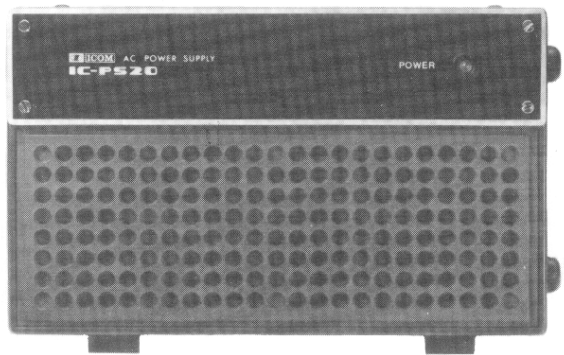


IC-PS20

AC POWER SUPPLY

INSTRUCTION MANUAL



Congratulation on the purchase of the ICOM's IC-PS20 AC power supply for the matching Transceivers. This AC power supply utilizes a newly developed switching regulator system, resulting in light weight and high efficiency.

■ SPECIFICATIONS

- **Number of Semiconductors:**

| | |
|------------|---|
| Transistor | 7 |
| IC | 1 |
| Diode | 9 |
- **Input Voltage:** 117/240V AC (50/60Hz)
- **Allowable Voltage Fluctuation:** $\pm 10\%$ of input voltage (suitable line voltage)
- **Input Capacity:** 550VA (at 20A load)
- **Output Voltage:** 13.8V
- **Max. Load Current:** 20A (10 minutes ON/10 minutes OFF 50% duty cycle)
- **Polarization:** Negative ground
- **Internal Speaker:**

| |
|----------------------|
| 125 x 77mm |
| 2 watt nominal input |
| 4 watt maximum input |
- **Demensions:** 110(H) x 180(W) x 260(D) mm
- **Weight:** Approximately 4.2 kg
- **Accessories Included:**

| | |
|---------------|---|
| AC power cord | 1 |
| Spare fuse | 2 |
| Speaker cord | 1 |

■ BEFORE USE

This AC power supply is designed to be turned ON and OFF with the power switch on your Transceiver; this unit does not have separate power switch except the MAIN SWITCH.

As this unit provides 20A maximum capacity at 13.8V DC, it is recommended that you do not use this unit with other than matching ICOM Transceivers, even for experimental purposes.

■ HOW TO USE

Connect the DC output plug of this unit to the Transceiver power connector securely, as shown in the following figure. At this time, make sure that:

- (1) The power switch on the Transceiver is OFF.
- (2) The T/R switch is in the Receive position.
- (3) No microphone is connected.

The connect the AC power cord to the AC power connector on the rear panel of the IC-PS20. Connect the AC power cord plug in a power outlet. At this time, make sure the Main Switch on the rear panel of the IC-PS20 is ON. By turning the Transceiver power switch ON, this unit will be turned ON and the power display LED illuminated. For further operating information, see the instructions for the Transceiver.

■ CAUTION

- For safe operation, be sure, this unit is not turned ON when connecting the AC power cord plug in an AC power outlet, with the state of the Transceiver's power switch ON.
- This unit stops the output voltage by a protection circuit, when output voltage is shorted or consumed Load current exceeds 25A. When the output voltage is stopped, turn the power switch of the Transceiver OFF and remove the cause of the problem.
- The power indicator of this unit is turned ON and OFF when the case temperature of the unit is raised to more than 70°C. When the indicator flashes ON and OFF, stop the transmit and wait for Receive position.

