Underwriters Laboratories (UL LLC)
Safety Certification Body (CB) Report

Model:	NV350 or NV3 or NV-350 followed by abcde
	(may be prefixed by NS - # / or - where # may be up to any four letters and may be followed by - $; where $ maybe any number between 000 to 999, indicating non-safety related model differences. Units may be additionally marked with a product code: K3x or Q3x where x may be any number of characters).
	Where:
	a = Airflow option (which can be S, R, Q, P, V, C, T, U, K or L),
	b = Input option (which can be S, or I),
	c = Leakage option (which can be S, M, L, R or T) optionally followed by
	d = Global option (which can be EN#V, EN12V, EN13.5V, IN#V, IN12V, IN13.5V, ES#V, ES12V, ES13.5V, IS#V, IS12V or IS13.5V) # represents the standby output voltage and is in the range 5 to 5.5V.
	e = modules
	
	(Non-Standard model)
	K300yy#
	(where yy can be 45x, 52x. Where # can be any letter denoting non-safety related changes, e.g. extra labels on the unit and x is for revision changes not affecting safety)
	
	See report Model Differences for details.

Device Description:	Switch Mode Power Supply
Applicant:	TDK-LAMBDA UK LTD KINGSLEY AVE ILFRACOMBE DEVON, EX34 8ES UNITED KINGDOM
Manufacturer:	Same as Applicant
Manufacturing Facility(ies):	Same as Applicant PANYU TRIO MICROTRONIC CO LTD SHIJI INDUSTRIAL ESTATE DONGYONG NANSHA GUANGZHOU GUANGDONG, 511453 CHINA TDK-Lambda (China) Electronics Co Ltd No.95, Zhujiang Rd, Xinwu District Wuxi Jiangsu, 214028 China
Report No.:	E331788-D1009-1/A1/C0-CB
Report (Re)Issue Date:	2021-11-16; 2024-07-24(A1)

Base Standard(s): IEC 61010-1:2010/AMD1:2016/COR1:2019

Additional Standards: JIS C 1010-01(2019)

Report Types: This report consists of the following report types:

- CB Report & Certificate

This report covers the Safety evaluation of the referenced model(s) according to the standard(s) specified above.

The **CB Certificate** is provided as a separate enclosure to this report and not provided in the body of this report.

Table of Contents

Report Modifications Summary

The following changes were made to this report. If none listed in the below table, this report is the originally issued report.

The following scheme is used throughout this report to reflect the **Report No.**:

(File No.) – (Report Ref. No.) – (x) / A(y) / C(z) – YYY, where:
(x) = Report (Re)Issue No.
(y) = Amendment No.
(z) = Correction No.
YYY = Report Type (UL/CB/IEC)

*NOTE: The **CB Certificate** may not be updated for report corrections that don't affect the CB Certificate contents; therefore if this report includes a correction number (z), it may not be reflected in the CB Certificate.*

Date Modified *(Year-Month-Day)*	Modifications Made (include Report Reference Number)	Modified By
2021-11-16	This report is a reissue of CBTR Ref. No. E331788-A17-CB-1, CB Test Certificate Ref. No. DK-33998-UL and E331788-A17-CB-1-Amendment-1, CB Test Certificate Ref. No. DK-33998-A1-UL. and CBTR Ref. No. E331788-A17-CB-1-Amendment-2, CB Test Certificate Ref. No.DK-33998-A2-UL. The original report was modified to include the following changes: - The standard has been ugraded to the latest revision date. - Standards were updated on critical omponent list - Components licenses were attached to the report - Capacitor Murata SA series and RA series with the same electrical ratings has been added as alternate to critical component list. No testing was considered necessary to make these changes. Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, has been determined that the product continues to comply with the standard.	Marcin Zurek
2024-07-24	(UL Project 4791352650) This report has been amended due to the following: 1) Added alternate fan YS Tech FD124020UB-H-NCB. 2) Added fusible resistor (type AC03-CS) in place of F2 fuse for non-standard model K30052x only. 3) Few updates in CCL table such as typo corrections, updated IEC certificate reference number of various components, and addition of alternate parts (relay, insulator) which are similar to original parts. 4) added factory location TDK-Lambda (China) Electronics Co Ltd. 5) updated model name nomenclature for clarity. Limited tests were considered to account these technical changes [e.g. Single fault condition (4.4), Component abnormal (4.4.1), Motor abnormal (4.4.2.5, Dielectric Voltage Withstand (6.8), Temperature test (10.1-10.4)] . In addition to this modification, USA/Canada National Differences USA/CAN (Rev2023) has been considered and added Japan National Differences in Enclosure section of the	Mark John DeSagun

