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# 1. INTRODUCTION AND GENERAL INFORMATION

1.1 EXD Module is an accessory designed to extended the discharge current capability of the SuperMasterCharger by 20A.

1.2 The standard discharge current is 60A and with the EXD Module it becomes 80A.

1.3 The maximum Power Dissipation will increase from 1.6KW to 2.1KW

1.4 As the total power dissipation is increased, two 20 cell batteries can be discharged up to 40A.

1.5 It connects to the rear of the Charger-Analyzer by way of a Control Cable and a Power Cable.

1.6 The EXD Module has its own FAN Control. The fan will turn on when the temperature reaches 32$^{o}$C.

1.7 The EXD Module is an extension of the Discharge Banks of the Charger-Analyzer.

# 2. BLOCK DIAGRAM

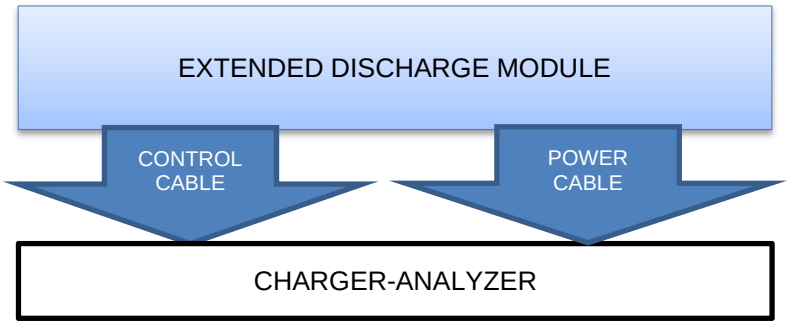


Figure 1 – SMC-EXD Block Diagram


Figure 2 – SMC with EXD

## 3. INSTALLATION

3.1 Make sure that power is off and that the Battery Cable is disconnected from any batteries.

3.2 Connect the Power Cable to the two pin Anderson Connector in the Rear Panel.

3.3 Connect the Control Cable to the 10 pin Connector in the Rear Panel.

3.4 To verify, turn the unit on and invoke VIEW 0. Observe that after the program version it will say “EXD OK”.

3.5 If any of the cables is not connected, VIEW 0 will display “NO EXD” and the maximum current will be limited to the standard 60A and the power dissipation will be limited to the standard 1.6KW.


Figure 3 – Connecting the EXD Module to the Charger-Analyzer

# 4. VERIFICATION OF PERFORMANCE

The following are hints and directions to help you determine if the EXD module is operating correctly.

## 4.1 CURRENT

4.1.1. Verify that the resulting current as seen in the Ammeter is in accordance to the programmed current.

## 4.2 TEMPERATURE

4.2.1. Verify the temperature of the EXD Discharge Module by invoking VIEW 4. T3 and T4 are the temperatures for the EXD Module, shared with the temperatures of Heatsink #2 in the Charger-Analyzer (the highest temperatures are reported).

# 5. TROUBLESHOOTING AND REPAIRS

Note: See section 14 in the Manual for the Charger-Analyzer

## 5.1 Continuous opening of the Discharge Limiter

5.1.1. Disconnect the Power Cable of the EXD Module to determine if the problem is in the EXD Module or in the Discharge Banks of the Charger-Analyzer.

5.1.2. Proceed per Section 14.3 in the Charger-Analyzer Manual to determine if there is a transistor causing the problem.

## 5.2 Overtemperature

5.2.1. Verify that the FANs are fully operational.

5.2.2. Disconnect the EXD Module Control Cable to determine if the problem is in the EXD Module or in the Discharge Banks of the Charger-Analyzer.

## 6. REPLACEABLE MODULES AND PARTS

**6.1 Power Transistor MJ15023 – P/N 4822J150230**

**6.2 Power Resistor, 0.33 OHM, 3W, 5%, Flame Proof – P/N 47413CR33F**

**6.3 Thermistor Cable Assembly – P/N 4332RT24P1**

**6.4 DC FAN, 14V – P/N 261112BFSR**

**6.5 EXD Module Interface Circuit Board (internal) – P/N 9879603808**

**6.6 EXD Module Control Cable (internal) – P/N 9862603308**

**6.7 EXD Module Power Cable (Internal) - 9811603308**

## 7. BATTERY TESTING NOTES

***Note: Battery testing is a hazardous operation. Handle batteries with extreme care as they are capable of very high discharge currents if short circuited.***

7.1 Check the Battery Manual, CMM or Aircraft Manufacturer Instructions for information on charging, discharging and testing.

# 8. DISCLAIMER

## 8.1 Qualified Personnel

- The EXT Extended Discharge Module for the SuperMasterCharger is a precision device intended to be operated by personnel qualified in the servicing of aircraft batteries.

## 8.2 JFM's Responsibility

- JFM Engineering's responsibility is limited to the repair/replacement of any malfunctioning part of the system (not responsible for any losses incurred from the usage of the system).

## 8.3 User's Responsibility

- It is the user's responsibility to verify suitability of the equipment in the intended applications.
- It is the user's responsibility to verify the performance of the Crowns and to operate and maintain them in accordance with the above given instructions.
- It is the user's responsibility to test batteries in accordance to the instructions and recommendations of the manufacturers of the batteries.
- It is the user's responsibility to operate Battery Test Equipment within standard safety procedures applicable to the operation of a Battery Test Facility.
- It is the user's responsibility to observe all necessary precautions and to be equipped with personal protective equipment when working with batteries to avoid injury due to electrolyte splashing, short circuits with tools and to avoid injury due to the size and weight of the batteries.

# 9. REVISION INDEX

**Table 1 - Index of Revisions**

| REVISION | DATE | NOTES |
|---|---|---|
| V0.1 | 10 January 2017 | Preliminary |
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