

# Field Removal / Replacement of ControlWave-series BOOT FLASH ICs

## WARRANTY NOTE

Damage to the BOOT FLASH IC or CPU Board because of failure to follow the instructions provided herein will result in termination of warranty.

## WARNING

**DO NOT Remove/Replace PROM without practicing ESD Protection!**

- Wear a properly connected ESD Wrist Strap.
- Make sure the ESD Work Mat is properly connected.
- Place the Printed Circuit Board on an ESD Work Mat.
- Make sure that the proper BOOT FLASH IC has been provided for the CPU Board in question (see Table 1).

## WARNING - BEFORE YOU BEGIN YOU MUST SAVE YOUR DATA

Removal of the BOOT FLASH IC results in a loss of flash configuration data and archive files. Flash configuration must be saved to an FCP file on a PC, and archive data must be collected /exported to disk files prior to chip removal. A summary of these procedures is included below; see the Open BSI manuals for more detail.

## Boot Flash IC Removal

### Part 1 – Preserving Your Data – Save Configuration Parameters to FCP File

1. Connect a PC, equipped with Open BSI, to serial COM port 2 of the ControlWave unit.
2. Click on **Start → Programs → OpenBSI Tools → LocalView**.
3. If you have a pre-defined Configure Mode view mode (\*.LVG) file, use it to connect, and skip to Item 6, otherwise choose 'Configure' for the "Mode", enter 'myfile' in the "Name" field, and click on the [Create] button.
4. From the Communication Setup page, choose the PC COM port you are using, and the baud rate, and click on [Next].
5. From the IP RTU Setup page, choose the local address of the ControlWave, and specify the type of ControlWave unit you are connecting to, then click on [Finish].
6. The Flash Configuration Utility will appear. Click on the [Load From RTU] button. The unit's configuration parameters will be read into the Flash Configuration Utility.
7. Click on [Write Profile To File], choose the folder where you want to save your configuration data, specify 'myconfig' in the "File name" field, then click on [Save]. The configuration data will be saved in an FCP file on the PC. Leave the Flash Configuration Utility and LocalView running.

## Part 2 – Saving Array Files to Disk (Only required if you need to save this data)

1. With LocalView running, click on **Start → Programs → OpenBSI Tools → Common Tools → Data Array Utility**.
2. If you have a pre-defined array script, use it, otherwise specify the number of the first array you want to save in the “**Array**” field, choose the appropriate “**Array Type**”, and specify a path and filename to hold the array data in the “**File**” field, then click on [**Save to Disk**]. Repeat this step for each additional array you want to save. Leave the Data Array Utility running.

## Part 3 – Collect Archive Files

Archive Files are automatically deleted once the chip is removed, therefore, if you want to save this data, you should collect those files using the Open BSI Harvester. See the *Open BSI Harvester Manual* for details. NOTE: Archive files cannot be re-imported, just exported.

## Part 4 – Removing the Chip

(Refer to Figure 1)

1. Wear an Electro-static Discharge (ESD) Wrist Strap that is properly connected to an ESD Work Mat, which in turn, is properly grounded.
2. Turn OFF power to the ControlWave.
3. Place the CPU Board assembly onto an ESD Work Mat.
4. Grasp the Chip Carrier Extraction Tool as shown in Figure 1.
5. Removing the BOOT FLASH IC requires care. To remove the BOOT FLASH IC properly, the Chip Carrier Extraction Tool must be alternately switched between the IC Socket’s FLASH Device Extraction Slots until the BOOT FLASH IC can be gently removed. To begin removing the BOOT FLASH IC, insert the Chip Carrier Extraction Tool’s Extraction Tip into one of the IC Socket Extraction Slots in the BOOT FLASH IC’s Socket. **You should not attempt to pry out the BOOT FLASH IC forcibly or in one step.**

