HEWLETT PACKARD

Badge3 Setup Guide

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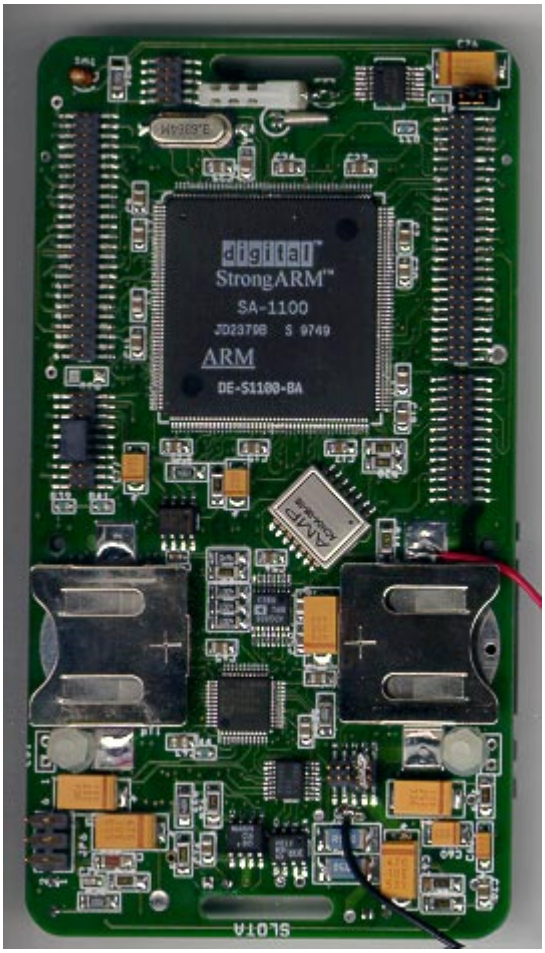

BADGE3 SETUP GUIDE

There are 5 steps necessary to bring up a new badge. They are:

1) Install the ground plane connect point jumper.
2) Jumper the badge for your battery supply.
3) Install a reset switch.
4) Select a PCMCIA power supply setting (optional).
5) Load software into the on badge FLASH memory.

INSTALL GROUND PLANE CONNECT POINT JUMPER

The badge has separate ground planes for the 3.3V VDD supply and the 1.5V StrongARM core supply. In normal operation, these two ground planes should be tied together at the single point provided by jumper J2. As shown in Figure 1, solder a wire jumper across J2.

