

skanti

INSTRUCTION MANUAL

COMBINED AC/DC POWER SUPPLY

TYPE P6001

500 7-81
910 000 21
1. udgave

skanti

P6001 INSTRUCTION MANUAL

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Due to the constant processing of the experience gained during production and operation of our equipment, minor modifications may occur relative to the information given in this manual. Whenever practicable corrections will be listed on a correction sheet inside the front cover of this manual.

P 6001 INSTRUCTION MANUAL

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P 6001

1. INTRODUCTION

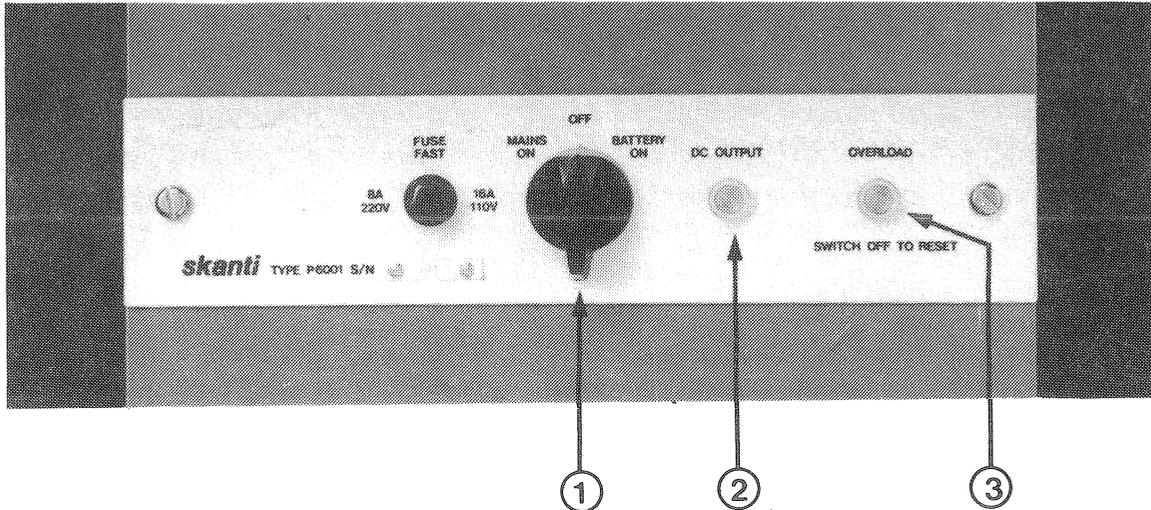
The P 6001 is a combined AC/DC Power Supply especially developed for powering the TRP 6000-series.

The input power for P 6001 is AC, and the output is a well regulated DC Voltage.

The regulation is achieved by the well known series regulation principle, and the power supply is fully protected against overload or short circuit conditions.

Where a battery is required as a reserve source of electrical energy to the radiotelephone equipment, it can be connected via the P 6001 power supply. By means of the switch on the front panel it is possible to select between AC or Battery operation.

2. OPERATING INSTRUCTIONS



2.1 AC MAINS OPERATION:

During normal operation where mains supply is available the Power switch (1) is switched to position "MAINS ON".

The mains voltage is fed to the mains transformer and the DC voltage from the rectifier is switched through to the output power terminals

The "DC OUTPUT" lamp (2) will light if the DC output voltage is present.

2.2 BATTERY OPERATION:

If there is a Mains voltage supply failure, the P 6001 power-switch can be switched over to "BATTERY ON". This will feed the Battery voltage to the output power terminals (assuming a battery is connected to the Battery input terminals of P 6001).

The "DC OUTPUT" lamp (2) will light, if the DC output voltage, which in this case is the same as the Battery voltage, is present.

