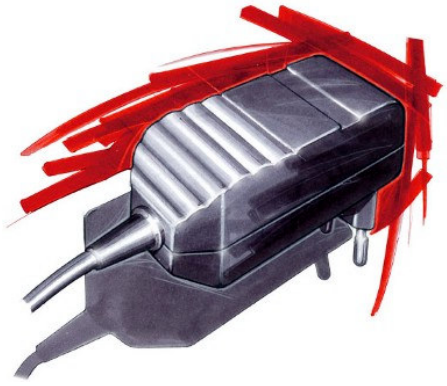
EGSTON

Switch Mode Power Supply

Product Name: P2xFSW3 6W

Standard Programme

Input:	90 - 264 V AC
Output :	3,0V – 24V max. 6W max. 1,2A
Type:	P2xFSW3 6W



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1 REVISION HISTORY

1.1 Evolution

Edition	Date	Responsible	Reason of change
A	28.05.2003	Obritzhauser	First edition
B	29.07.2003	Obritzhauser	EMV Standards Revised
C	04.02.2004	Obritzhauser	Voltage Range Extended

2 SCOPE

This document describes a switch mode power supply unit (AC/DC)
with fixed output voltage.
The unit is designed as a plug in power supply or an Desk Top Module.

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}	3	145	175	mA	
Input Frequency	f_{IN}	47		63	Hz	
Efficiency	η	65		80	%	at full load
Switching Frequency	f_{sw}		40		kHz	
Stand-by power	P_{stb}		400		mW	Without load

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

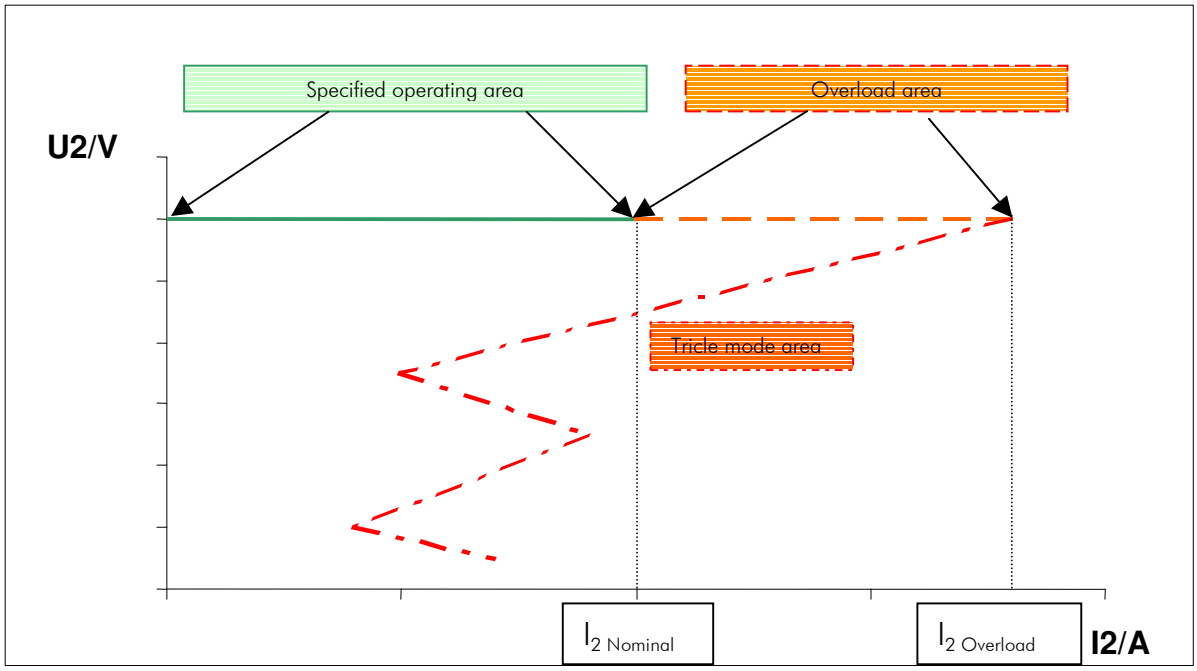
Sec	Parameter	Key	Min	Typ.	Max	Unit	Test Cond.
	Dielectric Strength		4,24			kV_{DC}	
	Operating Temperature		-5		40	°C	
			23		104	°F	
	Storage Temperature		-30	25	80	°C	
			-22	77	176	°F	
	Humidity				95	%	

