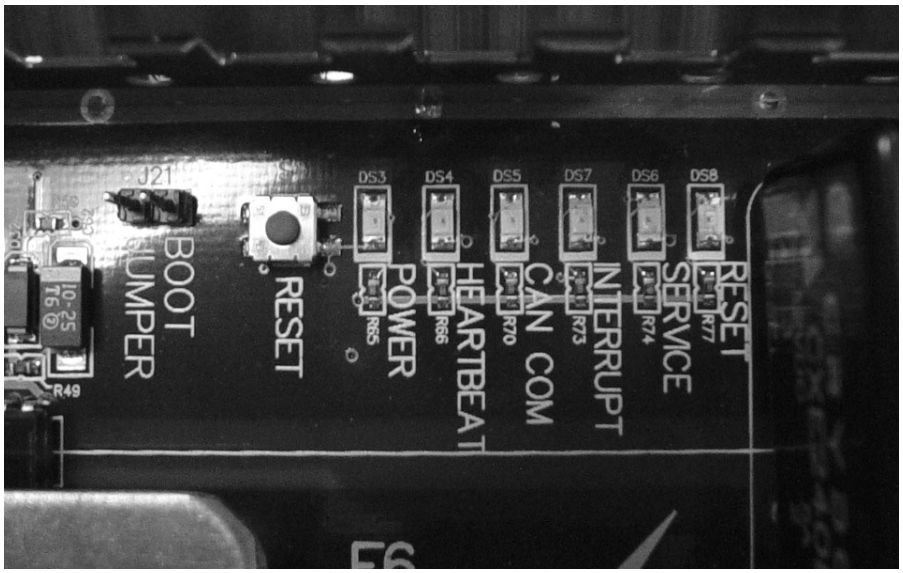
4. SCON BOARD STATUS LEDS

By examining the status LEDS on the SCON board, you can determine what code module is currently running on the board. This is useful when attempting to determine if a firmware download has failed, and if the MAIN or BOOT code is still operational on the board.

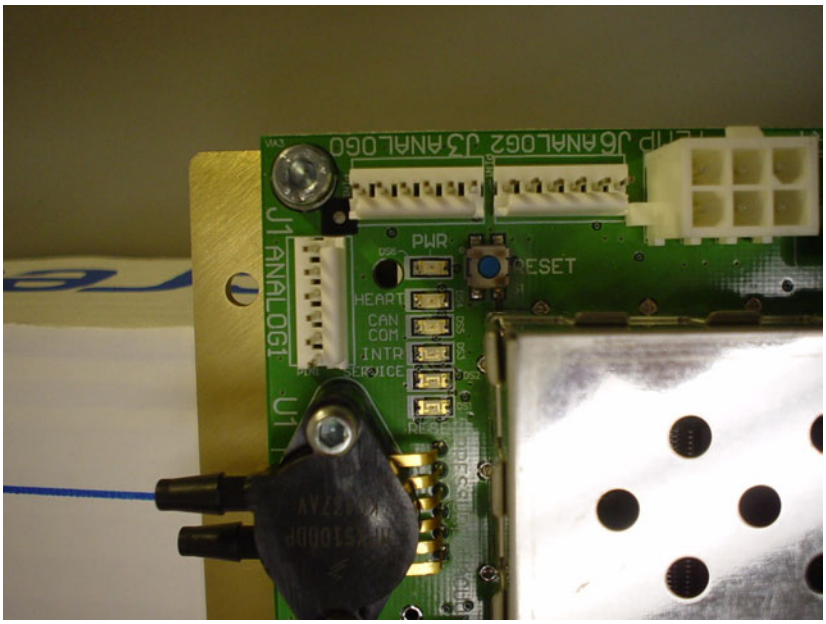
If MAIN code download has failed, the board will usually be only running the BOOT code. If a BOOT code download has failed, the board will usually only be running the BBR code (PDB and GENINE only).

