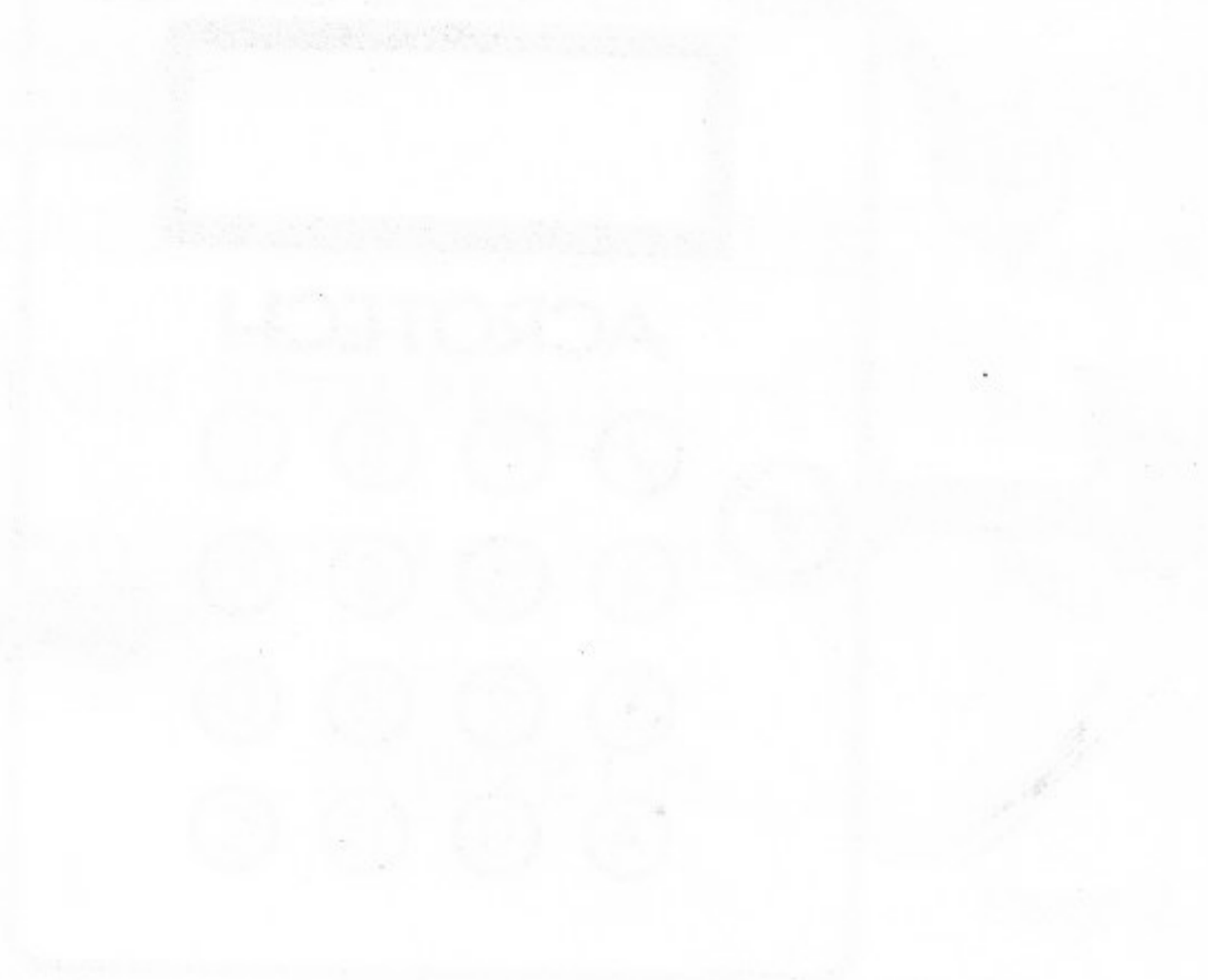


Instruction Manual 95207  
for Part # 20391

Digital Sensor Simulator

Model DSS-485



**ACROTECH**

4770-E Chino Avenue, Chino, CA 91710 USA

(909)465-0610 Fax(909)465-0403

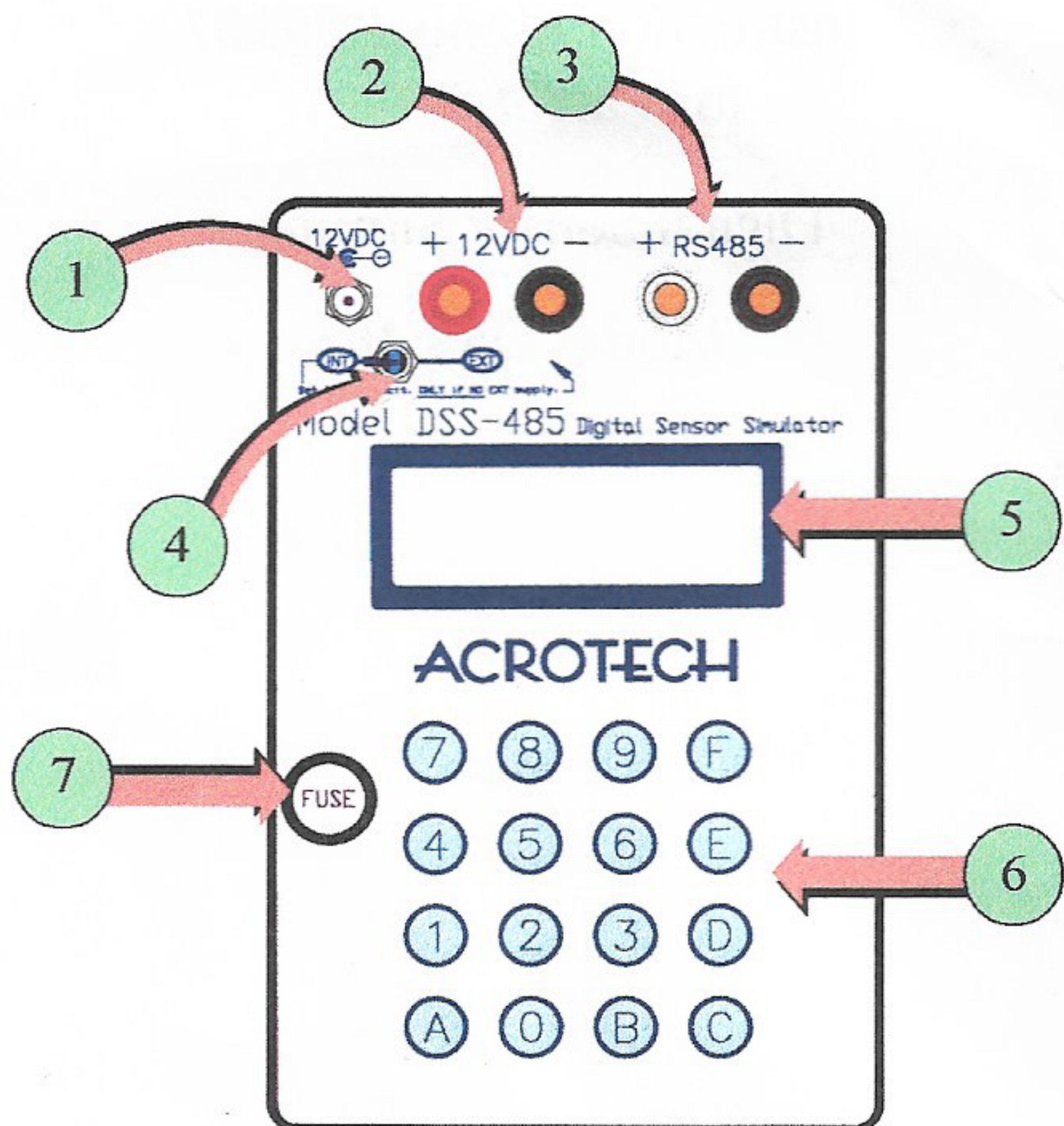


FIGURE 1

## TABLE OF CONTENTS

GENERAL DESCRIPTION	Page 5
LOAD CELL CONNECTIONS	Page 6
POWER OPTIONS	Page 6
OPERATION	Page 8
COMMANDS WITH LOAD CELLS	Page 9
COMMANDS WITH READOUTS	Page 11
COMMANDS WITH LOAD CELLS & READOUTS	Page 12