3.3 Output Specification

Parameter	Key	Min	Typ.	Max	Unit	Test Cond.	Available on request
Output Voltage	U_2	3		24	V	0 – 1,2 A	
Output voltage tolerance	T_{U2}			3	%	at PCB	1% Cable compensation
Output Current	$I_{2\ Nominal}$	1,2			A		Current regulation
Max. Overload current	$I_{2\ Overload}$		250 150		% of $I_{2\ Nominal}$	U_{IN} = 264V U_{IN} = 90V	
Output Power	P_2		6		W		
Ripple Voltage	$U_{2,rms}$			50 50	mV_{rms}	U_{IN} = 264V U_{IN} = 90V	

The unit is not long time overload 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.

3.3.1 Output template



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

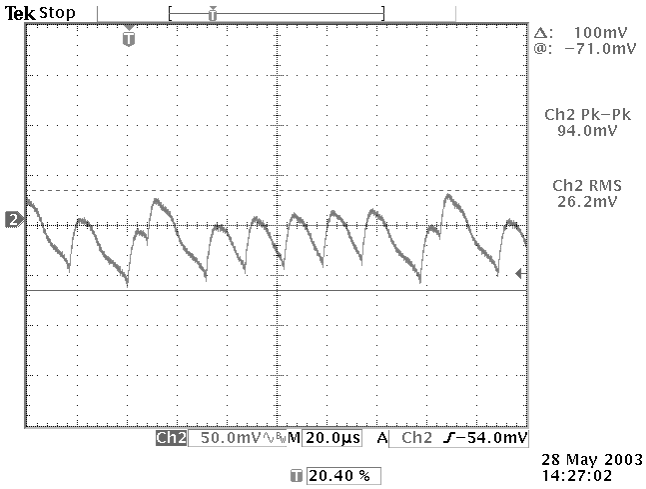
Overload area:
At an output current from $I_{2\ Nominal}$ to $I_{2\ Overload}$ the power supply delivers the specified output voltage U2.
The unit is not long time overload proof. If the unit is powered longer than 1 min in overload conditions, the device can be damaged.

Trickle mode area:
If the power demand would be higher 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.

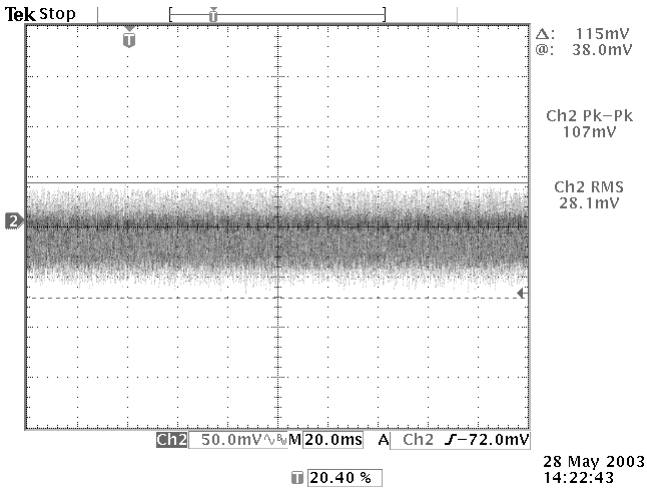
3.3.2 Output Ripple Voltage

The output ripple voltage is measured with an oszilloscope 20Mhz band limited at a representative 12V sample.