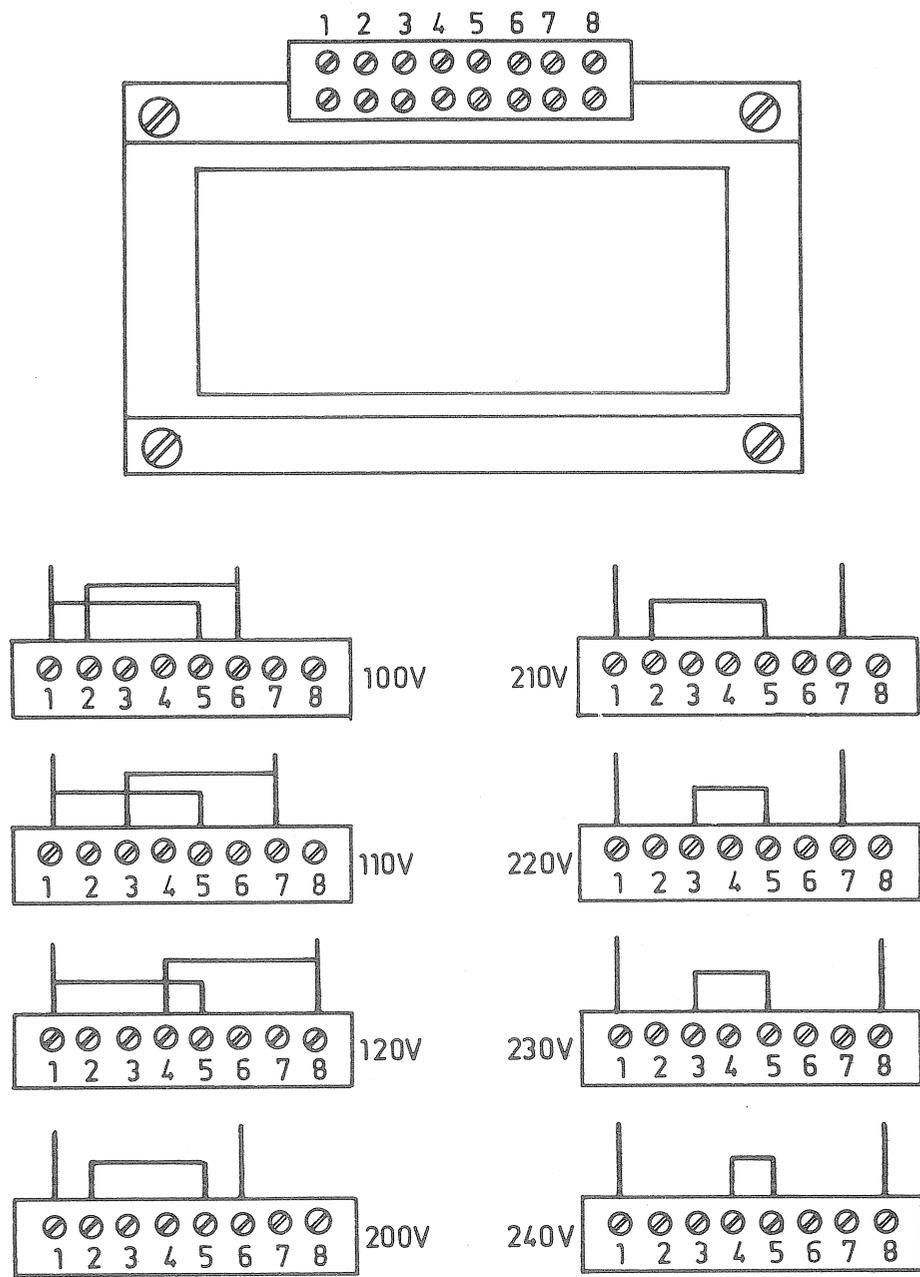
2.3 OVERLOAD:

If an overload condition occurs with the power-switch in position "MAINS ON", the "OVERLOAD" lamp (3) will light. Overload condition occurs if the DC output current exceeds approx. 43 A, or if the output power terminals are short-circuited.

The "DC OUTPUT" lamp (2) will extinguish, because the electronic shutdown circuit will keep the output voltage and current at zero.

2.3.1. RESET AFTER OVERLOAD:

When the cause for the overload has been found and corrected, the overload shutdown circuit must be reset. Turn the power-switch briefly to "OFF" position and back again to "MAINS ON". The DC output voltage is now present and the "DC OUTPUT" lamp will light.