### Drawing List

FIGURE 1	Page 2
FIGURE 2	Page 13
FIGURE 3	Page 14
FIGURE 4	Page 15

Acrotech's Digital Sensor Simulator Model DSS-485 is designed specifically for use with the Totalcomp strain gage sensor digitizing module with RS485 output, and readouts and signal processing systems designed for use with that module. The Simulator can be used with the Load Cell, the readout / signal processing system or with both simultaneously. The Simulator's signal and communications are on the RS485 line pair, and utilize 19,200 baud with 8 data bits, one stop bit and no parity protocol.

The DSS-485 is all digital in operation, therefore no calibration is required. Occasionally Acrotech will release updated versions of the software program that runs the DSS-485. Updates may be for purposes of matching new releases of the software that operates the Totalcomp strain gage sensor module, or to provide additional functions to make the simulator even more useful with the load cell and related signal processing equipment.

### **Load Cell Connections:**

Connect the four wires from the load cell to the appropriate color coded binding posts. These binding posts are used to connect the load cell, a readout, or both. They will accept stripped wires, spade lugs, single banana plugs and dual banana plugs on .75" centers.

### **Power Options:**

A 115VAC to 12VDC power adapter is provided with the DSS-485. This adapter will power the Simulator and if desired the load cell. The Simulator may be powered by an external 12VDC source, typically the readout that is powering the load cell. The Excitation select switch on the Simulator allows for the load cell to be powered by the AC power adapter that is powering the Simulator when the switch is set to "INT" (internal). However, the switch MUST be set to "EXT" (external) if any wires connected to the 2 binding posts marked 12VDC on the Simulator are from another power supply. For diagrams of different methods to connect the Load Cell and power sources see Figures 2-4.

### **A) Using the AC adapter only (Ref. Figure 2)**

- 1) Set the Excitation switch on the Simulator to "INT".
- 2) Plug the adapter into the Simulator and then into the 115VAC source.

### **B) AC adapter and External 12VDC (Ref. Fig 3)**

- 1) You MUST set the Excitation switch to "EXT".
- 2) Plug the AC adapter into the Simulator and then into the 115VAC source.
- 3) Connect the two wires for the external 12VDC excitation from the Readout or other source to the red and black binding posts on the Simulator, and turn on that source. It is not necessary to connect the excitation lines from the readout to the Simulator, in fact it is better not to if possible because of the risk of blowing the fuse, etc.

### **C) External 12Vdc power only (Ref. Figure 4)**

- 1) Set the Excitation switch to "EXT".
- 2) Connect the two wires for the 12VDC excitation from the Readout or other source to the red and black binding posts on the Simulator, and turn on that source. The power from the binding posts will be automatically connected to the required points inside the simulator.

## **Operation**

When power is applied to the DSS-485 it will conduct several tests in order to attempt to determine what type of operating mode the operator needs. If the 'E' key is pressed while the power is first being applied the DSS-485 will go directly to the main menu, skipping the display with the version and the following RS485 activity inspections.

The first thing the DSS-485 does is to display its model type and software version. Next the Simulator checks the RS485 line for any active readouts, computers, etc. operating on the line. If there is activity the Simulator will switch to the monitor mode and continually display the line activity.

If there is no activity detected the Simulator will send out a request on the RS485 line to check for any attached load cells. If one or more load cells respond the Simulator will begin displaying the current load on each load cell.

If no load cell response is detected the Simulator will go directly to the main menu and wait for the operator to select a function.

Pressing the 'E' key will 'escape' any activity unless the current display shows otherwise, since certain activities like addressing must allow for use of the 'E' key.

## **Commands with Load Cells**

### **1) Changing the Load Cell address:**

From the main menu select "2:LC add". The Simulator will determine the address of all connected load cells. If only one load cell is detected the Simulator will display that address value and allow you to enter two new characters for the address, they must be 01 to ff. If there are 2 or more load cells connected the Simulator will tell you that and require you to enter the address you want to change. Keep in mind that the higher the load cell address the longer it will take for the load cell to respond when its force is requested via the '00r' command requesting all load cell forces.