	report.	

Test Report issued under the responsibility of:

TEST REPORT
IEC 61010-1
Safety requirements for electrical equipment for measurement, control, and laboratory use
Part 1: General requirements

Report Number .....:	E331788-D1009-1/A1/C0-CB
Date of issue .....:	2021-11-16; 2024-07-24(A1)
Total number of pages.....:	183
Name of Testing Laboratory preparing the Report.....:	UL VS Limited Unit 1-3 Horizon, Wade Road, Kingsland Business Park, Basingstoke RG24 8AH, United Kingdom
Applicant's name.....:	TDK-LAMBDA UK LTD
Address .....:	KINGSLEY AVE ILFRACOMBE DEVON, EX34 8ES UNITED KINGDOM
Test specification:	
Standard.....:	IEC 61010-1:2010, IEC 61010-1:2010/AMD1:2016
Test procedure .....:	CB Scheme
Non-standard test method……..:	N/A
TRF template used .....:	IECEE OD-2020-F1:2020, Ed.1.3
Test Report Form No.....:	IEC61010_1P
Test Report Form Originator.....:	VDE Prüf- und Zertifizierungsinstitut GmbH
Master TRF.....:	2021-04-12

This report is not valid as a CB Test Report unless signed by an approved IECEE Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

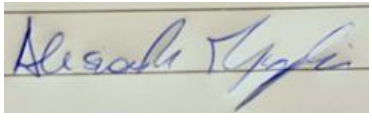
The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing NCB. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description.....:	Switch Mode Power Supply
Trade Mark.....:	Trademark image(s): TDK·Lambda
Manufacturer .....:	Same as Applicant

Model/Type reference.....:	NV350 or NV3 or NV-350 followed by abcde
	(may be prefixed by NS - # / or - where # may be up to any four letters and may be followed by - $; where $ maybe any number between 000 to 999, indicating non-safety related model differences. Units may be additionally marked with a product code: K3x or Q3x where x may be any number of characters).
	Where:
	a = Airflow option (which can be S, R, Q, P, V, C, T, U, K or L),
	b = Input option (which can be S, or I),
	c = Leakage option (which can be S, M, L, R or T) optionally followed by
	d = Global option (which can be EN#V, EN12V, EN13.5V, IN#V, IN12V, IN13.5V, ES#V, ES12V, ES13.5V, IS#V, IS12V or IS13.5V) # represents the standby output voltage and is in the range 5 to 5.5V.
	e = modules
	
	(Non-Standard model)
	K300yy#
	(where yy can be 45x, 52x. Where # can be any letter denoting non-safety related changes, e.g. extra labels on the unit and x is for revision changes not affecting safety)
	
	See report Model Differences for details.

Ratings.....:	100-240Vac nominal 47-440Hz, 5.5A rms max.