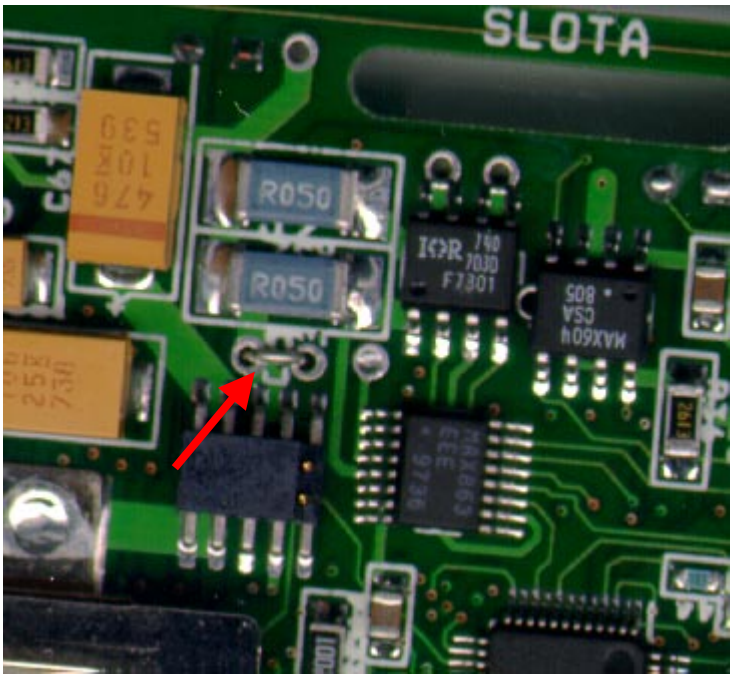

Figure 1: Ground Plane Connect Point

JUMPER THE BADGE FOR YOUR BATTERY SUPPLY

There are many options for how the badge can be connected to a power supply. On or off badge power sources can be selected by properly jumpering header JP7. JP7 is a small header with a 0.050 inch (1.27mm) pin pitch. These headers are manufactured by SAMTEC (www.samtec.com) as their FTS microstrip series connectors. A mating connector can be used to provide a removable jumper or external battery connection to JP7. The badge power supplies have been designed for a 3.0VDC input voltage. Any external power supply that can provide 3.0VDC can be used to power the badge. A 3.0 volt, 2 amp output bench supply is a great power source to use during code development.

Figure 2 shows the location of JP7, with an arrow pointing to pin 1. In this example, a removable jumper is connected to JP7 configured to allow the badge to use the on badge battery supply. Note that to do this, the removable jumper shorts pins 1, 2, 3 and 4 on JP7. Alternatively, an external 3.0 VDC power supply can be used by connecting one end of a wire to pins 2 and 4 on JP7, and the other end to the 3VDC positive supply. Ground is connected to pins 6, 8, 9 and 10.

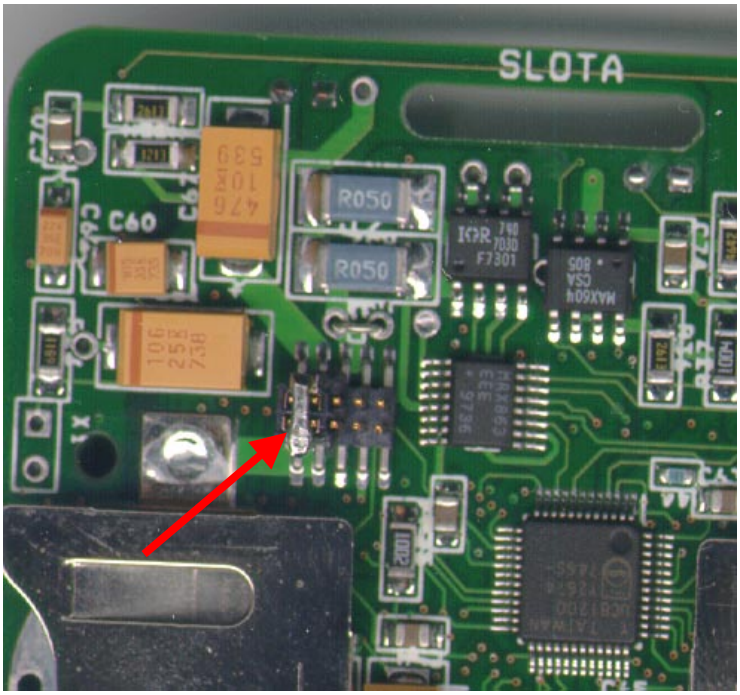

Figure 2: Location of JP7

Note that pins 1 and 3 on JP7 are connected to the on badge battery supply, so these pins should NOT be connected to an external power source if batteries have been installed in the on badge battery holders.

INSTALL A RESET SWITCH

Figure 3 shows where a reset switch should be installed on the badge. A suitable switch can be just a single pole, single throw normally open push button switch with a 0.100 inch (2.54mm) lead pitch. During code development, it is good to be able to hold the StrongARM processor in a reset state while new code is loaded into the FLASH. In this case, you could tape down the push button switch, or you may prefer to use a nonmomentary switch. Even just a 2 pin header with a mating shorting block can be used. You can install your reset switch facing in (placed on the same side as the StrongARM processor) or out (placed on the same side as the PCMCIA card). If you place it facing out, be sure it cannot physically interfere with an installed PCMCIA card.

