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EPC-100 Board Replacements

Now that the EPC-100E has replaced the EPC-100 and EPC-100EF, re-placement LOGIC boards (681064-1 and 681064-1R) will continue to be supplied with the original EPC-100 "Legacy" firmware. The "E" firmware chip for this logic board will be shipped loose with each replacement board so that if replacing a board in an "EF" or "E" unit, the correct chip is provided. These boards **DO NOT** include the CDROM or firmware for the associated display board to convert the unit to an "E" version.

Replacement DISPLAY boards (672124 and 672124R) are also configured as shipped for use in EPC-100 "Legacy" units. The "E" display firmware chip for this board will also be shipped loose with each replacement board so that if replacing a board in an "EF" or "E" unit, the correct chip is pro-vided. These boards **DO NOT** include the CDROM or firmware for the associ-ated logic board to convert the unit to an "E" version.

To update an EPC-100 to EPC-100E at the time of a board change-out:
- If replacing the Display Board, order upgrade kit 620011-1 also.
- If replacing the Logic Board, order display firmware chip 611038-1 and CDROM 609024-1 only.

The upgrade kit 620011-1 includes the following items needed to update or upgrade an existing EPC-100 to the EPC-100E current production standard.

(1) 611037-1   Programmed Microprocessor, EPC-100E Logic Board Firmware
(1) 611038-1   Programmed Microprocessor, EPC-100E Display Board Firmware
(1) 602532-2   Label Logic, EPC-100E
(1) 610243   Connector Plug 20 pin
(1) 609024-1   CDROM, EPC-100E Terminal program

Production part numbers were shipped as follows, starting with the most recent:

PRODUCT	TYPE	LOGIC FIRMWARE	DISPLAY FIRMWARE	LABEL
EPC-100E	Single Board	611037-1	611038-1*	"E"
EPC-100EF	Single Board	611013-1	611012-1*	"EF"
EPC-100	Single Board	601974	601538 + 601651**	"Legacy"
EPC-100	Multi Board	601538 + 601652	601538 + 601651**	"Legacy"

* The 601651 EPROM may, or may not, be in place in the EPC-100 "EF" units. It is not required in the "E" or "EF", and these models will work properly with or without it.

* Use of the "E" 611037-1 Logic Firmware with the "EF" 611012-1 Display Firmware is compatible and will operate as an "E". If using the upgrade kit, it is advisable to replace the "EF" 611012-1 Display Firmware with the "E" 611038-1 Display Frmware. This "EF" Display Firmware (611012-1) is obsolete and is replaced by the "E" Display Firmware.

** The 601651 EPROM must be in place in all units operating "Legacy" firmware.

Also, the "E" firmware changes the function of the "Connect for Single Regulator" (same on the Legacy and "EF") terminals to a function known as "Remote F1 Start". The selec-tion of single or dual bank control is done through the display on the "E" version. This new feature in the "E" allows for a remote F1 Start to be performed via relay logic by momentarily grounding this terminal.

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Installation Guide
EPC-100E Enhanced Feature Firmware Kit

REQUIRED ITEMS:

EPC-100E Enhanced Feature Firmware Kit
IC Extraction Tool
Personal Computer with RS232 or RS485 serial port
RS232 cable or RS485 converter with cables
Small clip lead

REMOVE POWER FROM THE EPC-100:

This can be done at the power source, or by disconnecting the 4-position terminal block, **T2SA** that provides power to the EPC-100.

INSTALL THE DISPLAY BOARD FIRMWARE:

On the display board of the EPC-100 locate the 40-pin IC in the blue or black socket. Using an IC extraction tool, remove and save the 40-pin IC and replace it with new part labeled **611038-1, EPC100E DSP** (orientation notch of this part should be installed **UP**).

INSTALL THE LOGIC/TERMINAL BOARD FIRMWARE:

On the logic/terminal board of the EPC-100 locate the 40-pin IC in the blue or black socket. Using an IC extraction tool, remove and retain the 40-pin IC and replace it with new part labeled **611037-1, EPC100E LOG** (orientation notch of this part should be installed **DOWN**).

INSTALL THE 20-POSITION EXPANSION TERMINAL BLOCK:

The 20-position plug-in terminal block provided in the kit provides access to the expanded I/O functions of the logic board. These include two thermocouples, two O2 sensor inputs, four generic 0-5v analog inputs and four digital outputs.

INSTALL THE LOGIC BOARD LABEL:

A replacement adhesive label is provided which includes a legend of the expanded connections of the new connector. Peel off the old label and apply the new one if required.

> **ATTENTION:** *After installing firmware chips, the default settings must be loaded by connecting two pins of the logic microprocessor. This must be done any time the chip versions are changed.*

PRE-LOAD DEFAULTS ON FIRST POWER-UP OF EPC-100E:

Locate the EPC-100E LOG 40-pin IC on the logic board. Connect a clip lead between **PIN 20** and **PIN 12** **(PAGE 4)** of the IC to force a reload of defaults on power-up. With the pins connected, apply power and verify operation of the display. The stepper motor position will read 999 when the initialization process has been completed. Remove power and disconnect the clip lead. At this point, the EPC-100E has been loaded with default values and will operate like a standard EPC-100 with the addition of catalyst protection features which can be configured from the keypad using setup screens. Other enhanced features can only be activated and configured using the terminal program.

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INSTALL THE TERMINAL PROGRAM ON THE PC TO BE USED FOR SETUP

It is possible to communicate using a standard RS232 connection or an RS485 connection which also requires an RS232 to RS485 converter (**B&B Electronics Model 4WSD9R** with switches set as follows (**RS-485, EchoOFF, 2wire, 2wire**).

CONFIGURE THE EPC-100E FOR COMMUNICATION:

With the new firmware installed and initialized, apply power and verify operation of the display. Enter the setup mode (**F1,F3,F2,F4**) then press **F1** to locate the screens to select the communication parameters. Select the port and protocol (RS232 9600N81 is recommended), then select the **MODBUS** node ID (100 is recommended).

CONNECT TO THE EPC-100E WITH THE TERMINAL PROGRAM:

Connect the cable from the PC to the EPC-100 (RS-232 DB9 recommended). Run the program (EPC-100E) and choose the appropriate **MODBUS ID#** and **CONNECTION** menu parameters and the program should begin to communicate. A description on the bottom right can be useful in troubleshooting communication errors.

ENABLE DESIRED ENHANCED FEATURES:

From the **MENU** bar click the **FEATURES** menu and click any feature you would like to enable. A check mark will identify enabled features, and configuration **TABS** will be added to provide access to configuration values of various features.

CONFIGURE DESIRED ENABLED ENHANCED FEATURES:

At this point, referencing the operating manual, **EPC-100E OM 5-06**, configure the EPC-100E operation to suit the application enhancements as required. This would be done in conjunction with the installation and wiring of additional I/O signals to be used with the new features. Various **TABS** provide access to the features which have been turned on by means of the **FEATURES** menu.

PIN 20
PIN 12
PIN 1

TS3

LOGIC
FIRMWARE
611037-1
611013-1
601974

NOTE NOTCH POSITION

EPROM
601651

DISPLAY
FIRMWARE
611038-1
611012-1
601538

NOTE NOTCH POSITION

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