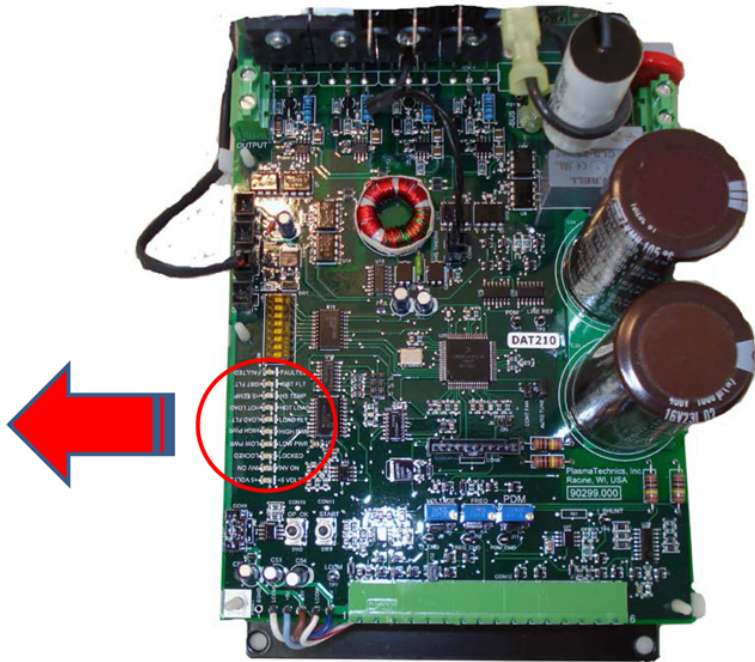


DAT210 Board LED Indicators, Programming and Troubleshooting

- FAULTED
- IGBT FLT
- HS TEMP
- HOT LOAD
- LOAD FLT
- HIGH PWR
- LOW PWR
- LOCKED
- INV ON
- +5 VOLTS



The DAT210 board on all Plasma Block® products contains 10 LED's which are used to indicate status during normal operation, board programming and troubleshooting of the unit.

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The DAT210 board's 10 LED's are shown below in various patterns with related status/description information.

<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>NORMAL RUNNING LED LIGHT PATTERN.</p> <p>Under normal running conditions, the LED light pattern will appear as shown here. The INV ON and +5VOLTS will be solid ; the LOCKED will be flickering.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PERFORMING CALIBRATION MODE – STEP 1</p> <p>Press the START button and hold briefly until these LED’s show, then release.</p> <p>Note – Unit must be in Semi-Auto mode (J5 removed). Note – Holding any longer will show a different pattern of LEDs.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input checked="" type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PERFORMING CALIBRATION MODE – STEP 2</p> <p>HS Temp LED will flicker, showing that the board is in Calibration Mode.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input checked="" type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PERFORMING CALIBRATION MODE – STEP 3</p> <p>This light pattern indicates T1 is set higher than 2% of the original set point. Adjust the T1 voltage pot to a value within the 2% range where the HIGH PWR led turns off. Proceed to the final step below.</p> <p style="text-align: center;">OR</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input checked="" type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PERFORMING CALIBRATION MODE – STEP 3A</p> <p>This light pattern indicates T1 is set lower than 2% of the original set point. Adjust the T1 voltage pot to a value within the 2% range where the LOW PWR led turns off. Proceed to the final step below.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PERFORMING CALIBRATION MODE – STEP 4</p> <p>FINAL STEP. Press the start button and hold it briefly until the LED’s light up, release the start button to exit calibration mode. The unit has now been adjusted to the original factory set values.</p>

The DAT210 board's 10 LED's are shown below in various patterns with related status/description information.

<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PERFORMING START BUTTON SWEEP – STEP 1</p> <p>Under normal running conditions, the LED light pattern will appear as shown here. The INV ON and +5VOLTS will be solid throughout this process; the LOCKED will be flickering.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PERFORMING START BUTTON SWEEP – STEP 2</p> <p>Holding the START button down until the LOCKED, LOW_PWR, and HIGH_PWR blink simultaneously.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input checked="" type="checkbox"/> HOT LOAD <input checked="" type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PERFORMING START BUTTON SWEEP – STEP 3</p> <p>After a second or two the LOAD_FLT and HOT_LOAD will blink simultaneously, along with the blinking LEDs in the previous step. When this occurs, release the START button.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PERFORMING START BUTTON SWEEP – STEP 4</p> <p>Upon release the LOCKED LED will blink rapidly. This indicates the frequency is sweeping up and down to find optimum value. The LOCKED LED will blink then flicker as normal after a few seconds completing the process. Verify the power or amperage draw values are within acceptable range for the model being used.</p>

The DAT210 board's 10 LED's are shown below in various patterns with related status/description information.

<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PROGRAMMING A POWER SET POINT – STEP 1</p> <p>NOTE – the unit must be in semi-auto mode (J5 removed) to program the power setpoint.</p> <p>When T1 has been turned to the desired set point press and hold the OP_OK button until this pattern shows --- then release.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input type="checkbox"/> LOCKED <input type="checkbox"/> INV ON <input type="checkbox"/> +5 VOLTS 	<p>PROGRAMMING A POWER SET POINT – STEP 2</p> <p>Upon release, the HIGH_PWR and LOW_PWR LED's will blink alternately. The unit may be in a tolerance set point of +/- 40%, +/- 20% or +/- 10%. Pressing the OP_OK button will cycle/repeat thru these three choices with a varying LED blink time (10% fast, 20% medium, 40% slow). To exit this mode or select a tolerance, move to STEP 3.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input checked="" type="checkbox"/> HS TEMP <input checked="" type="checkbox"/> HOT LOAD <input checked="" type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PROGRAMMING A POWER SET POINT – STEP 3</p> <p>Once desired tolerance band has been selected press and hold OP_OK longer than in the first step to attain this LED light pattern and then release.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input checked="" type="checkbox"/> IGBT FLT <input checked="" type="checkbox"/> HS TEMP <input checked="" type="checkbox"/> HOT LOAD <input checked="" type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>PROGRAMMING A POWER SET POINT – STEP 4</p> <p>If successful, this pattern of LED's will display. The INV_ON will blink once followed by a blink of the LOW_PWR LED. This pattern is a response to let the user know that the programming of the power setpoint has been successful.</p>

