

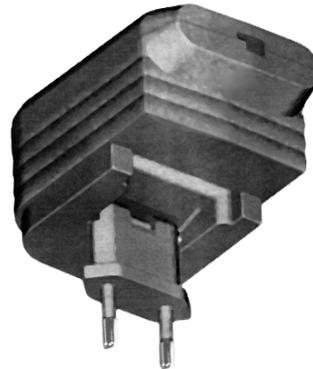
### General description

This document describes a switch mode power supply unit (AC/DC converter). The unit is designed as wall plug device. It is available with a plug for Europe, US (Japan, Canada) and UK with a wide range input voltage (100 - 264V AC). Other plugtypes can be tooled on request. The output voltage is fixed with a tolerance of  $\pm 3\%$ . Output voltages are available between 5V and 24V DC. Secondary cable connection to power supply is available fixed or pluggable. Secondary plug is available in different forms. The power supply is for indoor use only.

The standard power supply is meant for use with medical applications.

### Features

- Wide Input Range (100-264V)
- Output voltage fixed
- Output voltage stability  $\pm 3\%$
- Output power 24W
- High efficiency, typically 80%
- Protection Class II
- Europe, UK, US Plug available
- Europe and US housing have folding plugs
- Secondary plug customer specific
- Manufacturing according to ISO 9001
- Smallest available size



### Applications

- Electronic organiser (PDA)
- Mobile phones (Travel charger)
- Computer Accessories (Modem, Scanner)
- Personal entertainment (CD-Player, MD)
- Consumer electronic (camera, calculator)
- Medical applications (Fusion pump)
- Measuring Equipment

### Approvals

- CE
- ENEC
- cUL 1310

### Test standards

- EN 50 075
- EN 61000-6-1
- EN 61000-6-3
- EN 55 022
- EN 60 950

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### Revision history of this document

Actual Revision: 06/2004  
Previous Revision: 07/2001

Page of actual Rev.	Page of prev. Rev.	Changes since last release
		Output voltage range extended to 5-24V

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## 1 Certifications

### 1.1 Area specific approvals

- CE
- ENEC EN 60950
- cUL 1310 Class 2 power units

### 1.2 Tests

- EN 50 075 Flat non-wireable two-pole plugs
- EN 61000-6-1 EMC generic emission standard
- EN 61000-6-3 EMC generic immunity standard
- EN 55 022 Limits and methods of measurements of radio interference
- EN 60 950 Safety of information technology equipment

## 2 Technical Input Specification

### 2.1 Input Parameters

Table 1  
Input parameters for power supplies with wide input voltage range

Parameter	Key	Min	Typ	Max	Unit	Condition
Input voltage	$U_1$	100		264	V	Full load
Input current	$I_1$	5		500	mA	
Input frequency	$f_1$	47	50	63	Hz	With load
Efficiency	$\eta$	65	80	90	%	
Switching frequency	$f_{1,sw}$	35		250	kHz	

## 3 Technical Output Specification

### 3.1 Output Parameters

Table 2  
Output parameters for power supplies with different fixed output voltages

Idle mode		Short circuit		Full load (resistive load)		
$U_2$	$P_1$	$U_2$	$I_2$	$U_2$	$I_2$	$P_2$
[V]	[W]	[V]	[A]	[V]	[A]	[W]
5.0	<2.5	<1	<3.6	5.0	3.0	15
6.0	<2.5	<1	<3.6	6.0	3.0	18
9.0	<2.5	<1	<3.0	9.0	2.66	24
12.0	<2.5	<1	<2.4	12.0	2.0	24
15.0	<2.5	<1	<2.0	15.0	1.6	24
18.0	<2.5	<1	<1.6	18.0	1.33	24
24.0	<2.5	<1	<1.3	24.0	1.0	24

Table 3  
Output parameters for power supplies

Parameter	Key	Min	Typ	Max	Unit	Condition
Ripple voltage at switching freq	$U_{D-D,hf}$		75	150	mV	Full load
Reverse current $U_2=15V$	$I_r$		2.5	5	mA	Disconnected from mains

