



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	31781623.306
Date of issue	January 12, 2023
Total number of pages	359 + Attachments
Name of Testing Laboratory preparing the Report	TUV Rheinland of North America, Inc.
Applicant's name	TDK-Lambda Ltd.
Address	56 Haharoshet St., P.O.B. 500 Karmiel Industrial Zone Karmiel 2161401, Israel
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(s) Originator	VDE Prüf- und Zertifizierungsinstitut GmbH
Master TRF	2021-04-12
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Test item description:	Programmable Power Supplies
Trade Mark:	TDK-Lambda, TDK-Lambda
Manufacturer	Same as Applicant
Model/Type reference	<p>1. GENESYS+5000W series</p> <p>1a) Ordinary unit: Gxxx-yyy-z-v/uuuuuu/w or Gxxx-yyy-z-v-uuuuuu/w (xxx=010-600; yyy=8.5-500; z="GPIB (IEEE)", "MDBS", "ECAT", "IS420", "IS010", Blank; v="3P200", "3P208", "3P400", "3P480"; u=A-Z, 0-9, Blank; w="CO", "CS", Blank)</p> <p>1b) Blank units: GBxxx-yyy-z-v/uuuuuu/w or GBxxx-yyy-z-v-uuuuuu/w (xxx=010-600; yyy=8.5-500; z="GPIB (IEEE)", "MDBS", "ECAT", "IS420", "IS010", Blank; v="3P200", "3P208", "3P400", "3P480"; u=A-Z, 0-9, Blank; w="CO", "CS", Blank)</p> <p>1c) Booster unit: GSSxxx-yyy-v/uuuuuu/w or GSSxxx-yyy-v-uuuuuu/w (xxx=010-600; yyy=8.5-500; v="3P200", "3P208", "3P400", "3P480"; u=A-Z, 0-9, Blank; w="CO", Blank)</p> <p>2. GSP/GBSP 10kW series</p> <p>2a) Consist of: Ordinary unit + Booster unit (for details refer to General product information) GSPxxx-yyy-z-v/uuuuuu/w or GSPxxx-yyy-z-v-uuuuuu/w (xxx=010-600; yyy=17-1000; z="GPIB (IEEE)", "MDBS", "ECAT", "IS420", "IS010", Blank; v="3P200", "3P208", "3P400", "3P480"; u=A-Z, 0-9, Blank; w="CO", Blank)</p> <p>2b) Consist of: Blank unit + Booster unit (for details refer to General product information) GBSPxxx-yyy-z-v/uuuuuu/w or GBSPxxx-yyy-z-v-uuuuuu/w (xxx=010-600; yyy=17-1000; z="GPIB (IEEE)", "MDBS", "ECAT", "IS420", "IS010", Blank; v="3P200", "3P208", "3P400", "3P480"; u=A-Z, 0-9, Blank; w="CO", Blank)</p> <p>3. GSP/GBSP/GSSP 15KW series</p> <p>3a) Consist of: Ordinary unit + Two Booster units GSPxxx-yyy-z-v/uuuuuu/w or GSPxxx-yyy-z-v-uuuuuu/w (xxx=010-600; yyy=25.5-1500; z="GPIB (IEEE)", "MDBS", "ECAT", "IS420", "IS010", Blank; v="3P200", "3P208", "3P400", "3P480"; u=A-Z, 0-9, Blank; w="CO", "CS", Blank)</p> <p>3b) Consist of: Blank unit + Two Booster units GBSPxxx-yyy-z-v/uuuuuu/w or GBSPxxx-yyy-z-v-uuuuuu/w (xxx=010-600; yyy=25.5-1500; z="GPIB (IEEE)", "MDBS", "ECAT", "IS420", "IS010", Blank; v="3P200", "3P208", "3P400", "3P480"; u=A-Z, 0-9, Blank; w="CO", "CS", Blank)</p> <p>3c) Consist of: Three Booster unit GSSPxxx-yyy-v/uuuuuu/w or GSSPxxx-yyy-v-uuuuuu/w (xxx=010-600; yyy=25.5-1500; v="3P200", "3P208", "3P400", "3P480"; u=A-Z, 0-9, Blank; w="CO", Blank)</p> <p>4. GENESYS+ 1700W series</p> <p>4a) Ordinary unit Gxxx-yyy-z-r-v/uuuuuu/w or Gxxx-yyy-z-r-v-uuuuuu/w (xxx=010-600; yyy=2.8-170; z="GPIB (IEEE)", "MDBS", "ECAT", "IS420", "IS010", Blank; r="PSINK", Blank; v="1P100-240"; u=A-</p>

Z, 0-9, Blank; w="CO", Blank)

4b) Blank unit.

GBxxx-yyy-z-r-v/uuuuuu/w or GBxxx-yyy-z-r-v-uuuuuu/w
(xxx=010-600; yyy=2.8-170; z="GPIB (IEEE)", "MDBS", "ECAT",
"IS420", "IS010", Blank; r="PSINK", Blank; v="1P100-240"; u=A-
Z, 0-9, Blank; w="CO", Blank)

5. GENESYS+ GH1500W series

5a) Ordinary unit.

GHxxx-yyy-z-v/uuuuuu/w or GHxxx-yyy-z-v-uuuuuu/w (xxx=010-
600; yyy=2.6-150; z="GPIB (IEEE)", "MDBS", "ECAT",
"IS420", "IS010", Blank; v="1P100-240"; u=A-Z, 0-9, Blank;
w="CO", Blank)

5b) Blank unit.

