

Power Supply FPN5590 Operator Manual

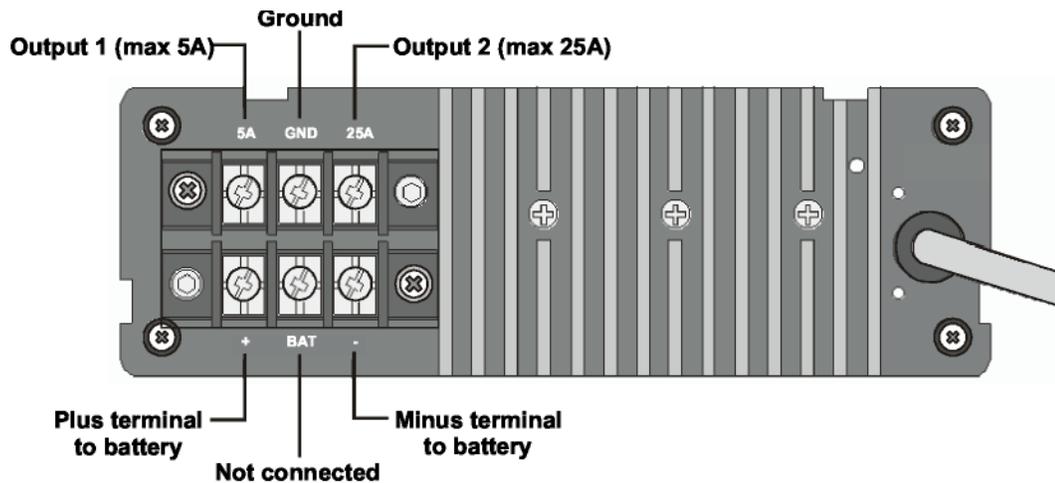
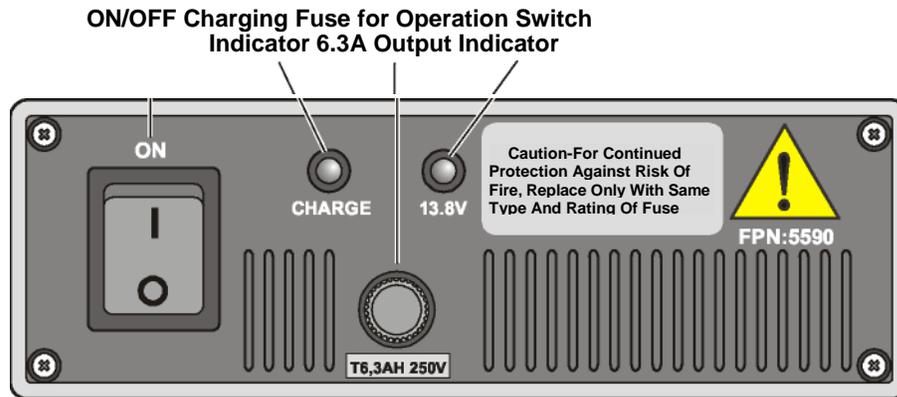


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This symbol is used in this manual to indicate an operating procedure, practice and so forth, which if not followed correctly, could result in bodily injury and/or damage to, or destruction of equipment.

1. Safety Precautions

- a. The FPN5590 is equipped with a protective earth terminal, for protecting the user against electrical shock and ensure electromagnetic compatibility (EMC). The protective earth can only fulfil its function if the FPN5590 power cable is inserted in a mains socket equipped with a reliable earth connection.
- b. FPN5590 is designed for cooling by free air convection:
 - Take care to providing enough open space around the unit for free air circulation.
 - Do not cover the unit while in use!
 - Avoid exposing the FPN5590 to direct sun radiation for prolonged intervals.
- c. FPN5590 is designed for operation at 20 to 90% relative humidity. Avoid operating the FPN5590 under excessive humidity and prevent water condensation.
- d. Protect the FPN5590 against water and chemical spillage.
- e. The FPN5590 meets the requirements for secure low voltage (SELV) per EN/IEC 60950 at the output. Only circuits also meeting SELV may be connected to the output.
- f. Do not attempt to open FPN5590 case. Maintenance and repair activities may only be performed by authorized, trained personnel.