### 3.2 Typical Output Characteristic

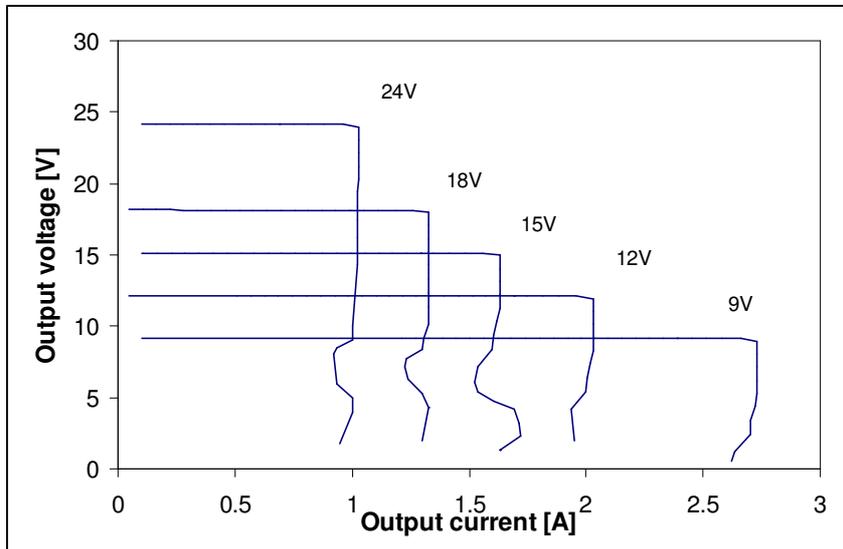


Figure 1  
Output Characteristic:  $U_1=230V$ ;  $f_1=50\text{ Hz}$ ; resistive load

### 3.3 Typical Efficiency Characteristic

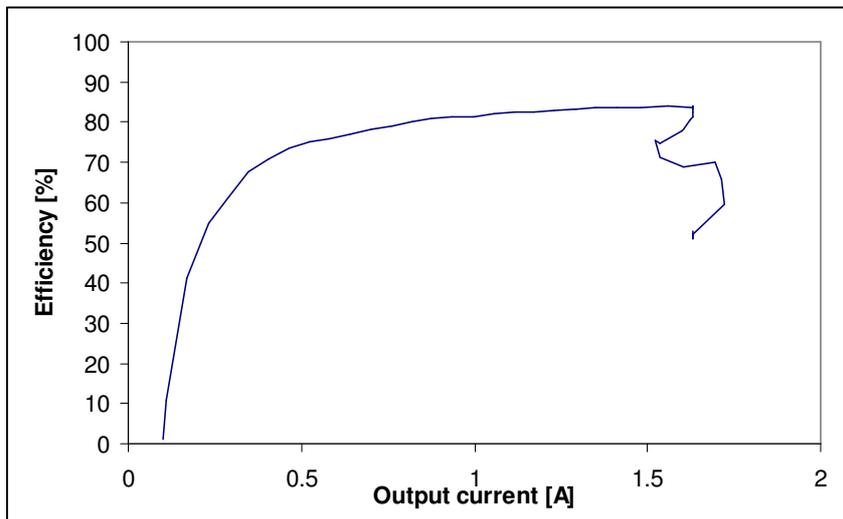


Figure 2  
Typical Efficiency characteristic:  $U_1=230V$ ;  $f_1=50\text{ Hz}$ ; resistive load  
Egston Power Supply N2GFSW 24W 15V representative sample

### 3.4 Output Voltage Transients

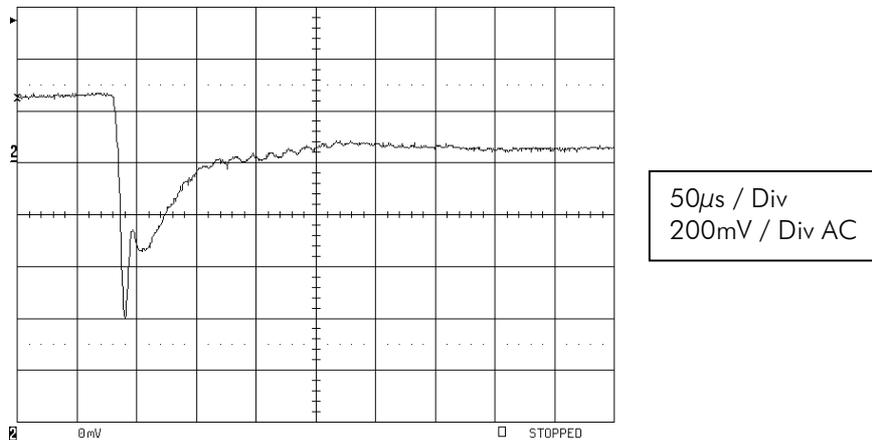


Figure 3  
Output voltage transients  
Egston Power Supply N2GFSW 24W 15V representative sample,  
10% to 100% resistive load change at 1kHz