GHBxxx-yyy-z-v/uuuuuu/w or GHBxxx-yyy-z-v-uuuuuu/w
(xxx=010-600; yyy=2.6-150; z="GPIB (IEEE)", "MDBS", "ECAT",
"IS420", "IS010", Blank; v="1P100-240"; u=A-Z, 0-9, Blank;
w="CO", Blank)

6. GENESYS+ 2700W series

6a) Ordinary unit

Gxxx-yyy-z-r-v/uuuuuu/w or Gxxx-yyy-z-r-v-uuuuuu/w (xxx=010-
600; yyy=4.5-265; z="GPIB (IEEE)", "MDBS", "ECAT", "IS420",
"IS010", Blank; r="PSINK", Blank; v="1P200" or "1P208" or
"1P230", "3P200" or "3P208", "3P400", "3P480"; u=A-Z, 0-9,
Blank; w="CO", Blank)

6b) Blank unit

GBxxx-yyy-z-r-v/uuuuuu/w or GBxxx-yyy-z-r-v-uuuuuu/w
(xxx=010-600; yyy=4.5-265; z="GPIB (IEEE)", "MDBS", "ECAT",
"IS420", "IS010", Blank; r="PSINK", Blank; v="1P200" or "1P208"
or "1P230", "3P200" or "3P208", "3P400", "3P480"; u=A-Z, 0-9,
Blank; w="CO", Blank)

7. GENESYS+ 3400W series

7a) Ordinary unit

Gxxx-yyy-z-r-v/uuuuuu/w or Gxxx-yyy-z-r-v-uuuuuu/w (xxx=010-
600; yyy=5.6-340; z="GPIB (IEEE)", "MDBS", "ECAT", "IS420",
"IS010", Blank; r="PSINK", Blank; v="1P200" or "1P208" or
"1P230", "3P200" or "3P208", "3P400", "3P480"; u=A-Z, 0-9,
Blank; w="CO", Blank)

7b) Blank unit

GBxxx-yyy-z-r-v/uuuuuu/w or GBxxx-yyy-z-r-v-uuuuuu/w
(xxx=010-600; yyy=5.6-340; z="GPIB (IEEE)", "MDBS", "ECAT",
"IS420", "IS010", Blank; r="PSINK", Blank; v="1P200" or "1P208"
or "1P230", "3P200" or "3P208", "3P400", "3P480"; u=A-Z, 0-9,
Blank; w="CO", Blank)

8. GENESYS+ 1000W series


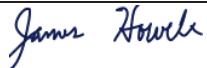

8a) Ordinary unit

Gxxx-yyy-z-v-p/uuuuuu/w or Gxxx-yyy-z-v-p-uuuuuu/w (xxx=010-
600; yyy=1.7-100; z="GPIB (IEEE)", "MDBS", "ECAT", "IS420",
"IS010", Blank; v="1P100-240"; p=E, U, I, J, C, Blank; u=A-Z, 0-9,
Blank; w="CO", Blank)

8b) Blank unit.

GBxxx-yyy-z-v-p /uuuuuu/w or GBxxx-yyy-z-v-p-uuuuuu/w
(xxx=010-600; yyy=1.7-100; z="GPIB (IEEE)", "MDBS", "ECAT",