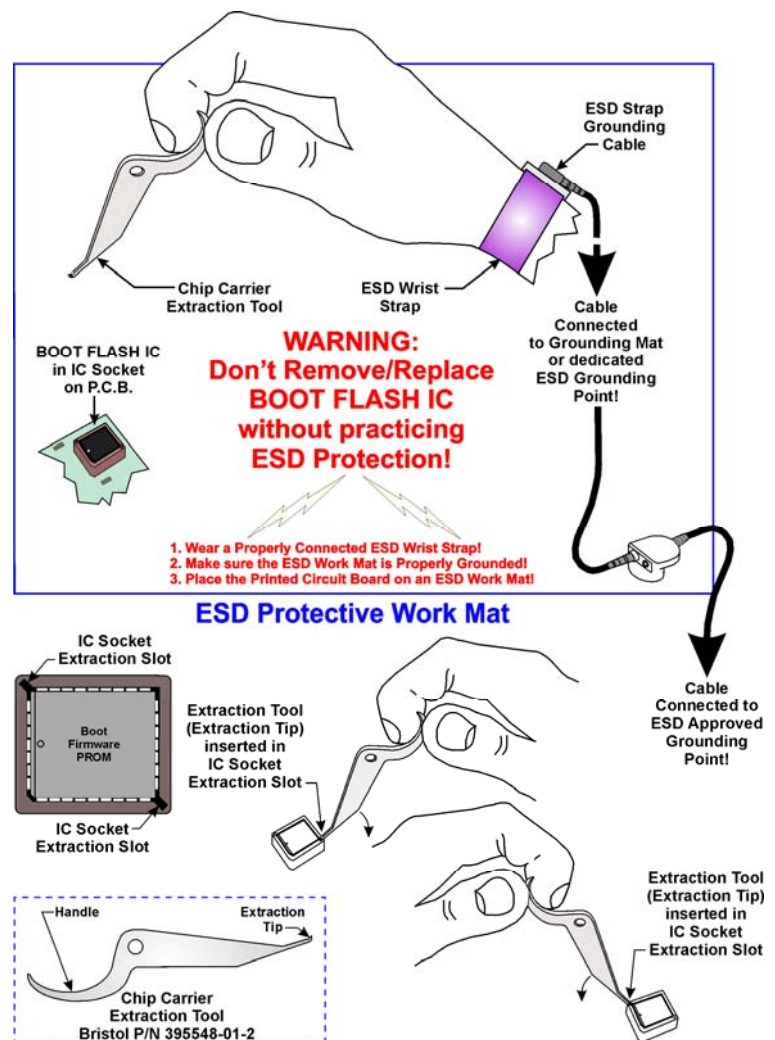


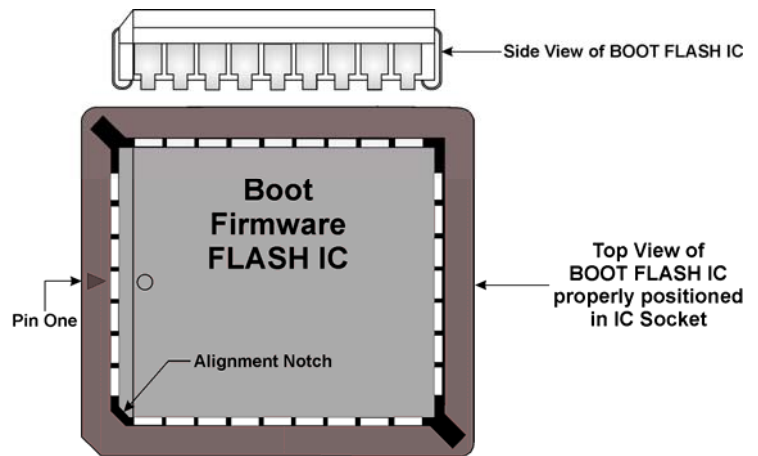
Figure 1 – BOOT FLASH IC Removal

Pry downward on the IC Socket just enough to feel the BOOT FLASH IC nudge. Now insert the tool’s Extraction Tip into the other IC Extraction Slot, and again in an effort to gently remove the BOOT FLASH IC, pry downward on the IC Socket just enough to feel the BOOT FLASH IC nudge. Go back and forth in this manner (about four times) until the BOOT FLASH IC can be removed by hand.

# BOOT FLASH IC Replacement

## Part 5 - Reinstalling the Chip (Refer to Figure 2)

1. Set the BOOT FLASH IC onto the FLASH IC Socket of the ControlWave's CPU board (as shown in Figure 2).
2. Exercise care. Center your thumb on the BOOT FLASH IC and press downward, firmly and evenly, so that the IC snaps into place without skewing in the IC Socket. If the BOOT FLASH IC has skewed in the IC Socket, use the Chip Carrier Extraction Tool as discussed previously in the *Removing the Chip* section.
3. Re-install the CPU board into the ControlWave-series unit and apply power.