After you enter the new address the Simulator will automatically begin displaying the force output of all connected load cells. If more than one load cell is attached and you would prefer to see only the force output of a specific load cell press 2 for the option to select the load cell to read.

### **2) Read the Load Cell load output:**

From the main menu select "5:LC force". The Simulator will determine if 1 or more than 1 load cells are connected. For only one load cell the display will begin showing the load cell force output and scroll up with the last value at the bottom.

With more than one load cell the display will appear to shift the readings up in sets. This is due to the rate at which new readings come in. All readings are displayed prior to new requests being sent by the simulator.

### **3) Read the Load Cell Parameters**

The DSS-485 can request and display all of the user allowed parameters. To view any of the following select "7:LC Parameters" from the main menu.

<u>Temperature</u> in degrees C:	aaTTcrlf	aaVTddlf	
<u>Number temp samples averaged:</u>	aaTNcrlf	aaVNddlf	
<u>raw temp Counts:</u>	aaTCcrlf	aaVCddlf	
<u>Uncompensated load data:</u>	aaTUCrlf	aaVUddlf	
<u>number load Samples averaged</u>	aaTScrlf	aaVSddlf	
<u>Mode:</u>	aaTMcrlf	aaVMddlf	
<u>Gain:</u>	aaTGcrlf	aaVGddlf	
<u>Ppm hot or cold:</u>	aaTPcrlf	aaVPHddlf	aaVPCddlf
<u>Version:</u>	aaTVcrlf	aaVVddlf	
<u>Response:</u>	aaTRddlf	aaVRddlf	

When only 1 load cell is attached the simulator will automatically request and display the information from the load cell. If 2 or more load cells are connected the simulator will require the user to enter the address of the load cell they wish the parameters displayed for.

## **Commands with Readout**

### **1) Load simulation:**

From the main menu select "3:SIM forc". Enter the load value to be simulated (0 to +/- 7 digits, no letters or decimal point). The Simulator will then respond to each properly addressed, load value request by the readout with the simulated load output. The request must be for either '00' or the channel the Simulator is addressed as (default at powerup is '01', use main menu function "1:DSS add" to change).

### **2) Temperature simulation:**

From main menu select "4:SIM tmp". Enter the temperature value to be simulated (0 to +/- 3 digits in degrees C (x 0.1), i.e. 22.5 degrees will be entered as +225). The value will be transmitted the same way by the Simulator. The Simulator will then respond to each properly addressed, temperature value request by the readout with the simulated temperature output. Request must be for the channel the Simulator is addressed as.

### **3) Verify data from readout:**

From the main menu select "6:Monitor". The Simulator will act as a monitor to display all messages occurring on the RS485 lines. The display scrolls up with each new message, thereby showing the last 4 messages received.

**Commands with Load Cell & Readout**

With both the Load Cell and Readout connected the simulator can perform most of the functions that it can do with either the load cell or the readout. It can also act as a monitor to display all messages occurring on the RS485 lines. The display scrolls up with each new message, thereby showing the last 4 messages received. From the main menu select "6:Monitor". Problems may occur when the connected readout is sending commands and the simulator also attempts to send commands. If the connected readout is sending commands it is best to either disable the sending commands of the connected readout if possible or only use the monitor mode when such a readout and a load cell are connected.