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

[X] **CB Testing Laboratory:**		
Testing location/ address .....:	UL VS Limited Unit 1-3 Horizon, Wade Road, Kingsland Business Park, Basingstoke RG24 8AH, United Kingdom	
Tested by (name, function, signature) .....:	Mark John De Sagun, Handler	
Approved by (name, function, signature) ....:	Alessandra Missaglia, Reviewer	
[ ] **Testing procedure: CTF Stage 1:**		
Testing location/ address .....:		

Tested by (name, function, signature) .....:		
Approved by (name, function, signature) ....:		
[ ] **Testing procedure: CTF Stage 2:**		
Testing location/ address .....:		
Tested by (name, function, signature) .....:		
Witnessed by (name, function, signature) ...:		
Approved by (name, function, signature) ....:		
[ ] **Testing procedure: CTF Stage 3:**		
[ ] **Testing procedure: CTF Stage 4:**		
Testing location/ address .....:	TDK-Lambda UK LTD Kingsley Avenue, Ilfracombe, Devon, EX34 8ES, UK	
Tested by (name, function, signature) .....:	N. S. Marsh, S. Hirstwood, Mark Gisbey (Tester)	 and See the original CBTR for signatures
Witnessed by(name, function, signature) ....:	See GPI for details.	
Approved by (name, function, signature) ....:	K. P. Tizzard, Alessandra Missaglia (Reviewer)	 and See the original CBTR for signatures
Supervised by (name, function, signature) ..:	Zmijewski Bartolomiej, Mark John De Sagun (Project Handler)	 and See the original CBTR for signatures

List of Attachments (including a total number of pages in each attachment)		
Document No.	Documents included / attached to this report (description)	Page No.
	Refer to Appendix A of this report. All attachments are included within this report.	

Documents referenced by this report (available on request):		
Document Name or No.	Documents description	Page No.
	Refer to Appendix A of this report. All attachments are included within this report.	

Summary of testing:

Refer to the Test List in Appendix B of this report if testing was performed as part of this evaluation.

Clause	Comment
Refer to the Test List in Appendix B of this report if testing was performed as part of this evaluation.	*Refer to the Test List in Appendix B of this report if testing was performed as part of this evaluation.*

Test Report History:
This report may consist of more than one report and is only valid with additional or previous issued reports:

Report Ref. No.	Item
Refer to Report Modifications under General product information for any modifications made to this report.	

Tests performed (name of test and test clause):	**Testing location:**
Refer to the Test List in Appendix B of this report if testing was performed as part of this evaluation.	*Refer to the Test List in Appendix B of this report if testing was performed as part of this evaluation.*

Summary of compliance with National Differences (List of countries addressed):

EU Group, USA, Canada, Japan

[X] The product fulfils the requirements of EN 61010-1:2010/A1, UL 61010-1 (3rd Ed.); Am. 1, CAN/CSA C22.2 No. 61010-1-12; UPD1:2015; UPD2:2016; AMD1:2018; COR1:2019; UPD3:2023 UL 61010-1, 3rd ed, Rev June 6, 2023, JIS C 1010-1(2019) .

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

[ ] **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

[X] **Statement not required by the standard used for type testing**

(Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)

Copy of marking plate
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Refer to the enclosure(s) titled Marking Label in the Enclosures section in Appendix A of this report for a copy.

Test item particulars :	
Type of item:	Laboratory
Description of equipment function:	Switch Mode Power Supply for building in.
Connection to mains supply:	None unless via the IEC60320 inlet.
Overvoltage category:	II
Pollution degree:	2
Means of protection:	Class I (PE connected)
Environmental conditions:	50°C ambient
For use in wet locations:	No
Equipment mobility:	Built-in
Operating conditions:	continuous
Overall size of equipment (W x D x H)	280 x 95 x 41mm Max.
Mass of equipment (kg):	2kg Max.
Marked degree of protection to IEC 60529:	N/A
Possible test case verdicts:	
- Test case does not apply to the test object .....:	N/A (Not Applicable)
- Test object does meet the requirement .....:	P (Pass)
- Test object does not meet the requirement .....:	F (Fail)
Testing:	
Date of receipt of test item .....:	2013-06-25, 2014-05-19 to 2014-10-07; 2019-09-04, 2024-04-02
Date(s) of performance of tests .....:	2013-07-05 to 2013-07-08, 2014-05-20 to 2014-10-07; 2024-04-08 to 2024-04-15