<p>Ratings</p>	<p>IS420", "ISO10", Blank; v="1P100-240"; p=E, U, I, J, C, Blank; u=A-Z, 0-9, Blank; w="CO", Blank)</p> <p>9. GENESYS+ GH1000W series</p> <p>9a) Ordinary unit. GHxxx-yyy-z-v-p/uuuuuu/w or GHxxx-yyy-z-v-p-uuuuuu/w (xxx=010-600; yyy=1.7-100; z="GPIB (IEEE)", "MDBS", "ECAT", IS420", "ISO10", Blank; v="1P100-240"; p=E, U, I, J, C, Blank; u=A-Z, 0-9, Blank; w="CO", Blank)</p> <p>9b) Blank unit. GHBxxx-yyy-z-v-p/uuuuuu/w or GHBxxx-yyy-z-v-p-uuuuuu/w (xxx=010-600; yyy=1.7-100; z="GPIB (IEEE)", "MDBS", "ECAT", IS420", "ISO10", Blank; v="1P100-240"; p=E, U, I, J, C, Blank; u=A-Z, 0-9, Blank; w="CO", Blank)</p> <p>Note: see "General product information" and "Definition of variables" for details</p> <p>Input:</p> <p>Option 1: AC 190-240V; 3W+PE, 50/60Hz. 1a), 1b), 1c): 18.5A max. 2a), 2b): 37A max. 3a), 3b): 55.5A max. 6a), 6b): 10.5A max. 7a), 7b): 13.2A max.</p> <p>Option 2: AC 380-415V; 3W+PE, 50/60Hz. 1a), 1b), 1c): 9.2A max. 2a), 2b): 18.4A max. 3a), 3b): 27.6A max. 6a), 6b): 5.5A max. 7a), 7b): 6.5A max.</p> <p>Option 3: AC 380-480V; 3W+PE, 50/60Hz. 1a), 1b), 1c): 9.2A max. 2a), 2b): 18.4A max. 3a), 3b): 27.6A max. 6a), 6b): 5.5A max. 7a), 7b): 6.5A max.</p> <p>Option 4: AC 100-240V; single phase, 50/60Hz. 4a), 4b): 20A max. 5a), 5b): 18.5A max. 8a), 8b): 12.5A max. 9a), 9b): 12.5A max.</p> <p>Option 5: AC 190-240V; single phase, 50/60Hz. 6a), 6b): 17.5A max. 7a), 7b): 22A max.</p> <p>Output:</p> <p>1a), 1b), 1c): DC 0-10V/500A to DC 0-600V/8.5A, 5200 Watt max. 2a), 2b): DC 0-10V/1000A to DC 0-600V/17A, 10400 Watt max. 3a), 3b): DC 0-10V/1500A to DC 0-600V/25.5A, 15600 Watt max. 4a), 4b): DC 0-10V/170A to DC 0-600V/2.8A, 1700 Watt max. 5a), 5b): DC 0-10V/150A to DC 0-600V/2.6A, 1560 Watt max. 6a), 6b): DC 0-10V/265A to DC 0-600V/4.5A, 2720 Watt max. 7a), 7b): DC 0-10V/340A to DC 0-600V/5.6A, 3450 Watt max.</p>
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		8a), 8b): DC 0-10V/100A to DC 0-600V/1.7A, 1050 Watt max. 9a), 9b): DC 0-10V/100A to DC 0-600V/1.7A, 1050 Watt max.
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	TUV Rheinland of North America, Inc.
Testing location/ address..... :		1279 Quarry Lane, Ste. A, Pleasanton, CA 94566
Tested by (name, function, signature)		
Approved by (name, function, signature) .. :		
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
Testing location/ address..... :		
Tested by (name, function, signature)		
Approved by (name, function, signature) .. :		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
Testing location/ address..... :		
Tested by (name + signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) .. :		
<input checked="" type="checkbox"/>	Testing procedure: CTF Stage 3:	TDK-Lambda Ltd.
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
Testing location/ address..... :		56 Haharoshet St., P.O.B. 500 Karmiel Industrial Zone Karmiel 2161401, Israel
Tested by (name, function, signature)		Elias Jiries Safety Group Leader 
Witnessed by (name, function, signature) . :		-
Approved by (name, function, signature) .. :		James Howell Test Engineer Principal 
Supervised by (name, function, signature) :		Dan Aquino Senior Test Engineer 

List of Attachments (including a total number of pages in each attachment)		
Document No.	Documents included / attached to this report (description)	Page No.
Attachment 1	National Differences	27 pages
Attachment 2	Photos	73 pages
Attachment 3	Electrical Schematics	28 pages
Attachment 4	PCB Layouts	105 pages
Attachment 5	Magnetics	51 pages
Attachment 6	Wire Harness	62 pages

Documents referenced by this report (available on request):		
Document Name or No.	Documents description	Page No.
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<p>Summary of testing: 31781623.306 – This report is an addition of a new module, Power Sink or “PSINK”. The module ‘PSINK’ does not affect the ratings (both input and output) of the power supply model it’s installed in. ‘PSINK’ is used only for dissipating redundant power when prompted to. For that reason, input power test was waived as it was seen as irrelevant. The heating test was done at 25C because as long as the module is dissipating power (ie. working), the temperature of the components will continue to rise until the thermal protection (110°C) is activated. So it does not make any difference if the test was done in 25C or 50C because it’s only a matter of time when the OTP will operate, and by that time, the components will have the same temperature whether the test was done in 25C or 50C. Power Sink Module (PSink) is only intended for GENESYS+ 1700W, GENESYS+ 2700W series, and GENESYS+ 3400W Series. The 3400W model was tested as the worst-case since it is the model which dissipates the most power and heat.</p> <p>31781623.300 - This Test Report is based on testing conducted as part of IEC 60950-1/A2:2013 TUV Rheinland reports 31781623.001 - 31781623.016 under CB certificate US-TUVR-011201.</p>	
Clause	Comment

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
31781623.300	Original report
31781623.303	<p>This report covers:</p> <ul style="list-style-type: none"> • Addition of suffix w=CS to GENESYS+5000W series • Addition models GSSP 15kW models. • Alternate PCB manufacturer. • Addition of optional IS420 and IS010 communication board in non-hazardous live circuit <p>Additional suffix is non-safety related and non-hazardous, no testing is considered necessary</p>
31781623.306	<p>This report covers:</p> <ul style="list-style-type: none"> • The addition of a new optional module (Power Sink, or “PSINK”) for models 1700W, 2700W, and 3400W, which can absorb and dissipate power from the output when certain conditions are met. • For this addition of optional module, the following sections and tables were updated: <ul style="list-style-type: none"> ○ General product information ○ Model/type reference ○ Table 4.4 with the single fault 4.4.2.12 of Q17 short D-S. ○ Form A.14, A.15, A.18, A.26A, A.28. • Administrative changes such as typos, etc. • Updating Table 1.A (critical components list) to include the following: <ul style="list-style-type: none"> ○ Power Sink module critical components. ○ Adding alternative component optocoupler TLP385 (D4) for optocoupler CNY64. ○ Adding alternative component Topswitch TOP series for MIP series. ○ Correct typos and outdated data • Updated Form A.15 to include changes in distances after replacing thermocouple CNY64 with TLP385. • Updated Attachments 2, 3, and 4 to include “PSINK” • Correction of typos on the previous certificate for the input current rating: <ul style="list-style-type: none"> - Change from Option 1: 6) 10A max.to 10.5A max. - Change from Option 1: 7) 12.5A max.to 13.2A max. - Change from Option 5: 6) 16.5A max.to 17.5A max
Tests performed (name of test and test clause):	Testing location:
<p>Report No. 31781623.300</p> <p>4.4.2.3 Protective conductor abnormal</p> <p>4.4.2.7.2 Mains transformers short circuit</p> <p>4.4.2.7.3 Mains transformers overload</p> <p>4.4.2.10 Cooling abnormal</p> <p>4.4.2.12 Insulation between circuits and parts</p> <p>5.1.3 Input test</p> <p>5.3 Durability of marking test</p> <p>6.2 Determination of accessible parts</p> <p>6.3.1 Levels in normal condition</p> <p>6.3.2 Levels in single fault condition</p> <p>(Witnessed)</p> <p>6.5.2.4 Bonding impedance test</p> <p>6.7.2, 6.7.3, K.3:</p> <p>Working voltage measurement, Clearances, creepage distances and solid insulation measurement</p>	<p>TDK-Lambda Ltd. 56 Haharoshet St., P.O.B. 500 Karmiel Industrial Zone Karmiel 2161401, Israel</p>