### 3.5 Output Ripple Voltage

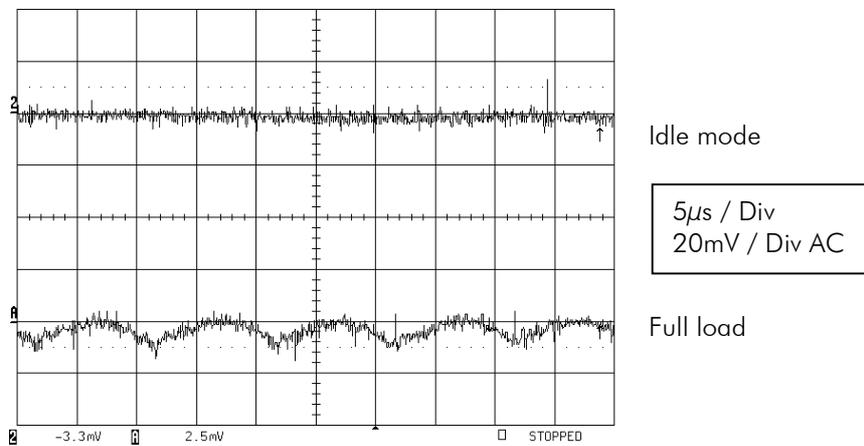


Figure 4  
Output ripple voltage  
Egston Power Supply N2GFSW 24W 15V representative sample

## 4 Electromagnetic Specification

### 4.1 Electromagnetic Characteristic

Test according to EN 55 022 class B passed.