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing NCB. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Throughout this report a point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....: Yes

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies)..... :	Same as Applicant PANYU TRIO MICROTRONIC CO LTD SHIJI INDUSTRIAL ESTATE DONGYONG NANSHA

	GUANGZHOU GUANGDONG, 511453 CHINA TDK-Lambda (China) Electronics Co Ltd No.95, Zhujiang Rd, Xinwu District Wuxi Jiangsu, 214028 China

General product information and other remarks:

Report Summary

All applicable tests according to the referenced standard(s) have been carried out.

Refer to the Report Modifications for any modifications made to this report.

Product Description

NV350 series. Switch mode power supplies for building into end equipment.

Additional Information

The following tests were selected as representative of the test program applicable to model covered by this CBTR: Single Fault Condition tests(4.4, 4.4.1, 4.4.2.12), Mains Supply (5.1.3), Dielectric Voltage Withstand Test (6.8), Plugs and Connectors (6.10.3), Determination of Accessible Parts, Limit Values for Accessible Parts (6.2, 6.3), Temperature Test (10.1 - 10.4).

These tests have been witnessed for models selected as representative of the standard covered by this report and the applicable test program. (4791153162, DA file 331).

This report is a reissue of CBTR Ref. No. E331788-A17-CB-1, CB Test Certificate Ref. No. DK-33998-UL and E331788-A17-CB-1-Amendment-1, CB Test Certificate Ref. No. DK-33998-A1-UL. and CBTR Ref. No. E331788-A17-CB-1-Amendment-2, CB Test Certificate Ref. No.DK-33998-A2-UL. The original report was modified to include the following changes:

- The standard has been ugraded to the latest revision date.
- Standards were updated on critical omponent list
- Components licenses were attached to the report
- Capacitor Murata SA series and RA series with the same electrical ratings has been added as alternate to critical component list.

No testing was considered necessary to make these changes. Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, has been determined that the product continues to comply with the standard.

Technical Considerations

- The product was investigated to the following standards:

Main Standard(s):

IEC 61010-1:2010/AMD1:2016/COR1:2019

From Country Differences:

- EU Group: EN 61010-1:2010/A1:2019 (Edition 3.1)
- USA(Rev2023): UL 61010-1, 3rd Edition, Revision Date 06/06/2023
- Canada(Rev2023): CAN/CSA-C22.2 No. 61010-1-12, Edition 3, Revision Date 06/2023

Additional Standards:

JIS C 1010-01(2019)

- The following additional investigations were conducted: -
- The product was not investigated to the following standards or clauses: -
- The following accessories were investigated for use with the product: -
- Equipment class: Class I

  Equipment type: For building in

  The product was submitted and tested for use at the maximum recommended ambient temperature (Tmra) of 50°C. From 50°C to 65°C the total output power and the module current ratings are both derated at 2.5% per °C.

For any non-certification testing - Unless specified otherwise in this report, the compliance “Decision Rule” is based on Simple Acceptance (Measurement Uncertainty is not taken into account when making a statement of conformity)

Engineering Conditions of Acceptability

When installed in an end-product, consideration must be given to the following:

This component has been judged on the basis of the creepage and clearances required in the indicated Standards, which would cover the component itself if submitted for Listing: UL 61010-1, 3rd Edition, May 11, 2012, Revised July 19, 2019, CAN/CSA-C22.2 No. 61010-1(2012-05), 3rd Edition, with revisions through 2018-11, IEC 61010-1:2010/AMD1:2016/COR1:2019, EN 61010-1:2010/A1:2019 (Edition 3.1)
The end-product shall consider that: The enclosure does not serve as a fire/electrical/mechanical enclosure excluding the external face of the IEC60320 inlet.
The need for the following shall be considered in the end-product: Bonding to protective earthing terminal (Class I construction)
The output connectors are Suitable for factory wiring only
Creepage and clearance distances were based on a maximum working voltage of Primary to earth dead metal: 622Vpeak, 343Vrms.
Primary to secondary: 650Vpeak, 363Vrms.
Insulation between primary circuits and accessible dead metal complies with the requirements for Basic insulation
Insulation between primary and secondary circuits complies with the requirements for Double and Reinforced insulation
The following tests shall be performed in the end-product evaluation considering rated input voltage and frequency.
- Temperature for customer air models
- Permissible Limits for Accessible Parts
- Dielectric Strength