4.1 Locating the Status LEDS

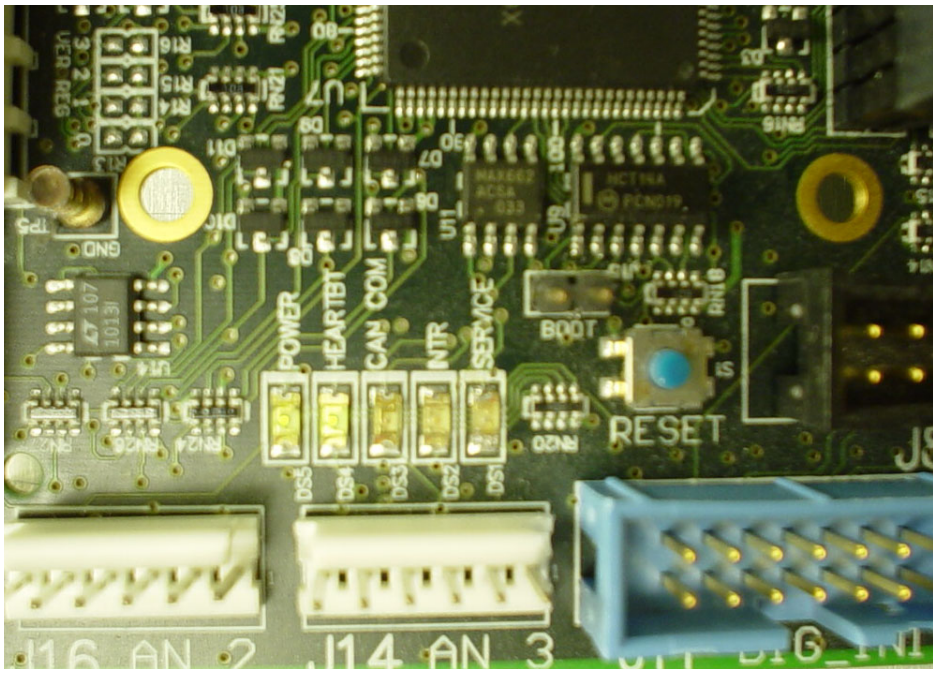
The status leds for the PDB board look like this:



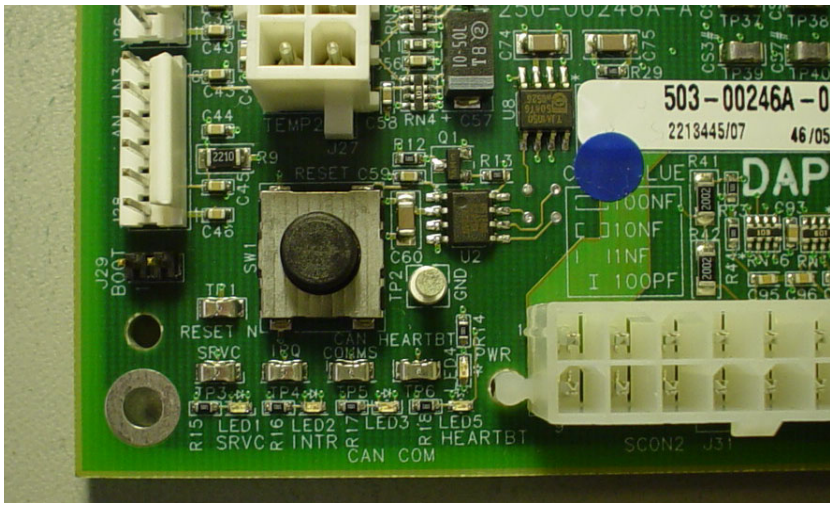
The status leds for the GENINE board look like this:



The status leds for the LIONEL board look like this:



The status leds for the DAPHNE board look like this:



4.2 General Status Indications

Each SCON board has status LEDS that indicate which SCON firmware module is running, and its operating mode. There are four status LEDS. There general meanings are listed below:

Name:	Description:	Color:
Power PWR	Indicates the board is powered on	Green
CAN COM	Flashes when CAN bus communication is occurring	Green
HEART HEARTBT HEARTBEAT	Flashes at ½ second (1Hz), indicates BOOT code running. Flashes at 1 second (.5Hz), indicates MAIN code running	Green
INTERRUPT INTR	Indicates CPU interrupt activity, Usually only on dimly when running on MAIN code.	Yellow
SERVICE SRVC	Indicates special service operation occurring. Used to indicate when flash memory is being erased or programmed	Red

4.3 BBR Mode for PDB and GENINE

This firmware module is only applicable to PDB and GENINE boards. This firmware is not field upgradeable, and is only used to download BOOT code into the board. This mode can be entered by a firmware command, or it could occur as a result of a failed BOOT code download procedure.