3.3.2.1 Measurement at 230V input voltage and 0,5A load

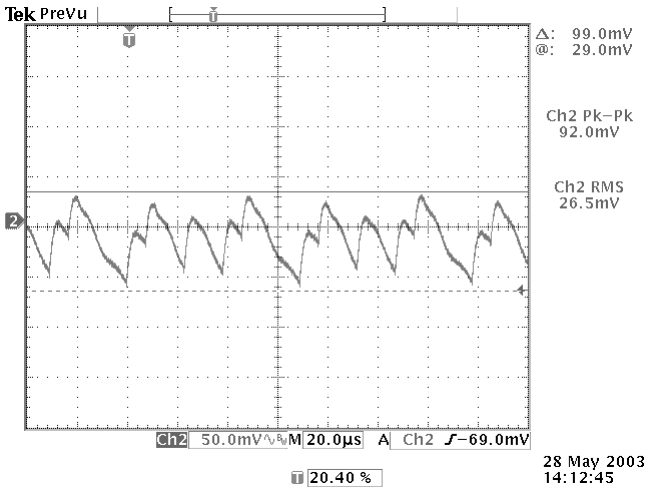


Ripple Voltage at switching frequency measured at a temperature of +25°C

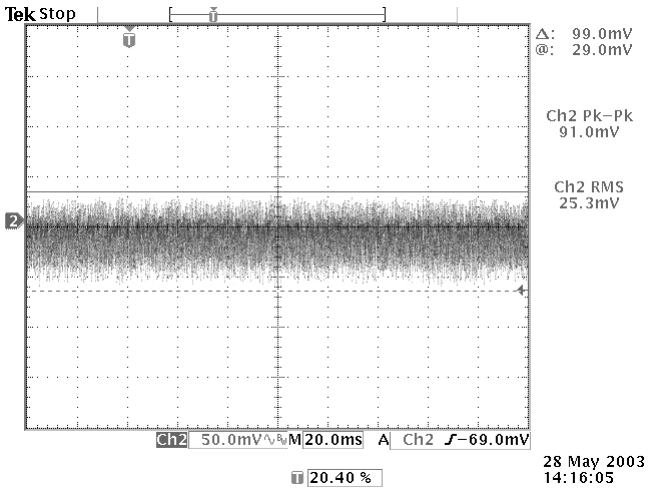


Ripple Voltage at mains frequency measured at a temperature of +25°C

3.3.2.2 Measurement at 120V input voltage and 0,5A load



Ripple Voltage at switching frequency measured at a temperature of +25°C