The unit is considered acceptable for use at on a max branch circuit of 20A
The unit is considered acceptable for use in a max ambient of 50°C. From 50°C to 65°C the total output power and the module current ratings are both derated at 2.5% per °C.
End-product temperature tests for power supplies shall consider that the following transformers employ the indicated insulation system Transformer TX1 Class F (155°C)
Transformer TX2 Class F (155°C)
Transformer T1 Class F (155°C)
Transformer T2 Class F (155°C)

End-product dielectric strength tests shall be based on the maximum working voltage of Primary to earth dead metal: 622Vpeak, 343Vrms.
Primary to secondary: 650Vpeak, 363Vrms.
The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY32 insulation system with the indicated rating greater than Class A (105°C) : T1, T2, TX1 & TX2 (all Class F).
The leakage current tests have been provided for information only. This test must be considered in the end product application and must be repeated for frequencies above 63Hz.
This product has been assessed for a maximum altitude of 3000m
The risk associated with clause 5.4.5 shall be assessed in the end product.

Input tolerance +/-10% has been considered. If unit is used above this tolerance range, additional assessment must be considered in end-product.
The unit is for input connection to IEC 60320 (option I only) and terminal block and considered permanent connection when installed in end-application.

Report Modifications

Date Modified *(Year-Month-Day)*	Modifications Made (include Report Reference Number)	Modified By
2021-11-16	This report is a reissue of CBTR Ref. No. E331788-A17-CB-1, CB Test Certificate Ref. No. DK-33998-UL and E331788-A17-CB-1-Amendment-1, CB Test Certificate Ref. No. DK-33998-A1-UL. and CBTR Ref. No. E331788-A17-CB-1-Amendment-2, CB Test Certificate Ref. No.DK-33998-A2-UL. The original report was modified to include the following changes: - The standard has been ugraded to the latest revision date. - Standards were updated on critical omponent list - Components licenses were attached to the report - Capacitor Murata SA series and RA series with the same electrical ratings has been added as alternate to critical component list. No testing was considered necessary to make these changes. Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, has been determined that the product continues to comply with the standard.	Marcin Zurek
2024-07-24	(UL Project 4791352650) This report has been amended due to the following: 1) Added alternate fan YS Tech FD124020UB-H-NCB. 2) Added fusible resistor (type AC03-CS) in place of F2 fuse for non-standard model K30052x only. 3) Few updates in CCL table such as typo corrections, updated IEC certificate reference number of various components, and addition of alternate parts (relay, insulator) which are similar to original parts. 4) added factory location TDK-Lambda (China) Electronics Co Ltd. 5) updated model name nomenclature for clarity. Limited tests were considered to account these technical changes [e.g. Single fault condition (4.4), Component abnormal (4.4.1), Motor abnormal (4.4.2.5, Dielectric Voltage Withstand (6.8), Temperature test (10.1-10.4)] . In addition to this modification, USA/Canada National Differences USA/CAN (Rev2023) has been considered and added Japan National Differences in Enclosure section of the report.	Mark John DeSagun

Description of model differences:

Unit Configuration Code:
NV350 or NV3 or NV-350 followed by abcde (these models are identical)

(may be prefixed by NS - # / or - where # may be up to any four letters and may be followed by - $; where $ maybe any number between 000 to 999, indicating non-safety related model differences)
Unit Configuration Code (Description :) may be prefixed by SP followed by / or – (SP represents a sales code). Units may be additionally marked with a product code: K3x or Q3x where x may be any number of characters).

