

SAILOR 5082 AC Power Supply / Charger

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Introduction

General description

The AC Power Supply / Charger is designed as a stand alone automatic AC Power Supply/ Battery Charger.

The AC Power Supply / Charger is designed with a Basic group with five fused and separated output lines and a Duplicated group with six fused and separated output lines to ensure independent supply for connected equipment.

The AC Power Supply / Charger will also serve as a fuse/terminal box.

Furthermore AC Power Supply / Charger includes the following features:

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

Technical data

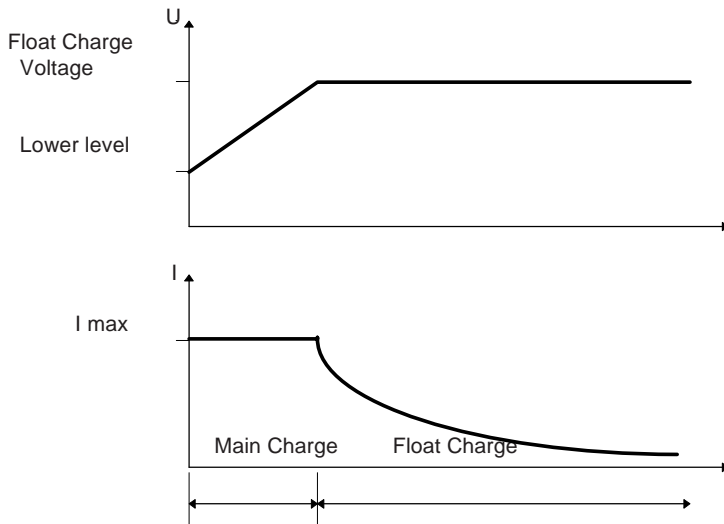
AC input voltages:	110, 120, 220/230, 240V AC +/- 10%
AC input frequency:	50/60 Hz +/- 6%
Float charge voltage:	Adjustable 26.8V - 28.8V to voltage specified by battery manufacturer with potentiometer on Charger Board.
DC output voltage with Charger Board disconnected:	28V
DC output current:	5082 2 x 29 A max.
Charger type:	Automatic, with float charging. IE characteristic.
Battery type:	Lead-acid, open or sealed.
Normal battery capacity:	40 - 400 Ah.
Normal charging time:	Max. 10 hours to 80% capacity (receive condition, 400 Ah battery).
Temperature compensation:	Optional external temperature sensors, NTC type 4.7K Ohm/25° C.
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 32V.
Alarm in case of:	Battery voltage too low (adjustable 22.0 - 24.0V) Battery voltage too high (adjustable 27.0 - 32.0V) Potentiometers on Charger Board.
AC Mains Alarm output:	Make/break relay contacts 0.5 A 32V. Alarm in case of AC supply failure.
Protection:	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: 152 mm, L: 638 mm, W: 440 mm.
Weight:	Approx. 18 kg.
Compass safe distance:	Standard: 2.0 m. Steering: 1.0 m.

Operation

Principle of operation

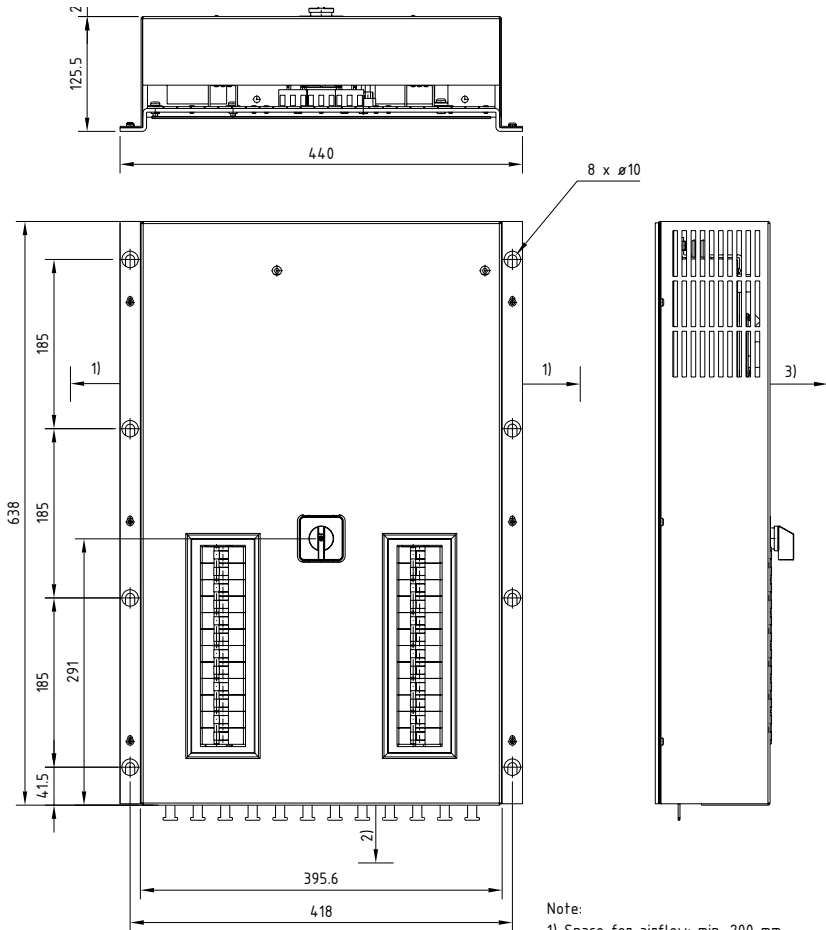
When charging the AC Power Supply/Charger is working as a current generator until the battery voltage reaches the voltage level set by the float voltage potentiometer on the charger board. At this level the AC Power Supply/Charger is changing state to a constant voltage generator to maintain a constant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

