

PCH 4652

Power Supply
Battery Charger
for GMDSS
Technical Manual

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1. INTRODUCTION

GENERAL DESCRIPTION

The PCH 4652 is designed as a stand alone automatic AC Power Supply/Battery Charger in a single battery configuration or together with the transceiver TU1250 in a dual battery configuration.

The PCH 4652 is designed with two automatically fused and fully separated output lines to

insure independent supply for the Inmarsat-C and VHF system in the duplicated equipment.

The PCH 4652 will also serve as a fuse/terminal - box with all terminals included for single or dual battery configuration.

The standard version of PCH 4652 is suitable for systems including transceivers up to 500 W.

Furthermore PCH 4652 includes the following features:

- Build-in shunt.
- Easy connection.
- Manual/automatic mode selectable on Charger Board.
- Galvanically isolated battery alarm and AC alarm outputs.
- Terminals for optional external temperature sensors.
- Indication for float or main charge and AC present.
- Charges open or sealed lead-acid batteries.

2. TECHNICAL DATA

AC input voltages:	110, 120, 220/230, 240 V AC +/- 10%
AC input frequency:	50/60 Hz +/- 6%
Float charge voltage:	Adjustable 26.8 V - 28.8V to voltage specified by battery manufacturer with potentiometer on Charger Board.
DC output voltage with Charger Board disconnected:	28 V
DC output current:	24 A max.
Charger type:	Automatic, with float charging. IE characteristic.
Battery type:	Lead-acid, open or sealed.
Normal battery capacity:	40 - 200 Ah.
Normal charging time:	Max. 10 hours to 80% capacity (receive condition, 200 Ah battery).
Temperature compensation:	Optional external temperature sensors,
TS1:	High battery voltage alarm compensation.
TS2:	Float charge voltage compensation.
Controls:	Off (Remote)/Automatic (on Charger Board).
Battery Alarm output:	Make/break relay contacts 0,5 A 32 V.
Alarm in case of:	<ul style="list-style-type: none">- Battery voltage too low (adjustable 22.0 - 24.0 V)- Battery voltage too high (adjustable 27.0 - 32.0 V) Potentiometers on Charger Board.
AC Mains Alarm output:	Make/break relay contacts 0,5 A 32 V.
Protection:	Alarm in case of AC supply failure. The AC Power Supply is current limited and protected against polarity reversal, short circuit, overvoltage and overtemperature.
Operating temperature	- 20° to + 55° C.
Dimensions:	H: 154 mm, L: 234 mm , W: 440 mm.
Weight:	Approx. 7.5 kg.

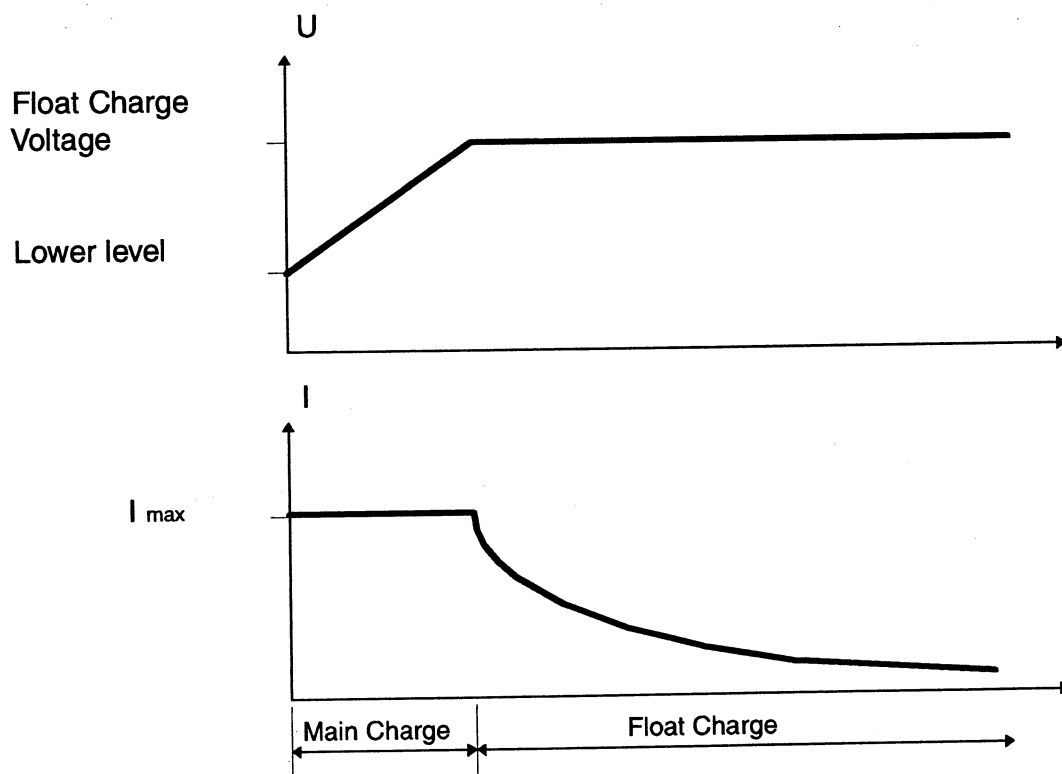
3. PRINCIPLE OF OPERATION

The PCH 4652 is designed to operate in two ways:

1. As a Power Supply/Charger for the duplicated equipment alone with its own battery.
The basic equipment is supplied from the AC Power Supply/Charger in the transceiver unit HT 4520 supplying its own battery (Dual battery configuration).
2. As a Power Supply/Charger together with the Power Supply/Charger in the transceiver unit HT4520 for both the duplicated and basic equipment with one battery (Single battery configuration).