344 401 41

FIG. 3.1
PRIMARY CONNECTIONS OF MAINS TRANSFORMER

3. INSTALLATION AND SIMPLE SERVICE

3.1 INSTALLATION:

The Power Supply is mounted on the bulkhead by 4 screws. Positions of holes for drilling are shown on page 4-3.

The following has to be checked during installation:

- A. Free space must be available to allow the air to pass freely along the cooling heatsinks at both sides of the Power Supply.
- B. Remove top cover of P 6001 and check that the Main transformer is wired for the actual AC Mains voltage. The different possibilities of connections are explained in section 3.2 below and there is also a drawing on the back of the front cover of P 6001.
- C. The fuse FS1 must have the right current and voltage ratings. (See section 3.3) and two spare fuses with the same ratings must be available.
- D. Earth must be connected to pin 3 on terminal strip TS1 (see Fig. 3.2)

3.2 PRIMARY CONNECTIONS OF MAINS TRANSFORMER:

The primary connections of the mains transformer must be wired up according to Fig. 3.1.

There are 8 different possibilities for connections, depending on the AC mains voltage available. For 100 V/110 V/ 120 V the 2 half sections of the primary part of the transformer are connected in parallel and for 200 V/210 V/220 V/230 V/240 V the 2 half sections of the primary are in series.

The voltage ratings indicated on Fig. 3.1 is the nominal voltage.

Always use the type of connection where the voltage as indicated on the instruction drawing is within $\pm 10\%$ of the available nominal Mains voltage. If there is more than one possibility of connection which will satisfy this demand, always use the type with the highest indicated voltage.

3.3. FUSE RATINGS

There is used only one fuse in the system, the Mains fuse FS1 on the front panel.

From the factory the P 6001 is normally delivered wired for 220 V AC, and therefore the fuse mounted is an 8A fast (quick acting) type.

The fuse ratings are as follows:

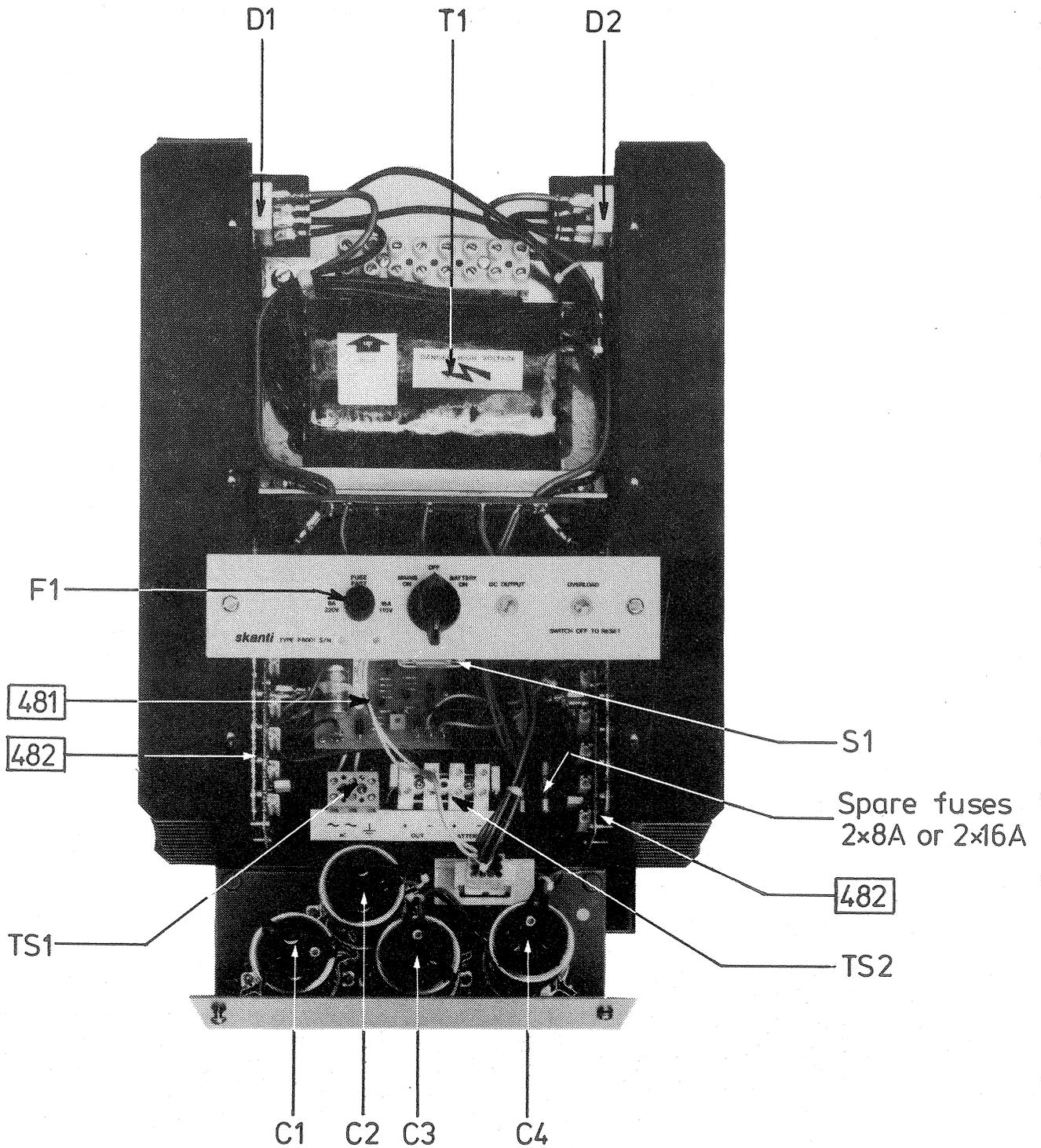


FIG. 3.2. LOCATION OF COMPONENTS

Mains Voltage (Volt)	Fuse FS1 (size 6.3 x 32 mm)
100/110/120	16A Fast (Quick Acting)
200/210/220/230/240	8A Fast (Quick Acting)

There are two spare fuses delivered with the Power Supply of the same ratings as for FS1. Remember to replace the spare fuses with ones of the correct rated value if the value of FS1 is changed due to a different Mains voltage being available.

3.4. COMPONENT LOCATION:

The different printed circuit boards and main components can easily be located on Fig. 3.2.

4. TECHNICAL DATA

INPUT VOLTAGE:	100 - 240 V AC $\pm 10\%$ Single phase, 48-65 Hz.
FUSE:	Internal fuse in power input. Ratings: 16A (100 - 120 V AC) 8A (200 - 240 V AC)
OUTPUT VOLTAGE:	28.5 V DC, adjustable ± 0.5 V
OUTPUT CURRENT:	27.5 A DC continuously at $T_{amb.} = 25^{\circ}\text{C}$, derating by 0.3 A/ $^{\circ}\text{C}$ up to max. $T_{amb.} = 55^{\circ}\text{C}$
LOAD REGULATION:	$\Delta V_{OUT} < 0.2$ V for a 0 to 30 A load change.
LINE REGULATION:	$\Delta V_{OUT} < 0.2$ V for a $\pm 10\%$ line change.
RIPPLE & NOISE	< 100 mV r.m.s. at 30 A load.
OVERLOAD PROTECTION:	Electronic shutdown triggered at approx. 43 A.
AMBIENT TEMPERATURE:	-15°C to $+55^{\circ}\text{C}$.
COOLING:	Natural convection.
WEIGHT:	29 kgs net.

4.1 INPUT CURRENT

Input current I_{IN} (at 220 V Mains voltage) as a function of Output current I_{OUT} (at 28.5 V DC output voltage) is shown on Fig. 4.1.