THEORY OF OPERATION

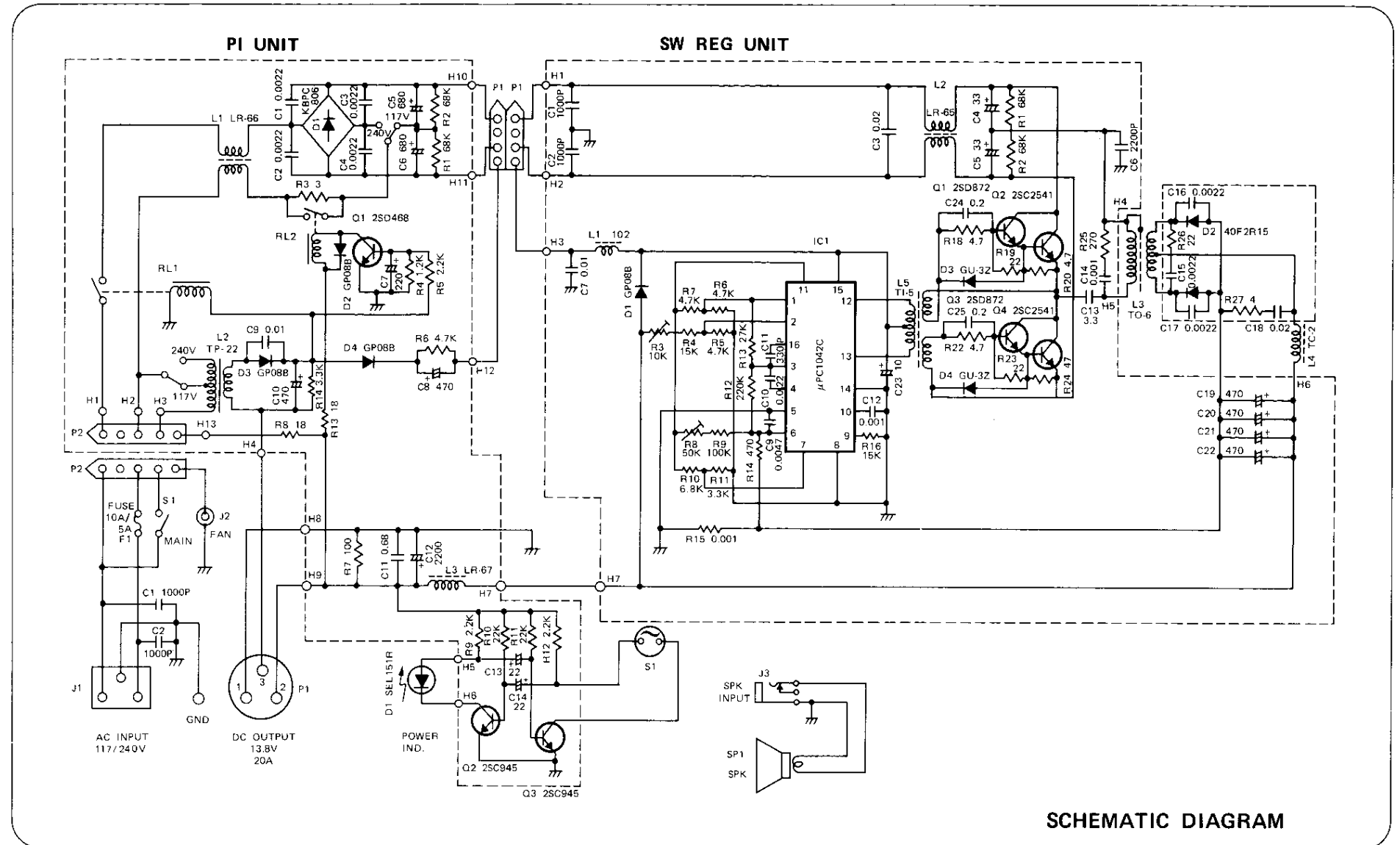
PI UNIT

AC power is supplied from the AC power connector (J1) to the sub-power transformer (T2), when the MAIN SWITCH on the rear panel of the IC-PS20 is turned ON. When the power switch of the Transceiver is turned ON, the output voltage from the secondary of T2 is rectified and filtered by D3 and C10, and is supplied to relay (RL1). Otherwise the rise pulse which is generated, by turning the power switch of the Transceiver ON, is supplied through D4, C8 and R6 to IC1 as the temporal Vcc. If you connect the AC power cord to an AC outlet with the power switch of the Transceiver ON, the rise pulse time is not high enough to start the function of IC1. Therefore you must connect the AC power cord to the AC outlet before you turn the switch of the Transceiver ON. The output voltage, rectified and filtered by D3 and C10, is supplied to RL1 and turns the relay ON. Then AC voltage is supplied through the AC line filter (L1) and rectified and filtered by D1 and C5, C6 and then $\pm 120V$ DC is put out at H10 and H11.