Where a = S, R, Q, P, V, C, T, U, K or L where:

Option Letter	Airflow Option
S	Forward airflow, standard fan
R	Reverse airflow, standard fan
Q	Forward airflow, quiet fan
P	Reverse airflow, quiet fan
V	Forward airflow, temperature controlled fan
C	Customer air, fan not fitted
T	Forward airflow, top fan
U	Customer air, fan not fitted, cover not fitted
K	Custom fan/chassis assembly
L	Fixed speed fan (see non-standards below)

Where b = S or I where:

Option Letter	Input Option
S	Screw input terminals
I	IEC input

Where c = S, M, L, R, or T, where:

Option Letter	Leakage Option
S	Standard Leakage (Class B Filter)
M	Medium Leakage
L	Low Leakage
R	Reduced Leakage
T	Tiny Leakage

Unit configuration may be given using the above code and/or by the option description. The input terminal type (screw or IEC) may alternatively be determined by examination of the unit.

Optionally followed by d = EN#V, EN12V, EN13.5V, IN#V, IN12V, IN13.5V, ES#V, ES12V, ES13.5V, IS#V, IS12V or IS13.5V. Where:

Description Option	Description
EN#V	AC good, global module good, PSU enable, 5-5.5V, 2A standby output
EN*V	AC good, global module good, PSU enable, 12-13.5V, 1A standby output
IN#V	AC good, global module good, PSU inhibit, 5-5.5V, 2A standby output
IN*V	AC good, global module good, PSU inhibit, 12-13.5V, 1A standby output
ES#V	AC good, PSU enable, 5-5.5V, 2A standby output
ES*V	AC good, PSU enable, 12-13.5V, 1A standby output
IS#V	AC good, PSU inhibit, 5-5.5V, 2A standby output
IS*V	AC good, PSU inhibit, 12-13.5V, 1A standby output

Where: # represents the standby output voltage and is in the range 5 to 5.5V.
Where * represents the standby output voltage and is in the range of 12-13.5V.
The Global Options Inhibit and Enable functions permit the customer to turn off or on the main PSUs

outputs and the fan. The standby supply is for use by the customer and provides an ES1 output that continues to operate when all the main PSUs outputs have been turned off using the Inhibit or Enable functions. All the functions of the Global Option pass through a single 8 way PWB socket and are all rated ES1.

Where e = NV350 or NV3 or NV-350 Modules:

Up to 3 of the following modules types may be fitted:

@B
or @BH
or @C
or @CM

where @ is the output voltage of the module and is within the range given in the single output module table.

or @/#DB (/ can be replaced with a _)

where @ is the output voltage of channel 1 and # is the output voltage of channel 2 of the module. Voltages are within the range given in the DB module tables.

or @/#DA (/ can be replaced with a _)

where @ is the output voltage of channel 1 and # is the output voltage of channel 2 of the module. Voltages are within the range given in the DA module tables. Only 1 DA module may be fitted.

or B/S

where B/S indicates that a blanking plate is fitted in place of a module.

The following nomenclature may optionally be used for outputs connected in series:
(Note that outputs may be connected in series even when this nomenclature is not used)

@BB or @ BHB or @BBH or @BHBH or @CC or @CCM

where @ is the total voltage of any two B, BH, C or CM modules connected in series.

or @/#BDB or @BHDB (/ can be replaced with a _)

where @ is the total series voltage of any B or BH module and DB module channel 1. # is the output voltage of the DB module channel 2. Voltages for # are within the range given in the DB module tables.

or @HDB

where @ is the total series voltage of any DB module channel 1 and channel 2.

