

AC-DC POWER SUPPLY



SAMLEX EUROPE[®] B.V.

Switch Mode AC-DC Power supply

Model No.

SEC - 1212G

SEC - 1225G

SEC - 1235G

SEC - 2412G

OWNER'S MANUAL

Please read this manual before operating your power supply

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CAUTION !



RISK OF ELECTRIC SHOCK
DO NOT OPEN



WARNING—TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. THERE ARE NO USER SERVICEABLE PARTS INSIDE—REFER TO QUALIFIED SERVICE PERSONNEL.

IMPORTANT SAFETY INSTRUCTIONS

Please read before using your power supply.

- 1.) It is recommended that you return your power supply to a qualified Samlex dealer for any service or repair. Incorrect assembly may result in electric shock or fire.
- 2.) To reduce the risk of electric shock, unplug power supply from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
- 3.) An extension cord should not be used unless absolutely necessary. If an extension cord must be used make sure that the pins on the plug are the same number, size and shape as those of the original power supply plug.
- 4.) Place the unit in an area that will allow air to flow freely around the unit. **DO NOT** block or obstruct vent openings on the side/bottom of the unit.
- 5.) Keep the unit away from moisture and water.
- 6.) **NEVER OPERATE THE UNITS IN PARALLEL**

WARNING

Your power supply should be grounded to reduce the risk of electric shock. The power supply is equipped with grounding conductor and grounding plug.

The cord must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances. Never alter the AC cord of plug provided. If the cord will not fit the outlet, have a proper outlet installed by qualified electrician. Improper connection can result in risk of electric shock.

DO NOT USE THE POWER SUPPLY FOR DIRECT CHARGING OF BATTERY OR DIRECT CONNECTION TO A BATTERY FOR BATTERY BACK-UP. (Please read the section on Battery Back-up).

Hazardous moving parts, keep away from moving fan blades.

DESCRIPTION

SEC-1212G, SEC-1225G and SEC 1235G are switched mode power supplies which convert 120V-240Vac, 50-60 Hz to regulated 13.8 VDC based on pulse width modulation (PWM) control. The SEC-2412G converts 120V-240Vac, 50-60Hz to 27.6 VDC.

FEATURES

- ☐ Based on switched mode technology and PWM control
- ☐ Compact and lightweight
- ☐ High efficiency and less heat dissipation
- ☐ Protected against short circuit, over current and
- ☐ Over voltage (through PWM controller)
- ☐ SEC-1212G is convection cooled. SEC-1225G/1235G and 2412G have forced
- ☐ Air cooling and over temperature shut down
- ☐ Fully approved Ce/LVD and safety
- ☐ Complies with european emission and immunity standards

CONNECTION AND OPERATION

NOTE! The DC output connector has a tubular hole of diameter 0.2” (5mm) with a set screw. For a firm connection, crimp/solder a pin type copper terminal on the cable ends of your 12V DC or 24V DC device.

Ensure that the power supply’s ON/OFF switch is off and it is unplugged from the AC outlet. Switch off your 12 or 24V DC device and connect it’s positive and negative to the RED (Positive) and WHITE (Negative) terminals respectively. Ensure that the connections are secure and tight. Plug the power supply into the AC outlet. Press the ON/Off switch of the power supply to ON and observe that the neon indicator in the switch illuminates. If the indicator fails to light , recheck the connection, AC outlet and the fuse inside the power supply.

Your 12 or 24V DC device may now be switched on.

COOLING AND FAN CONTROL / THERMAL SHUT DOWN (SEC-1225G/1235G AND 2412G)

SEC-1212G is cooled by convection.

PLACE THE UNIT IN A WELL VENTILATED OPEN AND COOL AREA.
DO NOT BLOCK THE VENTILATION OPENINGS ON THE SIDES

SEC-1225G/1235G and 2412G are cooled by convection and forced air. A temperature controlled fan has been provided to improve cooling at higher loads. The fan is controlled by a sensor mounted on the power transformer. **THE FAN WILL BE OFF AT LOWER LOADS.**

It will come on only when the temperature of the power transformer is above 70¼C due to higher loads. In case the fan fails or the air flow is blocked, a second temperature sensor mounted on the power transformer will activate over temperature shut down at 100¼C. The output voltage will be automatically resumed once the unit cools down.

PLACE THE UNIT IN A WELL VENTILATED OPEN AND COOL AREA.
DO NOT BLOCK THE OPENINGS AT THE FAN SUCTION ON THE BOTTOM
AND THE DISCHARGE OPENINGS ON THE SIDES .

