

# INSTRUCTION MANUAL



**KEPCO** An ISO 9001 Company.

**ATE-DMG  
EXT. CONTROL  
KIT**

## ATE-DMG EXTERNAL CONTROL FIELD UPGRADE KITS

**219-0439, 219-0440, 219-0441, 219-0463**

### 1. DESCRIPTION

Kepeco Kits 219-0439 for ATE 36-30DMG, 219-0440 for ATE 100-10DMG, 219-0441 for ATE 25-40DMG and 219-0463 for ATE 75-15DMG allows these models to be upgraded to accommodate external control of the output. Each kit contains a specially modified PC-12 connector (adapter assembly A11) with associated interconnect cable and a PROM which upgrades the firmware.

### 2. INSTALLATION OF COMPONENTS

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

**TABLE 1. MATERIAL REQUIRED**

MATERIAL	PART NUMBER	LOCATION	QUANTITY
• PROM Replaces U16 in Board A7	Different with each kit	Provided in this Kit	1
• Adapter assembly A11 with Interconnect cable.	Different with each kit	Provided in this Kit	1
• Instruction Manual	KEPCO P/N 228-1469	Provided in this Kit	1
• ESD (Electrostatic Discharge) wrist strap (KEPCO P/N 114-0080)	KEPCO P/N 114-0080	Provided in this Kit	1
• IC Extractor	114-0079	Provided in this Kit	1
• Phillips Screw Driver	N/A	Not Supplied	N/A

#### 2.2 DISASSEMBLY PROCEDURE

1. Turn power off, disconnect the unit from source power and remove line cord.
2. Remove the top cover of the unit by removing 20 screws as follows: two at top of the rear panel and nine on each side.

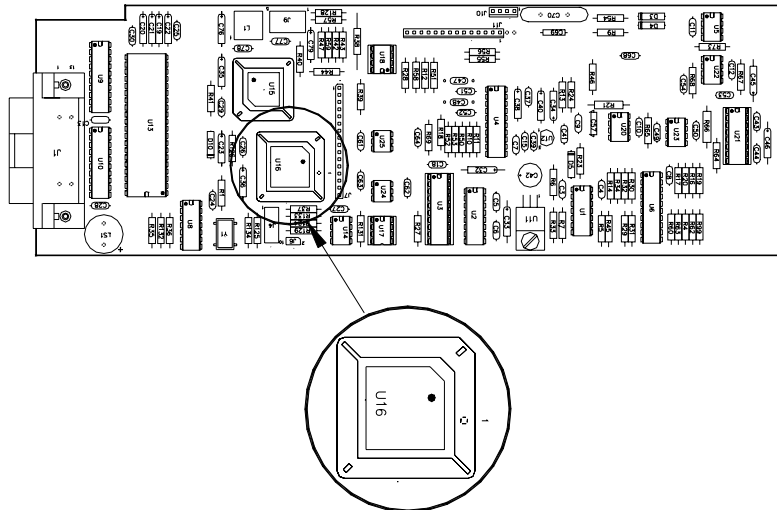
#### 2.3 PROM REPLACEMENT PROCEDURE (SEE FIGURE 1)

NOTE: The PROM included in this Kit updates the firmware to Rev 6.3. If the firmware is already at Rev 6.3 or later, it is not necessary to replace the PROM. Skip to PAR. 2.4 for Adapter Assembly replacement. Verify the PROM revision by pressing the MENU Key on the ATE-DMG keypad until the display shows the operating configuration. (See PAR. 2.8 of the ATE-DMG Technical Manual.)

1. Locate PROM, U16 on Digital board A7 (see Figure 1).
2. Take the wrist strap from kit and use the peel and stick area to connect the wrist strap to the chassis of the ATE-DMG. 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 ATE-DMG. Open one end.
4. Pry out the PROM 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 from the tube.
6. Insert the PROM into the socket, ensuring the dot is oriented as shown in Figure 1.