<p>6.8 Humidity preconditioning and Dielectric strength test</p> <p>6.10.3 Capacitance discharge test</p> <p>7.5.2 Handle Test</p> <p>8.2.1 Static rigidity test 30N</p> <p>8.2.2 Impact rigidity test</p> <p>9.4 Limited Energy Source</p> <p>10.1-10.4 Temperature test</p> <p>10.5.2 Non-metallic enclosure treatment</p> <p>10.5.3 Ball pressure test</p> <p>31781623.303 – No testing performed</p> <p>31781623.306 – The following tests were done to validate safety compliance of the added module Power Sink (“PSINK”):</p> <p>4.4.2.12: Insulation between circuits and parts;</p> <p>6.7.2, 6.7.3, K.3: Working voltage measurement, Clearances, creepage distances and solid insulation measurement;</p> <p>6.8: Humidity preconditioning and Dielectric strength test;</p> <p>10.1-10.4: Temperature test.</p>	<p>TDK-Lambda Ltd.</p> <p>56 Haharoshet St., P.O.B. 500 Karmiel Industrial Zone Karmiel 2161401, Israel</p>
<p>Summary of compliance with National Differences (List of countries addressed):</p> <p>The following national differences were considered to IEC 61010-1:2010 (3rd Edition) + Am 1: 2016: List of countries addressed: CENELEC member countries (Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom)</p> <p>List of countries addressed: United States of America, Canada</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of 61010-1:2010/A1:2016</p>	
<p>Statement concerning the uncertainty of the measurement systems used for the tests (may be required by the product standard or client)</p> <p><input type="checkbox"/> Internal procedure used for type testing through which traceability of the measuring uncertainty has been established: Procedure number, issue date and title:</p> <p>Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.</p> <p><input checked="" type="checkbox"/> Statement not required by the standard used for type testing <small>(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)</small></p>	

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.

GENESYS+5000W series:








Input option 1

GENESYS 5000W			
INPUT RATING: 190-240V 3W+⊕ 18.5A 50/60Hz	 <small>c us</small>	 <small>CERTIFIED</small>	<small>EN 61010-1 IEC 61010-1</small> <small>www.tuv.com ID: 006700000</small>     
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achem UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

Input option 2

GENESYS 5000W			
INPUT RATING: 380-415V 3W+⊕ 9.2A 50/60Hz	 <small>c us</small>	 <small>CERTIFIED</small>	<small>EN 61010-1 IEC 61010-1</small> <small>www.tuv.com ID: 006700000</small>     
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achem UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

Input option 3

GENESYS 5000W			
INPUT RATING: 380-480V 3W+⊕ 9.2A 50/60Hz	 <small>c us</small>	 <small>CERTIFIED</small>	<small>EN 61010-1 IEC 61010-1</small> <small>www.tuv.com ID: 006700000</small>     
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achem UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

Model identification marking (sample)

1. Ordinary (full panel) unit






2. Blank unit






GSP/GBSP 10kW series:






Input option 1

GENESYS				
INPUT RATING: 190-240V 3W+ 37A 50/60Hz			EN 61010-1 IEC 61010-1 www.tuv.com ID: 000700000	
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES				
US Patent No. 10,674,626				

Input option 2

GENESYS				
INPUT RATING: 380-415V 3W+ 18.4A 50/60Hz			EN 61010-1 IEC 61010-1 www.tuv.com ID: 000700000	
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES				
US Patent No. 10,674,626				

Input option 3

GENESYS	
INPUT RATING: 380-480V 3W+  18.4A 50/60Hz	  <div style="font-size: 8px;"> EN 61010-1 IEC 61010-1 www.tuv.com ID 000700000 </div>
ERC UK CA CE  	
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES	
US Patent No. 10,674,626	

Model identification marking








Model identification marking








GSP/GBSP/ GSSP 15kW series:






Input option 1

GENESYS	
INPUT RATING: 190-240V 3W+  55.5A 50/60Hz	  <div style="font-size: 8px;"> EN 61010-1 IEC 61010-1 www.tuv.com ID 000700000 </div>
ERC UK CA CE  	
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES	
US Patent No. 10,674,626	