- g. Only original spare parts approved by the manufacturer may be used, specifically the output fuse and external battery. For continued protection against risk of fire, replace fuses only with fuses of the same type and rating.
- h. The manufacturer cannot be held responsible or liable for possible damages caused by disregarding safety instructions.
- i. Incorrect replacement of the attached battery may result in explosions. Before changing the battery, please read part 4.1. operation of power supply with external battery. Used batteries must be properly disposed off, in accordance with the applicable regulations.



Caution: touching hot surfaces can lead to burn injuries.

See important safety instructions on the bottom of the FPN5590.

2. Functional Description

The FPN5590 is a power supply unit for use with the MICOM-2E/2R ALE HF-SSB radio transceivers, and is designed and manufactured according to specifications provided by MICOM-2E/2R ALE manufacturer.

The FPN5590 input voltage range is automatically switched between 110 and 220 VAC, 60/50Hz and therefore it can be used in the United States of America as well as in other countries. The external voltage is applied to a rectifier via two internal mains fuses and an EMI filter. The mains voltage selector switches the rectifier from bridge rectifying to two-way-rectifying, therefore ensuring that the charging voltage supplied by the rectifier to charging capacitors is practically the same for both 110 and 220 VAC inputs.

The rectified voltage is applied to a push-pull-converter operating at a switching frequency of 100 kHz, that provides galvanic isolation. The transformer output voltage is rectified and supplied to the outputs. A control loop, using an optocoupler for isolation, is used for current and voltage regulation. An additional optocoupler is used to activate an emergency control loop that prevents damage to the transceiver and/or battery in case the first optocoupler fails.

To avoid overheating and excessive internal temperatures that may result in automatic switch-off, take care that the unit is not covered, that no other instruments are placed above and that it is not operated near a heater. Also avoid direct exposure to sun.

While operating the unit with an external battery, the charging current is limited at 5A. When an external battery is connected, the radio transceiver can continue operating on battery power during mains failure or in case the FPN5590 is switched off.

Note that the transceiver draws current from the battery even the transceiver is switched off. Therefore, it is recommended to disconnect the transceiver from the battery if the radio is not used for prolonged periods. The FPN5590 disconnects itself from the battery automatically upon switch off or mains failure, and therefore does not draw current from the battery.

2.1. Technical Data

Input Data	<i>Nominal Input Voltage Range</i>	100-120 VDC and 220-240 VAC
	<i>Input Voltage Tolerance</i>	±10%
	<i>Nominal Frequency Range</i>	50-60 Hz 47
	<i>Frequency Tolerance</i>	to 63 Hz
Output Data	<i>Nominal Output Voltage</i>	13.8 VDC/30A
	<i>Output Voltage Tolerance</i>	±2.5%
	<i>Line Regulation</i>	\$ 1%
	<i>Load Regulation</i>	\$ 1%
	<i>Ripple</i>	\$ 1 % p-p
	<i>Noise</i>	\$ 1 % p-p 270 mm × 174 mm
	<i>Case Dimensions (L × W × H)</i>	× 60 mm
	<i>Weight</i>	2.5 kg
	<i>EMC</i>	Per EN50081-1, EN50081-2, EN50082-1, EN50082-2, EN55022 KI.B
	<i>Safety</i>	Per EN/I EC/U L 60950
	<i>Certifications</i>	<ul style="list-style-type: none"> • T<V-Mark (Europe) • T<V NRTL (USA)
	<i>Output 2 Fuse</i>	T6,3AH 250V
	<i>Battery</i>	Lead-gel or lead acid, 13,8 VDC, maximum 45Ah
	<i>Charging Current</i>	5A
	<i>Typical Charging Time (15Ah battery)</i>	Approx. 3 hours