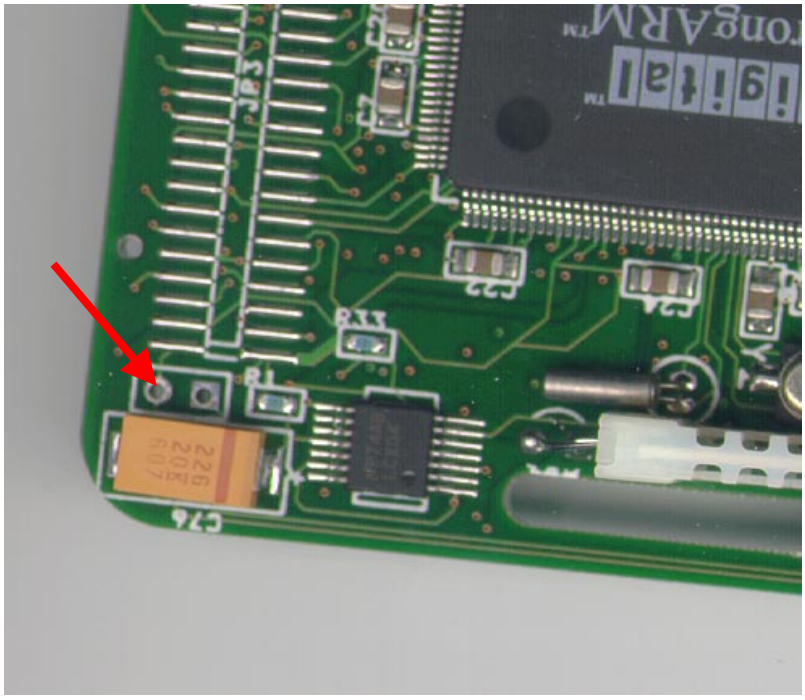

Figure 3: Location of RESET Switch

SELECT A PCMCIA POWER SUPPLY SETTING

You only need to configure a PCMCIA power supply if you will have a PCMCIA card installed. The badge will boot and run properly without it. JP6 is used to manually set the correct PCMCIA power supply voltage for your application. Figure 4 shows the location of JP6 with an arrow pointing to pin 1.

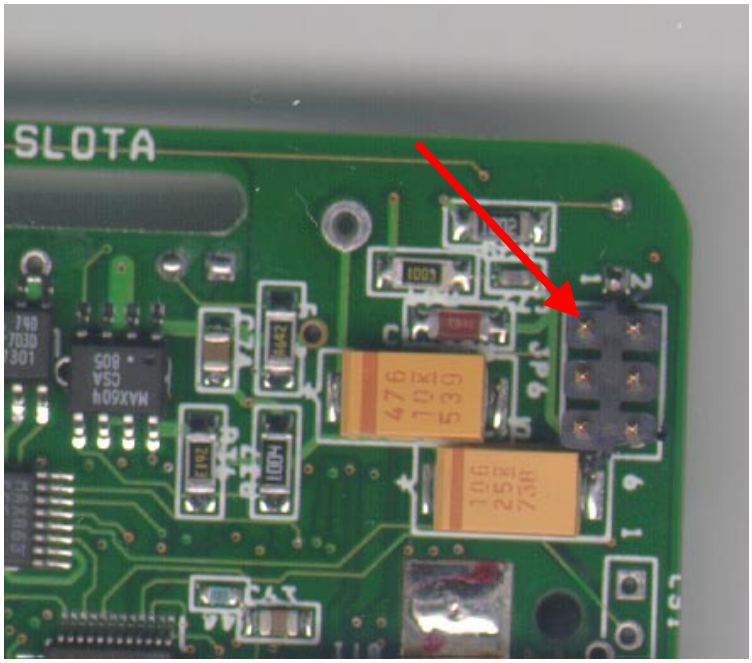

Figure 4: Location of JP6

The badge supports PCMCIA cards requiring 5VDC or 3.3VDC. For 5VDC cards, jumper pins 3 and 5 on JP6. For 3.3 VDC cards, jumper pins 1 and 3 on JP6. Note also that some PCMCIA cards with on board flash also require a programming voltage. If you have such a card, and the programming voltage is the same as your selected PCMCIA power supply (5 or 3.3 volts), then jumper pins 2 and 4 on JP6. If your card requires a programming voltage of 12 VDC, then jumper pins 4 and 6 on JP6.

There are two special notes to be aware of. First, although the badge can supply 3.3V or 5V to the PCMCIA card, it cannot supply the 12 VDC programming voltage if your card requires one. In addition to jumpering as described above, you will also need to provide your own source of 12 V. Connect your 12VDC source to pin 7 on power connector JP7. Ground can be connected to any or all of pins 6, 7, 9 and 10 on JP7.

