

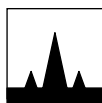
SPECTRA ENGINEERING



MXPS700 Series User Manual



MXPS700 Series



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All performance figures quoted are typical and are subject to normal manufacturing and service tolerances.

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FCC Interference Warning

Note: The equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial or residential environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with this instruction manual, may cause harmful interference to radio communication.

SAFETY SUMMARY

The MXPS700 power supply, contains dangerous mains voltages within.
For servicing, please return to your nearest distributor. No fuses or user-serviceable parts are within the power supply module.

The following general safety precautions as would normally apply, should be observed during all phases of operation, service and repair of this equipment.

CAUTION Risk of Electrical Shock.

AROUND THE EQUIPMENT

This product is a Safety Class 1 instrument. To minimise any possible shock hazard from power supply or lightning strike, the instrument chassis must be connected to an electrical ground. The instrument must be connected to the AC power supply mains through a three conductor power cable, with the ground wire firmly connected to an electrical ground (safety ground) at the power outlet. For instruments designed to be hard-wired to the supply mains, the protective earth terminal must be connected to the safety electrical ground before another connection is made. Any interruption of the protective ground conductor, or disconnection of the protective earth terminal will cause a potential shock hazard that might cause personal injury.

Provide adequate ventilation around the rear of the equipment.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

Do not operate the equipment in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

DO NOT ATTEMPT INTERNAL SERVICEING

Operating personnel must not remove the instrument cover. No internal adjustment or component replacement is allowed by non-Spectra qualified personnel. Never replace components with power cable connected. To avoid injuries, always disconnect power, discharge circuits and remove external voltage source before touching components.

DO NOT SUBSTITUTE PARTS OR MODIFY THE EQUIPMENT

Because of the danger of introducing additional hazards, do not install substitute or lower voltage parts to the equipment. Return to your authorised distributor.

WARRANTY CONDITIONS & PRECAUTIONS

This MXPS700 product is warranted against defects in materials and workmanship for a period of 1 years from date of shipment .During the warranty period, Spectra Engineering will, at it's option, either repair or replace products which prove to be defective.

The warranty shall not apply to defects resulting from improper or inadequate usage or maintenance by the buyer, buyer supplied products or interfacing. Furthermore, Spectra Engineering does not warrant any damage occurring as a result of the buyer's circuitry or the buyer's - supplied products.

The following conditions are not covered by the warranty. Please ensure that the MXPS700 is not subject to;

1. Over voltage or Reverse Power Supply Voltage.

Do not use AC supply which exceeds the input voltage and frequency rating of this instrument. The input voltage and frequency rating of the power supply series is: 85VAC to 265VAC, 50/60Hz. For safety reasons, the mains supply voltage fluctuations should not exceed +/-10% of nominal voltage.

2. Operation in locations subject to abnormal environmental conditions such as extreme temperatures or ingress of moisture or excessively dusty environments.

Introduction

This user's manual contains the operating instructions, installation instructions and specifications of the MXPS700 power supply series.

This versatile 1RU switch mode power supplies come in a rugged sturdy compact construction metal case, made to withstand harsh industrial environments.

The MXPS700 has a number of flexible configurations. These include the following models:

- MXPS700A – 13V8DC, 2X 330W
Suitable for 6X MX800 50W TX or 4x 100W VHF/UHF TX.
- MXPS700B – 28VDC, 2X 335W
Powers 1x 200/300 Watt Power Amplifier.
- MXPS700C –13V8DC (330W) & 28VDC (335W)
Powers 2X MX800 100 Watt 700/800MHz.

All models accept a wide mains voltage swings 85 to 264 VAC input voltage for worldwide use.

* Input mains fuse may require to be changed to 10amp if used on 110VAC.

Features

- Protected against mains surges, spikes and brown outs.
- Tolerant of high temperatures and vibration.
- Protected against short circuit, "Current Limiting Circuit". If the peak current rating is exceeded due to a short circuit or excessive load across the output terminals, the output current will be limited to a safe level, preventing damage to the power supply
- Over temperature protection.
- Output over voltage shutdown. Induced output transient protected.
- Manufactured using only well specified and qualified high grade commercial parts.
- Infant mortality burn in period.
- Easy to wire screw terminal output ports.
- AC input via covered IEC connector.
- Compliant with relevant international standards.
- Thermostatically controlled cooling fan.
- Output short circuit protected no minimum load current.

- 1RU rack mountable.
- Low radiated emissions due to double metal housing.

Turning the power supply ON/OFF

The power supply has an on/off switch located on the rear, marked "I" for ON and "O" for OFF.

Turn the power supply on, by pressing the "I" side of the switch.

Turning the power supply off, by press the "O" side of the power switch.

Connecting the Power Supply to Peripherals

When increased current is the goal, the ideal situation is to have the total load current split evenly across the two parallel ports.

The total equipment current draw will determine whether ports A & B required to be paralleled or not. See Parallel ports & Redundant Power Supply System section for more information.

Please insure the connecting equipment doesn't exceed the Max Output Current (MOC) requirements. See specification section below.