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7. Reclose the IC tube. Remove wrist strap and disconnect it from the ATE-DMG chassis.
8. Proceed to PAR. 2.4 to replace the Adapter Assembly



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**FIGURE 1. DIGITAL BOARD A7 PROM LOCATION**

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

## 2.4 ADAPTER ASSEMBLY A11 REPLACEMENT PROCEDURE (SEE FIGURE 2)

NOTE: See PAR. 2.2 for disassembly.

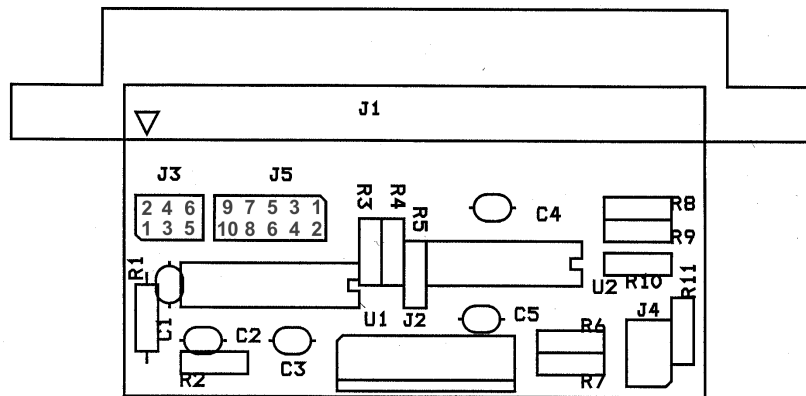
1. Unplug interconnecting cable going to A7J1 from A11 Assembly.
2. Remove and discard A11 assembly and interconnecting cable assembly.
3. Install new A11 Assembly and connect new interconnecting cable from A11J2 to A7J1.

## 2.5 REASSEMBLY

1. Attach the cover to the chassis using 20 screws.
2. Install the power cord and connect the unit to source power, then proceed to PAR. 2.6 to initialize and calibrate the unit.

## 2.6 INITIALIZATION AND CALIBRATION

1. Turn on power supply. The unit will initialize with ENTER PS TYPE displayed on the LCD.
2. Use the keypad to enter the voltage followed by the current (e.g., for the ATE 25-40DMG, enter 2540), then press ENTER (refer to Table 4-1 in ATE-DMG Service Manual).
3. The unit must then be calibrated by following the prompts displayed on the LCD (see Table 4-1 of ATE-DMG Service Manual).



**FIGURE 2. ADAPTER ASSEMBLY A11, COMPONENT LOCATION**

### 3. TECHNICAL MANUAL ADDITIONS

#### 3.1 FAST/SLOW MODE

PAR. 2.7.4 steps 4 through 7 of the ATE-DMG Service Manual are replaced by the following: Remove jumper on adapter assembly A11 between J3 pins 1 and 2; install jumpers between J3 pins 3 and 4 and between J3 pins 5 and 6. NOTE: Spare jumpers located on J5.

#### 3.2 USING THE EXTERNAL ANALOG REFERENCE

The following paragraphs describe the external control features available after the field upgrade kit has been installed.

The ATE-DMG now has the capability to control the output using an external d-c analog reference voltages. Analog references for both voltage and current are required to produce an output. Two uncommitted amplifiers (preamps "A" and "B") included in the unit can be used for signal conditioning. Each preamp has an inverting input (-), non-inverting input (+), and output, and a zero adjustment, and are accessible via A11J5 pins as shown in Figure 3. (For further details about Preamp "A" and "B" go to [www.kepcopower.com/support](http://www.kepcopower.com/support) and download the manual for ATE 1/4 Rack, 1/2 Rack 3/4 Rack or Full Rack, PAR's 3-37 through 3-84.)