Note.
For all outputs connected in series:
Series modules are non-standard units.
Refer to the Instruction Manual for Energy Source Classification of series modules.
Permissible min. value for @ is given by summing the min. voltage ratings of the outputs connected in series.
Permissible max. value for @ is given by summing the max. voltage ratings of the outputs connected in series.
Note: Series connection of one NV350 unit to another NV350 unit is not permitted.

Custom Models:

Model: NV350 LSS 24/24DB 15.5/5.5DB (K30045A)
Maximum outputs: 24V, 1A; 24V, 0.7A; 15.5V, 6.4A; 5.5V, 6.4A. (total power 175W max.)
Maximum ambient: 50°C
Orientations: Horizontal with chassis lowest, on either side.
Comments: PSU has fan drive voltage fixed at 5.5V.

Model: NV350 LSS 24/24DB (K30045B)
Maximum outputs: 24V, 7A; 24V, 0.7A. (total power 184.8W max.)
Maximum ambient: 50°C
Orientations: Horizontal with chassis lowest, on either side.
Comments: PSU has fan drive voltage fixed at 5.5V.

Model: NV350 TSS 24B 15BH 5/15DB (K30052X, where X can be any character)
Maximum outputs: 350W max.
Comments: PSU has top fan fitted.

ELECTRICAL & THERMAL RATINGS:

Input Parameters

Nominal input voltage (V)	100 - 240
Input voltage range (V)	85 - 264
Input frequency range (Hz)	47 - 440*
Maximum input current (A)	5.5
Inrush Current (A)	<15

*For frequencies above 60Hz, refer to Engineering Conditions of Acceptability.

For input voltages between 85 and 89.9V the output power is derated to 94% of the values given in the Cooling Options Table.

Output Modules:

Module	Output Voltage	Slots	Maximum Average Current According to Slot Position (A)				
			Slot 1	Slot 2	Slot 3	Slot 4	Slot 5
B	3.14-3.6V	2	40	-	40	40	40
	4.75-5.5V	2	40*	-	40*	40*	40*
	7-9V	2	2.5**	-	22.5**	22.5**	22.5**
	12-15.5V	2	16***	-	16***	16***	16***
	24-28V	2	8****	-	8****	8****	8****
BH	12-15.5V	2	20#	-	20#	20#	20#
	24-28V	2	10##	-	10##	10##	10##
C	12-13.2V	3	33.34†	-	33.34†	33.34†	-
	15-16.5V	3	26.67†	-	26.67†	26.67†	-
	24-26.4V	3	16.67†	-	16.67†	16.67†	-
	27-32V	3	14.82††	-	14.82††	14.82††	-
CM	12-13.2V	3	-	33.34†††	33.34†††	33.34†††	-
	15-16.5V	3	-	26.67†††	26.67†††	26.67†††	-
	24-26.4V	3	-	16.67†††	16.67†††	16.67†††	-
	27-32V	3	-	14.82†††	14.82†††	14.82†††	-
DA CH1	11.88-12.25V	1	-	-	-	-	3¥
DA CH2	11.9 to -11.6V	1	-	-	-	-	1¥¥
DB	3.14-3.6V	2	25	-	25	25	25
CH1	4.75-5.5V	2	25	-	25	25	25
	5.5-6.5V††††	2	25	-	25	25	25
	12-15.5V	2	13¥¥¥	-	13¥¥¥	13¥¥¥	13¥¥¥