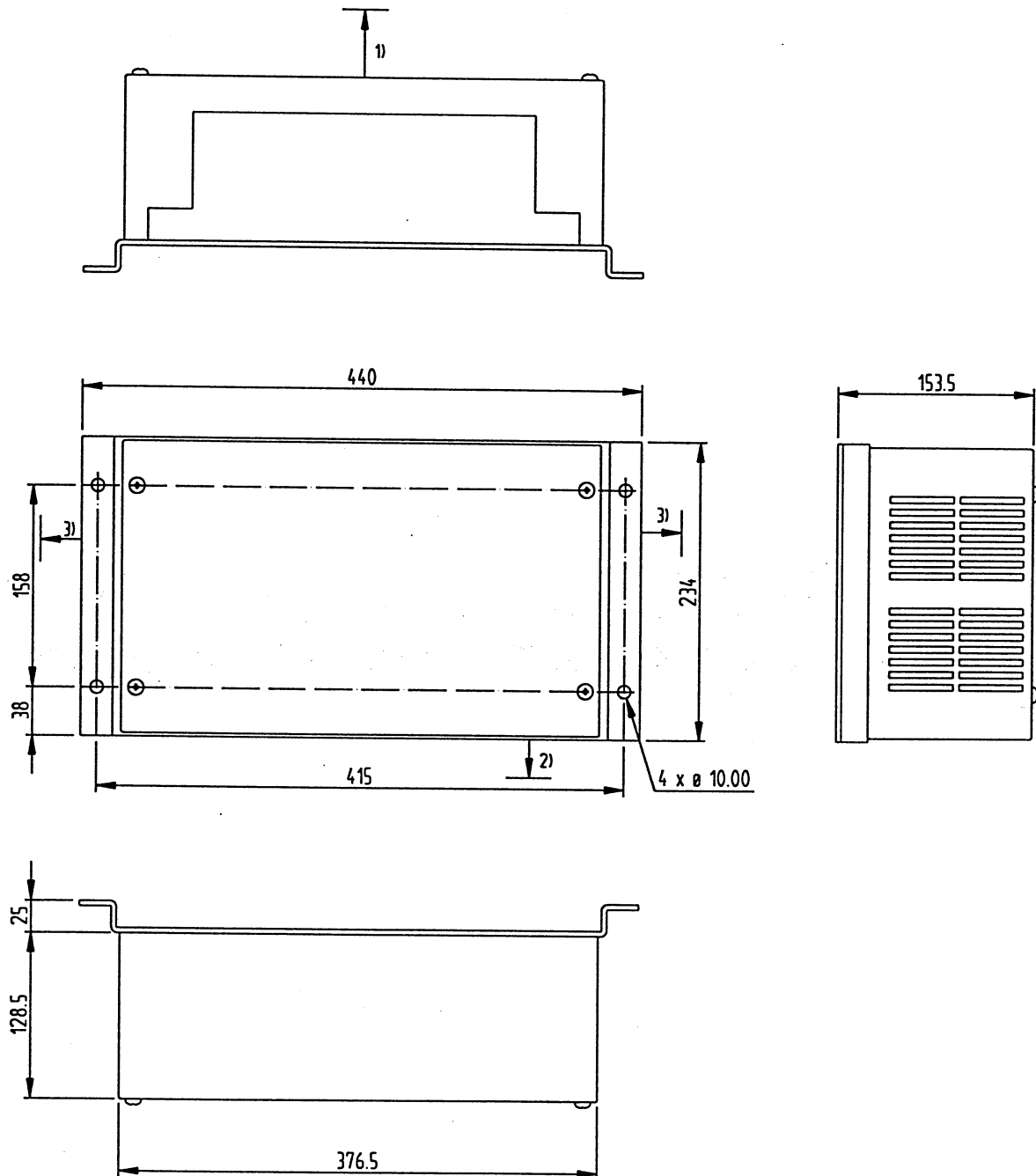
When charging the PCH 4652 is working as a current generator until the battery voltage reaches the voltage level set by the float voltage potentiometer on the charger board. At this level the PCH 4652 is changing state to a constant voltage generator to maintain a constant voltage to the battery.

TYPICAL CHARGE CURVE



4. INSTALLATION

OUTLINE AND DIMENSIONS



- 1) Space for Service access min. 500
- 2) Space for cable min. 200
- 3) Space for air flow min. 100

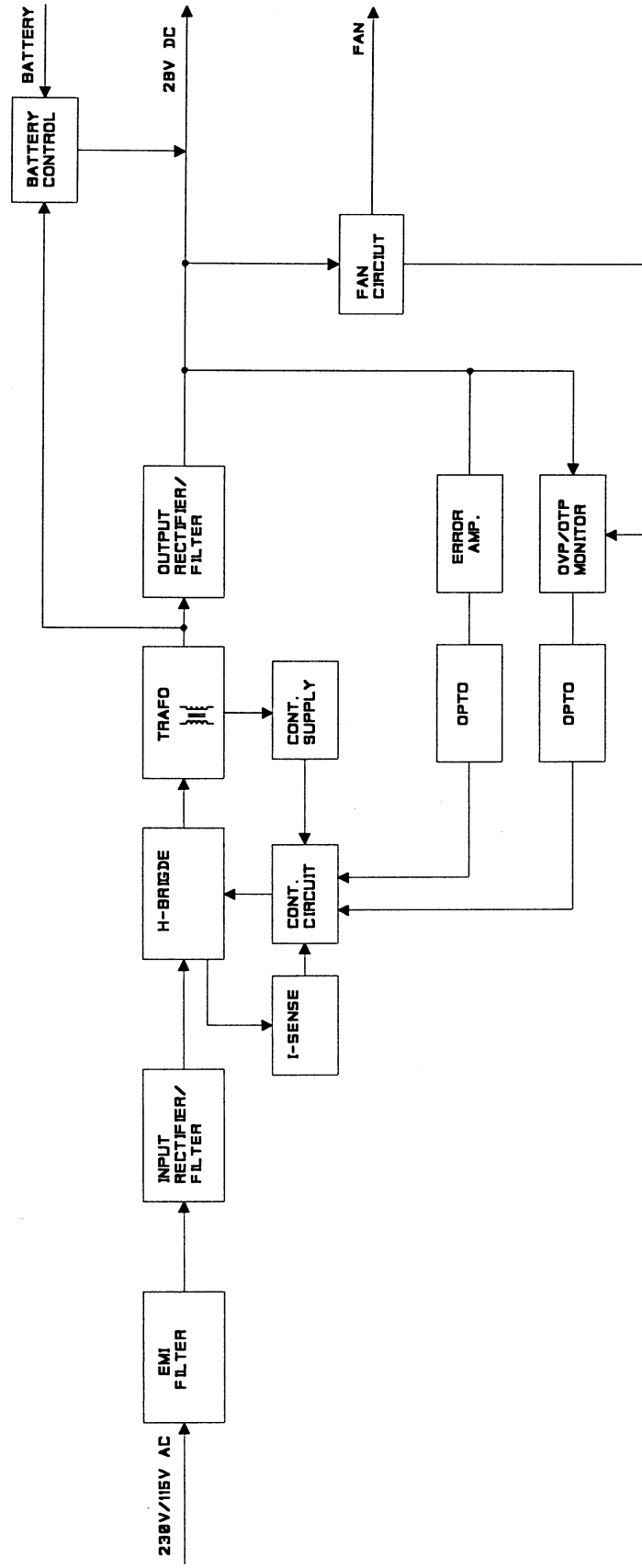
Dimensions are in mm.
Tolerance: ± 1
Weight: PCH4652: 7.5kg.