Input option 2

GENESYS			
INPUT RATING: 380-415V 3W+  27.6A 50/60Hz	 <small>c</small> <small>us</small>	 <small>www.tuv.com</small> <small>ID: 000700000</small>	<small>EN 61010-1</small> <small>IEC 61010-1</small> ERC UK CA CE  
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achem UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

Input option 3

GENESYS			
INPUT RATING: 380-480V 3W+  27.6A 50/60Hz	 <small>c</small> <small>us</small>	 <small>www.tuv.com</small> <small>ID: 000700000</small>	<small>EN 61010-1</small> <small>IEC 61010-1</small> ERC UK CA CE  
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achem UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			





Model identification marking



Model identification marking



GENESYS+ 1700W series:

GENESYS 1700W			
INPUT RATING: 100-240V 20A 50/60Hz			EN 61010-1 IEC 61010-1 EAC UK CA CE  
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

Model identification marking

1. Ordinary (full panel) unit







2. Blank unit








GENESYS+ 2700W series:






Input Option 1:

GENESYS 2700W			
INPUT RATING: 190-240V 3W+ ⊕ 10.5A 50/60Hz			EN 61010-1 IEC 61010-1 EAC UK CA CE  
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			





Input Option 2:

GENESYS 2700W			
INPUT RATING: 380-415V 3W+  5.5A 50/60Hz	 <small>c us</small>	 <small>CERTIFIED</small>	<small>EN 61010-1 IEC 61010-1</small>  
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

Input Option 3:

GENESYS 2700W			
INPUT RATING: 380-480V 3W+  5.5A 50/60Hz	 <small>c us</small>	 <small>CERTIFIED</small>	<small>EN 61010-1 IEC 61010-1</small>  
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

Input Option 5:

GENESYS 2700W			
INPUT RATING: 190-240V 17.5A 50/60Hz	 <small>c us</small>	 <small>CERTIFIED</small>	<small>EN 61010-1 IEC 61010-1</small>  
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

Model identification marking

1. Ordinary (full panel) unit











2. Blank unit











GENESYS+ 3400W series:









Input Option 1:

GENESYS 3400W			
INPUT RATING: 190-240V 3W+ ⊕ 13.2A 50/60Hz	 TÜV Rheinland c us	 TÜV Rheinland CERTIFIED	EN 61010-1 IEC 61010-1 EAC UK CA CE      
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			




Input Option 2:

GENESYS 3400W			
INPUT RATING: 380-415V 3W+ ⊕ 6.5A 50/60Hz	 TÜV Rheinland c us	 TÜV Rheinland CERTIFIED	EN 61010-1 IEC 61010-1 EAC UK CA CE      
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

Input Option 3:

GENESYS 3400W			
INPUT RATING: 380-480V 3W+ ⊕ 6.5A 50/60Hz	 TÜV Rheinland c us	 TÜV Rheinland CERTIFIED	EN 61010-1 IEC 61010-1 EAC UK CA CE      
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

Input Option 5:

GENESYS 3400W			
INPUT RATING: 190-240V 22A 50/60Hz			EN 61010-1 IEC 61010-1 EAC UK CA CE 
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

Model identification marking




1. Ordinary (full panel) unit









2. Blank unit



GENESYS+ GH1500W series:

GENESYS GH1500W			
INPUT RATING: 100-240V 18.5A 50/60Hz			EN 61010-1 IEC 61010-1 EAC UK CA CE 
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES			
US Patent No. 10,674,626			

GENESYS+ 1000W&GH1000W series:

GENESYS 1000W	
INPUT RATING: 100-240V 12.5A 50/60Hz	     
EU representative: TDK-Lambda Germany GmbH, Karl-Bold-Str. 40, D-77855 Achern UK representative: TDK-Lambda UK Limited, Kingsley Avenue, Ilfracombe, Devon EX34 8ES	
US Patent No. 10,674,626	