TYPICAL CHARGE CURVE



Installation

Outline and dimension



Note:

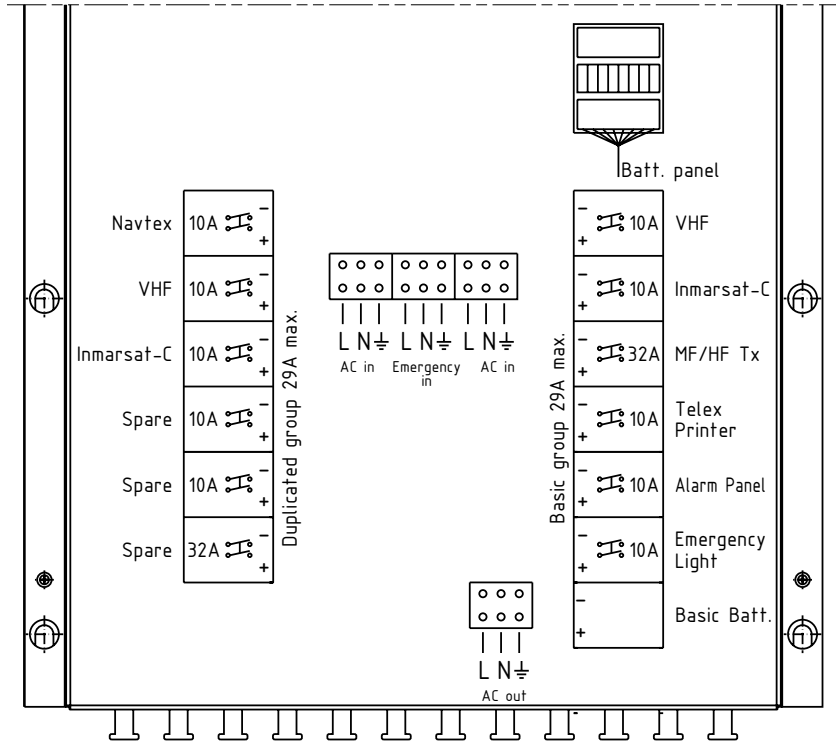
- 1) Space for airflow: min. 200 mm.
- 2) Space for cable and airflow: min. 25 mm.
- 3) Space for service access: min 1000 mm.

All dimensions are in mm.