Connections to A11J5 can be made via discrete wires, a flat ribbon cable not exceeding 1 foot in length or by discrete wires terminated into crimp style pins inserted into a 5x2 housing (not supplied). The following parts are recommended, but not supplied: ribbon cable: AMP 746285-1 (Kepco P/N 142-0246); Housing for discrete wires: Molex 39-01-2100 (Kepco P/N 142-0434); Pins: Molex 39-00-0039 (Kepco P/N 107-0290, 4 ea.).

NOTE: Connector A11J5 has two spare jumpers installed. When making connections to A11J5, move each spare jumper to a single pin of connector J3 (DO NOT SHORT J3 PINS).

1. Connect a 0 to 10V voltage reference to A11J5 pin 1 (pin 6 common); 0V programs the output voltage to zero, 10V programs output voltage to full scale.
2. Connect a 0 to 1V current reference to A11J5 pin 2 (pin 8 common), 0V programs the output current to zero, 1V programs output current to full scale.
3. Turn on the external reference feature by sending the DIAG:EXT 01 command via the GPIB interface.
4. To access the external reference feature from the front panel, with the power supply in command entry status **⏏**, press **MENU** key 13 times until the top line of the display reads **Extern. Ref On** or **Extern. Ref Off**, and the bottom line reads **0=Off**, **1=On**. Enter 1 to enable or 0 to disable and press **ENTER** to enable or disable the feature.
5. To access the feature from the GPIB the following commands are used.

To access external analog control from the GPIB, the following commands supplement those listed in Appendix B of the ATE-DMG Technical Manual.

#### B.91 [SOURce:]VOLTage[:LEVel]MODE COMMAND

#### VOLT:MODE

Syntax: Short Form: [SOUR:]VOLT[:LEV]:MODE {FIX | EXT}  
Long Form: [SOURce:]VOLTage[:MODE] {FIXed | EXTernal}

Description: **Established whether control of the output voltage is via keypad or GPIB commands (FIXED) or via external analog 0 to 10V reference (EXTERNAL).** Setting is stored in NVRAM and retained upon subsequent power up.

#### B.92 [SOURce:]VOLTage[:LEVel]MODE? QUERY

#### VOLT:MODE?

Syntax: Short Form: [SOUR:]VOLT[:LEV]:MODE?  
Long Form: [SOURce:]VOLTage[:LEVel]MODE?  
Return Value: FIXED or EXTERNAL

Description: **Returns FIXED or EXTERNAL whether voltage control is from the keypad or GPIB interface (FIXED) or from an external analog reference voltage (EXTERNAL).**

#### B.93 [SOURce:]CURRent[:LEVel]MODE COMMAND

#### CURR:MODE

Syntax: Short Form: [SOUR:]CURR[:LEV]:MODE {FIX | EXT}  
Long Form: [SOURce:]CURRent[:MODE] {FIXed | EXTernal}

Description: **Established whether control of the output current is via keypad or GPIB commands (FIXED) or via external analog 0 to 1V reference (EXTERNAL).** Setting is stored in NVRAM and retained upon subsequent power up.

## B.94 [SOURCE:]CURRENT[:LEVEL]MODE? QUERY

## CURR:MODE?

Syntax: Short Form: [SOUR:]CURR[:LEV]:MODE?  
 Long Form: [SOURCE:]CURRENT[:LEVEL]MODE?  
 Return Value: FIXED or EXTERNAL

Description: Returns **FIXED** or **EXTERNAL** whether current control is from the keypad or GPIB interface (**FIXED**) or from an external analog reference voltage (**EXTERNAL**).

## B.95 DIAG:EXT COMMAND

## DIAG:EXT

Syntax: Short Form: DIAG:EXT <value>  
 Long Form: DIAG:EXT <value>  
 where <value> xx<sub>HEX</sub>

Description: **DIAG:EXT 01** initializes external analog control and **03** sets **VOLT:MODE** and **CURR:MODE** to **EXTERNAL** (**DIAG:EXT 00** turns off the external analog control feature). Setting is stored in NVRAM and retained upon subsequent power up.

