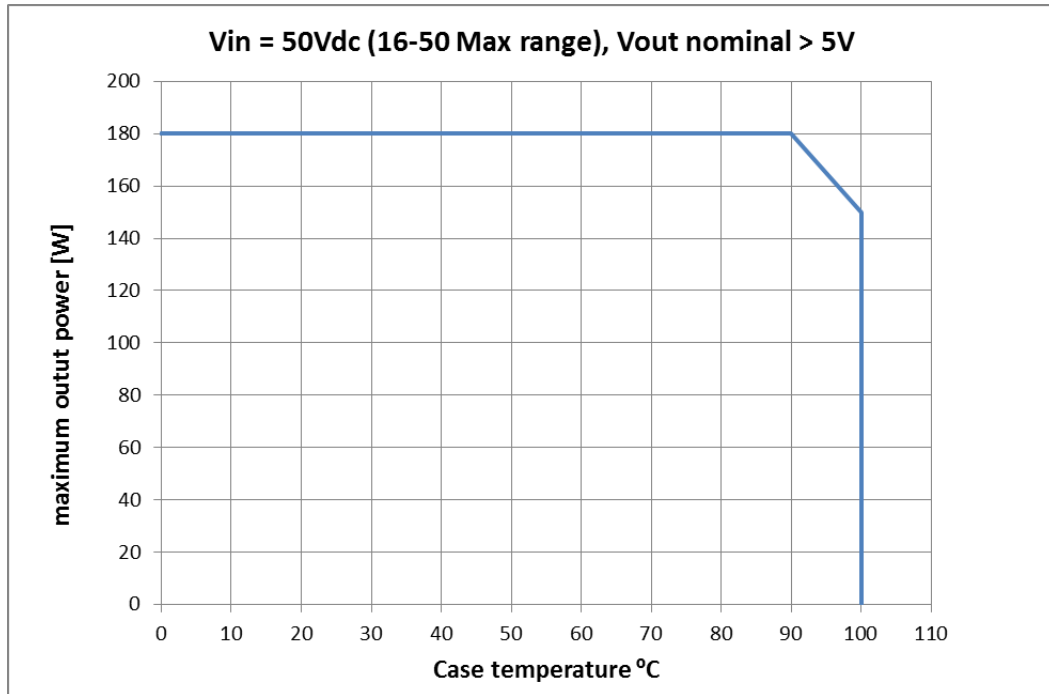
Maximum Output Power					
A6	160 W	A8	180 W	C2	320 W