Model identification marking

GHBxxx-xxx	LXI
GHxxx-xxx	LXI

Warning label



Test item particulars:	
Type of item	Measurement / Control / Laboratory
Description of equipment function	Programmable AC/DC power supplies
Connection to MAINS supply	Permanent: all except GENESYS+ 1000W/GH1000W Non detachable cord set (IEC 60309 type plug): all units except GENESYS+ 1000W/GH1000W / None / Battery operated NOTE: Means of connection to the mains depends on the final installation GENESYS+ 1000W/GH1000W Detachable cord set with non industrial plug (connector according to IEC 60320.)
Overvoltage category	II / III / IV
POLLUTION DEGREE	2
Means of protection	Class I (PE connected) / Class II (isolated)
Environmental conditions	Normal / Extended (Specify): Same as normal except: Altitude 3000m Temperature: 0-50°C considering derating as specified in general product information
For use in wet locations	Yes / No
Equipment mobility	Portable / Hand held / Floor standing / Fixed / Built in
Operating conditions	Continuous / Short time / Intermittent
Overall size of equipment (W x D x H)	Not including accessories or handles (mm): 423 x 441.5 x 43.6 (GENESYS+ Full-Width) 214 x 432 x 43.6 (GENESYS+ GH Half-Width)
Mass of equipment (kg)	3.5 max (GENESYS+ GH1000W/GH1500W series) 5 max (GENESYS+ 1000W/1700W series) 7 max (GENESYS+ 2700W/3400W series) 7.5 max (GENESYS+5000W series) 16 max (GSP/GBSP 10kW series) 24 max (GSP/GBSP 15kW series)
Marked degree of protection to IEC 60529	IPX0
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	: May 1, 2017 (31781623.001) Aug 27,2017 (31781623.003) N/A (31781623.004) Feb 4, 2018 (31781623.006) June 1, 2018 (31781623.008) N/A (31781623.009) N/A (31781623.011) Nov 22, 2018; Dec 6, 2018 (31781623.013) N/A (31781623.015) N/A (31781623.016) Dec 20, 2019 (31781623.300) N/A (31781623.303) June 2021 (31781623.306)
Date (s) of performance of tests	: May 1, 2017 to May 9, 2017 (31781623.001) Aug 27,2017 to Sep 28, 2017(31781623.003) N/A (31781623.004) Feb 4 to Feb 19,2018; Mar 4 to Mar 8,2018 (31781623.006) June 12, 2018 to June 18, 2018 (31781623.008) N/A (31781623.009) N/A (31781623.011) Nov 22, 2018; Dec 6, 2018; Feb 06 and 12, 2019; Mar 18, 2019; April 10-23, 2019 (31781623.013) N/A (31781623.015) N/A (31781623.016) Dec 20, 2019 to May 14, 2020 (31781623.300) N/A (31781623.303) June 2021 (31781623.306)
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 testing laboratory. "(see ENCLOSURE #)" refers to additional information appended to the report. "(see Form A.xx)" refers to a Table appended to the report. Bottom lines for measurement Tables Forms A.xx are optional if used as record.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
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
When differences exist; they shall be identified in the general product information section.	
Name and address of factory (ies)	TDK-Lambda Ltd. 56 Haharoshet St., P.O.B. 500 Karmiel Industrial Zone Karmiel 2161401, Israel

General product information and other remarks:

Description of unit:

The GENESYS+5000W series is a family of power supplies having rated output from 0-10VDC/0-500A up to 0-600VDC/0-8.5A with total output power 5200 Watt maximum.

The GENESYS+5000W series is separated into three types of front panels and operation modes:

a) G+5000W units: Ordinary (full panel) units: is comes with display, on/off switch and may be operated independently or in parallel with another Ordinary, Blank or Booster unit by manual or remote control mode. The G+5000W units, following by suffix "CS", provided without an output protection bus-bar bracket and input strain relief bracket. The G+5000W units following by suffix "CS", are not considered standalone equipment intended to be installed in the end-product, suitable means for mains connection and Electrical Enclosure shall be provided by end installations.

b) GB+5000W units: Blank units: is comes without display, with on/off switch, and may be operated independently or in parallel with another Blank or Booster unit by remote control mode only. The GB+5000W units, following by suffix "CS", provided without an output protection bus-bar bracket and input strain relief bracket. The GB+5000W units following by suffix "CS", are not considered standalone equipment intended to be installed in the end-product, suitable means for mains connection and Electrical Enclosure shall be provided by end installations.

c) GSS+5000W units: Booster units: is comes without on/off switch, display and operated by master unit only (Ordinary or Blank). The GSS+5000W units are not considered standalone equipment intended to be installed in the end-product, suitable means for mains connection and Electrical Enclosure shall be provided by end installations

The GSP/GBSP 10kW units consists of two single GENESYS+5000W units, in combination as described above in section " Model/Type reference", connected by the input and output in parallel.

Where the output protection bus-bar bracket and input strain relief bracket of each GENESYS+5000W removed and replaced by output protection bus-bar bracket and input strain relief bracket of the GSP/GBSP 10kW unit. The GSP/GBSP 10kW units is factory assembled only.

The GSP/GBSP/GSSP 15KW units consists of three single GENESYS+5000W units, in combination as described above in section " Model/Type reference", connected by the input and output in parallel. The GSSP 15 kW units are not considered as standalone equipment and intended to be installed in the end-product. The GSSP 15 kW provided without an output protection compartment and input strain relief bracket. Suitable means for mains connection and Electrical Enclosure shall be provided by end installations. Where the output protection compartment and input strain relief bracket of each GENESYS+5000W removed and replaced by output protection compartment and input strain relief bracket of the GSP/GBSP/GSSP 15kW unit. The GSP/GBSP/GSSP 15KW units is factory assembled only, suitable means for mains connection and Electrical Enclosure shall be provided by end installations

The GENESYS+ 1700W series based on GENESYS+ 5000W. Since the output power of the GENESYS+ 1700W units is lower than the GENESYS+ 5000W, two DC/DC boards and interconnects board removed because they are no longer needed. The GENESYS+ 1700W series has the same mechanical and electronic construction as the GENESYS+ 5000W, with the exception of input and PFC boards. Power supplies having rated output from 0-10VDC/0-170A up to 0-600VDC/0-2.8A with total output power 1700 Watt maximum.

The GENESYS+ GH1500W series is based on GENESYS+ 1700W. The GENESYS+ GH1500W uses the same modules used in GENESYS+1700W except for the output filter boards. The GENESYS+ GH1500W has a different mechanical construction. The power supplies having rated output from 0-10VDC/0-150A up to 0-600VDC/0-2.6A with total output power 1560 Watt maximum.

