

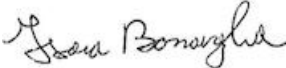







Test Report issued under the responsibility of:



TEST REPORT IEC 62368-1 Audio/video, information and communication technology equipment Part 1: Safety requirements	
Report Number	E511889-A6003-CB-1
Date of issue.....	2022-02-28
Total number of pages	82
Name of Test Laboratory preparing the Report	UL International Demko A/S Borupvang 5A, 2750 Ballerup, Denmark
Applicant's name.....	NEXTYS SA
Address	VIA LUSERTE SUD 6 6572 QUARTINO SWITZERLAND
Test specification:	
Standard	IEC 62368-1:2014
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.....	IEC62368_1D
Test Report Form(s) Originator	UL(US)
Master TRF.....	Dated 2021-02-04
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Test Item description	DIN-rail mounted 3-phase SMPS	
Trade Mark(s)	TDK-Lambda 	
Manufacturer	TDK-LAMBDA GERMANY GMBH KARL-BOLD-STRASSE 40 77855 ACHERN GERMANY	
Model/Type reference	DRB480-xx-3-zz (where xx can be 24, 48 or 72 indicating output voltage and where zz can be any character or symbol for marketing purposes only with no effect on safety or blank)	
Ratings	Input (all models): 3 x 400 - 500Vac, 50-60 Hz, 3 x 1.2 A	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/> CB Testing Laboratory:		
Testing location/ address	UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark	
Tested by (name, function, signature)	Oreste Buzzetti / Project Handler	
Approved by (name, function, signature)	Isaia Bonavoglia / Reviewer	
<input type="checkbox"/> Testing procedure: CTF Stage 1:		
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature)		
<input checked="" type="checkbox"/> Testing procedure: CTF Stage 2:		
Testing location/ address	Nextys SA Via Luserte 6 Quartino, 6572 CH	
Tested by (name, function, signature)	Stefano Ferreira / Tester	

Witnessed by (name, function, signature) ...:		Oreste Buzzetti / Project Handler	
Approved by (name, function, signature).....:		Isaia Bonavoglia / Reviewer	
<input type="checkbox"/>	Testing procedure: CTF Stage 3:		
<input type="checkbox"/>	Testing procedure: CTF Stage 4:		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Witnessed by (name, function, signature) ...:			
Approved by (name, function, signature).....:			
Supervised by (name, function, signature) ..:			

List of Attachments (including a total number of pages in each attachment):

National Differences (14 pages)

Enclosures (68 pages)

Summary of testing:**Tests performed (name of test and test clause):**

STEADY FORCE TEST, 250 N (4.4.4.2, T.5)

IMPACT TEST (4.4.4.4, T.6)

BALL PRESSURE TEST (5.4.1.10.3)

SAFEGUARDS AGAINST CAPACITOR DISCHARGE AFTER DISCONNECTION OF A CAPACITOR (5.5.2.2)

PROTECTIVE BONDING CONDUCTORS: LIMITED SHORT CIRCUIT TEST (5.6.4, Annex R)

RESISTANCE OF THE PROTECTIVE BONDING SYSTEM (5.6.6.2)

TOUCH CURRENT MEASUREMENT – EARTHED ACCESSIBLE CONDUCTIVE PARTS – THREE-PHASE EQUIPMENT (5.7.4)

PROTECTIVE CONDUCTOR CURRENT (5.7.5)

TEST FOR THE PERMANENCE OF MARKINGS (ANNEX F.3.10)

LIMITED SHORT CIRCUIT TEST (ANNEX R.1, 5.6.4.1, 5.6.4.4, 5.6.5.1)

Testing Location:**CBTL: UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark**

Test waived as enclosure is identical to the one of previously certified models of the same family. See report E511889-A6001

Test waived as enclosure is identical to the one of previously certified models of the same family. See report E511889-A6001

Test waived as input connectors are identical to those of previously certified models of the same family. See report E511889-A6001. Or are made with phenolic plastic material with a thickness of 1 mm minimum.

Test waived as label is identical to the one of previously certified models of the same family. See report E511889-A6001

Tests performed (name of test and test clause):

CLASSIFICATION OF ELECTRICAL ENERGY SOURCES (5.2.2.1-5.2.2.6)

DETERMINATION OF WORKING VOLTAGE (5.4.1.8)

SEPARABLE THIN SHEET MATERIAL (5.4.4.6.2)

HUMIDITY CONDITIONING (5.4.8)

Testing Location:**CTF Stage 2: Nextys SA****Via Luserte 6****Quartino, 6572****CH**

Test waived as insulation tape inside transformers is identical to the one of previously certified models of the same family. See report E511889-A6001

ELECTRIC STRENGTH TEST – TYPE TESTING OF SOLID INSULATION (5.4.9.1)
INPUT TEST: POLYPHASE (B.2.5)
NORMAL OPERATING CONDITIONS TEMPERATURE MEASUREMENT (B.2.6, 5.4.1.4, 6.3, 9.2)
SIMULATED ABNORMAL OPERATING CONDITIONS (B.3)
SIMULATED SINGLE FAULT CONDITIONS (B.4)
TRANSFORMER OVERLOAD (ANNEX G.5.3.3)

Summary of compliance with National Differences:

List of countries addressed: EU Group and National Differences, USA / Canada

The product fulfils the requirements of: EN 62368-1:2014 + A11:2017

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

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.

