EGSTON

Switch Mode Power Supply Product Name:

N1EFSW3 12W PS EuPII

Input:	100 - 240 V AC
Output :	5V – 24V max. 12W max. 1,5A
Type:	N1EFSW3 12W PS EuPII

1.1 Evolution

Edition	Date	Responsible	Reason of change
A	12.12.2011	Mauritz	First edition

2 SCOPE

This document describes a switch mode power supply unit (AC/DC converter) with fixed output voltage.
The unit is designed as a Wall Plug In power supply.

3 TECHNICAL SPECIFICATION SHEET

3.1 Input Specification

Parameter	Key	Min	Typ.	Max	Unit	Test Cond.
Input Voltage	U_{IN}	90		264	V	AC
Input Current	I_{IN}	2	100	350	mA	
Input Frequency	f_{IN}	47	50	63	Hz	
Efficiency	η		81		%	At full load
		According EuP Tier II				
Switching Frequency	f_{sw}		65		kHz	
Stand-by power	P_{stb}			300	mW	Without load
		According EuP Tier II				

Input Voltage
If the input voltage is out of operating range, the power supply does not meet the full specification. Above the specified upper limit of the input voltage the unit can get damaged. Below the specified lower limit of the input voltage the unit does not meet the specification.

Efficiency Under Load
The efficiency is defined as the ratio between the output power and input power.

3.2 Safety and Environmental Conditions

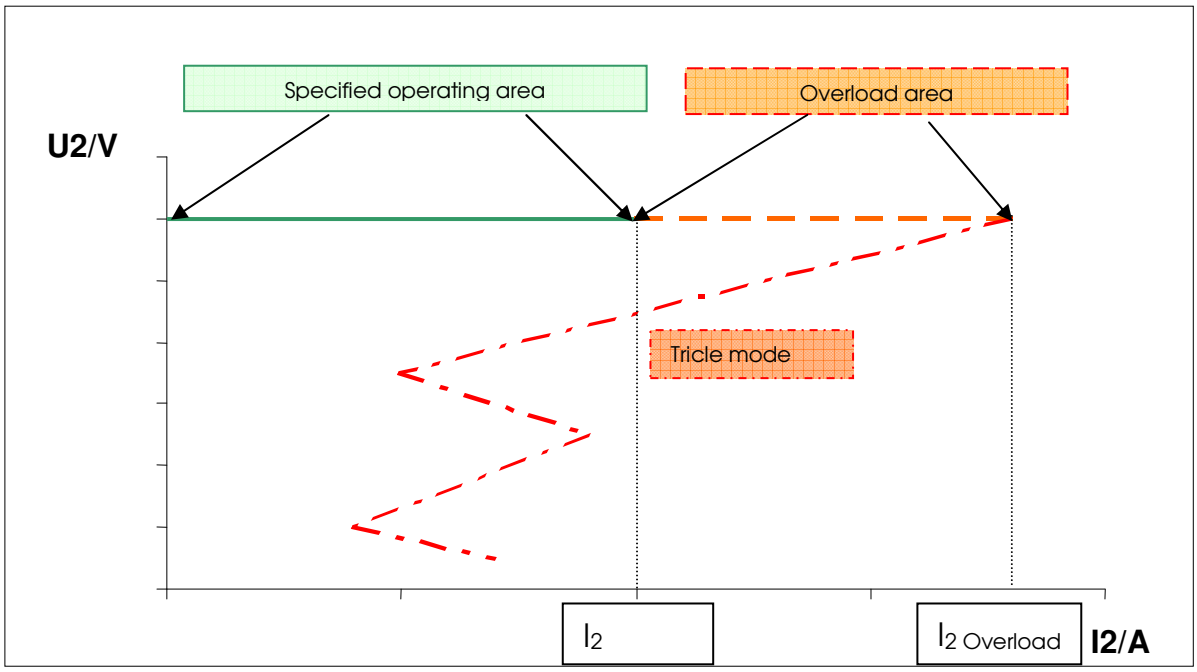
Parameter	Key	Min	Typ.	Max	Unit	Test Cond.
Dielectric Strength		3			KV_{AC}	
Operating Temperature		-20		50	°C	At free convection
		-4		122	°F	
Storage Temperature		-30	25	80	°C	
		-22	77	176	°F	
Humidity				95	%	