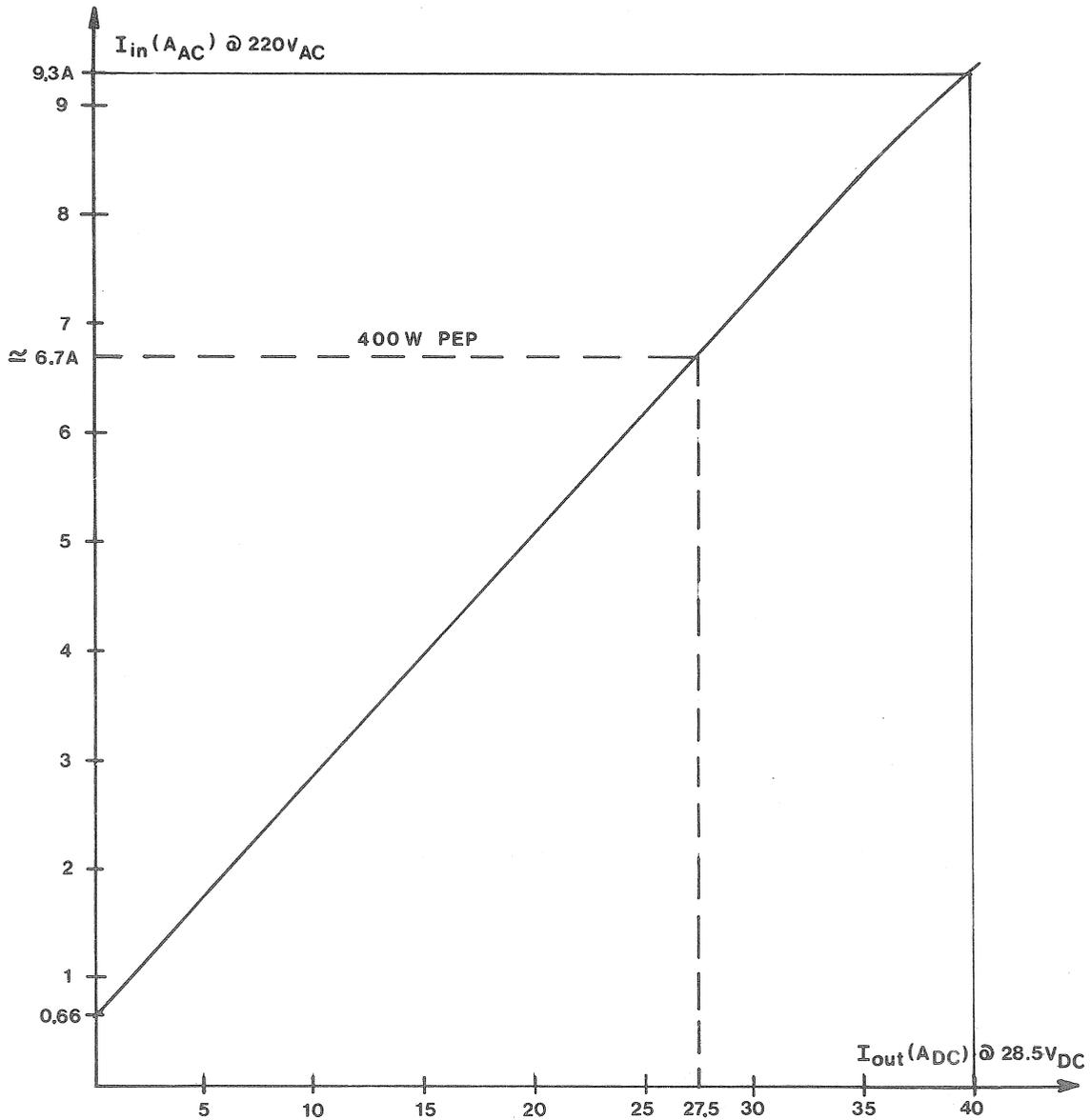


Fig. 4.1.

The dotted line marked 400 W PEP shows the nominal value of the current consumption of a TU 6400 transmitter which is transmitting the two-tone alarm signal with 400 Watts PEP output power. (2182 kHz, A3H mode). The nominal input current is 6.7 A in this condition.

4.2. INPUT POWER:

Max. input power requirements are 2.1 KW.