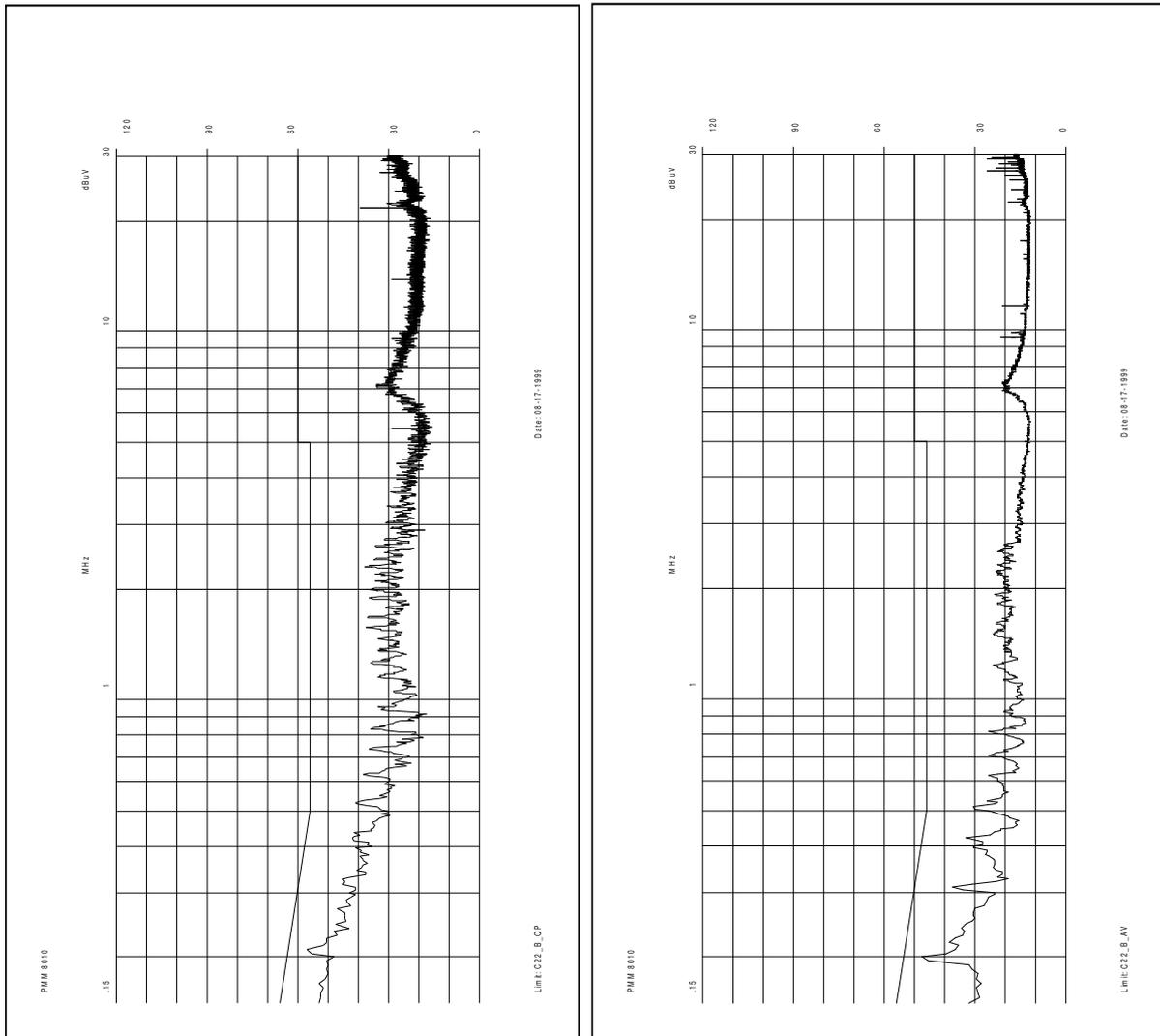


Figure 5  
Electromagnetic characteristics (Peak and average measurement, conducted EMC)  
Egston Power Supply N2GFSW 24W 15V representative sample

#### 4.2 Immunity to fast Transients (Burst)

According to EN 61 000 -4 -4 1kV passed.

#### 4.3 Immunity to Radiated Electromagnetic Field

According to EN 61 000 -4 -3 10V/m passed.

#### 4.4 Surge Capability

According to EN 61 000 -4 -5 1kV passed.

### 5 Environmental Condition

#### 5.1 Temperature Range

Table 4  
Temperature ranges for storage and operation

	Min	Max	Unit
<b>Storage Temperature</b>	-30	80	°C
	-22	176	°F
<b>Operation Temperature</b>	0	40	°C
	32	104	°F