Select a suitable gauge of the DC cable to ensure less than 0.5V volt drop at a maximum current draw of the connecting equipment.

Unplug the MXPS700 from the mains supply outlet.

Using the rear screw terminal connector, connect your DC cable, insuring the correct polarity. (+Ve) RED wire to the positive terminal pin and connect the negative (-Ve) Red with black or black wire to the negative terminal.

Please see rear layout label, for screw terminal polarity and connections.
See example *Figure 2 & 3*.

It is also recommend fitting an inline fuse holder in series with the positive, between to equipment and power supply.

Connect the appropriate plug to suit your radio/equipment on other end of the DC cable.

Then plug the mains power cable into the mains supply outlet and switch it on.

Turn power supply ON. Insure power led lights on radio. If no power led lights, turn OFF power supply and recheck cabling.

Cooling

The MXPS700 power supply provides cooling by convection and forced air cooling. This increases the normal airflow around the power supply in combination with a speed controlled fan to improve cooling at higher levels of use.

Caution: Place the power supply in a well ventilated and cool area. Do not block the ventilation openings on left & right sides of the unit.

Mounting

The MXPS700 design allows flexible mounting when used in conjunction with Spectra Engineering base stations / repeaters/ RF power amplifiers. The design allows it to be installed in a 1RU rack mount and it also can be installed at a distance from the base station / repeater if required.

Parallel ports & Redundant Power Supply System

In many applications it is desirable to connect both ports A & B terminals in parallel. This may be done to increase the total current available or for redundancy.

The MXPS700A / B models can be configured for paralleled & redundant configurations.

The design achieves this by incorporating two separate main block supplies, thus allowing the DC ports to be connected in parallel via the rear screw terminal block.

Proper load sharing can only be accomplished when the output voltage of the supplies are at the same level at the point where they are common. This means that voltage drop in the wiring must also be taken into account.

Multiple Units can be paralleled however Temperature fluctuation, component tolerances, and power supply location (i.e. wire lengths) are some of the factors that can influence the output voltage and thus effect the load sharing.

Redundancy is achieved when ports A & B are paralleled. If one of the main supply blocks ports should fail, and the maximum required current is half of MOC, the remaining working supply block will provide power to the load (equipment).

The MXPS700C can not be configured to work in paralleled & redundant configurations, as it is limited to MOC, due to its split supply rail configuration, (13V8 and 28VDC).

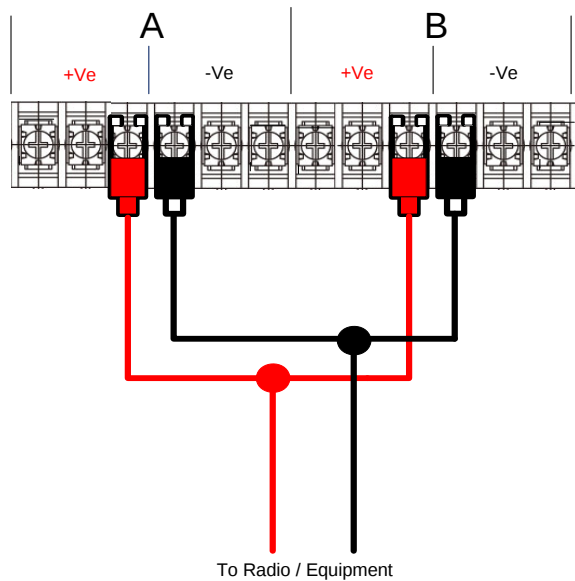


Figure 1, Paralleling A & B DC outputs.

Troubleshooting

Radio didn't power up when power supply was turned on.

Probable cause 1: No power in the AC outlet, or the main input fuse inside power supply mains (IEC) connector has blown.

Suggested solution: Check the mains power outlet, or replace the mains input fuse inside the unit (5 Amp fuse rating).

Probable cause 2: The unit is in current limiting condition or blown output fuse.

Suggested solution: Disconnect radio and check that the output terminals have not short-circuited and are have correct polarity.

Verify this fault condition with a multimeter.

Check in line fuses..

Fuse blows when power is turned on.

Probable cause: Unit is defective.

Suggested solution: Call technical support.

Specifications

Power Supply Specifications	MXPS700			
AC Mains Input Voltage	85VAC to 264VAC			
* AC Mains Input Current typ.	10A@115VAC	5A@240VAC		
Nominal Output Voltage @ 1Amp	Model	Output A	Output B	
	MXPS700A	13.8VDC +/- 0.2V	13.8VDC +/- 0.2V	
	MXPS700B	28VDC +/- 0.2V	28VDC +/- 0.2V	
	MXPS700C	13.8VDC +/- 0.2V	28VDC +/- 0.2V	
DC Maximum Output Current (MOC) <i>Continuous at 25°C</i>	Model	Output A	Output B	Paralleled Outputs
	MXPS700A	24A	24A	48A
	MXPS700B	12A	12A	24A
	MXPS700C	24A	12A	N/A
DC Rated Output Current @ Max Temp <i>Continuous at 60°C</i>	Model	Output A	Output B	Paralleled Outputs
	MXPS700A	22A	22A	44A
	MXPS700B	11A	11A	22A
	MXPS700C	22A	11A	N/A
Regulation	+/- 100mV			
Efficiency	>80% typical			
Ripple & Noise	< 20mV RMS			
Operating Temperature	-30°C to 60°C			
Design Field Lifetime (MTBF)	10 years @ 50°C			
Power Factor	Auto Power Factor Correction			
Weight	TBA			
Approvals	C-Tick, CE, UL, TUV, CB, CUL, S-MARK			

Due to ongoing development we reserve the right to alter specifications without notice.