Weight: 18 kg

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Installation wiring

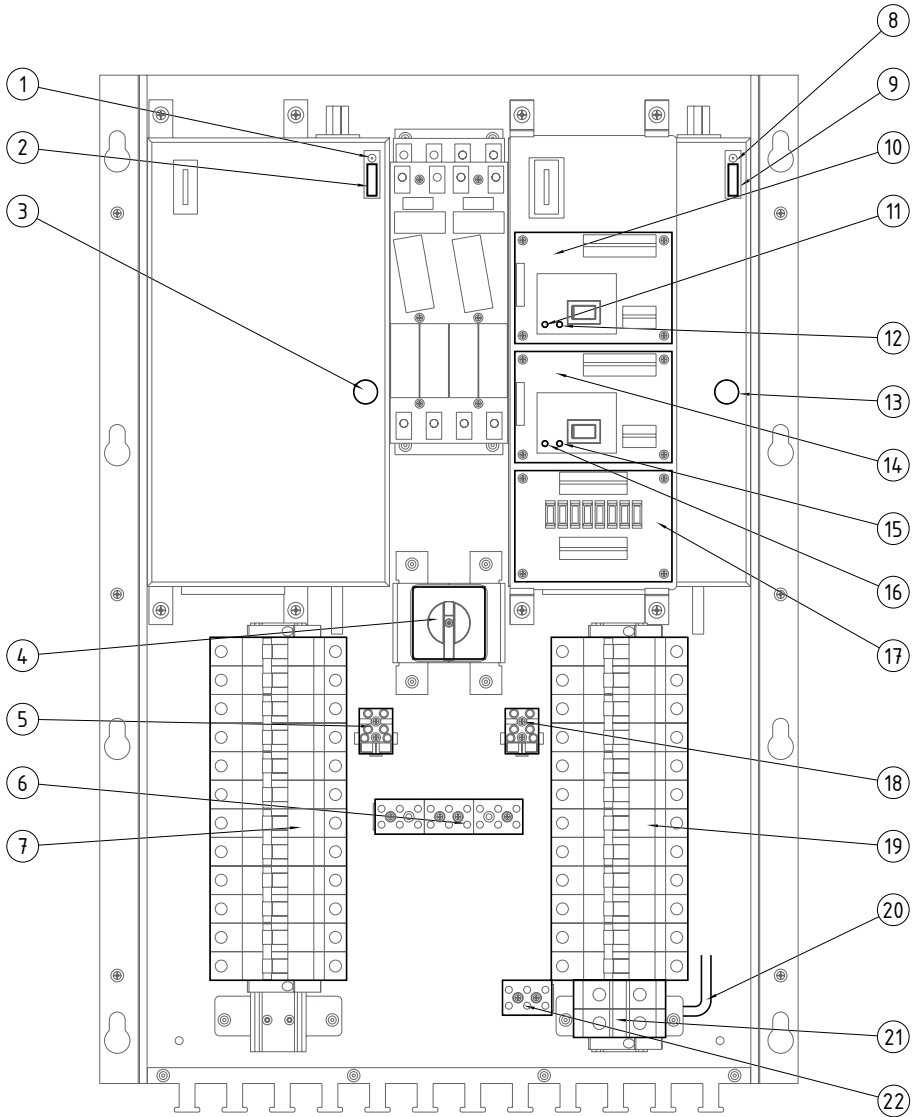


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Overview

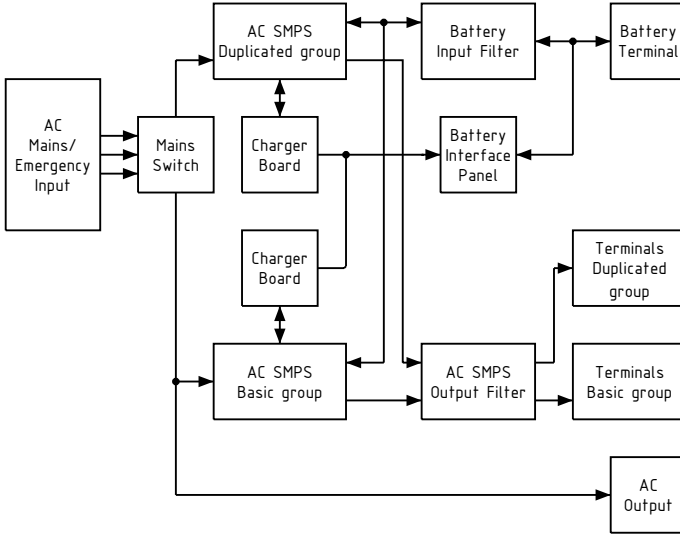
Text explaining overview drawing

1. Mains on indicator for Duplicated group.
2. Fuse for battery connection Duplicated AC SMPS.
3. Voltage selector switch for Duplicated group (must be set to same voltage as Basic group if powered from emergency supply) (Details see chapter AC supply voltage setting).
4. Mains Switch:
Position 0, labelled OFF on cover: The power supply/charger is off.
Position 1, labelled Mains on cover: The power supply/charger is powered from primary mains supply.
Position 2, labelled Emergency on cover: The power supply/charger is powered from emergency mains supply.
5. AC mains fuse for Duplicated group (Details see chapter AC supply voltage setting).
6. Mains terminals.
7. Terminals for Duplicated group.
8. Mains on indicator for Basic group.
9. Fuse for battery connection Basic AC SMPS.
10. Charger Board connected to AC SMPS for Basic group (Details see page 13-16).
11. Main Charge indicator for Charger Basic group.
12. Float Charge indicator for Charger Basic group.
13. Voltage selector switch for Basic group (must be set to same voltage as Duplicated group if powered from emergency supply) (Details see chapter AC supply voltage setting).
14. Charger Board connected to AC SMPS for Duplicated group (Details see page 13-16).
15. Float Charge indicator for Charger Duplicated group.
16. Main Charge indicator for Charger Duplicated group.
17. Battery Panel Interface (Details see chapter Battery Panel interface).
18. AC mains fuse for Basic group (Details see chapter AC supply voltage setting).
19. Terminals for Basic group.
20. Internal shunt.
21. Terminals for Battery.
22. AC out for extra power supply (max. 10A), (switched with Mains switch).