4.1 BLOCKDIAGRAM POWER SUPPLY

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BLOCKDIAGRAM POWER SUPPLY

BLOCKDIAGRAM POWER SUPPLY

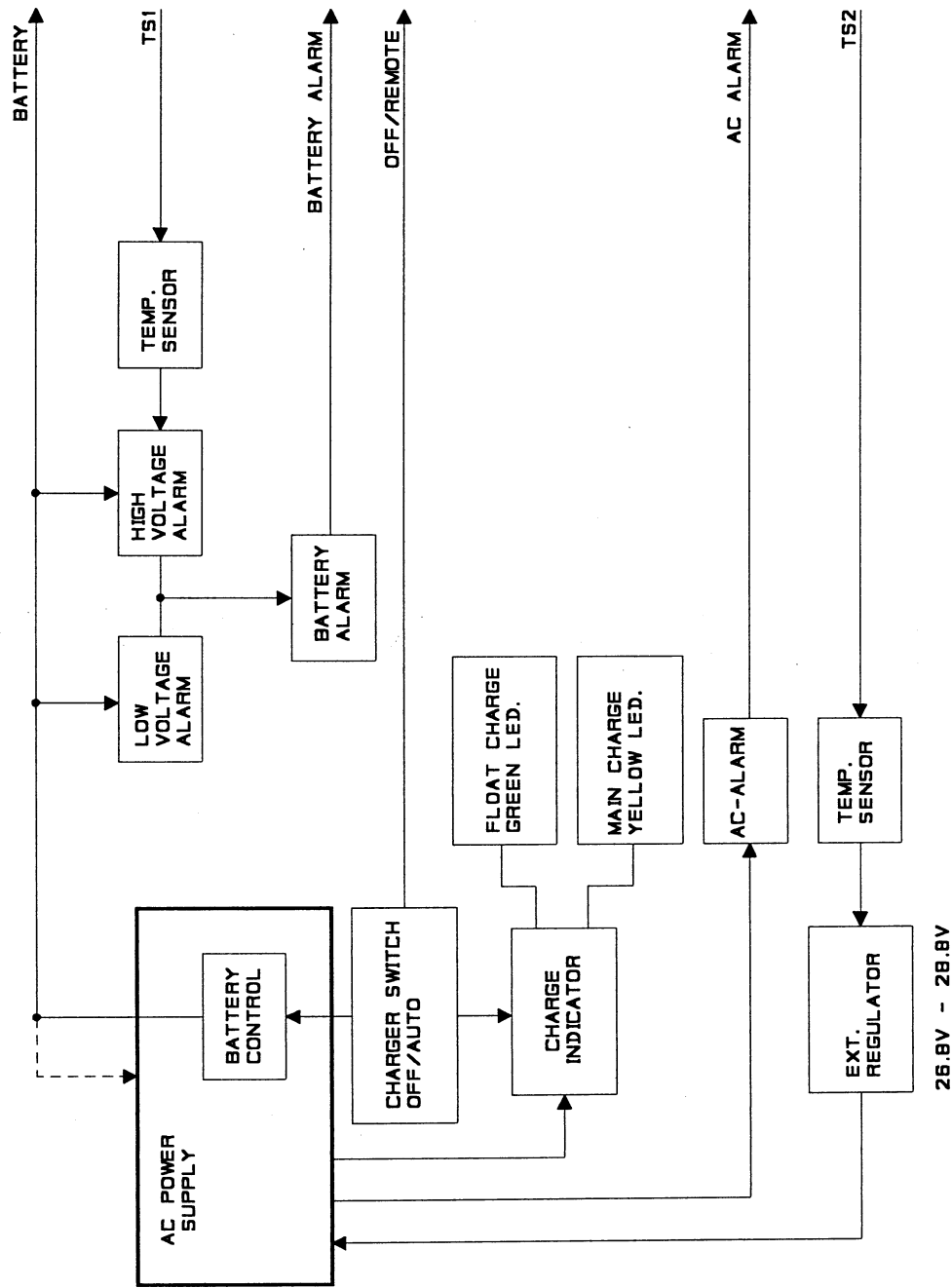


4.2 BLOCKDIAGRAM CHARGER

4-0-34726

BLOCKDIAGRAM CHARGER

BLOCKDIAGRAM CHARGER



5. AC SUPPLY VOLTAGE SETTING

Before connecting the PCH 4652 to the AC mains, be sure that the voltage selector switch is set to the correct voltage and that the fuse rating corresponds to the setting used.

The voltage selector switch is located on the AC Power Supply assembly under the front cover. The selected voltage is indicated by an arrow in the outer ring. The equipment is normally dispatched with the selector set to 220V. To select a different voltage insert a screwdriver in the slot and turn the switch to the correct setting.

Settings	Voltage range
110	99 - 132 V
220	198 - 264 V


Caution: Incorrect setting of the mains voltage selector may damage the AC Power Supply Assembly.

The AC mains fuse holder is an integral part of the AC terminal block which is located to the left under the front cover. The fuse is accessed by pulling out the black handle. The correct rating for each voltage setting is as follows

Settings	Fuse rating
110	10 A slow
220	6.3 A slow

Fuses are cartridge type measuring 5 x 20 mm.

The AC supply leads are connected as indicated to the terminal block. Screened power supply cable may be used as required by some administrations. The cable is fastened and the screen connected by a cable clamp on the main chassis below the terminal block.

L	Live
N	Neutral
	Protective earth

Recommended cable type: 3 x 1.5 mm²

6. BATTERY CHARGER

The Charger Board is located to the right under the front cover. It contains a charger control switch for local selection of the charging mode, **Auto** or **Off/Remote**. In the **Off/Remote** position the charging mode may be controlled remotely. Remote control cable is connected to the terminal strip marked '**Remote**' which also contains alarm outputs as indicated in the table below.

Remote

9-way terminal strip.

Battery charger alarm / control interface

Terminal	Designation	Description
1	DC-	Reference battery-, Galvanically isolated from system ground.
2	VR	Output 26-28 V DC (battery+) when AC and battery voltage are both present. Max. 200mA, internally protected. Galvanically isolated from system ground.
3	Auto	Input. Charger off when open, charger on when connected to VR.
4	AC Alarm O	Galvanically isolated AC alarm output. Relay contacts max. 0.5 A 32V. Alarm condition: AC supply missing. (terminals 5 and 6 are closed, terminals 4 and 6 are open in alarm condition).
5	AC Alarm C	
6	ACC Alarm	
7	Battery Alarm O	Galvanically isolated battery alarm output. Relay contacts max. 0.5 A 32V. Alarm condition: Low Voltage Alarm: Battery voltage < 22.0 - 24.0 V (adjustable). High Voltage Alarm: Battery voltage < 27.0 - 32.0 V (adjustable). (terminals 8 and 9 are closed, terminals 7 and 9 are open in alarm condition).
8	Battery Alarm C	
9	Battery Alarm	

Important: When the PCH4652 is used in a single battery configuration with two chargers the charger control switch on both charger boards must always be in AUTO mode.