The GENESYS+ 2700W and 3400W series are based on GENESYS+ 5000W. Since the output power of the GENESYS+ 2700W or 3400W units are lower than the GENESYS+ 5000W, one DC/DC board removed because it is no longer needed. The GENESYS+ 2700W and 3400W series have the same mechanical and electronic construction as the GENESYS+ 5000W, with the exception of additional one phase input and PFC boards but they are same as GENESYS+ 1700W series. The GENESYS+ 2700W and 3400W series having rated output from 0-10VDC/0-265A up to 0-600VDC/0-4.5A and 0-10VDC/0-340A up to 0-600VDC/0-5.5A respectively with total output power 2720 and 3450 Watt maximum respectively.

The GENESYS+ 1000W series based on GENESYS+ 1700W. The GENESYS+ 1000W series has the same mechanical and electronic construction as the GENESYS+ 1700W, with the exception of input and PFC boards. The power supplies having rated output from 0-10VDC/0-100A up to 0-600VDC/0-1.7A with total output power 1050 Watt maximum.

The GENESYS+ GH1000W series is based on GENESYS+ 1000W. The GENESYS+ GH1000W uses the same modules used in GENESYS+1000W with the exception of half size enclosure. The power supplies having rated output from 0-10VDC/0-100A up to 0-600VDC/0-1.7A with total output power 1050 Watt maximum.

Power Sink module.

Certain power supplies can have the option of Power Sink module. Power Sink Module (PSink) is only intended for GENESYS+ 1700W, GENESYS+ 2700W series, and GENESYS+ 3400W Series. Power supplies with this module can absorb and dissipate power. An internal logic module senses when the output voltage is higher than desired (by 5%) and signals the Power Sink module to sink current across the power supply output terminals.

Engineering Considerations

- The units are Class I, evaluated for use in Installation Category II and Pollution Degree 2 environments.
- The units are evaluated for use in TN and TT power systems.
- All units may be adjusted by operator to 105% of the rated output voltage or current.
- Units with output rated up to (but not including) 60VDC considered as non-hazardous live output units.
- Units with output rated 60VDC and higher considered as Secondary Hazardous voltage output units and not accessible during normal operation using an output protection bracket.
- The units consist of an aluminum box-type frame enclosure with an aluminum cover.

The following parts factory installed (or may be installed - optional parts) inside of enclosure:

Common parts:

Input board IA764 for input 190-240V or IA765 for inputs 380-415V and 380-480V include:

- Input SELV module IA814 for input 190-240V or IA850 for inputs 380-415V and 380-480V;
- Input control module IA815 for input 190-240V or IA849 for inputs 380-415V and 380-480V;
- Input STBY module IA818 for inputs 380-415V and 380-480V.

For GENESYS+ GH1500W/1700W only:

- Input board IA763 for input 100-240V

For GENESYS+ 2700W/3400W only:

- Input board IA763 for input 190-240V

For GENESYS+ GH1000W/1000W only:

- Input board IA823 for input 100-240V

Power factor control board (PFC) IA766 for input 190-240V - 3Ph, IA767 for inputs 380-415V - 3Ph and 380-480V - 3Ph.

For GENESYS+ GH1500W/1700W only: Power factor control board (PFC) IA833 for input 100-240V - 1Ph.

For GENESYS+ 2700W/3400W only: Power factor control board (PFC) IA833 for input 190-240V - 1Ph.

For GENESYS+ GH1000W/1000W only: Power factor control board (PFC) IA822 for input 100-240V - 1Ph.

GENESYS+ 5000W have three DC/DC converter boards connected in parallel,

GENESYS+GH1000W/GH1500W/1000W/1700W have one DC/DC converter board:

GENESYS+2700W/3400W have two DC/DC converter board connected in parallel.

DC/DC boards IA768 for output 10V-30V, IA785 for output 40V-100V, IA769 for output 150-300V or IA851 for output 400-600V, each board includes:

- DC/DC slave module IA771.

Control board IA806.

Output filter board-IA787 for output 10-100V, IA809 for output 150-300V or IA788 for output 400-600V.

For GENESYS+ GH1000W/GH1500W: IA791 for output 10-100V, IA873 for output 150-200V, IA792 for output 300-600V.

Interface board-IA770.

For GENESYS+ 2700W/3400W/5000W only: Connect board-IA789.

Display-IA772 (GENESYS+ series)

Display-IA871 (GENESYS+ GH1000W/GH1500W only)

Blank Display-IA854 or IA884 or IA860 or IA910 (GENESYS+ series)

Booster-IA853 (GENESYS+ 5000W)

Air filter kit-IA857:

For all models except 10V 3.4kW~15kW: 0~40°C, 100% load.

For 10V 3.4kW~15kW models: 0~30°C, 100% load, For 30°C ≤T_a≤40°C, derate 5A/1°C.

Operating: Maximum 10000ft (3000m).

For all models except 10V 3.4kW~15kW: Derate 1°C/100m, or 2% Load/100m above 2000m.

For 10V 3.4kW~15kW models: Derate 2°C/100m, or 2% Load/100m above 2000m.

Optional parts

GPIB (IEEE) board IA834.

Anybus board IA790 (which gives option to ECAT and MDBS).

IS420 and IS010 board IA978.

The power I/O connectors are suitable for factory and field wiring.

The units are suitable for maximum ambient operating temperature 50°C at maximum load with the following derating: All units which include GPIB (IEEE) module are limited up to T_{ma}=40°C. Output current derating 2%/100m or T_{ma} derating 1°C /100m above 2000m. Non operating: 40000ft (12000m).