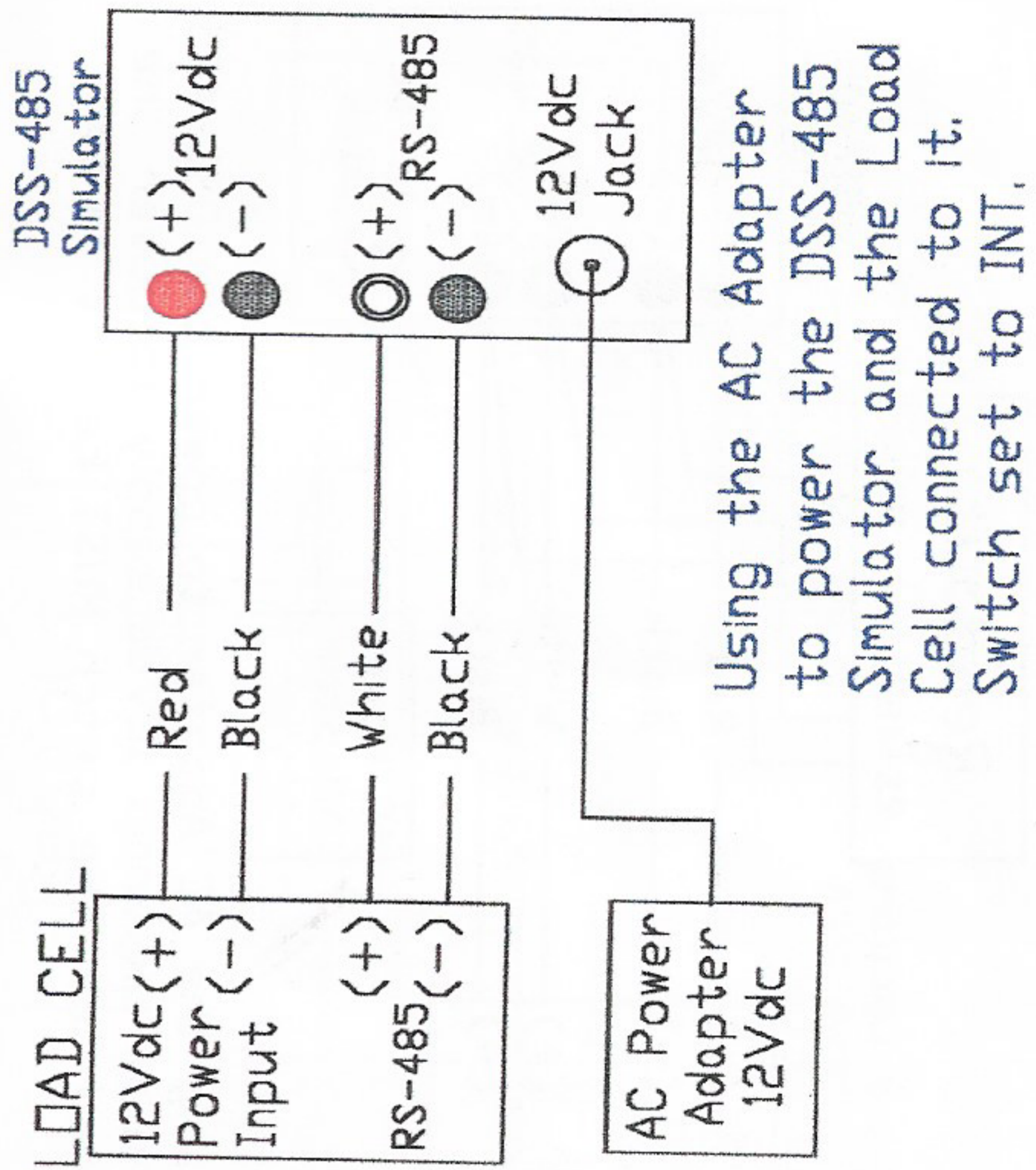