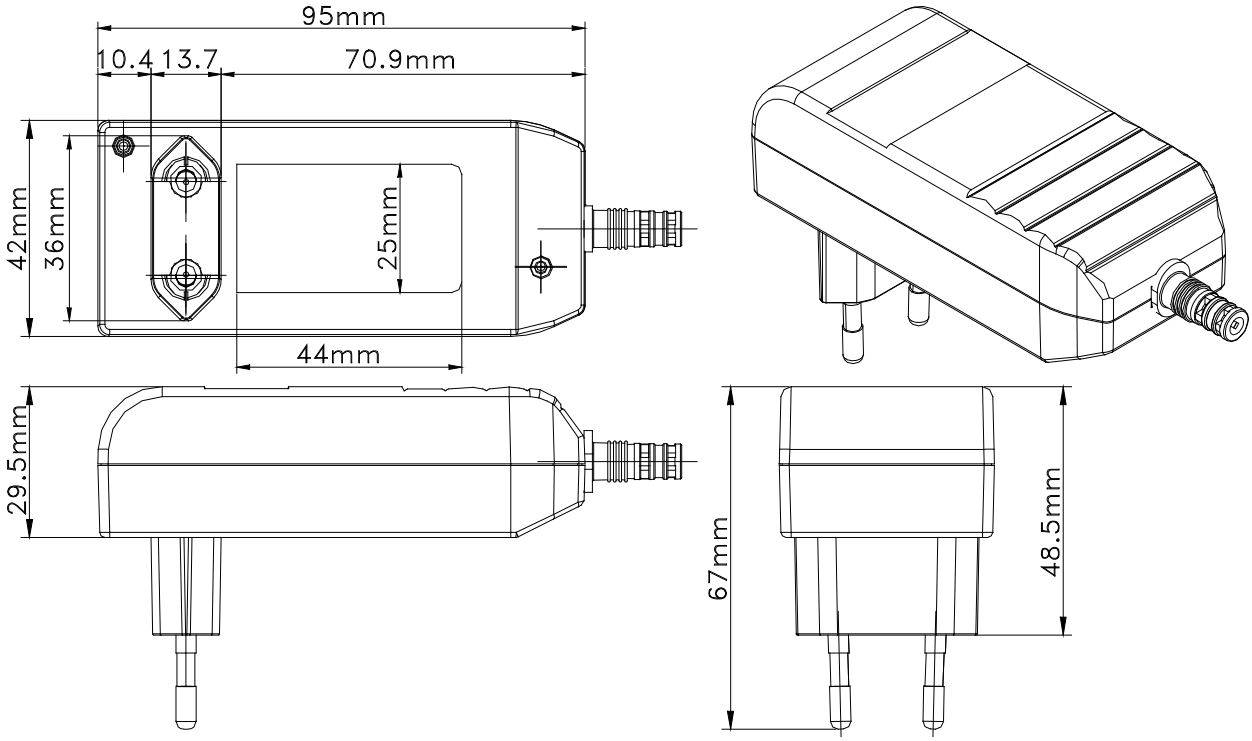


Ripple Voltage at mains frequency measured at a temperature of +25°C

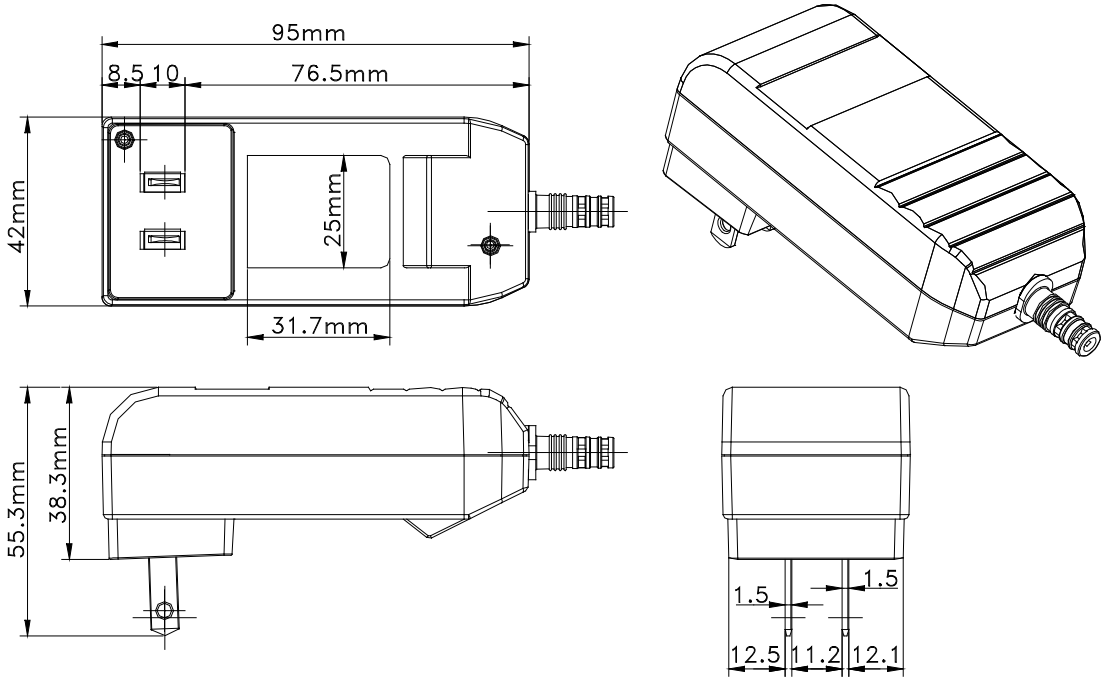
3.4 Mechanical Parameters

3.4.1 Housing dimension

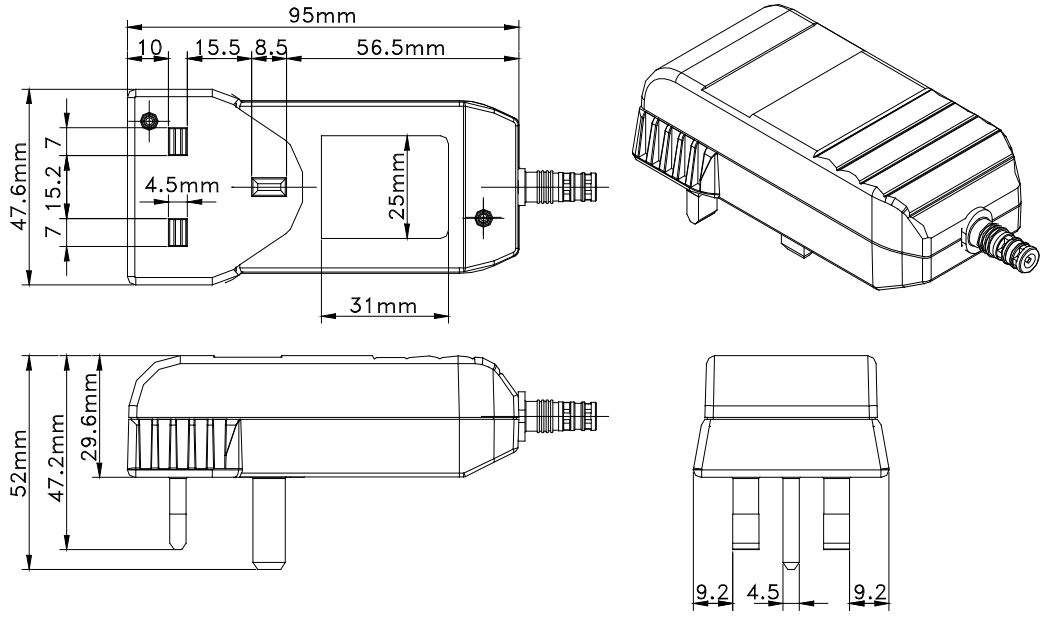
3.4.1.1 Euro housing



3.4.1.2 US Housing

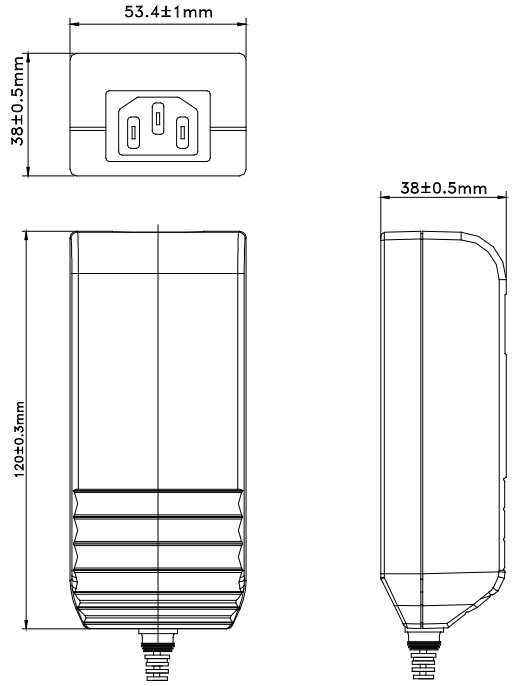


3.4.1.3 UK Housing