2.2. Internal Protection Means

- **Fuses:** The power supply is equipped with a 6.3A fuse for output 1, accessible from outside.
- **Overtemperature Protection:** Automatic switch off, with automatic return to operation after cooling period.
- **Overtemperature Fuse:** The overtemperature fuse is activated only when the overtemperature protection is not activated, despite excessive temperatures. In this case, repair by authorized and qualified personnel is required.
- **Switch-on Delay:** To grant sufficient time for internal voltage selection, converter switch-on is delayed a few seconds after turning the mains switch on.
- **Secondary Current Limit:** The secondary current limiting threshold for all the outputs is 30A.
- **Safety Control Loop:** In case of failure of the main control loop, the safety control loop prevents operation of the converter to avoid possible damage to connected equipment. In case the safety control loop is activated, the green LED on the front panel is turned off.

3. Extent of Delivery

The FPN5590 package includes:

- FPN5590 unit.
- Operator manual (this manual).

4. Optional Accessories

The following accessories are available:

- Fuse, T6.3AH 250V.
- Battery connection cable, including 30A fuse.
- Battery (approved type) 12VDC, min. 15Ah.

5. Operating Instructions

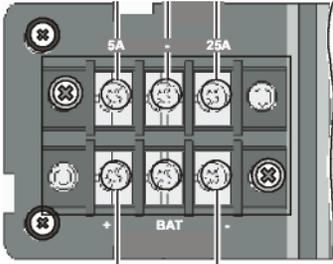
Operation may only be conducted by authorized and qualified personnel.

5.1 Operation of FPN5590 with External Battery



Risk of explosion if incompatible battery is used or battery is incorrectly connected!

Battery and Load Connections



Output 1 (max. 5A)
Ground
Output 2 (max. 25A)

Fuse
30A

12V Battery

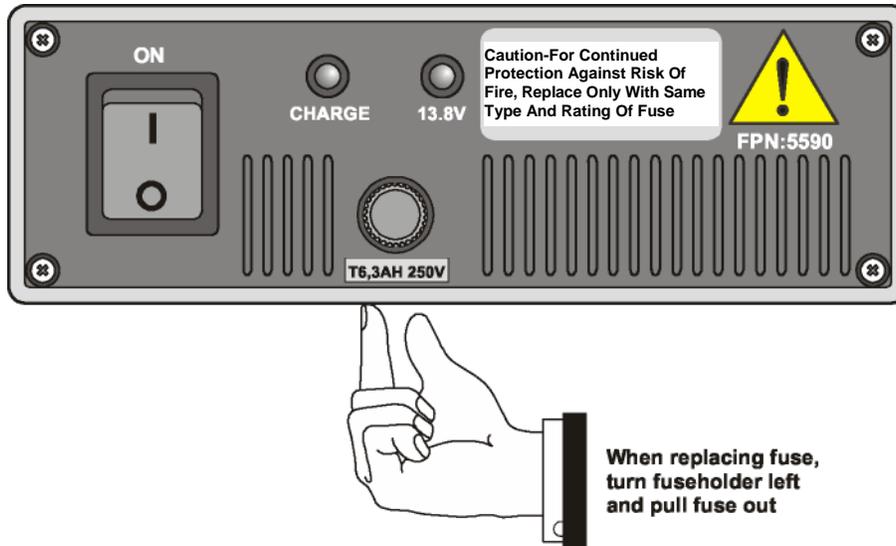
5.2 Fuse Replacement



Caution

Before replacing fuse, disconnect the FPN5590 from power by disconnecting its mains cable plug from the mains socket.

For continued protection against risk of fire, replace fuses only with same type and rating of fuse. Fuse rating: T6,3AH 250V



6. Cleaning

Remove dirt with soft, clean brush.

Clean external surfaces only with soft cloth moistened with water. Avoid extensive contact with water.