TEMPERATURE COMPENSATION

Where the ambient temperature of the battery is expected to be very variable the life of the battery may be increased by controlling the charging voltage as a function of the temperature.

Two temperature sensors may be connected to the Charger Board for temperature compensation, one for the float charging voltage, the other for the independent High Voltage Alarm circuit. The temperature sensors should be installed in close proximity to the battery.

TS1

2-way terminal strip.

Temperature sensor input for high voltage alarm.

Terminal	Designation	Description
1	TS+	Temperature sensor input for battery temperature compensation. Jumper must be moved to TS1 ON when used.
2	TS-	

TS2

2-way terminal strip.

Temperature sensor input for float charging voltage.

Terminal	Designation	Description
1	TS+	Temperature sensor input for battery temperature compensation. Jumper must be moved to TS2 ON when used.
2	TS-	

Important: When temperature sensors are not installed, jumpers must be in Off position.

When the PCH4652 is used in a single battery configuration with two chargers and temperature compensation is selected sensors from both chargers must be used.

7. BATTERY ALARM ADJUSTMENT

Before connecting the battery it is important to adjust the float charge voltage and the battery voltage alarm to the values prescribed by the battery manufacturer.

Before starting the adjustment make the following steps:

1. Be sure the PCH4652 is disconnected from the mains and the battery not connected.
2. Turn the potentiometers located on the Charger Board marked '**High Voltage Alarm**' and '**Low Voltage Alarm**' clockwise.
3. Connect a voltmeter and a small power supply capable of delivering 1.0A and adjustable up to 33 V DC to the '**Battery**' terminal and switch on the two automatic fuses marked '**Charger input**' both located on the terminal strip marked '**Duplicated equipment**'.
4. Connect a ohmmeter between the battery alarm output terminals 8 and 9 of the '**Remote**' terminal strip located on the Charger Board.

7.1 LOW VOLTAGE ALARM(LVA):

1. Adjust the small power supply to the desired low voltage alarm level(22.0 - 24.0 VDC).
2. Read on the ohmmeter that the relay contacts are closed.
3. Now carefully turn the potentiometer marked '**Low Voltage Alarm**' anticlockwise until the relay contacts just open.

7.2 HIGH VOLTAGE ALARM(HVA):

1. Adjust the small power supply to the desired high voltage alarm level(27.0 - 32.0 VDC).
2. Read on the ohmmeter that the relay contacts are open.
3. Now carefully turn the potentiometer marked '**High Voltage Alarm**' anticlockwise until the relay contacts just close.
4. Disconnect all instruments.

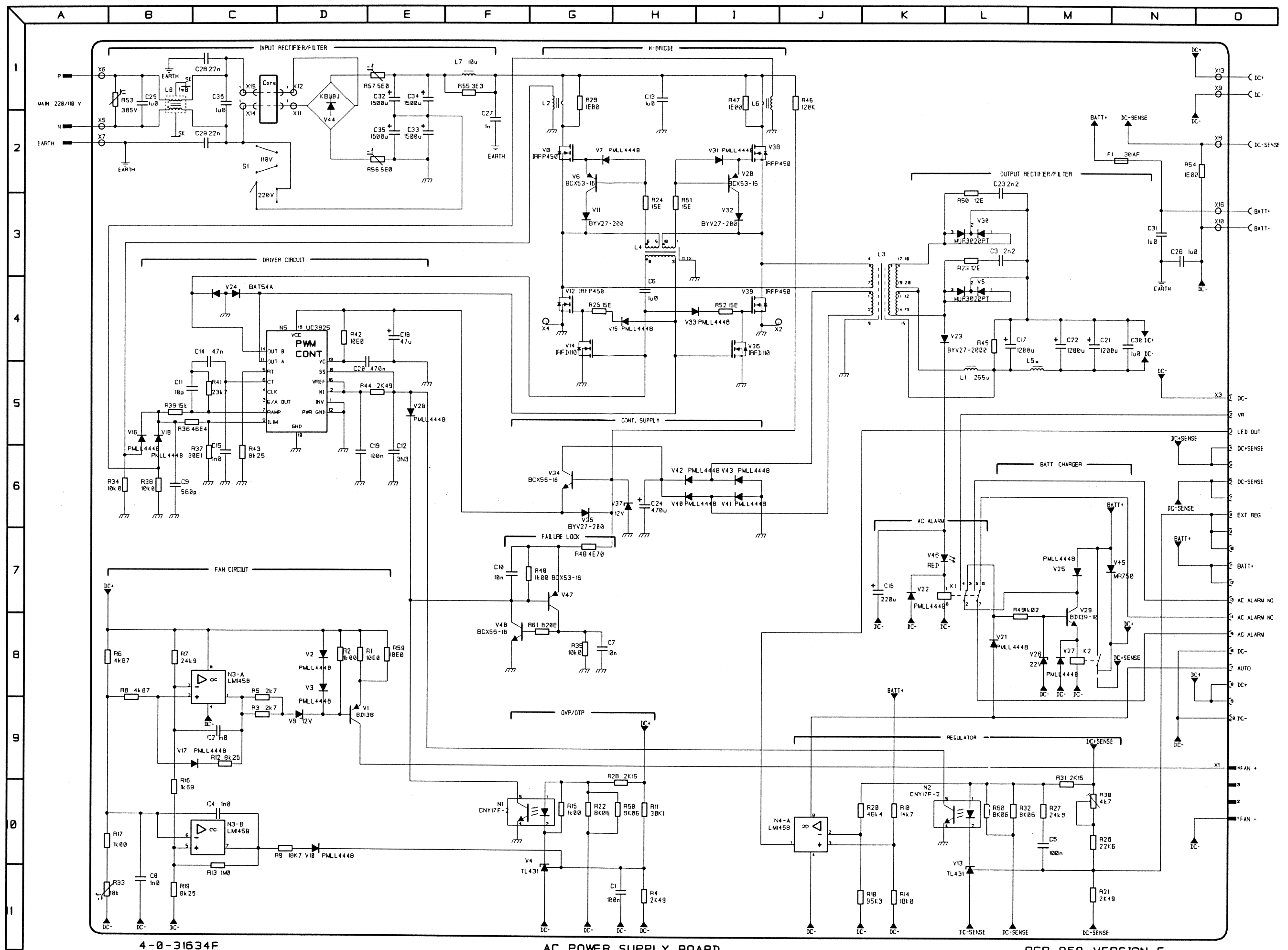
7.3 FLOAT CHARGE VOLTAGE ADJUSTMENT

1. Connect a voltmeter to the terminals '**- Voltmeter**' and '**+ Voltmeter**' located on the terminal strip marked '**Duplicated equipment**'.
2. Set the battery charger switch on the Charger Board in OFF/REMOTE position. A remote switch if any must also be in OFF position.
3. Connect the mains to the PCH4652.
4. Adjust the potentiometer located on the Charger Board marked '**Float Voltage**' until the charge voltage prescribed by the battery manufacturer is read on the voltmeter(26.8 - 28.8V DC).
5. Disconnect all instruments.
6. Connect the battery to the '**Battery**' terminal located on the terminal strip marked '**Duplicated equipment**'.
7. Switch the battery charger to AUTO position.

