

# INSTRUCTION MANUAL



**KEPCO** An ISO 9001 Company.

**BOP 1000W  
RETROFIT  
KIT 219-0530**

## BOP 1000W FIRMWARE RETROFIT KIT

### 1. DESCRIPTION

Kepeco KIT 219-0530 contains ten identical PROMs used to upgrade the firmware for the GPIB interface of ten BOP 1000W power supplies. The upgraded GPIB interface firmware is more reliable in multiple unit operation, streamlines operation, adds recording of errors and provides for recovery of all errors reported by the GPIB.

This KIT applies only to

- Models BOP 50-20MG, BOP 72-14MG and BOP 100-10MG, all revisions
- Models BOP 10-75-MG, BOP 20-50MG and BOP 36-28MG, revision 5 and higher
- Models BOP 10-75-MG-26566, BOP 20-50MG-26828 and BOP 36-28MG-26567

NOTE: The 10V, 20V and 36V models below revision 5 which are NOT marked with 26566, 26828, 26567, respectively, must first be upgraded using KIT 219-0491 which must be ordered separately.

When the upgrade is complete, a five digit number is added to the Model number of the modified unit to identify the upgrade(s) installed.

### 2. INSTALLATION INSTRUCTIONS

#### 2.1 MATERIAL REQUIRED (SEE TABLE 1.)

**TABLE 1. MATERIAL REQUIRED**

MATERIAL	LOCATION	QUANTITY
• PROM (Kepeco P/N 250-0691) Replaces U2 in Digital Board A1	Provided in this Kit	10
• Instruction Manual 228-1636	Provided in this Kit	1
• ESD (Electrostatic Discharge) wrist strap (Kepeco P/N 114-0080)	Provided in this Kit	1
• IC Extractor	Provided in this Kit	1

## 2.2 PRELIMINARY PROCEDURE

1. Prior to upgrade, turn on unit and note the serial number when it is displayed during power-up. Record Serial number for configuration after upgrade is complete.

## 2.3 DISASSEMBLY PROCEDURE

1. Turn power off, disconnect the unit from source power and remove line cord.
2. Remove the two mounting ears from the chassis by removing three screws from each.
3. Remove the top cover of the unit by removing 14 screws as follows: two at top of the front panel, four at each side, (one towards the rear, three at the bottom) and four at the top of the rear panel.

## 2.4 DIGITAL BOARD A1 PROM REPLACEMENT (SEE FIGURE 1)

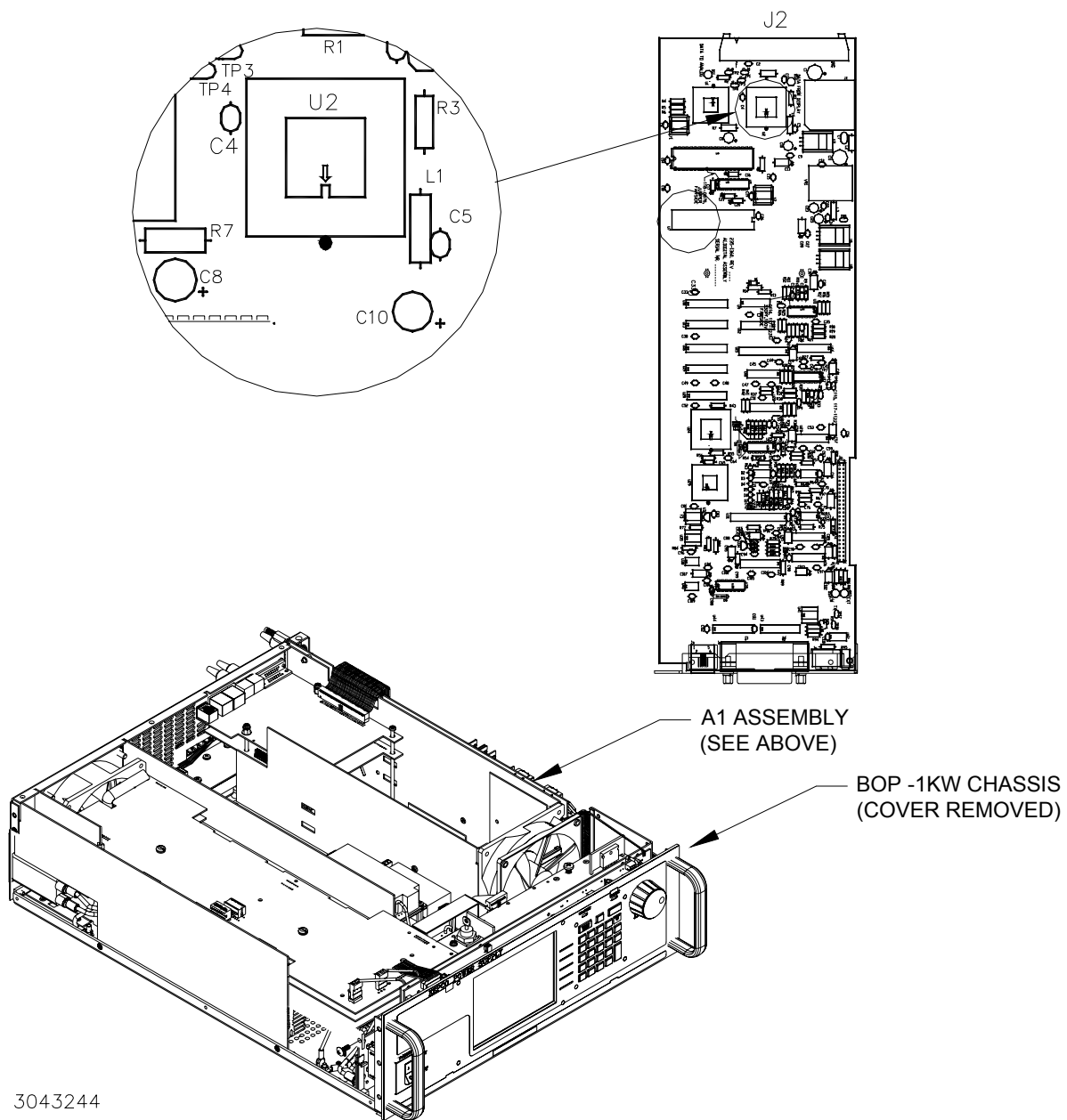
1. On Digital board A1, locate PROM, U2 (see Figure 1).