The second special note is that the 5 VDC supply can be enabled or shut down by software running on the StrongARM processor. To enable the 5VDC supply, you must drive the general I/O pin GP24 on the StrongARM to a logic 1 level. You should also know that driving GP24 low will shut down the 5VDC power supply regulation circuits, but current at a low voltage will still flow to the PCMCIA card through the power supply inductor L2. To completely shutdown the PCMCIA card to conserve power, you will either need to remove the card, remove the jumpers on JP6, or use any power management circuitry your PCMCIA card may provide.

LOAD SOFTWARE INTO THE ON BADGE FLASH MEMORY

A new badge has no software loaded in FLASH memory. Code is in circuit programmed into the FLASH memory using the JTAG port on the badge. The JTAG port is controlled by a hardware device called a *TAP Master* which is hosted by a PC. For further details on how all this works, refer to the document *BADGE3 TAP MASTER GUIDE.* Below is a summary of steps necessary to get code into the FLASH.

1. Compile or assemble your code using the ARM programming tools. After compiling or assembling, link your code using the **–bin –aif** options.
2. Connect the TAP master cable to the badge as shown in Figure 5. The TAP master cable can be connected to the badge with the power turned on. Note the spacer on the cable connector attached to the badge. This allows the cable connector to physically clear the crystal.

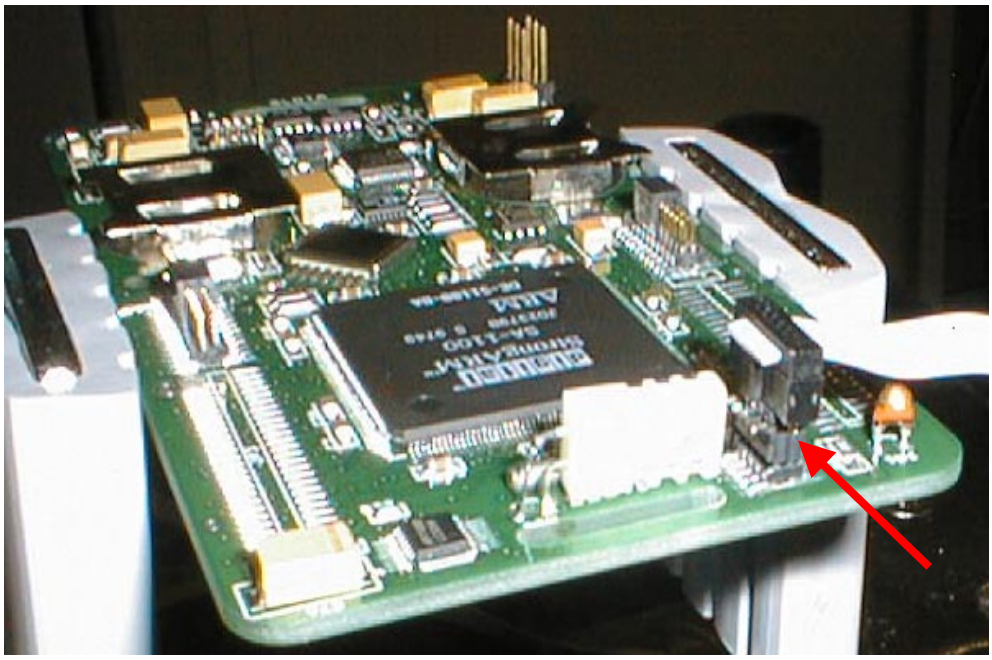

Figure 5: Badge JTAG connection

3. Place and hold the badge in a hardware RESET state by activating your reset switch.
4. If the FLASH needs to be erased, run the **ERASEFL** program first. Erased FLASH has all bits set to logic 1. Erasing an already erased FLASH device is not harmful to the FLASH.
5. Load your code into flash with the **LOADFL** program.
6. You can optionally look at what was loaded into the FLASH by running the **DUMPFL** program.
7. Disconnect the TAP master cable from the badge.
8. Boot the badge by releasing it from the hardware RESET state it was placed into in step 3.