TROUBLESHOOTING DAT210 PROBLEMS

<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>HIGH POWER WARNING – PATTERN 1</p> <p>LEDs indicate the unit’s power is higher than the tolerance level of the programmed power point.</p>	
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>HIGH POWER WARNING – PATTERN 2</p> <p>After a period of 5 – 10 seconds this pattern will display indicating a warning that the unit will hard fault and shut itself off.</p>	<p>Step 1 Does unit show a hard fault? (PATTERN 3) Yes – Go to Step 2 No – Go to Step 3.</p> <p>Step 2 Turn unit on.</p> <p>Step 3 Turn T1 pot counterclockwise.</p> <p>Step 4 Did HIGH PWR LED turn off ? Yes – No further action needed No – Repeat Step 3 and 4.</p>
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input type="checkbox"/> LOCKED <input type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>HIGH POWER WARNING – PATTERN 3</p> <p>Hard fault indicator of T1 being set higher than its programmed set point for too long of a period of time. The unit has now shut itself off to prevent possibility of damage.</p>	
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>LOW POWER WARNING – PATTERN 1</p> <p>LEDs indicate the unit’s power is lower than the tolerance level of the programmed power point. Also, it may indicate issues in the system outside the block. Investigate that possibility if the steps here do not resolve the problem.</p>	
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>LOW POWER WARNING – PATTERN 2</p> <p>After a period of 5 – 10 seconds this pattern will display indicating a warning that the unit will hard fault and shut itself off.</p>	<p>Step 1 Does unit show a hard fault? (PATTERN 3) Yes – Go to Step 2. No – Go to Step 3.</p> <p>Step 2 Turn unit on.</p> <p>Step 3 Turn T1 pot clockwise.</p> <p>Step 4 Did LOW PWR LED light turn off ? Yes – No further action needed. No – Repeat steps 3 and 4.</p>
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input type="checkbox"/> LOCKED <input type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>LOW POWER WARNING – PATTERN 3</p> <p>Low power hard fault indicates that T1 has not been adjusted in time and the unit has shut itself off.</p>	

<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input checked="" type="checkbox"/> HS TEMP <input checked="" type="checkbox"/> HOT LOAD <input type="checkbox"/> LOAD FLT <input checked="" type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>POWER LIMIT WARNING.</p> <p>HS_TEMP and HOT_LOAD lights will flicker rapidly in an alternating pattern. Power level is reaching or at a dangerous point; unit will not increase wattage past this limit. DAT210 will shut itself off after approximately 20 seconds.</p>	<p>Step 1 Turn T1 pot counterclockwise until LED pattern ceases.</p> <p>Step 2 Continue decreasing T1 until HIGH PWR LED turns off.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input checked="" type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input checked="" type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>LOAD FAULT - PATTERN 1</p> <p>Pattern is caused by the DAT210 detecting a problem with Plasma Block cell or the transformer. After 5 – 10 seconds board will display pattern 2 shown below.</p>	<p>Step 1 Does unit display a hard fault? PATTERN 3 Yes – Go to step 2. No – Go to step 3.</p> <p>Step 2 Check for proper connection of transformer To PCB and Plasma Block cell.</p>
<ul style="list-style-type: none"> <input type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input checked="" type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input checked="" type="checkbox"/> LOCKED <input type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>LOAD FAULT - PATTERN 2</p> <p>After 10 – 15 seconds board will display pattern 3 shown below.</p>	<p>Step 3 Replace the transformer with a known Functioning transformer.</p> <p>Step 4 Turn unit on. Does the light pattern remain ? (ANY OF THE THREE) Yes – Turn unit off. Proceed to Step 5. No – Transformer has gone bad.</p>
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input checked="" type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input type="checkbox"/> LOW PWR <input type="checkbox"/> LOCKED <input type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>LOAD FAULT - PATTERN 3</p> <p>Hard fault indicated by this LED pattern. The unit has shut itself off to prevent damage to the cell, transformer, or PCB .</p>	<p>Step 5 Using original transformer, swap the cell.</p> <p>Step 6 Turn unit on. Does the light pattern remain ? (ANY OF THE THREE) Yes – PCB has malfunctioned, contact PTI. No – There is a problem with the cell block or other component.</p>
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> FAULTED <input type="checkbox"/> IGBT FLT <input type="checkbox"/> HS TEMP <input type="checkbox"/> HOT LOAD <input checked="" type="checkbox"/> LOAD FLT <input type="checkbox"/> HIGH PWR <input checked="" type="checkbox"/> LOW PWR <input type="checkbox"/> LOCKED <input type="checkbox"/> INV ON <input checked="" type="checkbox"/> +5 VOLTS 	<p>SOFT CHARGE RELAY FAILURE.</p> <p>This pattern of lights indicates a soft charge relay failure.</p>	<p>Step 1 Check proper connections by referring to “Single phase soft start” manual on PTI’s website.</p> <p>Step 2 Remove AC from relay.</p> <p>Step 3 Remove wires from DAT210 (on 12 terminals 3 & 5).</p> <p>Step 4 Apply 5VDC to those removed wires and listen for an immediate click sound. If no CLICK, bad relay.</p>