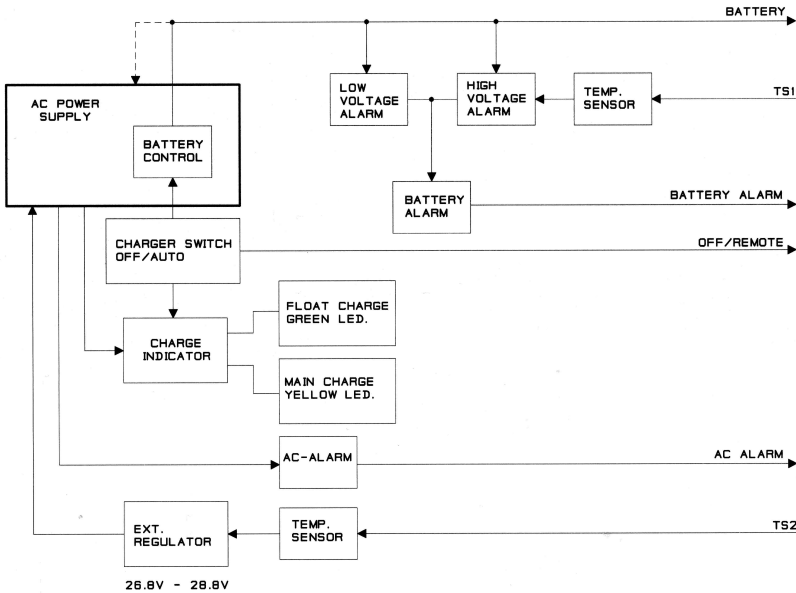
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Block diagram 5082



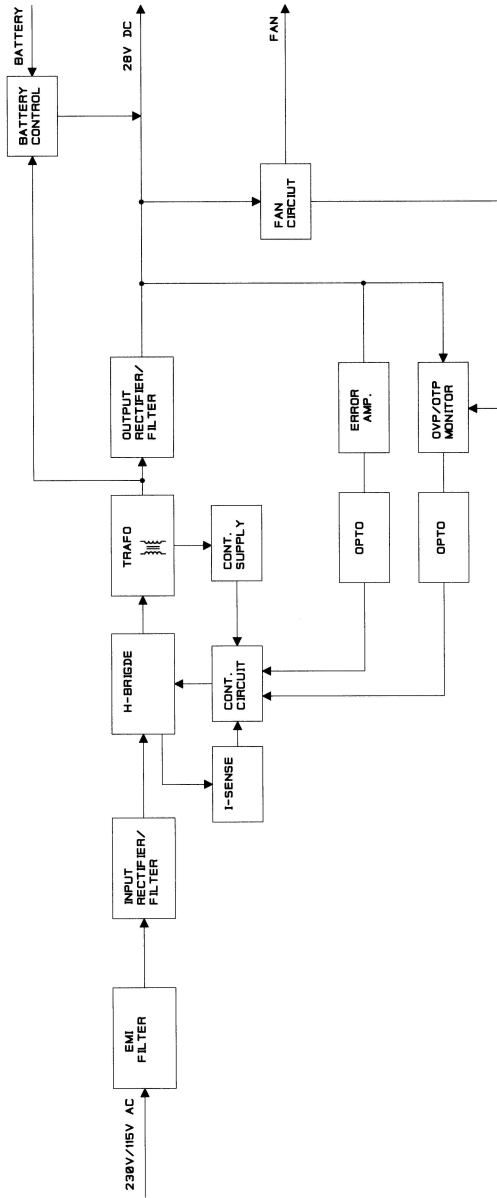
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Block diagram Charger



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Block diagram Power Supply



4-0-34725

AC supply voltage setting

Before connecting the AC Power Supply / Charger 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.