### **CAUTION: FAILURE TO USE THE ESD WRIST STRAP MAY DAMAGE THE PROM!**

2. Take the ESD wrist strap from kit and use the peel and stick area to connect the wrist strap to the chassis of the BOP. Place the wrist strap on your arm as indicated by the instructions for the wrist strap.
3. Touch the IC tube to the chassis of the BOP. Open one end.
4. Pry out the PROM U2 using an IC extractor. Insert the hook, first into one slot and then the other, and gently pry out the PROM. Place the PROM in the tube and close the tube.
5. Open the other end of the IC tube and remove the replacement PROM (P/N 250-0608 U2) from the tube.
6. Insert the PROM into the socket, insuring the dot on the chip is oriented as shown in Figure 1.
7. Close the IC tube. Remove wrist strap and disconnect it from the BOP chassis.

## 2.5 REASSEMBLY

1. Attach the cover to the chassis using 14 screws.
2. Attach the two mounting ears to the chassis using three screws for each
3. Install the power cord, connect the unit to source power, turn on power supply and proceed to Initialization, PAR. 3.
4. At the rear of the unit, for Models BOP 10-75-MG-26566, BOP 20-50MG-26828 and BOP 36-28MG-26567, add the following marking to the model number: -26865 to identify the unit as having the GPIB firmware upgrade installed. For all other models, add -26862 to the model number to identify the unit as having the GPIB firmware upgrade installed.



**FIGURE 1. DIGITAL BOARD A1 PROM LOCATION**

### 3. INITIALIZATION

After the upgrade has been completed it will be necessary to restore max/min settings to the factory defaults from the front panel, and store the serial number and factory default password settings using a SCPI command via remote interface.

1. At the front panel, press **F5** then use **↓** to highlight **Max/Min Settings**. Press **F1** to display the Max/Min Settings menu. Press **F2** to set all the Max/Min settings to the factory default. Then press **F4** to save the settings for power-up.
2. To reset the unit password to "default", use a remote interface and send the following SCPI command:  
`syst:pass:cen default`
3. To establish the Serial Number use a remote interface to send the string `DIAG:SER XXXXXX` where XXXXXX is serial number recorded during the preliminary procedures (PAR. 2.2, step 1).
4. Cycle power to the unit, turning it OFF, then ON using the POWER ON/OFF circuit breaker.

### 4. INSTRUCTION MANUAL CHANGES

When multiple BOP 1KW units are used and a write command is followed by a read command, a means of ensuring that the data is available to be read is required. This can be done by either inserting a short delay (at least one millisecond) between the write and read command, or the status byte must be polled to determine when the data available bit is set.

- In a language such as C, or Basic, the delay can be inserted by invoking the delay function with a period of 0.002.
- In LabView the delay can be inserted by using the timer functions.
- To use a poll of the status byte to determine when the data available bit is set, refer to Section 3 of the BOP -1KW Technical Manual: MAKING SURE THE PREVIOUS COMMAND IS COMPLETE.