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 - Refer to Enclosure titled Marking Plate for copy.

TEST ITEM PARTICULARS:	
Classification of use by	Instructed person
Supply Connection	AC Mains
Supply % Tolerance	Other + 10 % / - 12.5 %
Supply Connection – Type	permanent connection
Considered current rating of protective device as part of building or equipment installation	20 A; building;
Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Class I
Access location	restricted access area
Pollution degree (PD)	PD 2
Manufacturer’s specified maximum operating ambient (°C)	55 (70°C with derating)
IP protection class	IPX0
Power Systems	TN TT
Altitude during operation (m)	303000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.5
POSSIBLE TEST CASE VERDICTS:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement :	P (Pass)
- test object does not meet the requirement :	F (Fail)
TESTING:	
Date of receipt of test item..... :	2022-01-03
Date (s) of performance of tests..... :	2022-01-21 TO 2022-01-27
GENERAL REMARKS:	
<p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	
Manufacturer’s Declaration per sub-clause 4.2.5 of IEC60335-1:	

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 :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
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When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) :	TDK-LAMBDA MALAYSIA SDN BHD LOT 2 & 3, BATU 9 3/4 KAWASAN PERINDUSTRIAN BANDAR BARU JAYA GADING 26070 KUANTAN PAHANG MALAYSIA
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GENERAL PRODUCT INFORMATION:

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

Product Description
 Product under evaluation is a series of DIN-rail mounted 3-phase SMPS

Model Differences
 All models differ for output power and voltage. Transformers are different for each family.
 Nomenclature:
 xx = output voltage in volts (24 or 48 or 72)

Additional application considerations – (Considerations used to test a component or sub-assembly) -
 -

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of : 55°C (70°C with derating)
- The product is intended for use on the following power systems : TT, TN
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply values : +10%/ -12.5%
- The equipment disconnect device is considered to be : To be provided in final installation
- The following were investigated as part of the protective earthing/bonding : Printed wiring board trace (refer to Enclosure - Schematics + PWB for layouts)
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- The following scope limitations apply to this test report and additional evaluation and/or tests may be required when submitting this CB Report to a National Certification Body (NCB) to obtain a national mark:
 - No EMC tests nor evaluation to EMC Directive 2004/108/EC and 2014/30/EU
 - No evaluation to RoHS Directives 2002/95/EC, 2011/65/EU and (EU) 2016/585
 - No evaluation to Council Recommendation 1999/519/EC nor 2006/25/EC
 - Only English version of markings and instructions provided and reviewed
- Products supplied with tri-phase voltage of 400-500 V between phases and 230-290 V between each phase and earth.

Engineering Conditions of Acceptability

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

- The following product-line tests are conducted for this product : Electric Strength, Earthing Continuity
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Secondary: 203 V_{rms}/656 V_{pk} (Model DRB480-24), Primary-Secondary: 232 V_{rms}/456 V_{pk} (Model DRB480-48), Primary-Secondary: 256 V_{rms}/480 V_{pk} (Model DRB480-72)
- The following output circuits are at ES1 energy levels : All outputs of 24 and 48 V models
- The following output circuits are at ES2 energy levels : Output of 72 V model
- The following output circuits are at PS3 energy levels : All outputs of all models
- The maximum investigated branch circuit rating is : 20 A
- 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 : been conducted
- The following end-product enclosures are required : Electrical, Fire, Mechanical
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C) : Transformers on Mainboard of all models (TR1) are Class B (130°C), Transformers on AUX board of all models (TR1) are Class F (155°C)
- The equipment is suitable for direct connection to : 3-Phase AC mains supply
- The power supply was evaluated to be used at altitudes up to : "3,000 m"
- Safeguards against capacitor discharge after disconnection of a connector shall be checked in final installation.

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.) (Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.)	
Electrically-caused injury (Clause 5): (Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification) Example: +5 V dc input ES1	
Source of electrical energy	Corresponding classification (ES)
Input circuit	ES3
Output circuitry (models DRB480-24 and DRB480-48)	ES1
Output circuitry (model DRB480-72)	ES2
Secondary circuit at output of Transformer	ES2
Relay output	ES1
Electrically-caused fire (Clause 6): (Note: List sub-assembly or circuit designation and corresponding energy source classification) Example: Battery pack (maximum 85 watts): PS2	
Source of power or PIS	Corresponding classification (PS)
Whole product	PS3
Injury caused by hazardous substances (Clause 7) (Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.) Example: Liquid in filled component Glycol	
Source of hazardous substances	Corresponding chemical
-	-
Mechanically-caused injury (Clause 8) (Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.) Example: Wall mount unit MS2	
Source of kinetic/mechanical energy	Corresponding classification (MS)
Sharp edges and corners	MS1
Mass	MS1
Thermal burn injury (Clause 9) (Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.) Example: Hand-held scanner – thermoplastic enclosure TS1	
Source of thermal energy	Corresponding classification (TS)
Enclosure (metal)	TS1
Terminal blocks (plastic)	TS1

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:**Radiation (Clause 10)**

(Note: List the types of radiation present in the product and the corresponding energy source classification.)

Example: DVD – Class 1 Laser Product

RS1

Type of radiation	Corresponding classification (RS)
Indicator LED's	RS1