3.3 Output Specification

Parameter	Key	Min	Typ.	Max	Unit	Test Cond.
Output Voltage	U_2	5		24	V	0 – 1A
Output voltage tolerance	T_{U2}			3	%	at PCB
Output Current	$I_{2\ Nominal}$			1,5	A	
Max. Overload current	$I_{2\ Overload}$		170 120		% of $I_{2\ Nominal}$	U_{IN} = 264V U_{IN} = 90V
Output Power	P_2			12	W	
Ripple Voltage	$U_{2,rms}$			50 50	mV_{rms}	U_{IN} = 264V U_{IN} = 90V

The unit is not long time over-current proof. If the unit is powered longer than 1 min in overload conditions (current range between $I_{2\ Nominal}$ and $I_{2\ Overload}$), the device can be damaged. The period between two overload conditions has to be at least 15 minutes.

3.3.1 Output template



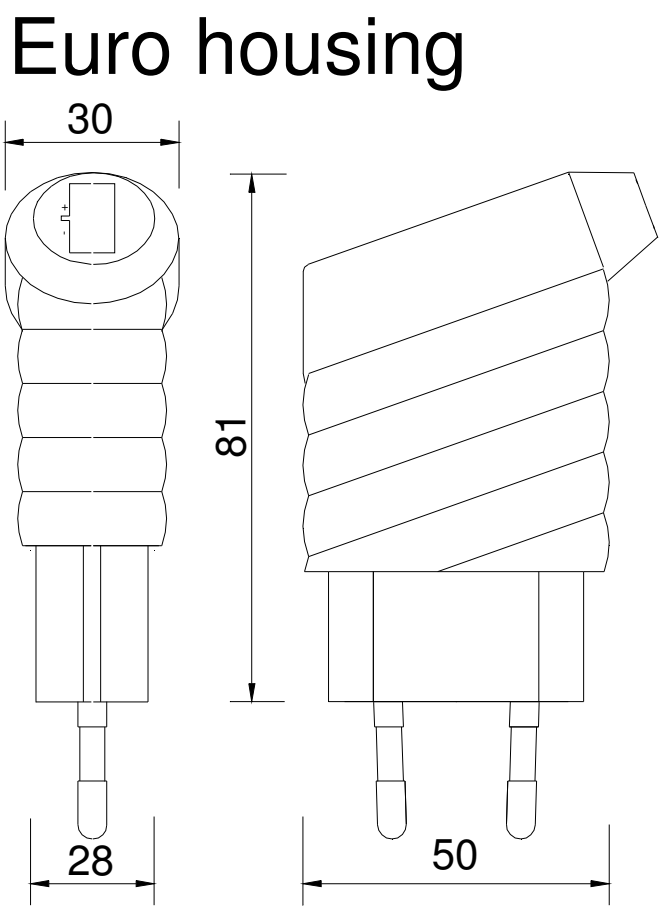
Specified operating area:
At an output current from 0A to $I_{2\ Nominal}$ the unit fulfills all specified data.

Overload area:
At an output current from $I_{2\ Nominal}$ to $I_{2\ Overload}$ the power supply delivers the specified output voltage U2.
The unit is not long time overload proof. If the unit is powered longer than 1 min in overload conditions, the device can be damaged. The period between two overload conditions has to be at least 15 minutes.

Trickle mode area:
If the power demand would be greater than $I_{2\ Overload}$ or the power supply works in short circuit the output voltage and current can not be defined (this parameters are not stable). The wattage of the SMPS is de-rated. In this mode the unit can not be damaged. After removing this conditions the unit fulfills the specification.

3.4 Mechanical Parameters

3.4.1 General housing Dimension:



3.4.2 Housing and Potting

The device is potted.