## Part 6 – Restoring Configuration Files from the FCP File

1. With LocalView and the Flash Configuration Utility running, click on **[Read Profile from File]** and then browse to the *myfile.fcp* file you saved earlier, and click on **[Open]**.
2. Now, click on the **[Save to Rtu]** button. The configuration parameters will be reloaded into the BOOT FLASH IC.
3. Power OFF the unit, then power it back ON, to activate the parameters.

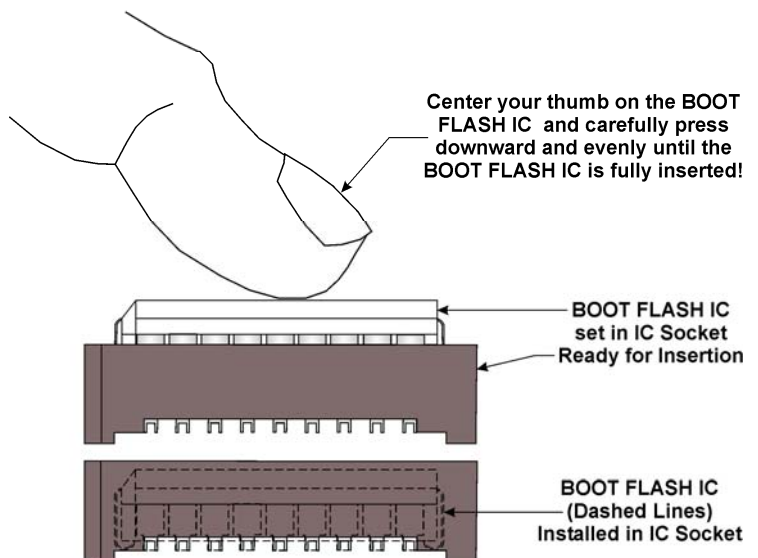


Figure 2 – BOOT FLASH IC Replacement

## Part 7 – Restoring Data Arrays

With the Data Array Save/Restore Utility running, select the file containing the first array you saved earlier, and click on the **[Restore to Rtu]** button. Repeat this process for all the other arrays you saved.

Table 1 – ControlWave Platform BOOT FLASH ICs

ControlWave Series CPU	CPU Board Part #	BOOT FLASH IC Part #
ControlWave PAC	392962-01-2	395609-01-1
ControlWave I/O Expansion Rack	400016-XX-X	395645-01-8
ControlWave LP	392932-XX-X	395617-01-4
ControlWave EFM	400058-01-4	395662-01-0
ControlWave GFC Classic	400074-XX-X	395662-02-8
ControlWave MICRO	400058-XX-X	395661-01-0
ControlWave MICRO (Dual Ethernet)	400126-01-0	395661-01-0
ControlWave MICRO I/O Expansion Rack	400058-07-3	395662-03-6
ControlWave XFC	400068-XX-X	395701-00-7
ControlWave_10	400084-XX-X	395709-01-6
ControlWave_30		
ControlWave_35	400110-01-6	395709-01-6
ControlWave_31	400110-02-4	395731-01-1
ControlWave Express/EPAC/GFC (14MHz) (Full ACCOL III Library)	400094-02-9	395716-01-2
ControlWave Express/EPAC/GFC (14MHz) (Full ACCOL III Library) (6V I.S.)	400094-05-3	395716-01-2
ControlWave Express/EPAC/GFC (33MHz) (Full ACCOL III Library) (without Ethernet)	400094-03-7	395716-02-0
ControlWave Express/EPAC/GFC (33MHz) (Full ACCOL III Library) (with Ethernet)	400094-04-5	395716-02-0
ControlWave Express/EPAC/GFC (14MHz) (Standard ACCOL III Library) *	400094-10-0	395716-01-2
ControlWave Express/EPAC/GFC (33MHz) (Standard ACCOL III Library) **	400094-11-8	395716-02-0
ControlWave Express/EPAC/GFC (33MHz) (Standard ACCOL III Library) ***	400094-12-6	395716-02-0

\* = Ultra Low Power CPU, 5-18Vdc, Solar Regulator, Aux. Out, without Gas Calculations

\*\* = Low Power CPU, without Ethernet, 9-28Vdc, Solar Regulator, Aux. Out, without Gas Calculations

\*\*\* = CPU with Ethernet, 9-28Vdc, Solar Regulator, Aux. Out, without Gas Calculations