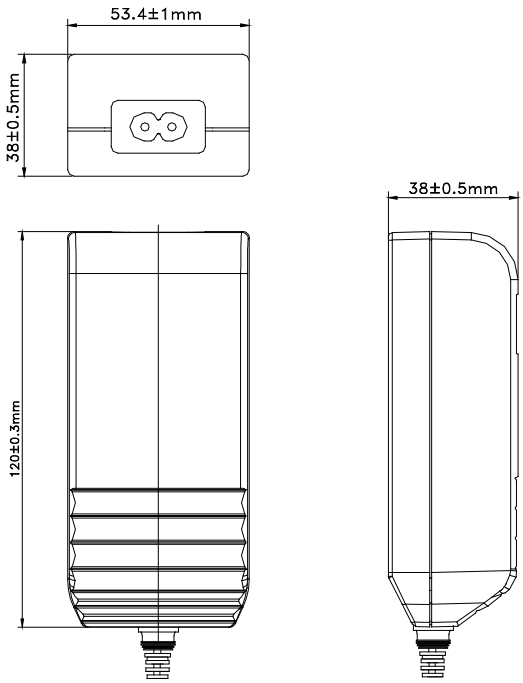


3.4.1.4 Desk Top Housing

With IEC 320 C14 Primary Plug



With IEC 320 C8 primary Plug



3.4.2 Housing Material

	6W UK,EURO,US	12W UK,EURO,US	24W UK,EURO,US	DESKTOP
Material	PA6,V0 Technyl C50H2	PA6,V0 Technyl C50H2	PA6,V0 Technyl C50H2	PA6,V0 Technyl C50H2
Flammability rate	V0	V0	V0	V0

3.5 Cable And Connector

According customer´s requirements.

