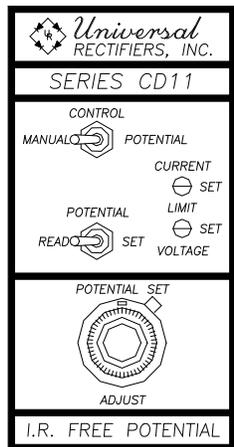




## BASIC OPERATING INSTRUCTIONS FOR SOLID STATE IR FREE RECTIFIERS

### MANUAL OPERATION



1. Manual-Potential switch must be in manual position.
2. Link bars must be in lowest setting.
3. Turn rectifier on.
4. Observe output.
5. Turn rectifier off.
6. Adjust link bars
7. Repeat steps 3-6 until desired output is reached.

NOTE: Solid state controls have no effect in manual mode and need not be adjusted. Solid state printed circuit boards may be removed for inspection or repair in manual mode. Unit will remain operational.

### CONSTANT POTENTIAL OPERATION

1. With the Manual-Potential switch in the Manual position, increase link bars to obtain an output slightly higher than required, but still within the rating of the rectifier.
2. Place the Manual-Potential switch in the potential position.
3. Place the Read-Set switch in the Set position. (The switch must be held in this position.)
4. Observe readings on the reference meter. Adjust to desired **IR FREE** potential with Potential Set knob on face of controller. This control has a locking device. Take care not to force the control if the locking device has been activated.

5. Return the Read-Set switch to the Read position and the unit will resume operation as an automatic potential control unit. Output will be regulated to maintain the preset potential.

NOTE: Readings on the reference meter are IR Drop Free and indicate the same reading as an instant off reading taken at the electrode terminals with a conventional instrument. Your unit operation relies solely on the signal it receives from the electrode. Care should be taken to prevent unwanted "generated" signals in the reference lead wire that can greatly affect the operation of the rectifier unit.

1. Avoid long reference electrode leads
2. Do not install the reference leads in the same conduit as the **AC** power leads or the **DC** leads.
3. Do not connect the **STRUCTURE** terminal post to the Negative output terminal. A separate small gauge wire must be connected from the **STRUCTURE TERMINAL** post to the protected structure.
4. When possible, run the Electrode and Structure leads together in a (2) conductor shielded cable.

#### **CURRENT LIMIT - CONSTANT CURRENT OPERATION** (optional)

NOTE: The **CURRENT LIMIT** is factory set at rated output of rectifier. If different current limit is desired then proceed with the following steps.

1. With Manual-Potential switch in the Manual position, increase link bars to obtain a current output slightly higher than required, but still within the rating of the rectifier.
2. With unit turned off, install a temporary shorting jumper across **ELECTRODE** and **STRUCTURE** terminal posts.
3. Place Manual-Potential switch in Potential position.
4. Turn unit on. Output should return to the output as adjusted in step (1) above.
5. Adjust **CURRENT LIMIT** control (with small screwdriver) counter clockwise (decrease) to desired current output.
6. Turn unit off and remove jumper from **ELECTRODE-STRUCTURE** terminal post.
7. Turn unit on. The unit is now set up to operate as a potential control unit with a current limit set at a specific setting from step (5) above.

NOTE: By leaving the shorting jumper across the **ELECTRODE-STRUCTURE** terminal post, the unit operates as a **CONSTANT CURRENT** unit only. (The potential control mode is defeated.) The output current will maintain at the current setting with nominal circuit resistance changes. If there is an extreme change in external load circuit resistance, link bars may need to be moved to a higher setting to maintain the preset current.

### **VOLTAGE LIMIT - CONSTANT VOLTAGE** (optional)

NOTE: The **VOLTAGE LIMIT** is factory set at rated output of the rectifier. If different voltage limit is desired then proceed with the following steps.

1. With the Manual-Potential switch in the Manual position, increase link bars to obtain a voltage slightly higher than required, but still within the rating of the rectifier.

2. With the unit turned off, install a temporary jumper across the **ELECTRODE** and **STRUCTURE** terminal post.

3. Place Manual-Potential switch in the Potential position.

4. Turn unit on. Output should return to the output as adjusted in step (1) above.

5. Adjust **VOLTAGE LIMIT** control (with small screwdriver) counter clockwise (decrease) to desired voltage output.

6. Turn unit off and remove jumper from **ELECTRODE** and **STRUCTURE** terminal post.

7. Turn unit on. The unit is now set up to operate as a potential voltage.

NOTE: By leaving the shorting jumper across the **ELECTRODE-STRUCTURE** terminal post, the unit operates as a **CONSTANT VOLTAGE** unit only. (The potential control mode is defeated.) The output current will maintain at the current setting with nominal circuit resistance changes. If there is an extreme change in external load circuit resistance, link bars may need to be moved to a higher setting to maintain the preset current.

All modes of operation of the unit can only go as high as the link bar settings will allow. If desired Potential cannot be obtained, and unit is not operating against a voltage or a current limit. Increase the link bars for more output.

## **TROUBLE SHOOTING HINTS**

NOTE: A wiring diagram for use by experienced personnel is provided. Only experienced electrical personnel should attempt location and repair of electrical difficulties, should they occur. Some symptoms of elementary trouble and the possible remedy are as follows:

### **1. NO D.C. CURRENT OR D.C. VOLTAGE OUTPUT**

**CHECK:** A.C. overload protection for blown fuses or tripped breaker. Check A.C. power supply. (Is desired potential maintained?) If desired potential is maintained then unit has automatically cut back output of rectifier to maintain potential.

### **2. D.C. VOLTAGE BUT NO D.C. CURRENT READING**

**CHECK:** D.C. ammeter. Check D.C. connections and external D.C. circuit for electrical continuity.

### **3. D.C. CURRENT READING BUT NO D.C. VOLTAGE READINGS**

**CHECK:** Check D.C. voltmeter.

### **4. MAXIMUM RATED D.C. VOLTAGE CANNOT BE ATTAINED**

**CHECK:** A.C. line voltage. Check link bar adjustments for maximum. Check accuracy of D.C. voltmeter. Check that unit is not operating against a preset voltage and or current limit.

### **5. MAXIMUM RATED D.C. CURRENT CANNOT BE ATTAINED**

**CHECK:** Load resistance of external D.C. circuit. Check that unit is not operating against a preset voltage and or current limit.

### **6. REFERENCE METER PEGGED FULL SCALE AND NO D.C. OUTPUT**

**CHECK:** Electrode and Structure connections and external reference circuit for electrical continuity.

NOTE: Give model and serial numbers when writing or calling Universal Rectifiers Inc. in reference to this rectifier.