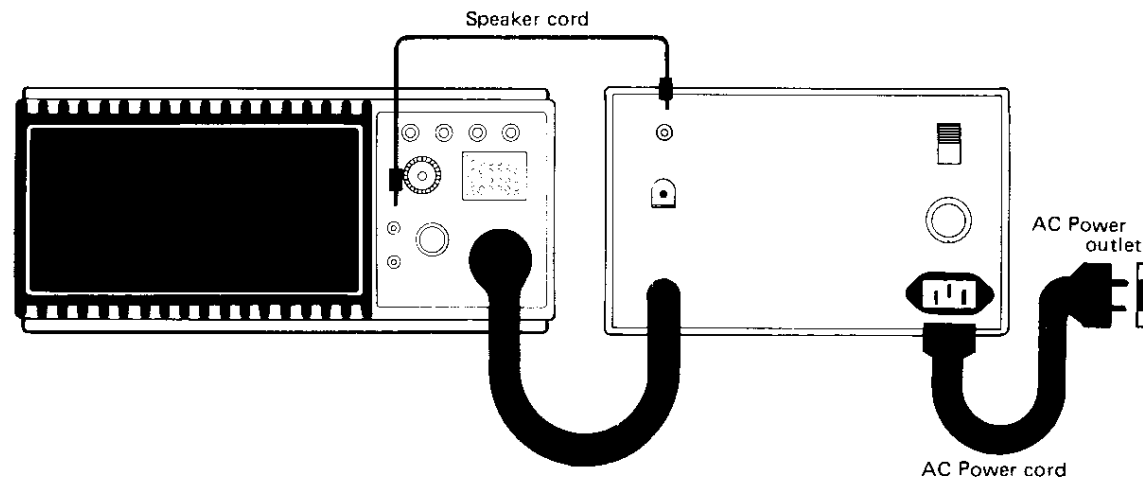
SW REG (Switching Regulator) UNIT

$+120V$ from H1 and $-120V$ from H2 are fed through various noise filters to the collector of Q1, Q2 and emitter of Q3, Q4. IC1 is a switching regulator IC and contains a 5V reference voltage circuit, oscillator circuit, op-amp, comparator, and current limit circuit. The oscillating frequency is set about 50KHz by the time constant circuit of R16 and C12. The pulse signals from Pin 12 and Pin 13 are fed through the pulse transformer L5 to Q1, Q2, Q3 and Q4 alternately, so that the $\pm 120V$ is put out at the primary of L3. The output voltage at secondary is rectified by D2 and filtered by L4, C19~C22 and fed through D1 to IC1 for normal Vcc. The output voltage is filtered again by L3, C12 in the PI UNIT, then 13.8V DC is put out at P1. When the output voltage is shorted or consumed Load current exceeds 25A, IC1 stops its function by the action of internal op-amp.

S1 connected to the collector-base of Q3 in the PI UNIT is a thermal sensor, to detect the case temperature. When the case temperature of this unit raises to about $70^{\circ}C$, the power indicator on the front panel turns ON and OFF by the astable multivibrator composed with Q2 and Q3.



SCHMATIC DIAGRAM

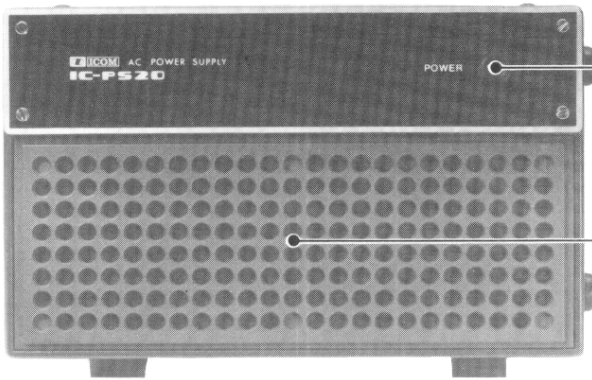


HOW TO USE THE INTERNAL SPEAKER

Use the included speaker cord to connect the SPK INPUT jack on the rear panel of the IC-PS20 and the EXT SPK jack on the Transceiver.

The impedance and nominal input power of the speaker in this unit are 8 ohms and 2 watts, respectively. This speaker can be used with any transceiver or receiver with these specifications. The speaker is designed for communication purposes and is not suitable for Hi-Fi use.

FUNCTIONS



Power Display LED

Is illuminated when power is ON. The power ON/OFF is controlled by the power switch of the Transceiver. This unit does not have a separate power switch.

Speaker

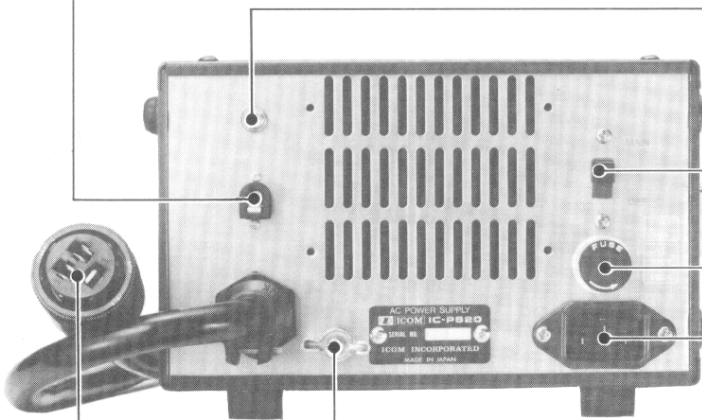
There is a 125 x 77mm oval speaker built in. Use as the external speaker for the Transceiver. The impedance is 8 ohms and the input power is 2 watts.

Fan Power Jack

Jack for cooling fan connection. 12V, approximately 100mA is available through this jack. For normal operation, a cooling fan is not necessary; however, it is recommended that an optional cooling fan be used for continuous transmission, such as for RTTY.

SPK INPUT Jack

Speaker input jack for connecting to EXT SPK jack of the Transceiver, using the included speaker cord.



Main Switch

The power ON/OFF of this unit is remote-controlled by the power switch of the Transceiver. It is recommended that the Main Switch be turned OFF when the unit is not used for a long time. When the Main Switch is OFF, the power can not be turned on by the power switch of the Transceiver.

GND Terminal

Ground this terminal with as short a wire as possible to protect from shock.

Fuse Holder

Fuse holder for the AC power line. If the fuse blows, replace with a 10A (at 117V) or 5A (at 240V) fuse after checking the cause of the problem. Use a philips (+) screwdriver to open the holder. The outside ring of the holder can not be rotated.

DC Output Plug

DC13.8V is available at up to 20A. Connect this plug to the power connector of the Transceiver.

AC Power Connector

Connect the included AC power cord.



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