Important: When the PCH4652 is used in a single battery configuration with two chargers the float charge voltage on both charger boards must be adjusted to the same level within ± 0.1 V to ensure proper load share.

8. SCHEMATIC DIAGRAMS

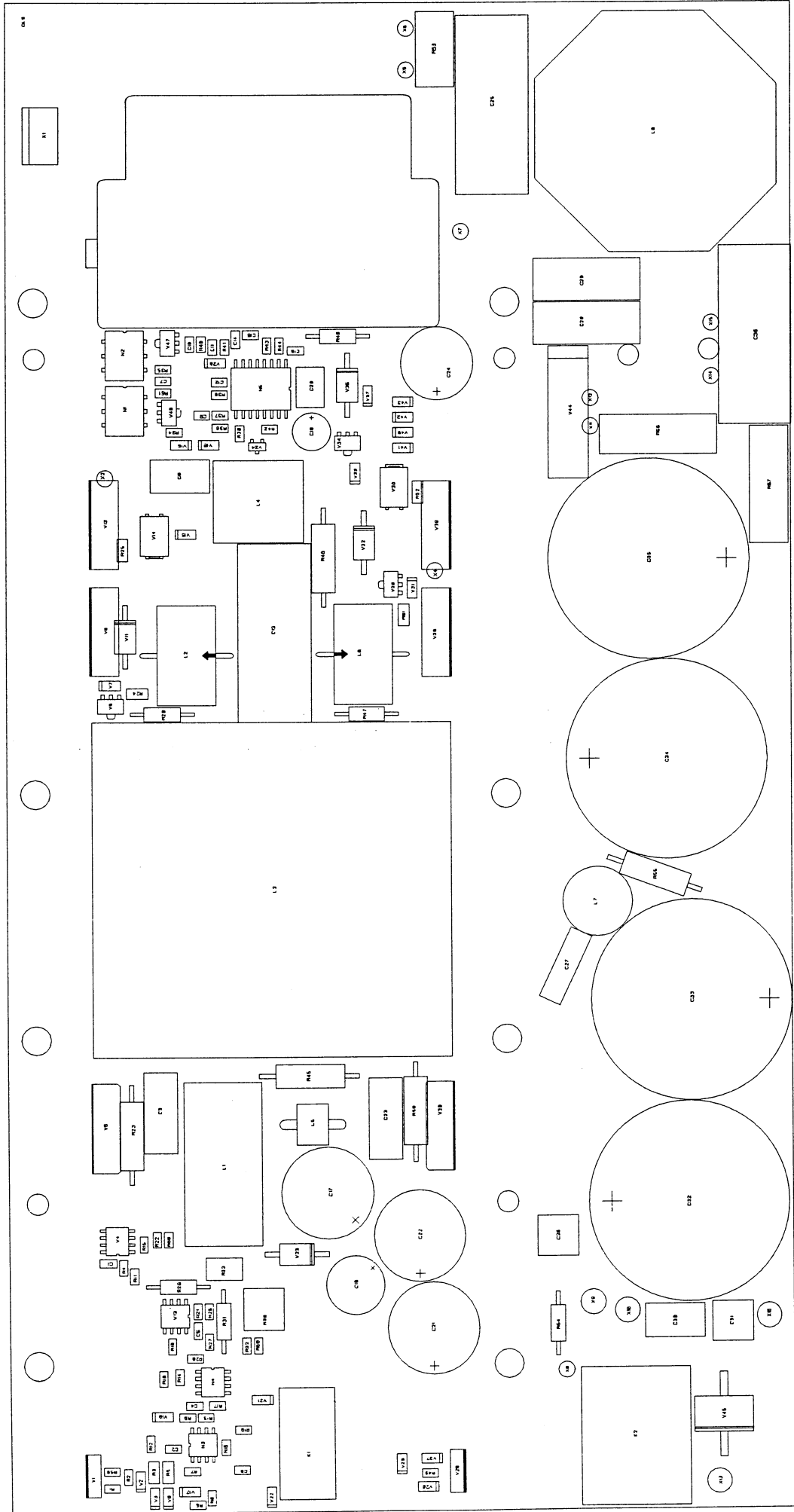
8.1 POWER SUPPLY UNIT



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AC POWER SUPPLY BOARD