## B.96 DIAG:EXT ? QUERY

## DIAG:EXT?

Syntax: Short Form: DIAG:EXT?  
 Long Form: DIAG:EXT?  
 Return Value: 00<sub>HEX</sub>, 01<sub>HEX</sub> or 03<sub>HEX</sub>

Description: Returns **00** when external analog control feature is disabled. Returns **01** when external analog control feature is enabled. Returns **03** when external analog control feature is enabled upon power up.

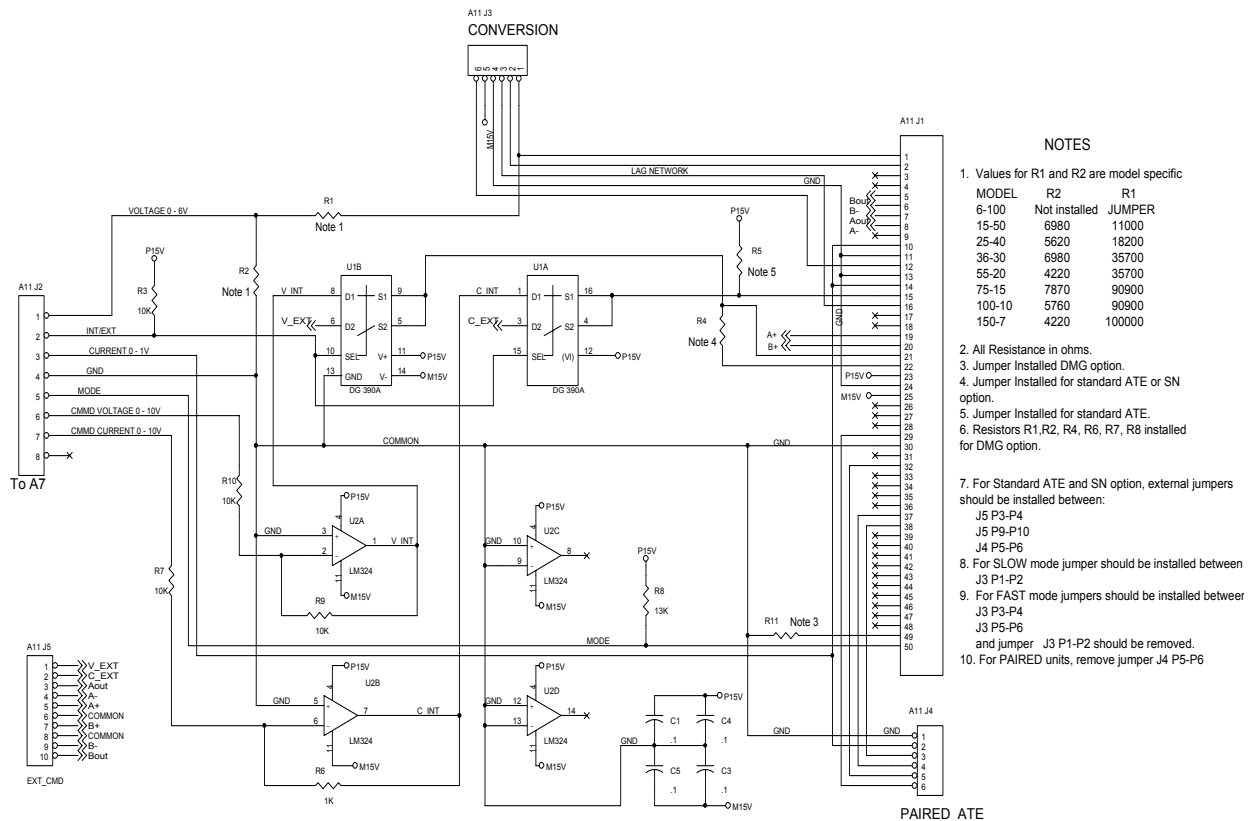


FIGURE 3. SCHEMATIC DIAGRAM