Housing Material	PC + ABS
Colour of Housing	black
Potting Material	Polyurethane, UL listed

4 MARKING ON THE HOUSING

4.1 Laser marking

Product name
Input parameters
Output parameters
Safety instructions
Date code of production
CE marking
Approval marks

5 EMC

The units meet the following EMC requirements:

5.1 Emission with representative 15V device:

Test passed according to EN55022 Class B and FCC15 Class B.

5.2 Immunity To Flicker

Test according to EN 61000-3-2

5.3 Immunity to Fast Transients (Burst)

Test according to EN61000-4-4

Input Line: 2.0kV – 5/50 ns – 5.0 kHz

Output Line: 2.0kV – 5/50 ns – 5.0 kHz

5.4 Immunity to Radiated Electromagnetic Field

Test according to EN 61000-4-3

Test characteristic: 80 – 1000 MHz; 80% AM (1kHz), 3V/m

5.5 Immunity to Electrostatic Discharge

Test according to EN 61000-4-2

Test characteristic: Contact discharge 6kV

Air discharge 8kV

5.6 Surge Capability

Test according to EN61000-4-5

Test characteristic: line to line: 1kV Surge

line to earth: 2kV Surge

5.7 Immunity to conducted disturbances

Test according to EN 61000-4-6

Test characteristic: 150kHz – 80 MHz; 80% AM (1kHz), 3V

5.8 Immunity to voltage dips, short interruptions and voltage variations

Test according to EN 61000-4-11
Test criterion C

6 RELIABILITY

6.1 MTBF

Can be done on request.

Because of experience the MTBF can be **inexact estimated:**

For the calculation the following standards was used:
MIL-HDBK-217 F

MTBF at 25° ambient temperature:
4.329.004h (value of a similar device)

MTBF at 40° ambient temperature:
1.992.032h (value of a similar device)

6.2 Maintainability

The power supply is not to be repaired.

6.3 Temperature cycle test

During quality approval the unit passed the EGSTON standard temperature cycle test.

7 SAFETY

The units pass the following tests:

7.1 Dielectric Strength

The input isolation test voltage is 3kV 50/60 Hz, sinusoidal waveform. Test duration is 2 seconds for 100% test, 1minute 3kV AC or lot-test.

7.2 Over-current Protection

The unit is not long time over-current proof. If the unit is powered longer than 1 min in overload conditions, the device can be damaged. The period between two overload conditions has to be at least 15 minutes.

7.3 Single Component Failure

A single component failure does not cause any damage to persons or ambient (fire, explosions, etc).

7.4 Short Circuit

The power supply is designed with a short circuit protection. A shortened output does not cause any damage to persons or ambient (fire, explosions, etc.) After removing this conditions the unit fulfills the specification.

8 APPROVALS AND TEST STANDARDS

8.1 General

The device is galvanically isolated with SELV output.

8.2 Test Standards

EN 60950-1
EN 55022
EN 55024

8.3 Approvals

ENEC

CE Conformity with the EU low voltage directive and EMC directive

9 ORDERING INFORMATION

	POWER CLASS	12 Watt
N	SUPPLY TYPE	EGSTON Power Supply Type
1	OPERATION TEMP. RANGE	1 = -20°C to +50°C
E	PRIMARY CONNECTOR	E = Euro Plug
F	CABLE CONNECTION	F = Fixed Cable
S	APPLICATION	S = Standard
W	WIDE INPUT RANGE	W = 90V-264V
3	OUTPUT STABILITY	3 = 3%
12W	HOUSING DIMENSION	12W
12V	OUTPUT VOLTAGE	5V-24V
1A	OUTPUT CURRENT	1500mA max.

10 PACKAGING AND WEIGHT

N1EFSW3 12W	pcs	kg	size
Single Carton	1	0,22	95x85x30
Power Supply per Packaging Case	50	11	427x196x165
Power Supply per Layer (EU- Pallet) 7 Packaging cases	350	98	1200x800x165
1 Full Pallet (7 Layer)	2450	560	1200x800x1500