4.3. CABLES FOR INTERCONNECTING P 6001 and TU 6200/6400

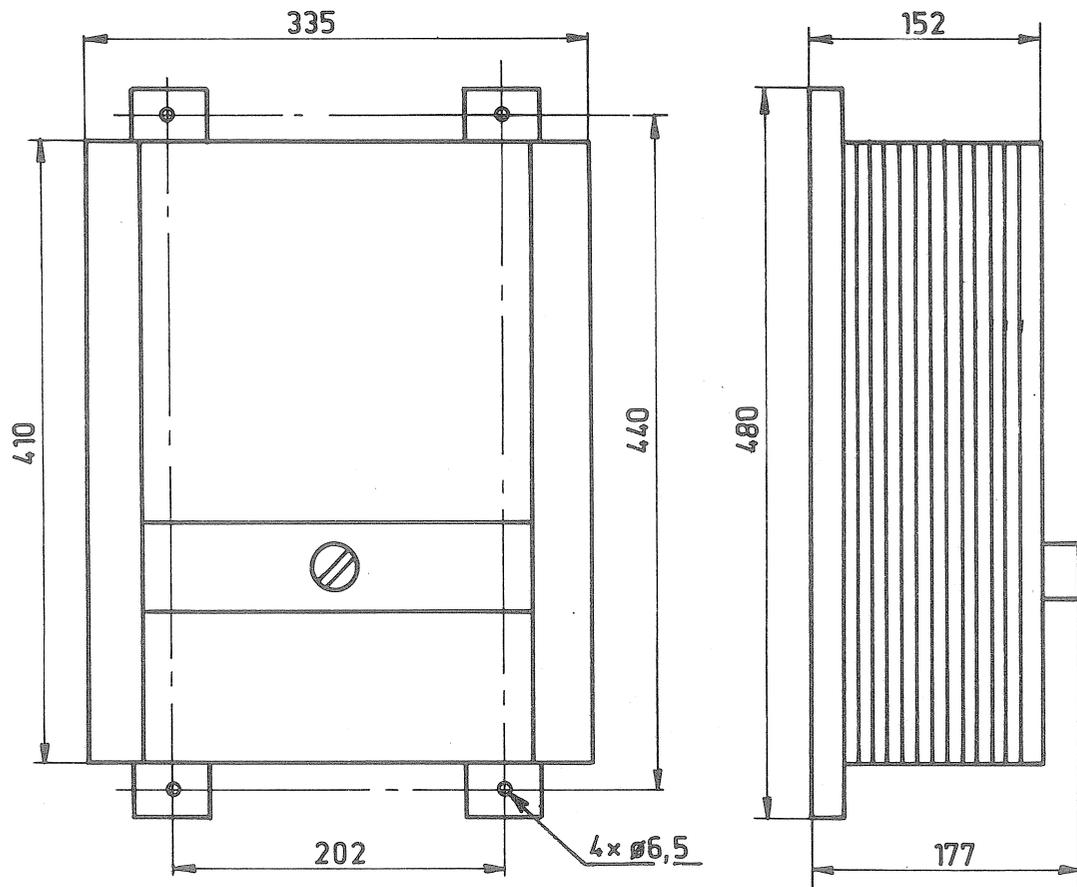
Maximum voltage drop in the supply leads from P 6001 to TU 6200/ TU 6400 should be 0.5 Volt total (0.25 Volt each lead). Table 4.1 shows the necessary cable cross sectional area applicable.

Table 4.1

Max. Cable Length		Cross Sectional area pr. lead
P 6001 - TU 6200	P 6001 - TU 6400	
6 m	3 m	6 mm ²
10 m	5 m	10 mm ²
16 m	8 m	16 mm ²
27 m	13 m	25 mm ² *)