BATTERY CHARGING AND BATTERY BACK-UP



WARNING ! THESE UNITS ARE POWER SUPPLIES AND NOT BATTERY CHARGERS.
DO NOT CONNECT THESE UNITS DIRECTLY TO A BATTERY

These units should **NOT BE DIRECTLY CONNECTED TO A BATTERY** for charging or for battery back-up. Battery charging and battery back-up may be undertaken only when the battery is connected through suitable external isolating diodes and charge limiting resistor. The isolating diode will ensure that the battery does not back power the power supply. When a battery is deeply discharged, it will initially draw a very large charging current and thus, will force the power supply into current limit mode for prolonged periods. This is harmful for the power supply. The charge limiting resistor will limit the charging current, thereby, ensuring that the maximum charging current is well below the current limit value of the power supply.

WE OFFER OPTIONAL BATTERY BACK-UP AND CHARGING MODULE .

TROUBLESHOOTING -GENERAL

PROBLEM : Power ON/OFF switch does not illuminate when turned on.

PROBABLE CAUSE

No power in the AC outlet

AC side fuse inside the power supply is blown

SUGGESTED REMEDY

Check there is power in the outlet.

Replace the fuse inside the unit.
See fuse ratings at page 8

PROBLEM : AC side fuse blows as soon as power is turned on.

PROBABLE CAUSE

Unit is defective

SUGGESTED REMEDY

Please contact your dealer

PROBLEM : The output voltage is 0 V or very low

PROBABLE CAUSE

Input voltage is very low

The unit is in current limit condition due to overload caused by large reactive loading or by the output being short circuited

Unit is shut down due to over temp. (SEC-1225G/1235G/2412G)

SUGGESTED REMEDY

Check that the input voltage is 120V- 240Vac

Check the output terminals are not shorted. Remove the load. If the output voltage gets restored, the load is shorted or is offering large reactive impedance.

Check that the fan has not failed or the vent openings are not blocked

PROBLEM : Output voltage drops as soon as the load is switched on

PROBABLE CAUSE

The unit is going into current limit protection mode

SUGGESTED REMEDY

Reduce the load current to less than the current limit value. Motors, pumps, compressors, relays, incandescent and halogen lamps and large capacitors in the input section of the DC devices draw very high inrush or starting currents of up to 10 times their normal operating currents. Ensure that these inrush/starting currents are below the current limit value of the power supply.

SWITCHING POWER SUPPLIES AND RF NOISE

- 1 Switched mode power supplies (SMPS) employ high frequency switching and thus, are a source of radio interference, a recipient of radio interference and a conduit of radio interference. (Older linear type transformer based power supplies do not employ high frequency switching voltages and will be quieter as compared to switching type of supplies).
- 2 The primary emission sources originate in the switching devices due to their fast switching current transitions: harmonics of the switching frequency and broadband noise created by under-damped oscillations in the switching circuit. The secondary source is from the bridge rectifier, both rectifier noise and diode recovery. The AC input rectifier / capacitor front end of the switching power supplies (excepting those with power factor correction) are notorious for generating power supply harmonics due to the non linear input current waveform. The noise is both conducted and radiated through the input power cord and the DC output wiring to the radio.
- 3 Switching power supplies are also recipients of radio interference. The normal operation of the power supply can be disturbed due to RF noise getting coupled into the power supply. Thus, the power supply may generate excessive RF noise and lose output voltage regulation due to excessive transmitter energy being coupled through the AC / DC lines to the power supply's regulator feedback path. This may be due to antenna being too close or due to the antenna or feed system not radiating properly. First check the antenna system SWR. Then, if necessary, relocate either the antenna or the power supply farther apart.
- 4 The receiver may “hear” the power supply. A slowly moving, slightly buzzing carrier heard in the receiver may be caused by the antenna being too close. As with the transmitter related noise pick up, a loose coaxial connector or a broken or a missing ground may aggravate this problem. Normally these noises will be below the background or “band” noise. Increase the separation between the power supply and the receiving antenna. Use an outdoor antenna. This will reduce the amount of signal picked up from the power supply and also increase the amount of the desired signal.
- 5 The conducted and radiated RF noise from these power supplies is limited by internal filtration. These RF noise currents are filtered and bypassed to the chassis of the power supply. The chassis is, in turn, connected to the earth ground pin of the ac input power cord. Thus, the chassis of the power supply is connected to the earth ground of the 120V-240 Vac distribution system. The net RF noise generated by these power supplies complies with the limits laid down in the European Standards for emissions and immunity.