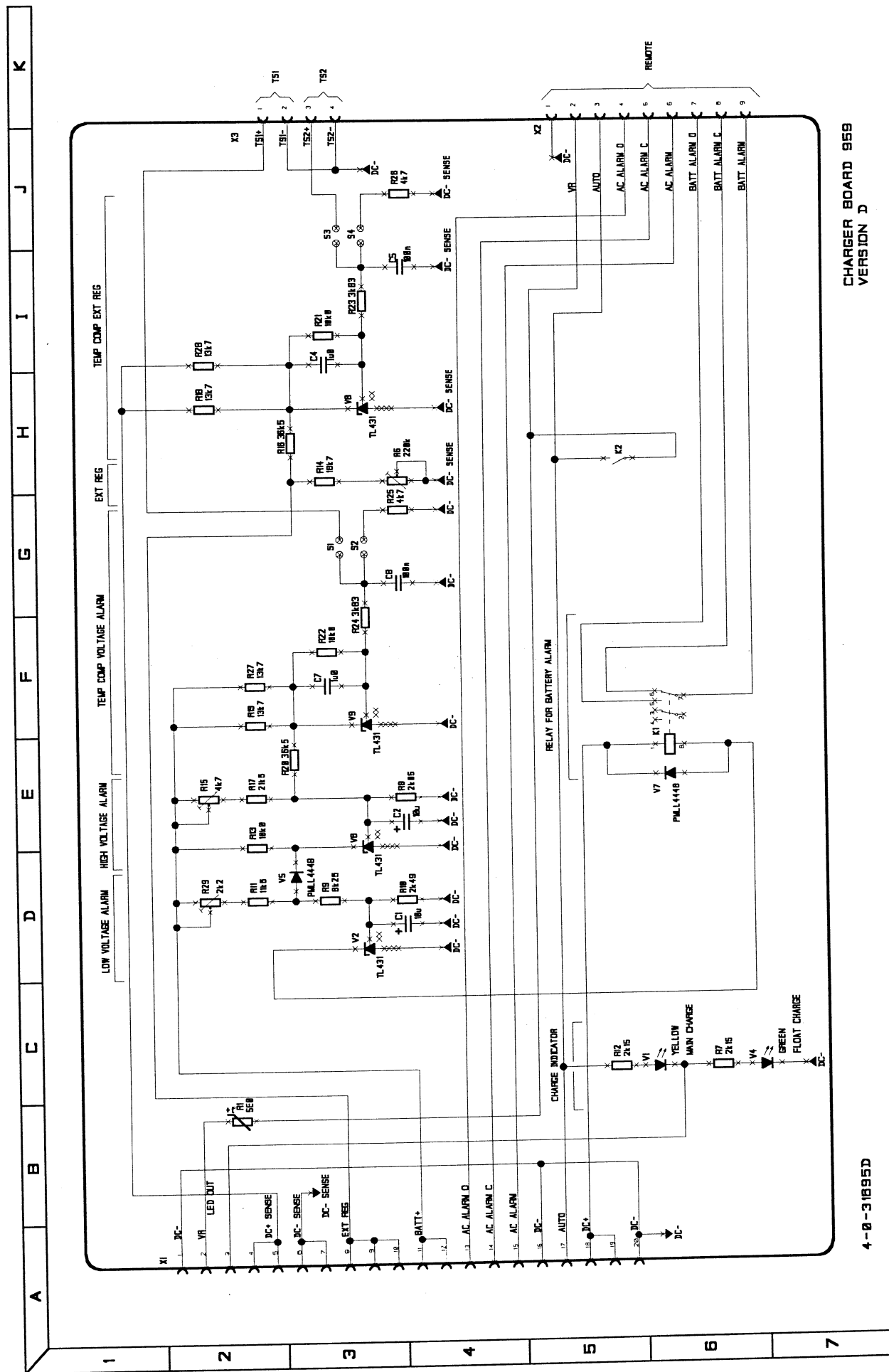
PCB 958 VERSION F

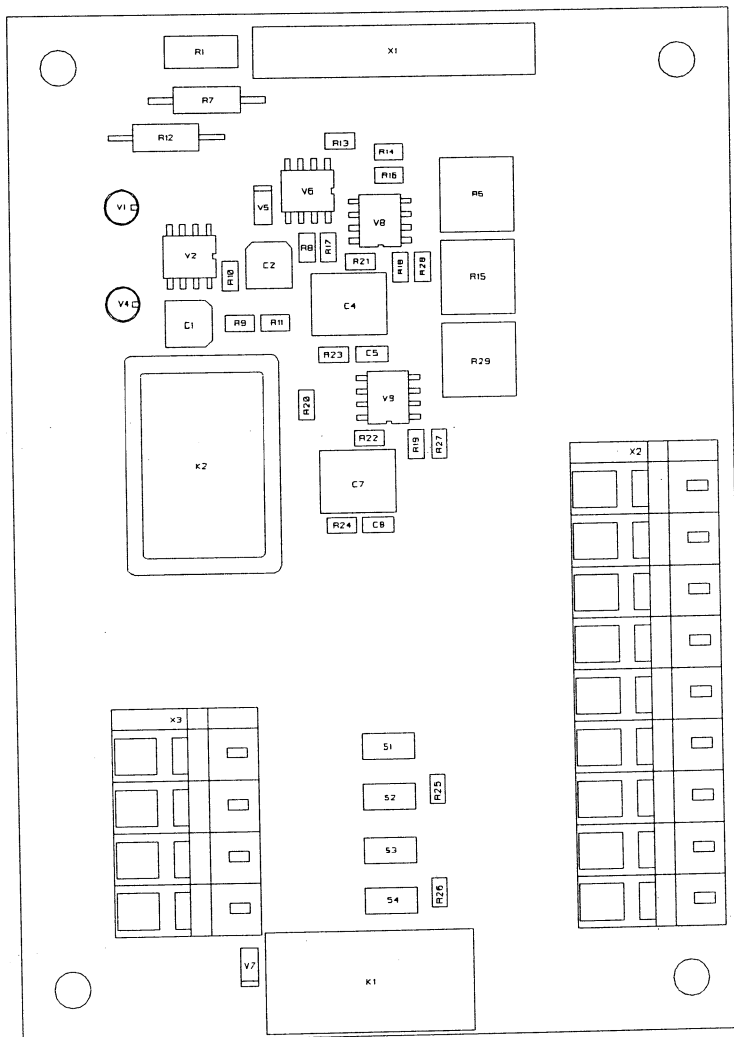


5-6-31634E COMP 1

AC POWER SUPPLY BOARD 958
VERSION E
VIEWED FROM TOP SIDE

8.2 CHARGER BOARD





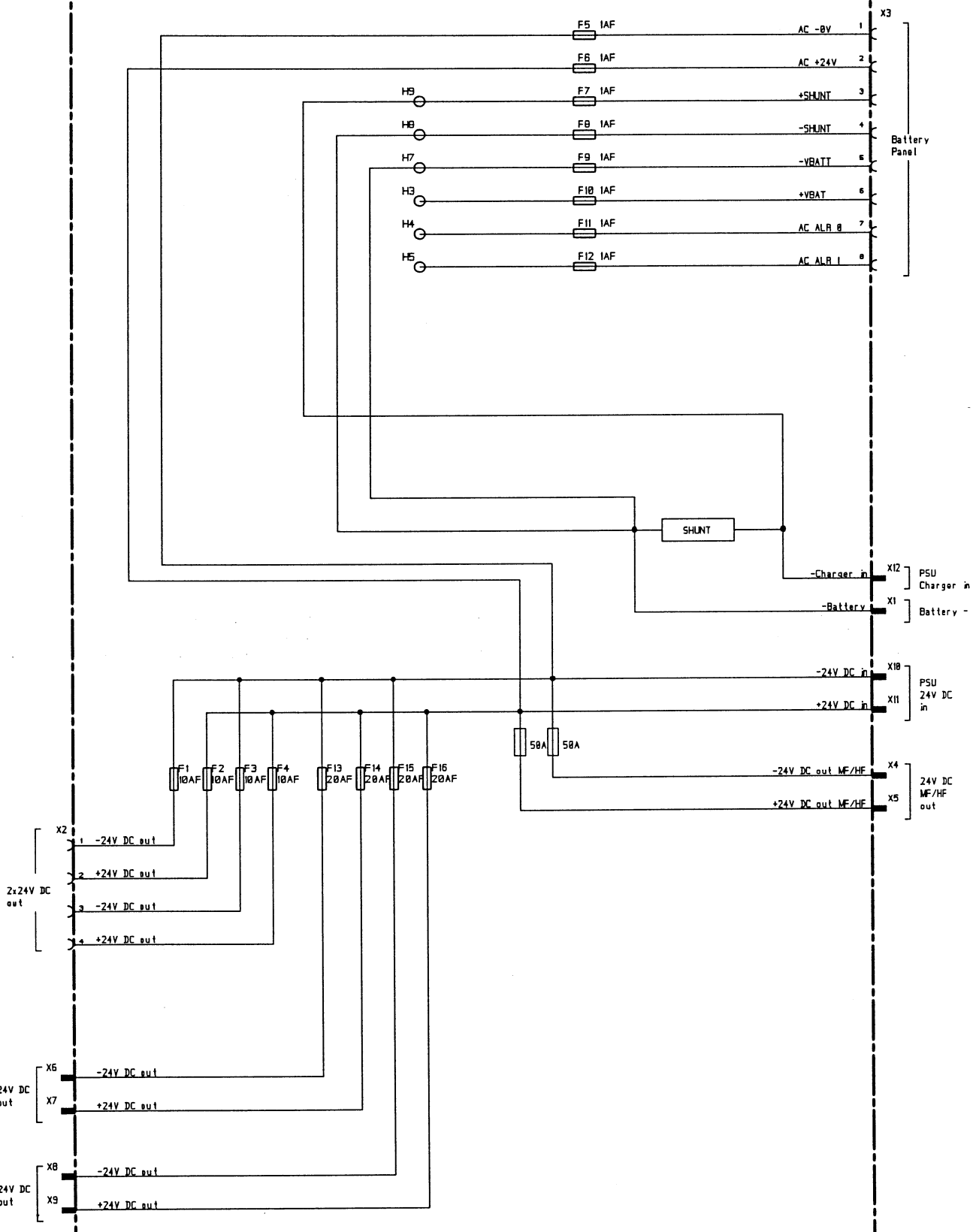
5-6-31695D

CHARGER BOARD 959
VERSION D
VIEWED FROM TOP SIDE

8.3 CONNECTION BOARD

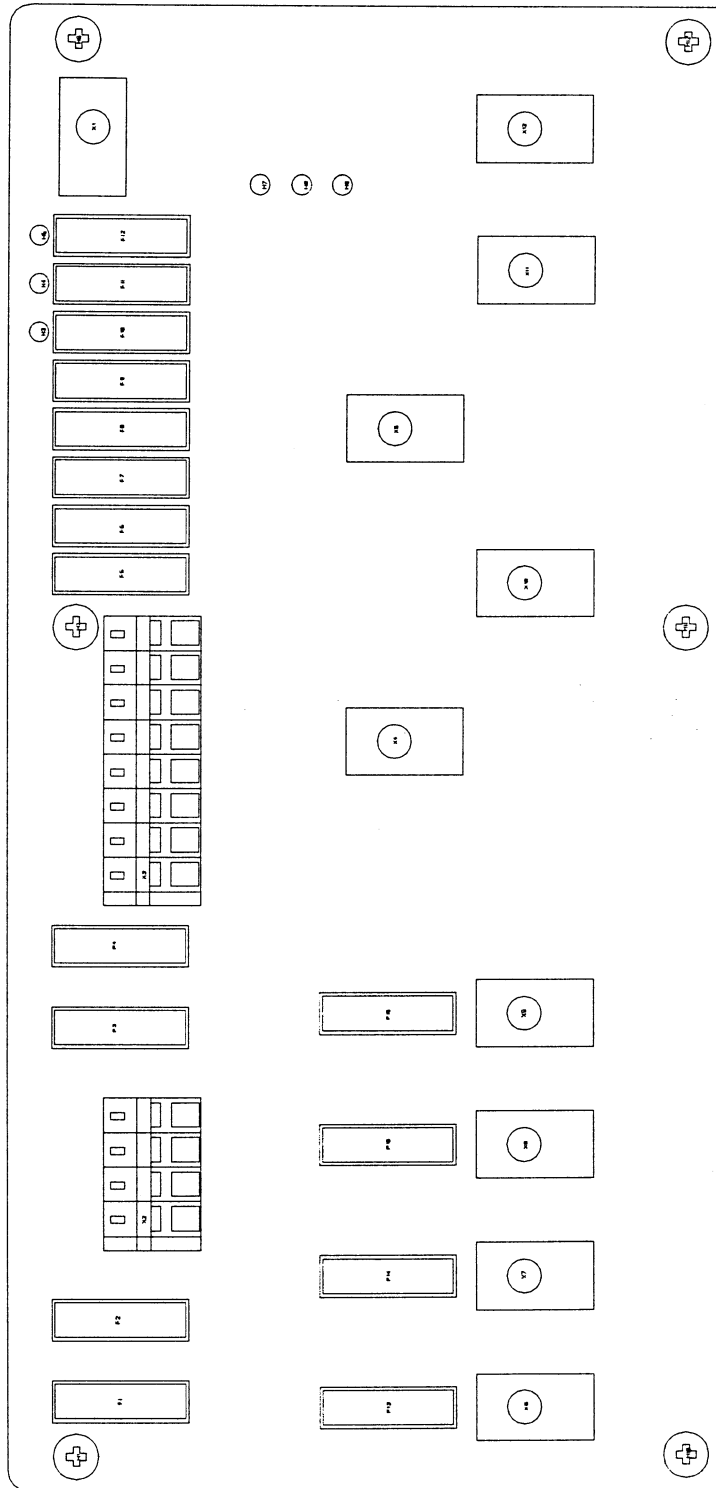
A | B | C | D | E | F | G

CONNECTION BOARD 34815