y = T

Product Grade			
C	-20 to 100°C	T	-40 to 100°C
M	-55 to 100°C	S	-55 to 100°C

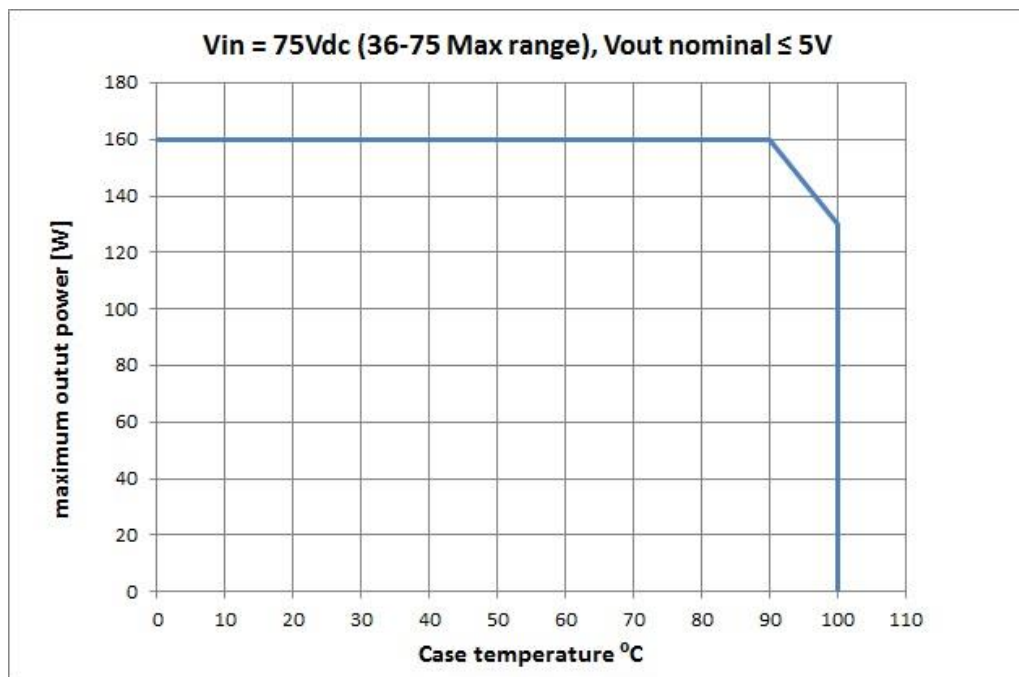
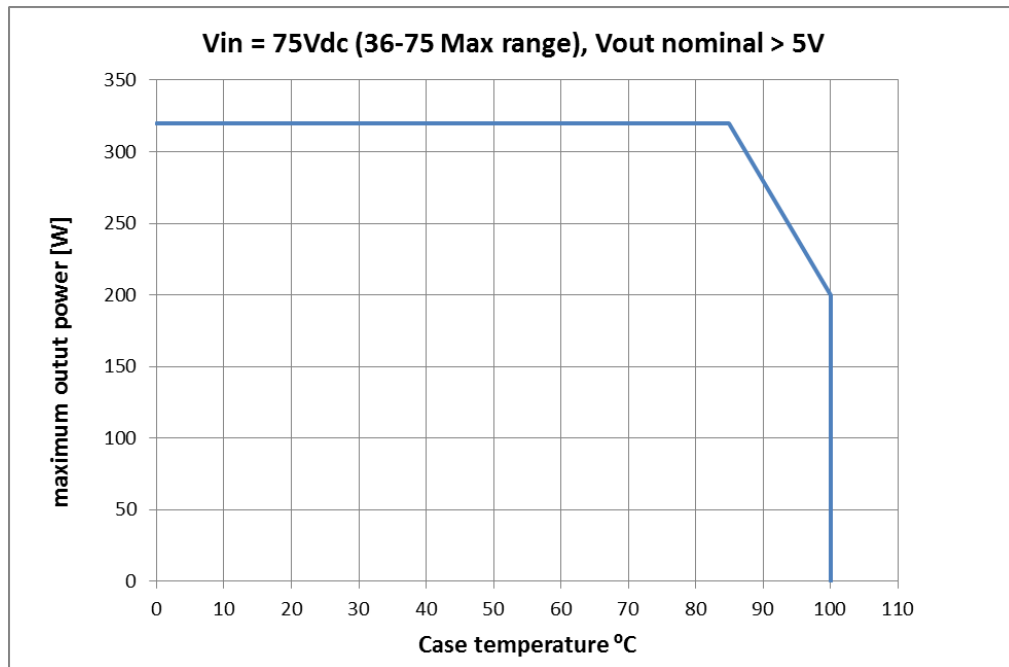
zz = 09

Options (non-safety related), any alphanumeric, non-inclusive list					
Option ID	Pin length	Communication	Option ID	Pin length	Communication
01	----	Analog	07	Short	Remote control
02	----	Digital PMBus	09	Long	Analog
03	----	Remote control	10	Long	Digital PMBus
05	Short	Analog	11	Long	Remote control
06	Short	Digital PMBus			



**Notes:**

1. Maximum output power defined in part number and available across entire Vin range
2. Low Line voltage derived from part number. Low line =  $V_{in\ max} / \text{range ratio}$
3. De-rating curves based on Vout nom.  $V_{out\ max} = V_{out\ nom} + 10\%$ . Vout max defined in part number



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