3.6 Marking on the housing

3.6.1 Plug In Devices

3.6.1.1 EU/UK devices

Laser marking
Product name
Input parameters
Output parameters
Product code
Safety Instructions

CE Conformity Mark with the EU low voltage directive and EMC directive

ENEC Mark

GS Mark

3.6.1.2 US devices

Laser marking
Product name
Input parameters
Output parameters
Product code
Safety Instructions

CE Conformity Mark with the EU low voltage directive and EMC directive

GS Mark

UL Mark for Canada and the United States

3.6.2 Desktop Devices

Laser marking
Product name
Input parameters
Output parameters
Product code
Safety Instructions

CE Conformity Mark with the EU low voltage directive and EMC directive

ENEC Mark

GS Mark

UL Mark for Canada and the United States

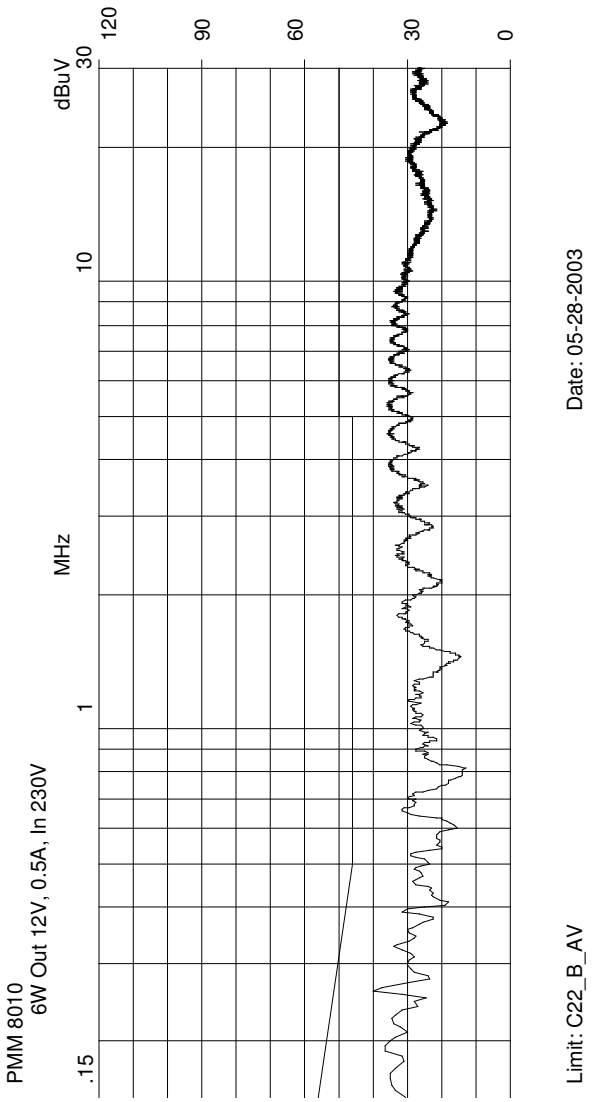
4 EMC

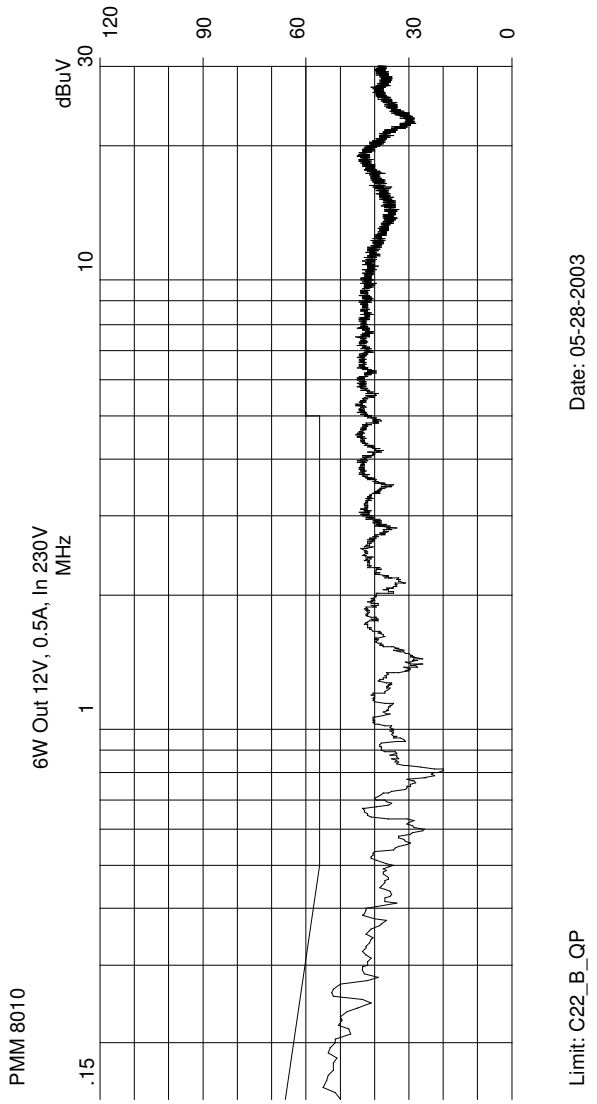
The units meet the following EMC requirements:

4.1 Emission with representative 12V device:

Test passed according to EN55022 Class B.

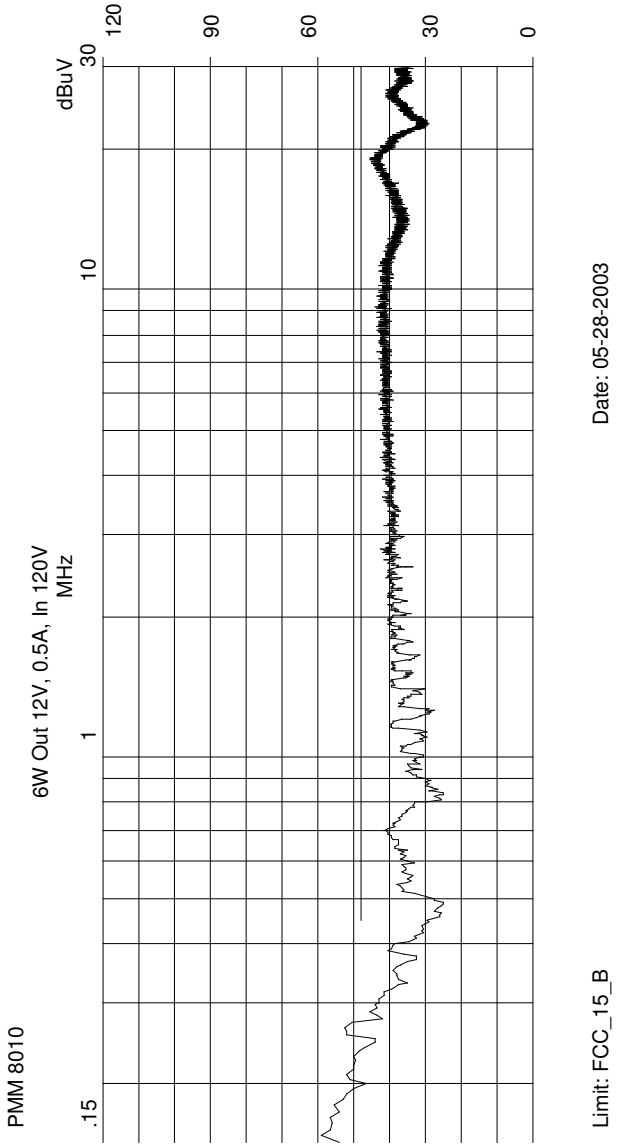
Primary: 230V AC, Secondary: 12V / 500mA , Temperature: 25°C, Load connected to ground, Peak and Average Measurement.





Test passed according to FCC15 Class B.