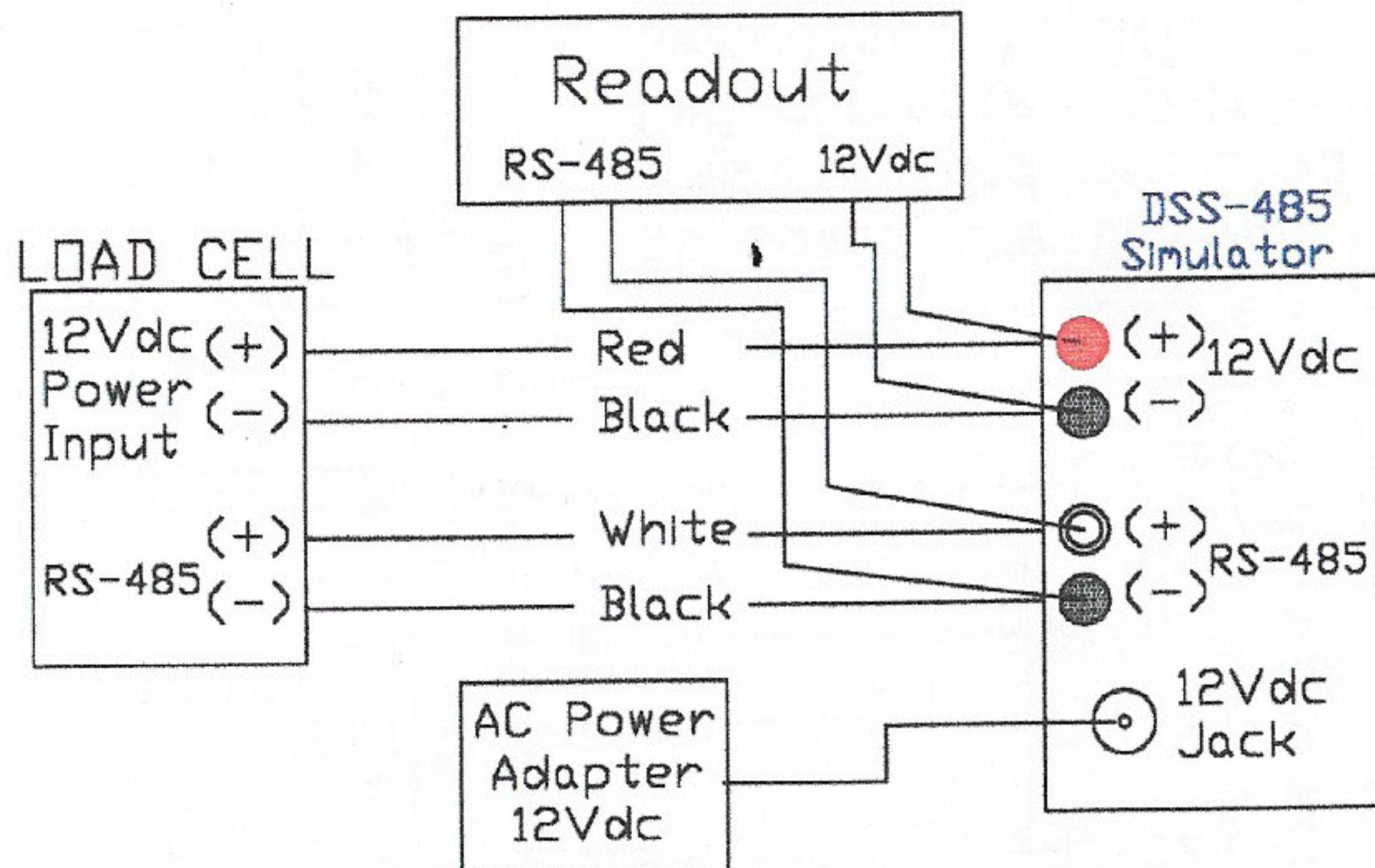