* Input mains fuse may require to be changed to 10amp if used on 110VAC.

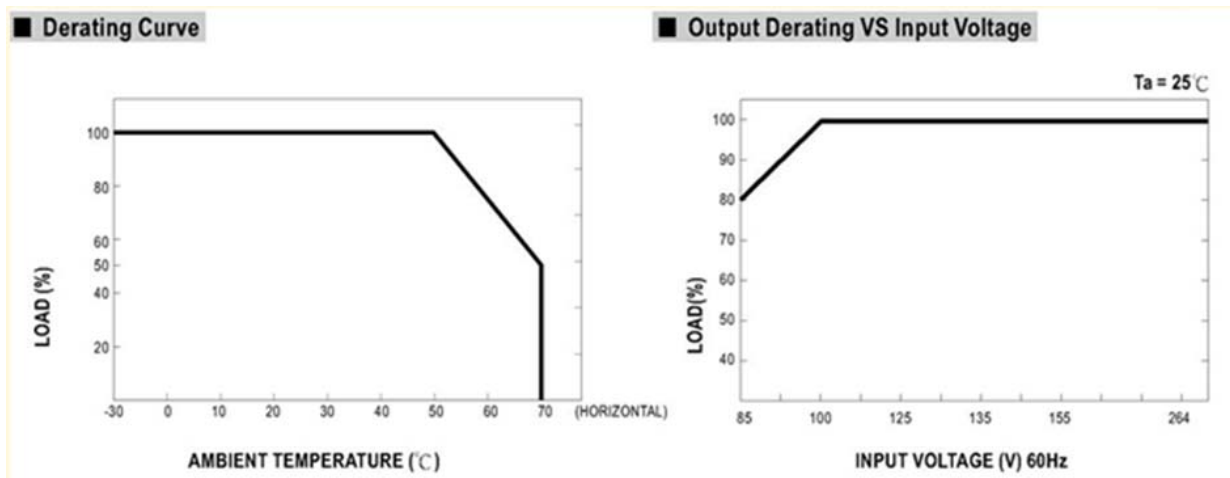


Figure 2 – De-rating Cures

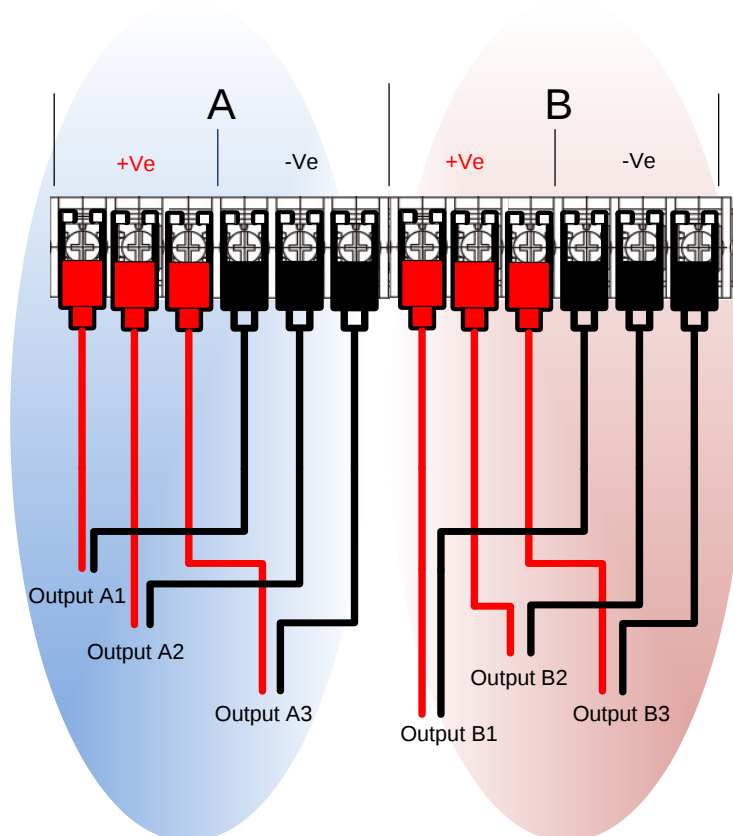


Figure 3 – Rear View of Output Ports A & B Connection Terminals.
(See Specifications for current capacity of ports)



Figure 4 – MXPS700C Rear View.



Figure 5 – MXPS700 Right Hand Side View