If the board is running BBR code, it will not communicate with the rest of the system over the CAN bus. This will mean the board will appear to be “Dead” to the CTP machine.

You must visually examine the status LEDS on the board to determine if this firmware code is running on the board. The following table indicates how the status LEDS will indicate that the BBR code is running on the board.

BOARD TYPE:	**STATUS LEDS:**
PDB	SERVICE and HEATRBEAT leds flash alternately on - off
GENINE	Both HRTBT + DEBUG/SERVICE leds flashing at the same time

5. SCON I/O BOARD OPERATING MODES

The SCON I/O boards have three separate operating modes. The default operating mode is to only response via the SCON (CAN) bus, but there are two other operating modes where the SCON board will respond to the RS-232 serial port using the DF1 binary protocol. Once an operating mode has been selected, it will continue to operate in that mode on subsequent resets and power-ups. (i.e. it is saved in NVS)

The debris removal cabinet uses the LIONEL board in RS-232 Operating Mode "Local".

5.1 Normal Operating Mode

This is the default-operating mode of the SCON board. The heartbeat status LED will flash on and off at fixed one second intervals. The board will respond to SCON commands coming in from the CAN bus.

5.2 RS-232 Operating Mode – Gateway

In this mode of operation, the RS-232 serial port is used for SCON commands using the DF1 binary protocol. The SCON board will also respond to SCON commands on the CAN bus as well. The SCON board can act as an RS-232 "Gateway" to the CAN bus in this operating mode. NOTE: You MUST have an operational SCON CAN bus with at least one other active node present for this operating mode to work correctly on the SCON board. The heartbeat status LED will flash with two quick on flashes, and then a longer off pause to indicate the board is operating in this mode.

5.3 RS-232 Operating Mode – Local

In this mode of operation, the RS-232 serial port is used for SCON commands using the DF1 binary protocol. The SCON board disables the CAN bus in this mode, so no communication over the CAN bus is possible. This allows only communication with the SCON board, with no active connection to the CAN bus. The heartbeat status LED will flash with three quick on flashes, and then a longer off pause to indicate the board is operating in this mode.

5.4 Switching Operating Modes

To switch into any of the two optional operating modes, you MUST be operating from the normal operating mode first.

If you require the RS-232 serial port baud rate to be different than the default of 9600 baud, then you can issue the following monitor command: "*sat baud nnnnn*", where "nnnnn" is the desired RS-232 serial port baud rate in decimal. Note that you will have to re-configure your terminal emulator for the new baud rate as soon as this monitor command has been issued. As an example to switch to a baud rate of 19200, issue the following command: "*sat baud 19200*". Note that this serial port baud rate is saved in NVS, but only applies to the serial port while running in DF1 operating mode Gateway, or Local.

If you require the CAN bus baud rate to be different from the default of 500KHz., then you can issue the following monitor command: "*sat canbaud xxxx*", where "xxxx" is the desired

CAN bus baud rate in decimal. Your choices for "xxxx" are: 1000, 888, 762, 500, 250, 125, and 62. This applies to all operating modes, except DF1 mode Local.

5.5 Switch to Normal Mode

To select the normal operating mode, connect a terminal emulator to the SCON board's serial port at 9600 baud, and then press the reset button. Wait for the message: "*Override Binary Mode? (Y/N)*", and when you see this press the "*Y*" key. Now wait 6 seconds, then enter "*Creo <Enter>*" to enter the diagnostic monitor mode.

5.6 Switch to Operating Mode – Gateway

From the normal operating mode, diagnostic monitor prompt, enter the following: "*sat remote gateway*". The board will now be operating in operating mode Gateway – RS-232 to CAN gateway mode.

(See the note above regarding the RS-232 serial port baud rate, and the CAN bus baud rate)

5.7 Switch to Operating Mode – Local

From the normal operating mode, diagnostic monitor prompt, enter the following: "*sat remote local*". The board will now be operating in DF1 operating mode Local – RS-232 access to the SCON board only. (CAN bus operation is not possible).

(See the note above regarding the RS-232 serial port baud rate)