

# 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**


#### CONFIDENTIAL

This document contains proprietary information originated and/or owned by EGSTON System Electronics Eggenburg GmbH.

This information shall not be duplicated, used or disclosed in whole, or in part, to any other party or used for any other purpose without the prior consent of EGSTON System Electronics Eggenburg GmbH.

Copyright © 2011 EGSTON System Electronics Eggenburg GmbH  
A-3730 Eggenburg, Grafenberger Strasse 37  
All Rights Reserved.



**PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII**

Document prepared and responsible for

M. Mauritz

Standard Programme

Approved by

Day

Month

Year

Revision

M. Obritzhauser


12

12

11

A

1.1	Evolution .....	3
2	Scope .....	3
3	Technical Specification Sheet.....	4
3.1	Input Specification .....	4
3.2	Safety and Environmental Conditions .....	4
3.3	Output Specification.....	5
3.3.1	Output template .....	6
3.4	Mechanical Parameters.....	7
3.4.1	General housing Dimension:.....	7
3.4.2	Housing and Potting .....	8
4	Marking on the housing.....	8
4.1	Laser marking .....	8
5	EMC.....	9
5.1	Emission with representative 15V device: .....	9
5.2	Immunity To Flicker.....	9
5.3	Immunity to Fast Transients (Burst).....	9
5.4	Immunity to Radiated Electromagnetic Field .....	9
5.5	Immunity to Electrostatic Discharge .....	9
5.6	Surge Capability .....	9
5.7	Immunity to conducted disturbances .....	9
5.8	Immunity to voltage dips, short interruptions and voltage variations. ....	10
6	Reliability .....	11
6.1	MTBF .....	11
6.2	Maintainability.....	11
6.3	Temperature cycle test .....	11
7	Safety .....	12
7.1	Dielectric Strength .....	12
7.2	Over-current Protection .....	12
7.3	Single Component Failure.....	12
7.4	Short Circuit.....	12
8	Approvals and test standards .....	13
8.1	General .....	13
8.2	Test Standards .....	13
8.3	Approvals .....	13
9	Ordering Information .....	14
10	Packaging and weight.....	15

	<b>PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII</b>			Page 3/15	
	Document prepared and responsible for				
	M. Mauritz			Standard Programme	
	Approved by		Day	Month	Year
M. Obritzhauser		12	12	11	A


## 1.1 Evolution

<b>Edition</b>	<b>Date</b>	<b>Responsible</b>	<b>Reason of change</b>
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.

	<b>PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII</b>				Page 4/15	
	Document prepared and responsible for					
	M. Mauritz			Standard Programme		
	Approved by		Day	Month	Year	Revision
M. Obritzhauser		12	12	11	A	

### 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	$\eta$		81		%	At full load
		According to EuP Tier II				
Switching Frequency	$f_{sw}$		65		kHz	
Stand-by power	$P_{stb}$			300	mW	Without load
		According to 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	$^{\circ}C$	At free convection
		-4		122	$^{\circ}F$	
Storage Temperature		-30	25	80	$^{\circ}C$	
		-22	77	176	$^{\circ}F$	
Humidity				95	%	

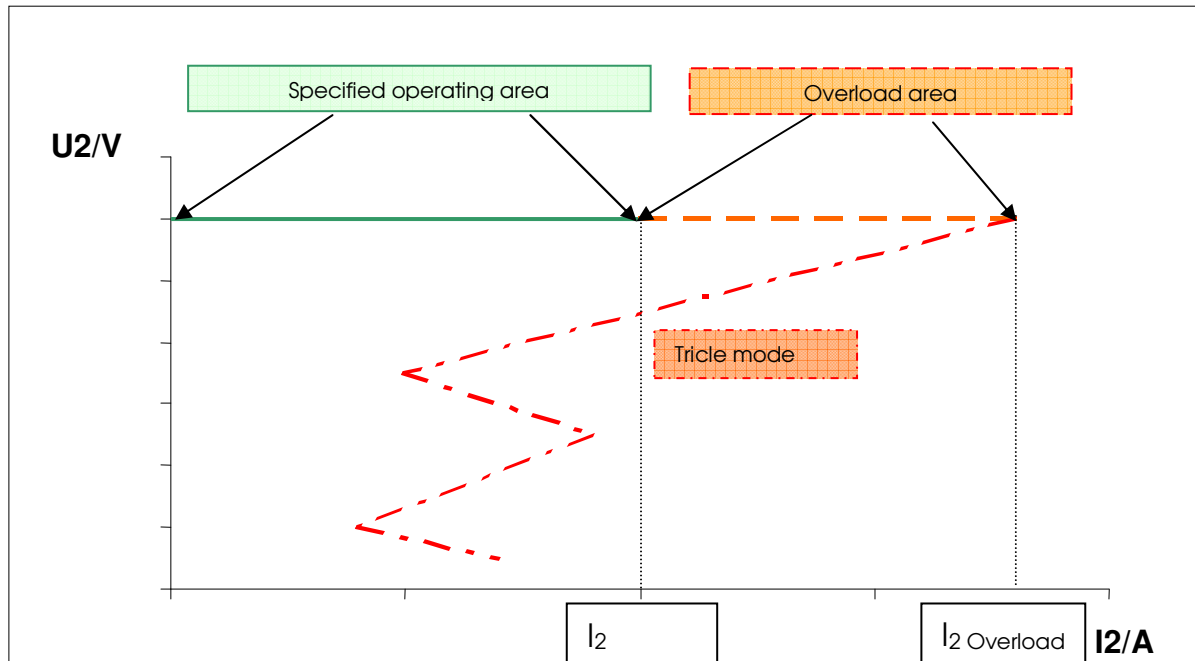
	<b>PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII</b>			Page 5/15		
	Document prepared and responsible for					
	M. Mauritz		Standard Programme			
	Approved by		Day	Month	Year	Revision
	M. Obritzhauser		12	12	11	A

