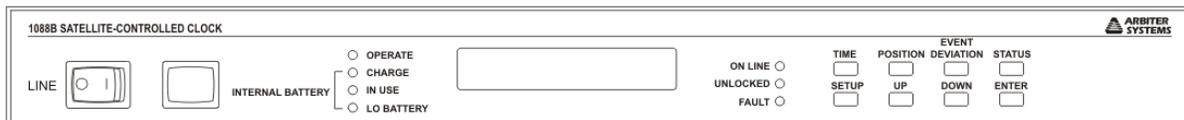


Option 28

Time, Frequency, Phase Monitor

Firmware Upgrade Instructions



Model 1088B Shown

Document No. PD0038500B

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1 Introduction

These instructions cover the installation of replacement Option 28 program ROMs (firmware) in all Arbiter GPS clocks with Option 28 installed. Sometimes the main program ROM in the clock needs to be changed at the same time as the Option 28 ROM as they are interdependent. If it is required to install the main program ROM you will be notified and the main program ROM will accompany the Option 28 ROM. Install these at the same time, and consult any other documentation that accompanies these instructions.

2 Required Equipment

1. Torx T-25 or large slot screw driver
2. IC Removal Tool, curved tweezers or small blade screwdriver

3 Installing the Option 28 ROM

1. First turn the power switch to OFF (if so equipped), and disconnect the power cord. For clocks with Options 08 or 10 power supply options, instead of IEC-320 power receptacles, be careful with open voltages.
2. Using a T-25 driver (or flat-blade screwdriver), remove the four screws securing the cover and lift off the cover.
3. See Figure 1 and, using the appropriate IC removal tool, remove the existing program ROM on the Option 28 board. It is located on the right side of the clock while viewing from the front panel.
4. Install the new program ROM. Observe the correct IC orientation and make sure the IC pins line up well on both sides of the socket. If necessary, use a pin-bending tool to line up the pins.

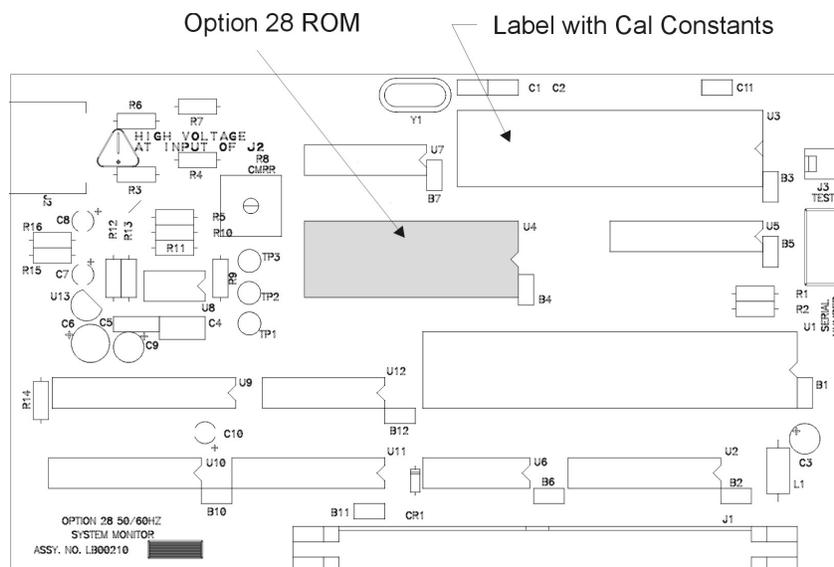


Figure 1: Option 28 ROM Location

4 Calibrate Option 28 Voltage and Phase

After replacing the clock cover and connecting power, the voltage and phase measurements should be calibrated. Voltage calibration (i.e. “RV”) and phase calibration (i.e. “PC”) are described below. These should be typed in through a terminal program (e.g. Hyperterminal) using a null-modem cable and setting the terminal settings to 9600 baud, 8, N, 1, no flow control.

These commands restore the voltage and phase calibration initially installed at the factory. Calibration constants are normally located on a white label fixed on the Option 28 board (close to the ROM socket) and seen in Figure 1.

4.1 Voltage Calibration

Use the command “V,KRV” (command is NOT case sensitive) to install the voltage and calibration from the previous installation.

where V = the voltage calibration constant; K = the key code, clock model (e.g. 1093, 1084, 1088)

4.1.1 Voltage Example

Where the voltage constant is 1.015 in a Model 1088B, type in the value as follows:

```
1.015,1088RV
```

4.2 Phase Calibration

Use the command, “P,KPC” (command is NOT case sensitive) to install the phase calibration from the previous installation.

where P = the phase calibration constant, K = the key code, clock model (e.g. 1093, 1084, 1088)

4.2.1 Example

Where the phase constant is -0.05 in a Model 1088B, type in the value as follows:

```
-0.05,1088PC
```

5 Final Setup

If included, refer to the main Firmware Upgrade Instructions sheet, and complete the installation. If you are only installing the Option 28 program ROM at this time, follow the instructions below.

1. Replace the clock cover and tighten the four M-25 screws that secure it to the clock chassis.
2. Connect the power cord and turn the power switch ON (if equipped with a power switch).