*) Use pin terminal adapter 343 428 11

4.4. PHYSICAL DIMENSIONS:

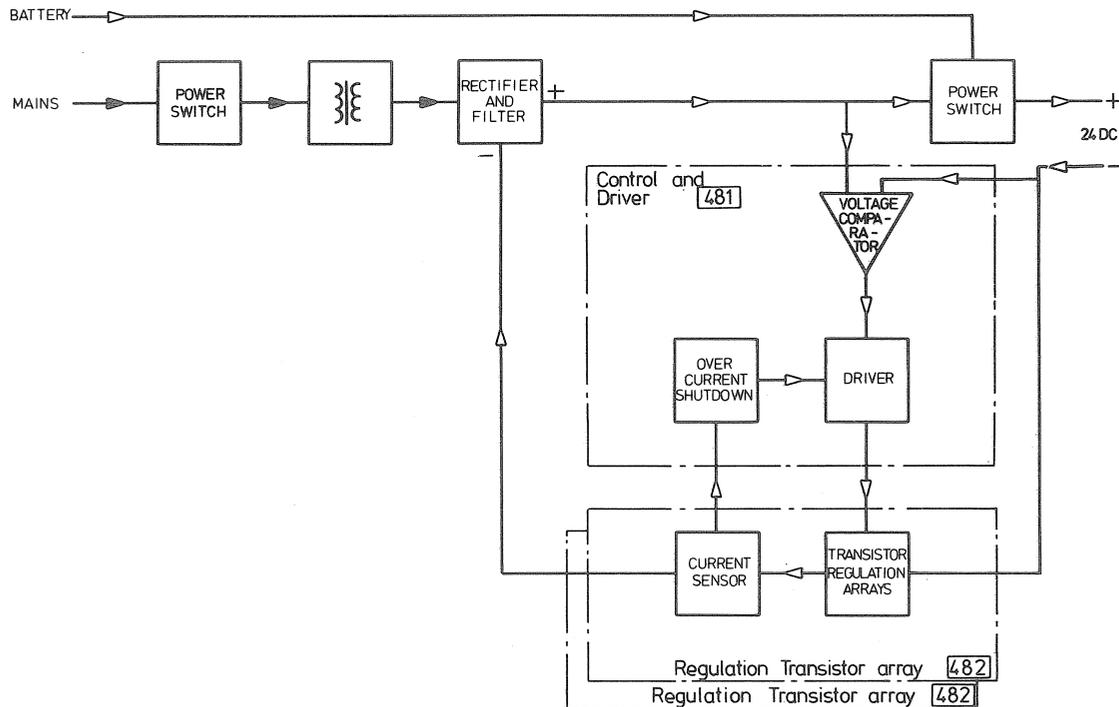


4.5. WEIGHT:

29 kgs

5. FUNCTION DESCRIPTION

5.1. BLOCK DIAGRAM



5.2. FUNCTION DESCRIPTION:

The AC mains voltage is fed through to the mains transformer by the power switch, when this is switched to position "MAINS ON".

The voltage is stepped down by the transformer and fed to the full wave rectifier and the filter section.

The positive voltage from the filter is led to the DC output terminal through the Power Switch.

The negative side of the filter is applied to the two regulation transistor arrays [482]. Each of the two transistor arrays consists of 8 transistors in parallel. This gives a total of 16 transistors in parallel for the complete series regulation circuit. Each transistor has a current sensing resistor in series with the collector current, and if the current increases over a certain limit, it will be detected by the Over Current Shutdown circuit on the Control and Driver Board [481]. The activated shutdown circuit will prevent any base current

from reaching the driver transistor. The Over Current Shutdown can be compared to a thyristor which short-circuits the input to the driver transistors and thereby prevents any base current from reaching the series regulation transistors. The output current will be reduced to zero and because of a foldback circuit it will remain at zero until the power supply has been briefly switched off by the power switch.

The voltage comparator compares a part of the output voltage to a zener diode reference circuit. If the output voltage for instance is slightly decreased, the base current to the regulation transistors will increase. This will decrease the voltage drop over the transistor regulation arrays. The output voltage will increase and thereby reach the stabilized voltage level again.

6. SPARE PARTS LIST

STANDARD SHIPBORNE SPARES:

2 Fuse 8 A Quick acting 6.3 x 32 mm 720 380 00

or

2 Fuse 16 A Quick acting 6.3 x 32 mm 720 416 01

(Which one to be used depends on mains voltage available).