### 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 <sub>rms</sub>	$U_{IN} = 264V$ $U_{IN} = 90V$

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  $I_{2 \text{ Nominal}}$  the unit fulfills all specified data.

#### Overload area:

At an output current from  $I_{2 \text{ Nominal}}$  to  $I_{2 \text{ Overload}}$  the power supply delivers the specified output voltage  $U_2$ .

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.

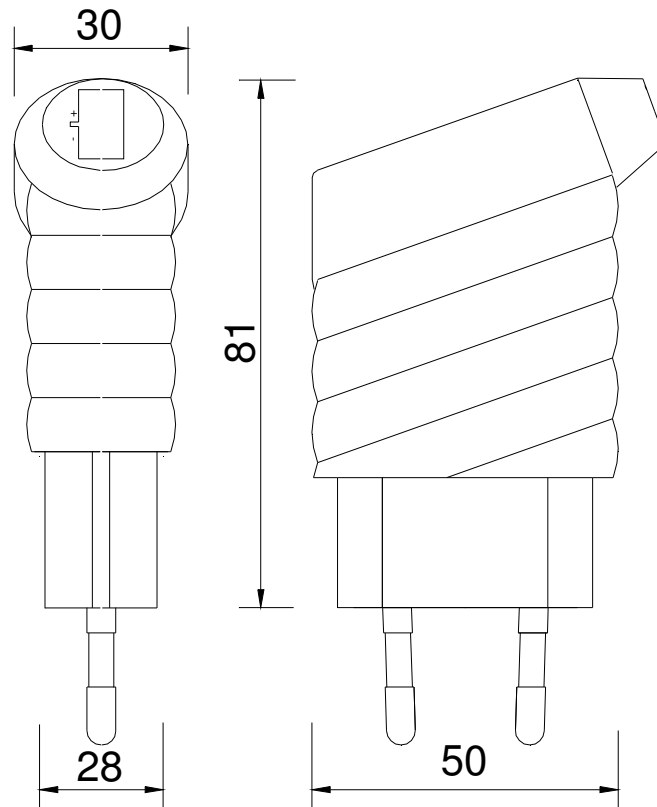
#### Trickle mode area:


If the power demand would be greater than  $I_{2 \text{ Overload}}$  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:

## Euro housing



	<b>PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII</b>			Page 8/15			
	Document prepared and responsible for						
	M. Mauritz			Standard Programme			
	Approved by			Day	Month	Year	Revision
	M. Obritzhauser			12	12	11	A

### 3.4.2 Housing and Potting

The device is potted.


<b>Housing Material</b>	PC + ABS
<b>Colour of Housing</b>	black
<b>Potting Material</b>	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



	<b>PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII</b>			Page 9/15	
	Document prepared and responsible for				
	M. Mauritz		Standard Programme		
	Approved by		Day	Month	Year
M. Obritzhauser		12	12	11	A

## 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

	<b>PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII</b>			Page 10/15		
	Document prepared and responsible for					
	M. Mauritz			Standard Programme		
	Approved by			Day	Month	Year
M. Obritzhauser			12	12	11	A

## 5.8 Immunity to voltage dips, short interruptions and voltage variations

Test according to EN 61000-4-11

Test criterion C

	<b>PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII</b>			Page 11/15		
	Document prepared and responsible for					
	M. Mauritz			Standard Programme		
	Approved by			Day	Month	Year
M. Obritzhauser			12	12	11	A

## 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.

	<b>PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII</b>			Page 12/15	
	Document prepared and responsible for				
	M. Mauritz			Standard Programme	
	Approved by		Day	Month	Year
M. Obritzhauser		12	12	11	A

## 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.

	<b>PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII</b>			Page 13/15		
	Document prepared and responsible for					
	M. Mauritz			Standard Programme		
	Approved by			Day	Month	Year
M. Obritzhauser			12	12	11	A

## 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

 Conformity with the EU low voltage directive and EMC directive

	<b>PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII</b>			Page 14/15		
	Document prepared and responsible for					
	M. Mauritz		Standard Programme			
	Approved by		Day	Month	Year	Revision
	M. Obritzhauser		12	12	11	A

## 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.

	<b>PRODUCT SPECIFICATION N1EFSW3 12W PS EuPII</b>			Page 15/15			
	Document prepared and responsible for						
	M. Mauritz			Standard Programme			
	Approved by			Day	Month	Year	Revision
	M. Obritzhauser			12	12	11	A

## 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