



**BASIC OPERATING INSTRUCTIONS**  
**RK25 SOLID STATE CONTROL RECTIFIERS**  
**POTENTIAL CONTROL, CURRENT ADJUST, and VOLTAGE ADJUST**

**MANUAL OPERATION**

1. Auto-Manual switch must be in manual position.
2. Link bars must be in lowest setting.
3. Turn rectifier on.
4. Observe output. Adjust link bars to desired output.

**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 Auto-Manual Control 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. Turn Rectifier OFF. Place the Auto-Manual Control switch in the potential position.
3. Place the Read-Set Potential switch in the Set position. (The switch must be held in this position.)
4. Observe readings on the reference meter. Adjust to desired potential with Potential Set knob. 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 "On Potential" and indicate the same reading as 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**

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 the Auto-Manual Control 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. Turn Rectifier OFF and adjust CURRENT LIMIT knobs fully clockwise.
3. Place the Auto-Manual switch in the AUTO mode.
4. Turn Rectifier on. Output should return to the output as adjusted in step one above.
5. Adjust CURRENT LIMIT control counter clockwise (decrease) to desired current output. Rectifier will maintain this current setting with nominal circuit resistance changes. If there is an extreme change in external load circuit resistance, link bars may need to be at a higher setting to maintain the preset current. Constant current operation is a function of the current limit feature of this unit.

### **VOLTAGE LIMIT - CONSTANT VOLTAGE OPERATION**

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

1. With the Auto-Manual Control 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. Turn Rectifier OFF and adjust VOLTAGE LIMIT knobs fully clockwise.
3. Place the Auto-Manual switch in the AUTO mode.
4. Turn Rectifier on. Output should return to the output as adjusted in step one above.
5. Adjust VOLTAGE LIMIT control counter clockwise (decrease) to desired voltage output. Rectifier will maintain this voltage setting with nominal circuit resistance changes. If there is an extreme change in external load circuit resistance, link bars may need to be at a higher setting to maintain the preset voltage. Constant voltage operation is a function of the voltage limit feature of this unit.

### **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.