6. Following additional guidelines may be followed to reduce the effects of RF noise:

- a Use additional appropriate AC radio frequency interference (RFI) power line filter immediately before the ac input of the power supply. **Recommended:** Corcom Inc. (www.cor.com) “Q” series. Filtered, ferrite coated cord set (www.emceupen.com) is another choice. These cord sets, with integral line interference filters, reduce common and differential mode interferences over a wide frequency range. Because they are shielded, they are also effective against radiated interferences. In addition to the built-in filter networks, the cable conductors are coated with an RF absorbing ferrite compound. This provides additional attenuation at high frequencies that is lacking in most regular LC filters. The RF absorption of the ferrite-coated cable avoids resonance's at high frequencies, reducing the conducted and radiated RF noises even further
- b Use additional appropriate DC radio frequency interference (RFI) power line filter immediately after the dc output of the power supply. **Recommended:** Corcom Inc.(www.cor.com) “DA” / “DC” series
- c The positive and negative terminals of the dc output side of the power supply are isolated from its chassis. As pointed out at para 5 above, all the noise currents that are internally filtered are by passed to the chassis of the power supply and onward to the earth ground of the 120V-240 Vac system through the earth ground pin of the power cord. Therefore, the negative terminal of the power supply should never be connected / bonded to the chassis of the power supply.
- d Twist the positive and negative wires from the output of the power supply to the radio

SPECIFICATION

MODEL NO.	SEC-1212G	SEC-1225G	SEC-2412G	SEC-1235G
INPUT VOLTAGE (NORMAL):	120-240VAC 50-60Hz			
OUTPUT VOLTAGE:	13.8 VDC +/- 1%	13.8 VDC +/- 1%	27.6 VDC +/- 1%	13.8 VDC +/- 1%
OUTPUT RIPPLE & NOISE: (ON FULL LOAD, PEAK TO PEAK)	120 mV	150 mV	150 mV	150 mV
OUTPUT CURRENT, CONTINUOUS:	9.5A	25A	12	32A
CURRENT LIMIT:	13.5A	27A	14A	35A
INPUT WATTAGE AT NO-LOAD CONDITION:	120VAC<0.25W 240VAC<0.45W	NO REQUIRED	NO REQUIRED	NO REQUIRED
EFFICIENCY:	>86%	>90%	>90%	>90%
PFC:	ACTIVE	ACTIVE	ACTIVE	ACTIVE
COOLING:	CONVECTION	TEMPERATURE CONTROLLED FAN		
PROTECTIONS:	OVER CURRENT, SHORT CIRCUIT AND OVER VOLTAGE OVER TEMPERATURE SHUT DOWN (THROUGH PWM CONTROLLER).			
FUSE RATING: (SLOW BLOW)	T2.5A/250V	T4A/250V	T4A/250V	T5A/250V
DC OUTPUT CONNECTION:	TUBULAR HOLE DIA 0.2" (5MM) WITH SET SCREW			
SAFETY STANDARD:	EN60950-1			
EMI/EMC STANDARD:	EN55022 Class B; EN61000-3-2,3; EN61000-4-2,3,4,5,6,8,11			
C-TICK	AN/NZS CISPR22: Class B			
FCC	PART 15 SUBPART B Class B			
ENERGY EFFICIENCY CERTIFICATION	CEC / Doe / MEPS	NO REQUIRED	NO REQUIRED	NO REQUIRED
ENVIRONMENTAL TEMP. RANGE:	0-40° C			
DIMENSION (L x W x H),CM	190 X 180 X 60			
WEIGHT	1.45Kgs	1.75Kgs	1.75Kgs	1.85Kgs
NOTE: SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE				

2 YEAR Limited Warranty

The SEC 1212G/1225G/1235G/2412G manufactured by Samlex Europe B.V. (the “ Warrantor “) is warranted to be free from defects in workmanship and materials under normal use and service. This warranty is in effect for 2 years from the date of purchase by the user (the “ Purchaser “)

For a warranty claim, the Purchaser should contact the place of purchase to obtain a Return Authorization Number.

The defective part or unit should be returned at the Purchaser’s expense to the authorized location. A written statement describing the nature of the defect, the date of purchase, the place of purchase, and the Purchaser’s name, address and telephone number should also be included.

If upon the Warrantor’s examination, the defect proves to be the result of defective material or workmanship, the equipment will be repaired or replaced at the Warrantor’s option without charge, and returned to the Purchaser at the Warrantor’s expense.

No refund of the purchase price will be granted to the Purchaser, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so.

Warranty service shall be performed only by the Warrantor. Any attempt to remedy the defect by anyone other than the Warrantor shall render this warranty void.

There shall be no warranty for defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion.

No other express warranty is hereby given and there are no warranties which extend beyond those described herein. This warranty is expressly in lieu of any other expressed or implied warranties, including any implied warranty of merchantability, fitness for the ordinary purposes for which such goods are used, or fitness for a particular purpose, or any other obligations on the part of the Warrantor or its employees and representatives.

There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives for injury to any persons, or damage to person or persons, or damage to property, or loss of income or profit, or any other consequential or resulting damage which may be claimed to have been incurred through the use or sale of the equipment, including any possible failure of malfunction of the equipment, or part thereof.

The Warrantor assumes no liability for incidental or consequential damages of any kind.

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