#### 5.2 Humidity

Maximum 95% without condensation

## 6 Mechanical Parameters

### 6.1 Housing

Plastic Housing Material: ABS/PC blend (UL 94 V0)  
Colour: Black

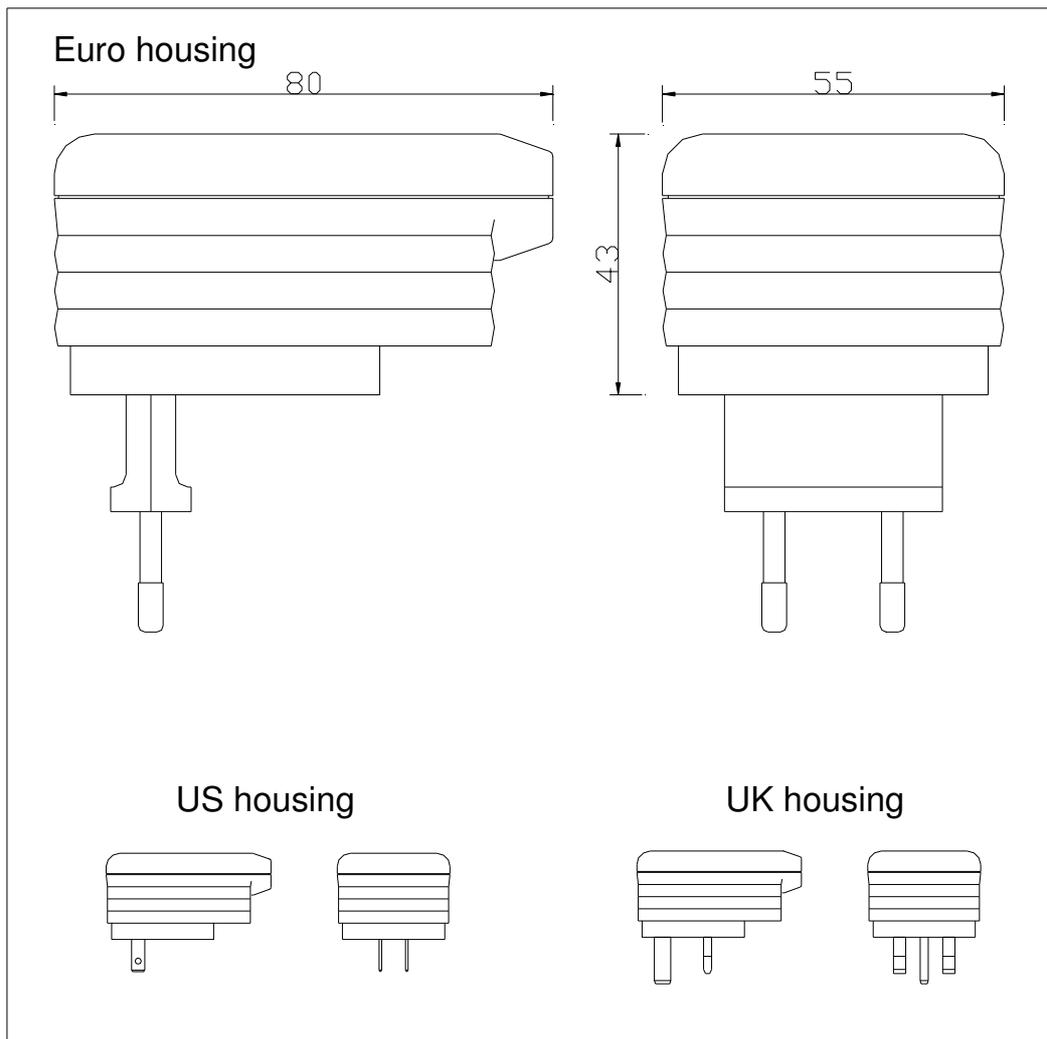


Figure 6  
Dimensions in mm  
Euro and US housing have folding plugs

### 6.2 Weight

Table 5

Weight of power supply without cable and secondary plug

Version	Weight (g)	Weight (oz)
Euro-, US-, UK-Housing	115	4.0

### 6.3 Typical Marking

On power supply unit:



Figure 7

Example of Label on plastic housing by laser marking

Marking on power supply unit is possible according to customer requirements.

Further markings like approval logos (CE, UL) and company name (EGSTON) on the housing.

## 6.4 Secondary Cable and Plug

A fixed or pluggable cable to the power supply can be chosen. Refer to the Product Code in the ordering information section of this document.

Table 6  
Cable length

	Length	Unit
Standard cable	1.5	m
Maximum length to pass specifications	3	m

We offer a universal plug set with 5 different types. Other plugs available.

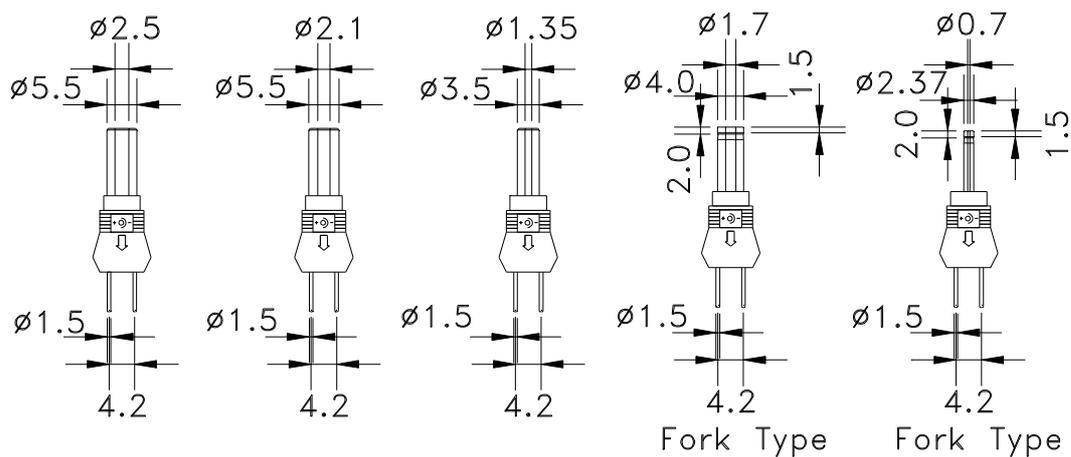


Figure 8  
Universal plug set

The polarity of the universal plugs can be set by the user.