Setting	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

Setting	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

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 26-28V DC (battery +) when AC and battery voltage are both present. Max. 200 mA, 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	AC Alarm	
7	Bat Alarm O	Galvanically isolated battery alarm output. Relay contacts, max. 0.5 A 32V Alarm conditions: Battery voltage < 22 - 24V (adjustable) or Battery voltage > 27 - 32V (adjustable) (terminals 8 and 9 are closed, terminals 7 and 9 are open in alarm condition)
8	Bat Alarm C	
9	Bat Alarm	

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.

Battery alarm adjustment

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

Before starting the adjustment, go through make the following steps:

1. Be sure the AC Power Supply / Charger 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 33V DC to the '**Battery**' terminal.
4. Connect an ohmmeter between the battery alarm output terminals 8 and 9 of the '**Remote**' terminal strip located on the Charger Board.

LOW VOLTAGE ALARM (LVA):

1. Adjust the small power supply to the desired low voltage alarm level (22.0 - 24.0V DC).
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.

HIGH VOLTAGE ALARM (HVA):

1. Adjust the small power supply to the desired high voltage alarm level (27.0 - 32.0V DC).
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.

Float charge voltage adjustment

1. Connect a voltmeter to the terminals `0V DC` and `+24V DC` located on the terminal strip of the Connection Board.
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 AC Power Supply / Charger.
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 next to the Charger Board.
7. Switch the battery charger to the AUTO position.

Battery Panel interface

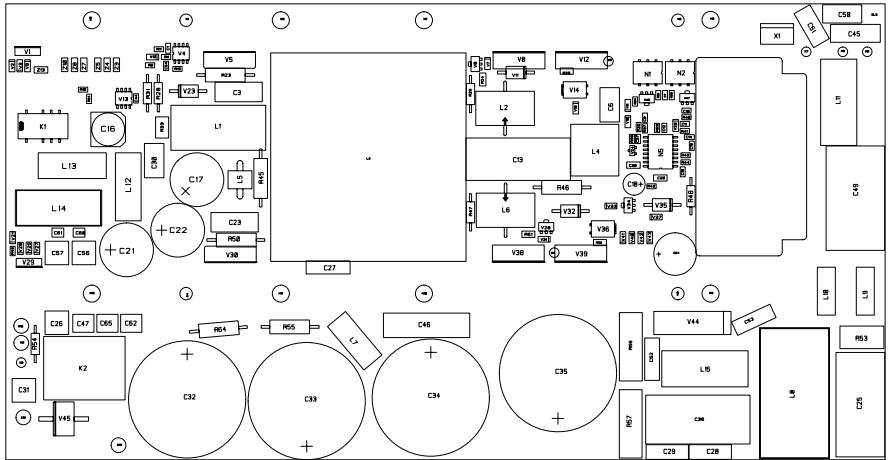
The Battery Panel interface is located to the right under the front cover. It contains a terminalstrip for connecting a Battery Panel.

8-way terminal strip
Batt. Panel Interface.

Terminal	Designation	Description
1	AC alr 1	Galvanically isolated AC alarm output. Relay contacts, max. 0.5A, 32V.
2	AC alr 0	Alarm condition: AC supply missing (terminals 1 and 2 are closed)
3	0VDC	Supply voltage output for alarm and light
4	+24VDC	
5	-Shunt	Current meter output
6	+Shunt	Current meter output, reference
7	-Vbat	Voltmeter output and supply
8	+Vbat	

Schematic diagram

Power Supply Unit

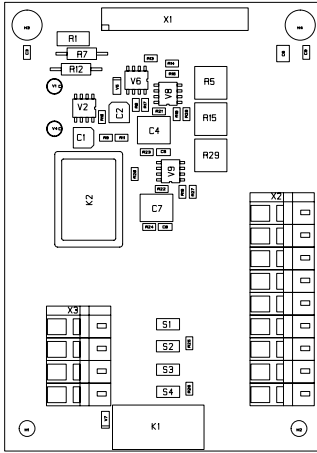


AC SMPS
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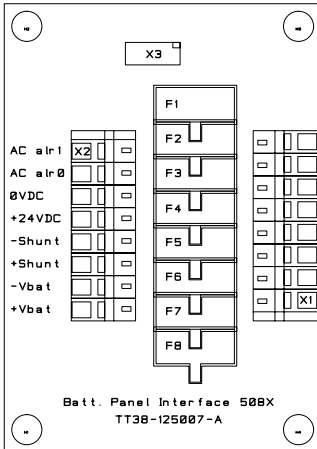
AC SMPS
TT38-125502-B55

Charger Unit



AC SMPS CHARGER
TT38-125503-B56

Battery Panel Interface



Batt. Panel Interface 508X
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TT-98-126900-THR-A

Issue: 0801/Preliminary