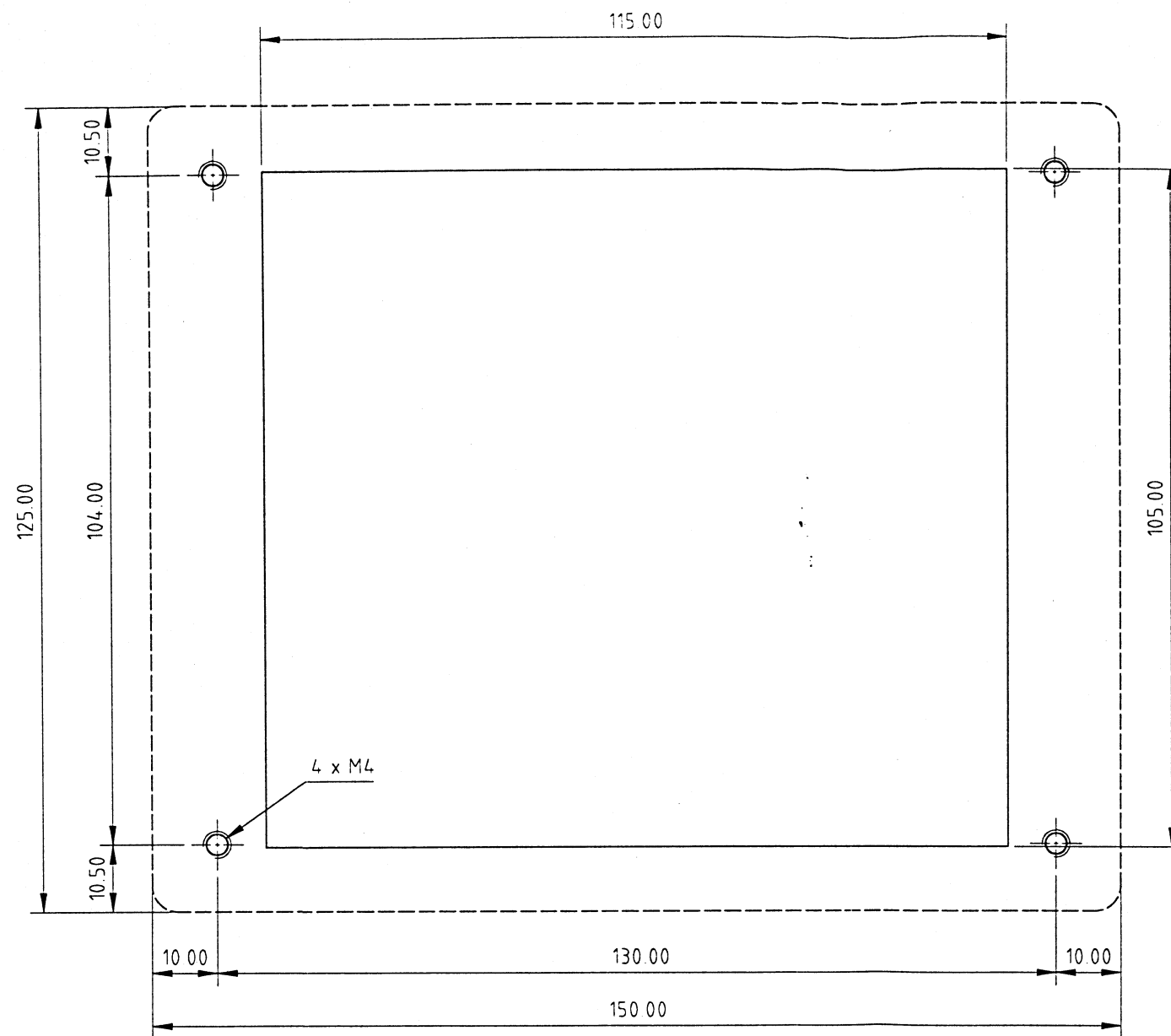


MAIN

4-0-34815A



CONNECTION BOARD
5-6-34815 A
VIEWED FROM TOP SIDE



CUT FOR MOUNTING BRACKET

FOR YOUR INFORMATION

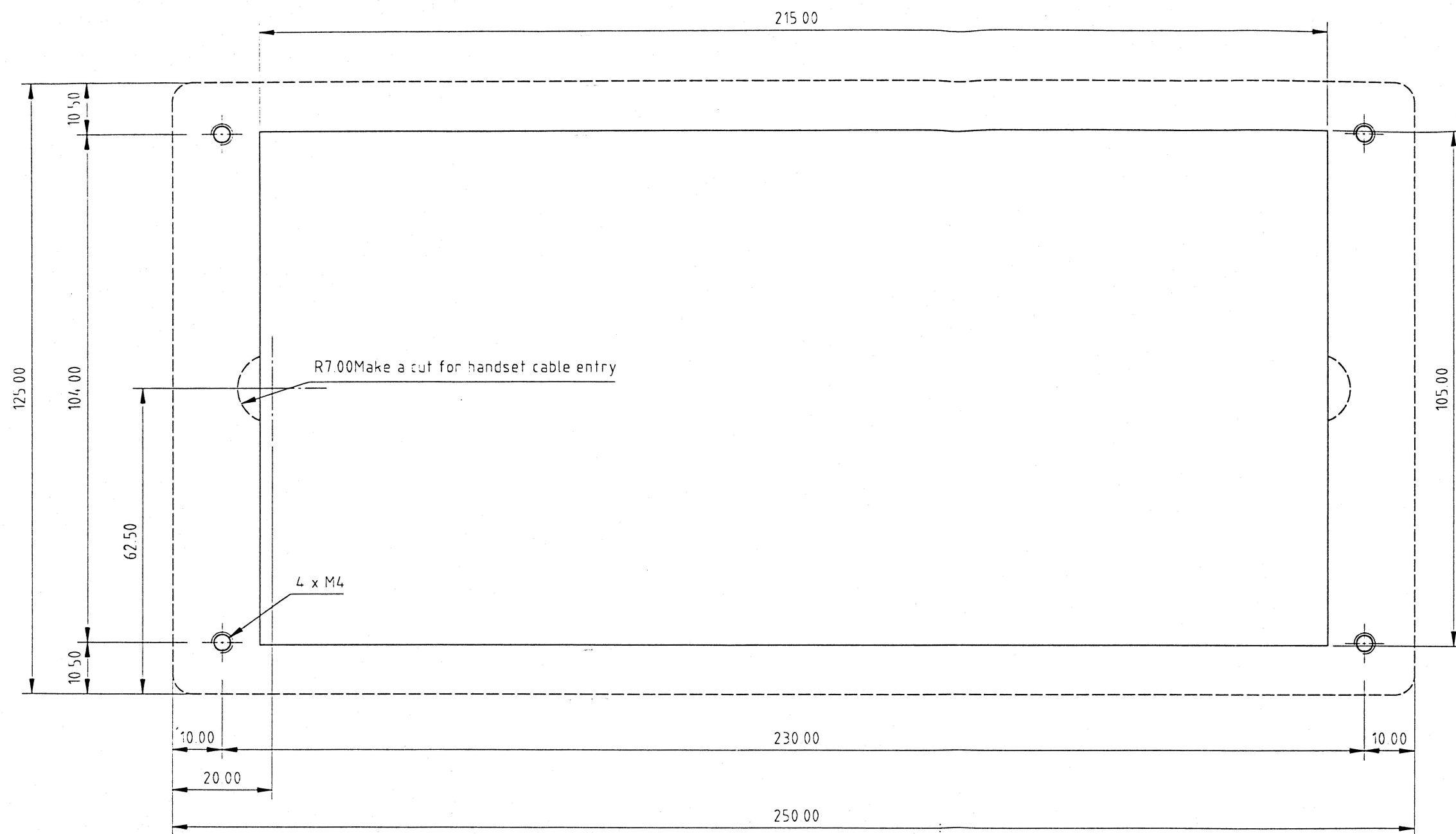
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DOKUMENTATION
MA IKKE ANVENDES TIL PRODUKTION
DATO: 07.10.98
VERSION: 3

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		FINISH				
		BESKR				
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		100 x 100mm				TEGN NR 100P3
		RETTELSE				



CUT FOR MOUNTING BRACKET

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MIDLERTIDIG
DOKUMENTATION
MA IKKE ANVENDES TIL PRODUKTION
DATO: 07.10.98
VERSION: 4

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		FINISH			
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