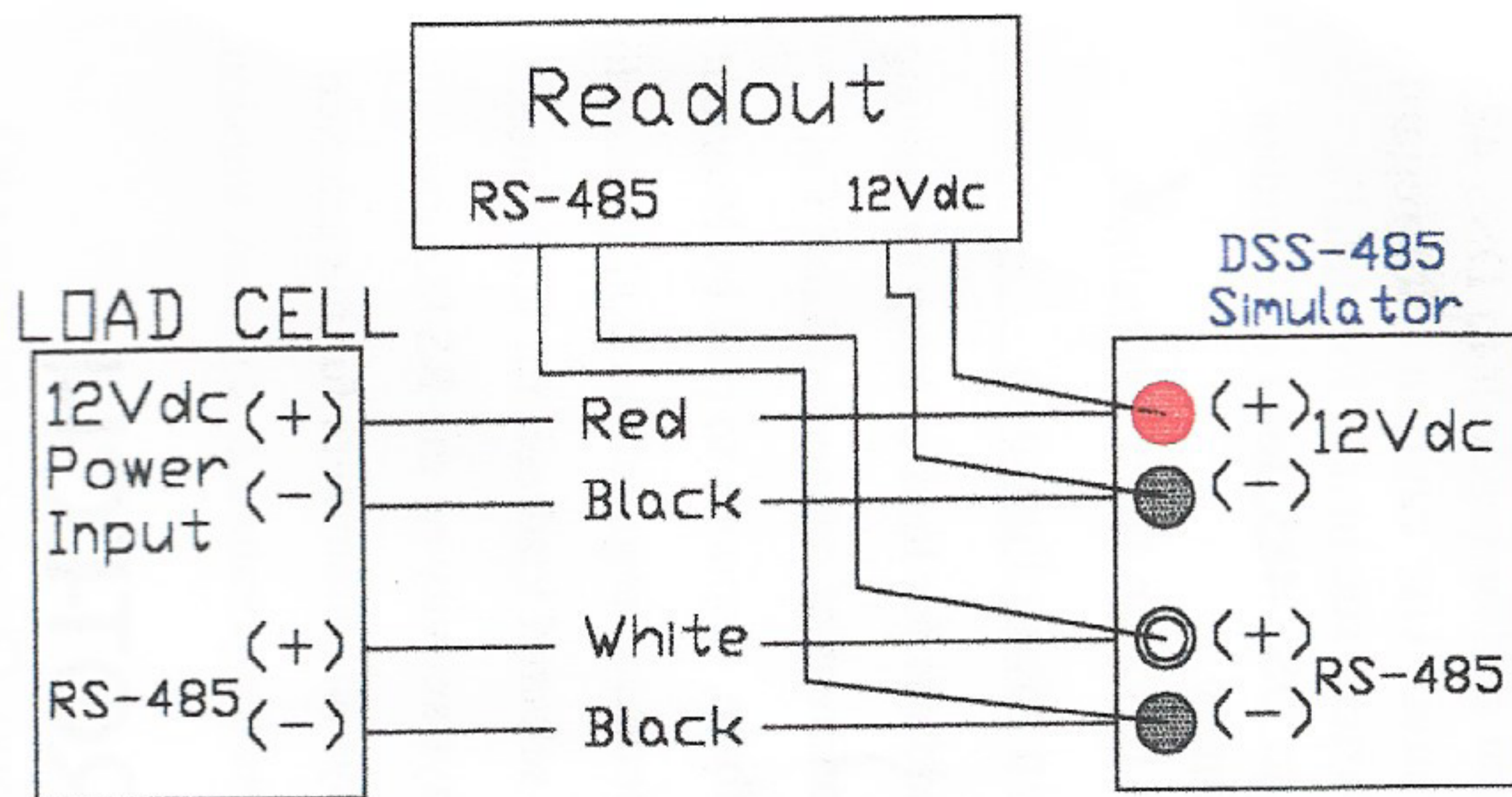
FIGURE 2  
Page 13

FIGURE 3  
Page 14



Using the AC Adapter to power the DSS-485 and an External 12Vdc supply to power the Load Cell. The switch MUST be set to EXT.

FIGURE 4  
Page 15



The Load Cell connections are optional when the simulator is used only to checkout a readout.

Using the External 12Vdc supply from the Readout only. The switch MUST be set to EXT.



## Quick Start Guide

- 1) Attach load cell and/or readout to DSS-485 terminals as required. Use caution with regard to the Excitation switch, see inside for details.
- 2) Apply power to DSS-485, load cell and/or readout appropriately.
- 3) Select desired function from list below.

<u>Keypad</u>	<u>Main Menu Function</u>	
---------------	---------------------------	--

- |   |   |  |
|---|---|--|
| ① | Set DSS-485 address for load or temp simulating.  |  |
| ② | Set or change address of connected Load Cell.   |  |
| ③ | Simulate load/force, responds to poll by Readout.   |  |
| ④ | Simulate Temperature, responds to poll by Readout.  |  |
| ⑤ | DSS-485 polls selected load cell for load/force.  |  |
| ⑥ | DSS-485 displays activity on the RS485 line.  |  |
| ⑦ | DSS-485 displays all parameters for the selected load cell, such as temperature & software version. |  |

## **ACROTECH**

4770-E Chino Avenue, Chino, CA 91710 USA  
(909)465-0610 Fax(909)465-0403

f/DSS-485.PPP