### 7 Ordering Information

#### 7.1 Generic Product Code

N 2 E F S [W] 1 6V 1000mA

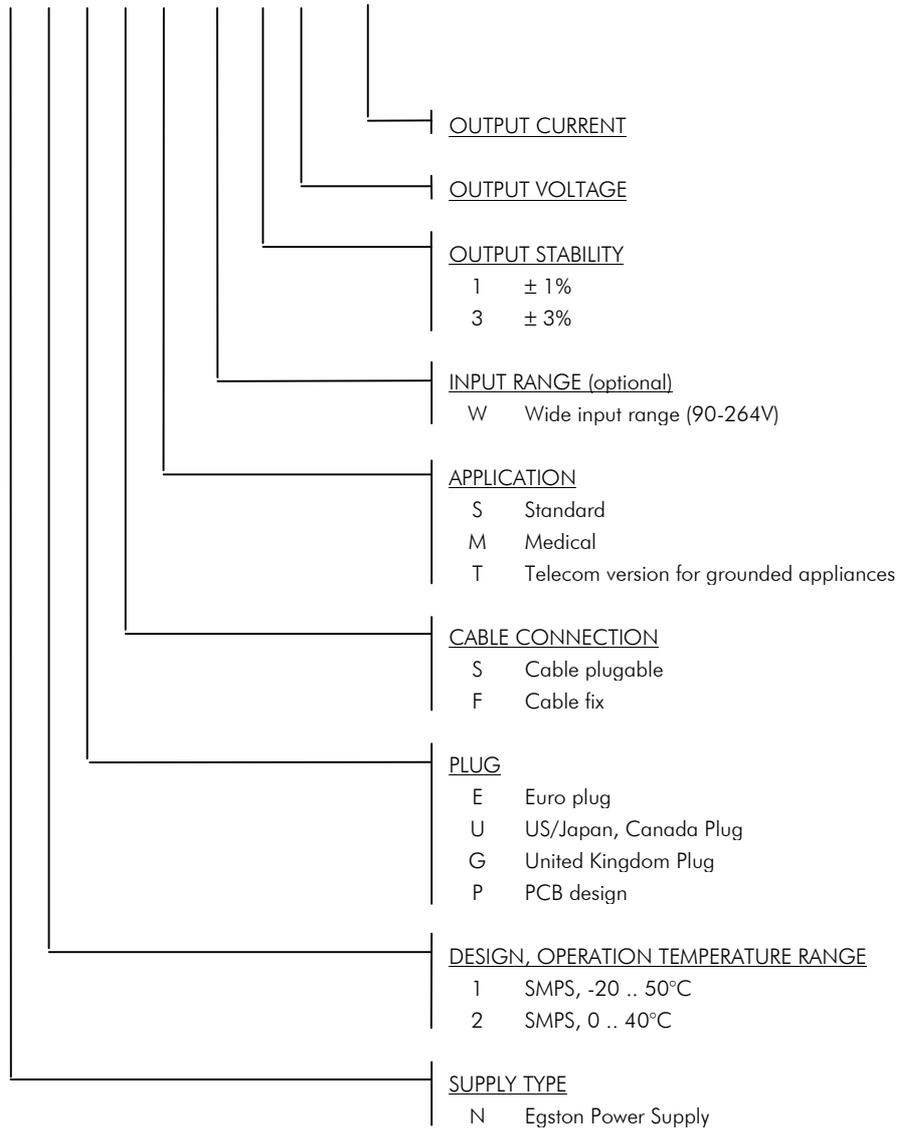


Table 7  
Product code

## 7.2 Packaging

### 7.2.1 Cardboard box

The power supply (with cable, secondary plug and manual) is available in a cardboard box with Egston-design or user-specific-design. Marking on the cardboard can be provided on a printed label, according customer requirements. 50 cardboard boxes are packed in one outer box.

Table 8  
Dimensions of cardboard box

Version	Length	Width	Height	Unit
<b>Euro-, US-, UK-housing</b>	100	110	72	mm

### 7.2.2 Bulk packaging

The Euro-, US- and UK-units (without individual cardboard box) can be delivered in bulk packaging in lots of 50 pieces / package.

Table 9  
Weight per package

Version	Weight (kg)	Weight (oz)
<b>Euro-, US-, UK-housing</b>	~10	~350