DEPOT SPARES:

481 Control and Driver Board 107 448 11

482 Regulation Transistor Array 107 448 21

8 Transistor, TIP 35 A 842 003 50

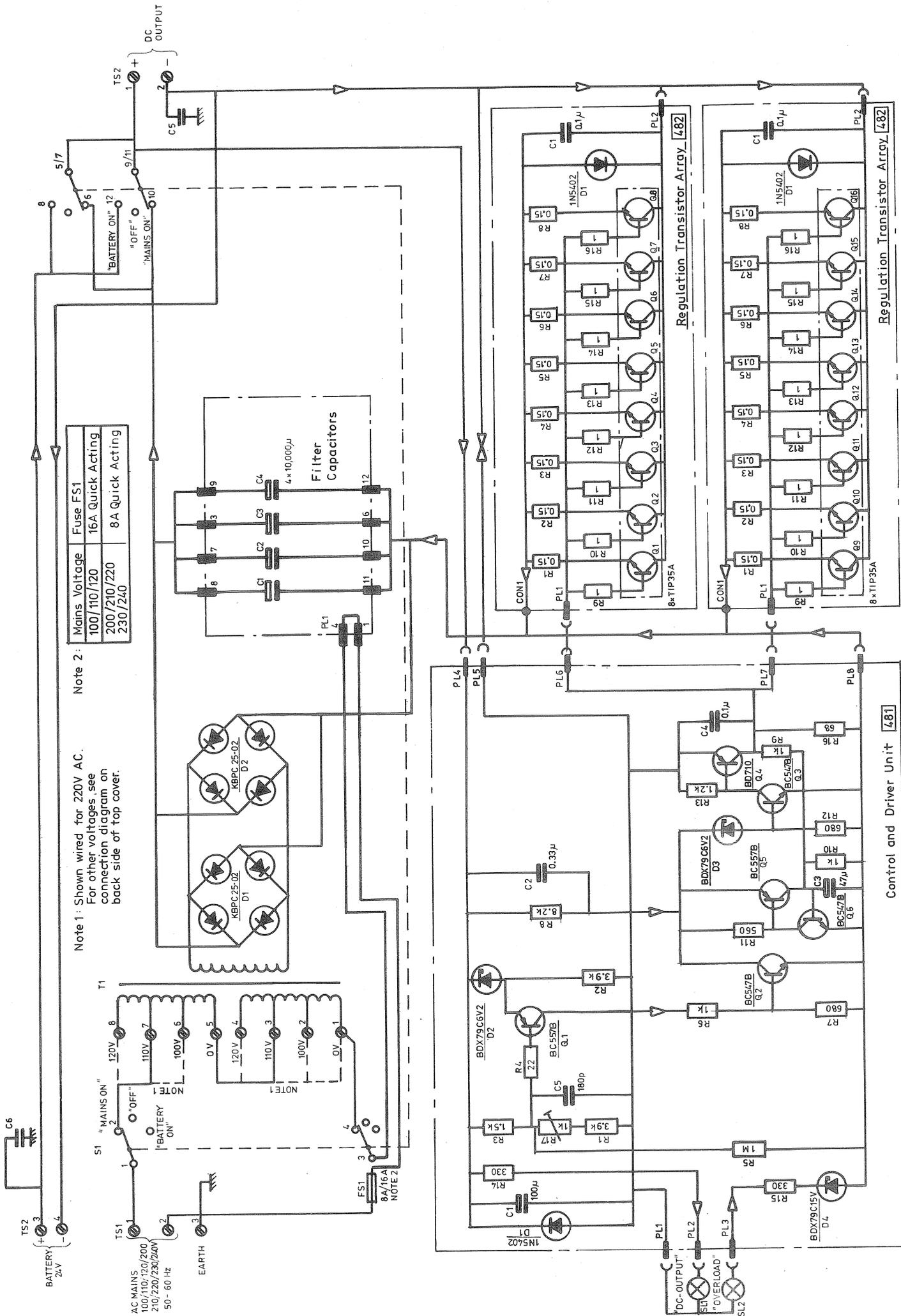
4 Capacitor, 10000 μ F/63 V 652 910 51

1 Capacitor, 0.1 μ F/250 V 624 510 01

2 Rectifier, 25 A/200 V 831 250 20

1 Mains Transformer 384 401 51

1 Lamp 754 000 04



Note 1: Shown wired for 220V AC.
For other voltages, see connection diagram on back side of top cover.

Note 2:

Mains Voltage	Fuse FS1
100/110/120	16A Quick Acting
200/210/220	8A Quick Acting
230/240	