Primary: 120V AC, Secondary: 12V / 500mA , Temperature: 25°C, Load connected to ground, Peak Measurement



4.2 Immunity To Flicker

Test according to EN 61000-3-2

4.3 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

4.4 Immunity to Radiated Electromagnetic Field

Test according to EN 61000-4-3
Test characteristic: 80 – 1000 MHz; 80% AM (1kHz), 3V/m

4.5 Immunity to Electrostatic Discharge

Test according to EN 61000-4-2
Test characteristic: Contact discharge 6kV
Air discharge 8kV

4.6 Surge Capability

Test according to EN61000-4-5
Test characteristic: line to line: 1kV Surge
line to earth: 2kV Surge

4.7 Immunity to conducted disturbances

Test according to EN 61000-4-6
Test characteristic: 150kHz – 80 MHz; 80% AM (1kHz), 3V

4.8 Immunity to voltage dips, short interruptions and voltage variations

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

5 RELIABILITY

5.1 MTBF

at 240V input voltage ≥ 1.900.000 hours
at 100V input voltage≥ 2.400.000 hours

MTBF calculation according SN 29500 at 40°C ambient temperature

5.2 Maintainability

The power supply is not to be repaired.

6 SAFETY

The units pass the following tests:

6.1 Dielectric Strength

The input isolation test voltage is 3kV 50/60 Hz, sinusoidal waveform. Test duration is 2 seconds for 100% test, 1minute 4,24KV DC or lot-test..

6.2 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.

6.3 Single Component Failure

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

6.4 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.

7 APPROVALS AND TEST STANDARDS

7.1 Test Standards

EN 60 950
UL 1310
EN 61000-6-1
EN 55022
EN 55011
EN 55014-1
EN 61204-3

7.2 Approvals

7.2.1 EU/UK devices

CE Conformity with the EU low voltage directive and EMC directive

ENEC

GS

7.2.2 US devices

CE Conformity with the EU low voltage directive and EMC directive

GS

c UL us UL for Canada and the United States

7.2.3 Desktop Devices

CE Conformity with the EU low voltage directive and EMC directive

ENEC

GS

c UL us UL for Canada and the United States

8 ORDERING INFORMATION

	POWER CLASS	**6 Watt**
P	**SUPPLY TYPE**	**P = New Generation Power Supply**
2	**OPERATION TEMP. RANGE**	**2 = -5°C to +40°C**
E	**PRIMARY CONNECTOR**	**E = Euro plug** **U = US/Japan/Canada Plug** **G = United Kingdom Plug** **D = Desktop Module**
F	**CABLE CONNECTION**	**F = Fixed**
S	**APPLICATION**	**S = Standard** **M = Medical** **H = Household**
W	**WIDE INPUT RANGE**	**W = 90V-264V**
3	**OUTPUT STABILITY**	**3 = 3%**
6W	**HOUSING DIMENSION**	**6W**
6V	**OUTPUT VOLTAGE**	**3V-24V**
1A	**OUTPUT CURRENT**	**1200mA max.**

9 PACKAGING AND WEIGHT

Cable with connector 5.5/2.1	38 g
Instruction Manual	3.6 g
Euro pallet empty (wooden):	21 kg

SINGLE PACKAGING			PS 1.5m cable+connector 5.5/2.1	Single carton empty	Single carton full	Packing case empty	Packing unit	Packing case full	Cartons per palett	Euro pallet full	Single carton	Packing case	Euro palett
P2	EU	6W	120	13	137	180	50	7.1	27	213	126x68.5x43.5	351x260x226	1200x800x
P2	US	6W	120	13	137	180	50	7.1	27	213	126x68.5x43.5	351x260x226	1200x800x
P2	Uk	6W	120	16	140	180	50	7.2	18	151	136x76x50.5	388x280x260.5	1200x800x
		Unit	g	g	g	g	Pcs.	kg	Pcs.	kg	mm	mm	mm

10 SPECIALS FEATURES:

Following Specials can be offered on request

10.1 Output voltage tolerance 1%

The output voltage can be adjusted with a tolerance of ±1%.

10.2 Visual operation Display (green LED)

When the green led is shining the output voltage is delivered.

10.3 Current regulation

The secondary voltage will be reduced when the selected output current is reached.

The max. Current which can be selected is 80% of $I_{2\ Nominal}$.
The current regulation can be delivered at the secondary voltage range form 5 to 24V.

10.4 Pluggable secondary cable

Only available at Egston Standard - Plug In Powersupplies.

10.5 Customer specific secondary Plug

10.6 Australian Primary plug

10.7 Print module

The power supply is built in a housing which can be soldered on to a PCB.