For GENESYS+ 5000W only:

Units with output 0-10VDC/0-500A: up to T_{ma}=40°C, or 0-10VDC/0- 450A up to T_{ma}=50°C; For 10V model derate 5A/1°C above 40°C. For 10V model T_{ma} derating 2°C /100m,

For 10V model only: Max. output current for using GPIB (IEEE) is 400A up to 40°C and 450A up to 30°C.

For GSP/GBSP+ 10kW only:

Units with output 0-10VDC/0-1000A: up to T_{ma}=40°C, or 0-10VDC/0-900A up to T_{ma}=50°C; For 10V model derate 10A/1°C above 40°C. For 10V model T_{ma} derating 2°C /100m, For 10V model only: Max. output

current for using GPIB (IEEE) is 800A up to 40°C and 900A up to 30°C.

For GSP/GBSP+ 15kW only:

Units with output 0-10VDC/0-1500A: up to T_{ma}=40°C, or 0-10VDC/0-1350A up to T_{ma}=50°C; For 10V model derate 15A/1°C above 40°C. For 10V model T_{ma} derating 2°C /100m,

For 10V model only: Max. output current for using GPIB (IEEE) is 1200A up to 40°C and 1350A up to 30°C.

For GENESYS+ GH1500W only:

When applying input voltage under 100Vac, maximum operating temperature is 45°C.

Definition of variable(s): Model configuration code

GENESYS+5000W series

Gxxx-yyy-z-v-uuuuuu-w or Gxxx-yyy-z-v/uuuuuu/w – ordinary unit

GBxxx-yyy-z-v-uuuuuu-w or GBxxx-yyy-z-v/uuuuuu/w – blank unit

GSSxxx-yyy-z-v-uuuuuu-w or GSSxxx-yyy-z-v/uuuuuu/w – booster unit

GSP/GBSP 10kW series:

GSPxxx-yyy-z-v-uuuuuu-w or GSPxxx-yyy-z-v/uuuuuu/w Consist of: Ordinary unit + Booster unit

GBSPxxx-yyy-z-v-uuuuuu-w or GBSPxxx-yyy-z-v/uuuuuu/w Consist of: Blank unit + Booster unit

GSP/GBSP/GSSP 15KW series:
 GSPxxx-yyy-z-v-uuuuuu-w or GSPxxx-yyy-z-v/uuuuuu/w Consist of: Ordinary unit + Two Booster units
 GBSPxxx-yyy-z-v-uuuuuu-w or GBSPxxx-yyy-z-v/uuuuuu/w Consist of: Blank unit + Two Booster units
 GSSxxx-yyy-z-v-uuuuuu-w or GSSxxx-yyy-z-v/uuuuuu/w Consist of: Three Booster units

GENESYS+ 1000W/1700W series

Gxxx-yyy-z-v-p-uuuuuu-w or Gxxx-yyy-z-v-p/uuuuuu/w – ordinary unit
 GBxxx-yyy-z-v-p-uuuuuu-w or GBxxx-yyy-z-v-p/uuuuuu/w – blank unit

GENESYS+2700W/3400W series

Gxxx-yyy-z-v-uuuuuu-w or Gxxx-yyy-z-v/uuuuuu/w – ordinary unit
 GBxxx-yyy-z-v-uuuuuu-w or GBxxx-yyy-z-v/uuuuuu/w – blank unit

GENESYS+ GH1000W/GH1500W series

GHxxx-yyy-z-v-p-uuuuuu-w or GHxxx-yyy-z-v-p/uuuuuu/w – ordinary unit
 GHBxxx-yyy-z-v-p-uuuuuu-w or GHBxxx-yyy-z-v-p/uuuuuu/w – blank unit

Variable:	Range of variable:	Content:
xxx	010-600	min/max output voltage in VDC
y	yyy = 8.5-500 (for GENESYS+5000W) yyyy = 17-1000 (for GSP/GBSP 10kW) yyyy = 25.5-1500 (for GSP/GBSP/GSSP 15kW) yyy = 2.8-170 (for GENESYS+1700W) yyy = 2.6-150 (for GENESYS+ GH1500W) yyy = 4.5-265 (for GENESYS+ 2700W) yyy = 5.5-340 (for GENESYS+ 3400W) P	min/max output current in A
z	1. GPIB (IEEE) 2. MDDBS 3. ECAT 4. IS420 5. IS010 6. Blank	1. IEEE card installed. 2. AnyBus module installed with MDDBS option. 3. AnyBus module installed with ECAT option. 4. Isolated Analog Programming option 4~20 mA. 5. Isolated Analog Programming option 0~10 mA. 6. Base model.
r	PSINK or Blank	PSINK is an optional feature which the customer can purchase. It indicates the addition of a Power Sink module inside the power supply.
p	1. E 2. U 3. I 4. J 5. C 6. Blank;	1. power cord set for Europe 2. power cord set for US/Canada 3. power cord set for Israel 4. power cord set for Japan 5. power cord set for China 6. power cord set not provided with unit;
u	1. Various letters or/and numbers 2. Blank	1. Indicate other options (not safety related) 2. Base model

w	<ol style="list-style-type: none"> 1. CO 2. CS 3. Blank 	<ol style="list-style-type: none"> 1. Conformal coating used on all boards or partially (for environmental protection only). 2. Without output compartment, for built-in only. 3. Base model.
<p>Description of model differences:</p> <p>Refer to General Product Information section</p>		
<p>Description of special features: (HV circuits, high pressure systems etc.)</p> <p>No special features</p>		