	24-28V	2	7¥¥¥¥	-	7¥¥¥¥	7¥¥¥¥	7¥¥¥¥
DB	3.3-6V‡	2	10	-	10	10	10
CH2	7-15.5V	2	5	-	5	5	5
	24-32V	2	2	-	2	2	2

* - Linearly derate from 40 to 36A over the voltage range 5.2 to 5.5 V.
** - Linearly derate from 22.5 to 20A over the voltage range 8 to 9V.
*** - Linearly derate from 16 to 13A over the voltage range 13.5 to 15.5 V.
**** - Linearly derate from 8 to 7A over the voltage range 26 to 28 V.
# - Linearly derate from 20 to 16.5A over the voltage range 13.2 to 15.5 V.
- Linearly derate from 10 to 8.5A over the voltage range 25.7 to 28 V.
† - C & CM modules may output up to 600W for up to 10 seconds providing that the converter ratings are not exceeded and the average power from the module does not exceed the following: 400W for 115 - 264Vac input or 350W for 90Vac input (average power may be linearly interpolated between 90 and 115Vac input).
†† - Derate to 400W above 27V. C & CM modules may output up to 600W for up to 10 seconds providing that the converter ratings are not exceeded and the average power from the module does not exceed the following: 400W for 115 - 264Vac input or 350W for 90Vac input (average power may be linearly interpolated between 90 and 115Vac input).
††† - CM Module cannot be fitted to slot 1 due to medical spacing requirements.
†††† - See Table below

DB modules with 6V nominal, Output Channel1

Cooling options C, S, T & V	O/P 1 : 5.5 - 6V O/P 1 + O/P 2 : 195W total. O/P 1 : 6 - 6.5V O/P 1 + O/P 2 : Linearly derate from 195 to 170W total.
Cooling option Q	O/P 1 : 5.5 - 6V O/P 1 + O/P 2 : 180W total. O/P 1 : 6 - 6.5V O/P 1 + O/P 2 : Linearly derate from 180 to 140W total.
Cooling options P & R	O/P 1 : 5.5 - 6.5V O/P 1 + O/P 2 : 120W total.

DB modules with 6V nominal channel 1 are not allowed when channel 2 exceeds 5.5V.

¥ - 3A forward air, 2A reverse air.
¥¥ - 1A forward air, 0.6A reverse air.
¥¥¥ - Linearly derate from 13 to 10A over the voltage range 12.5 to 15.5 V.
¥¥¥¥ - Linearly derate from 7 to 6A over the voltage range 25 to 28 V.
‡ - Voltage measured at the module power terminals. This voltage at the power terminals must not be exceeded when remote sense is used.

Cooling Options:

Cooling option	Input volts	continuous O/P power	peak power O/P (W)	Ambient(°C)	Derating(°C) †
(S, V ,T) Forward air standard fan	90-264(Vac) ‡	350W	400 peak if 350 average #	65	2.5% per°C above 50
(S, V) Forward air standard fan	115-264(Vac)	450W	510 peak if 450 average #	65	2.5% per°C above 50
(S, V ,T) Forward air standard fan	180-264(Vac)	664W	740 peak if 600 average #	65	2.5% per°C above 50
(R) Reverse air standard fan	90-264(Vac) ‡	250W	N/A	65	2.5% per°C above 50

(Q) Forward air quiet fan	90-264(Vac) ‡	350W	N/A	65	2.5% per°C above 50
(P) Reverse air quiet fan	90-264(Vac) ‡	250W	N/A	60	3.8% per°C above 50

C, U Cooling Option : Customer air, fan not fitted. Refer to Customer Air Cooling section in for details.

† Both the total output power and the module output currents are derated by the given value.
‡ For input voltages between 85 and 89.9V the output power is derated to 94% of the values given for 90V input.
# The PSU may output the given peak power for up to 10 seconds providing that the average power from the PSU does not exceed the stated value.
Continuous, peak and average power ratings may be linearly interpolated for input voltages between 90 and 180V.
Global Option standby outputs (12-13.5V at 1A or 5-5.5V at 2A) should not be included when calculating total PSU output power, but they are subject to the current deratings for operation above 50°C.
Global Options with output voltages between 5.01 and 5.5V have their max. output current linearly derated from 2A at 50°C ambient to 1.4A at 65°C ambient.
For reverse airflow cooling all B, BH and DB modules are limited to a maximum output power of 150W (total for both channels on dual output modules).

Description of special features:

(HV circuits, high pressure systems etc.)

See additional information above.