



On Site Training Session

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Gen2 Plasma Block®

Gen1 Enhanced Plasma Block®

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Safety Considerations

Checklist:

Unit Grounded, safe place to discharge

High Voltage Terminal, keep away

Constant flow of oxygen going through Plasma Block, prevent vacuum or flooding

AC input, AC input into green connector, no shorts

Circuit board, power supply, control kit. Clear of debris, Water , dust, metallic items. Prevent a short causing damage to the unit or its parts.



DAT210 Normal Running

Unit in Semi auto mode,
AC voltage applied, indicated by RED LED, know supply is working
with plus 5 volt LED.

Power the unit up in semi auto mode...
Demo normal running in semi auto mode then
Install auto tune jumper and demonstrate normal running in auto
Tune mode.

Turn unit on...
Inverter on shows up
Low power flash to show ramp to program power setting
Lock light flicker

Concludes normal running for semi auto mode

Now put unit into auto tune (install jumper)
Lock light constant now, will flicker to show processor is
Trying to maintain a programmed power set point.



Plasma Block Environment

Dust free

Clean oxygen flow

Temperature

Prevent backflow into Block

Proper voltage and Wattage

Circuit breakers

Moisture free, maintain proper humidity

Prevent metallic/magnetic debris

Proper water temperature

Proper oxygen pressure

Wires clear of HV



DAT210 Auto Tune Overview

Digital Auto Tune Feature – brief overview of what it is and what it does

We are assuming the power set point has been programmed, refer to our training video “DAT210 Set Power Point” for a demonstration On programming the power point.

Unit is on in auto tune mode signified by the lock light steady and on. It blinks occasionally to maintain it's power set point.

The Auto Tune feature of this board will adjust watts to the ozone cell based On changes in the pressure of the oxygen feed and the voltage input. If you have a drop or Spike in voltage it will make adjustments to frequency and maintain your Power set point which maintains optimum ozone output.

The auto tune feature ensures system uptime and maximum ozone output based on optimum program performance values.

Two other topics, “ DAT210 pressure change” and “DAT210 voltage change ” will demonstrate actual performance of the Auto tune feature.



DAT210 LED Fault Indicators

Demonstrate a series of LED light patterns indicating malfunctions you may experience

For additional information refer to...

DAT210 Board LED Indicators Programming and Troubleshooting Manual

DAT210 LED Documentation Manual

PTI website, Support, Training/Instructional Videos, DAT210 LED Fault Indicators

There may be slight differences between firmware versions.



Basic Troubleshooting

On-Off switch, nothing happens	<ul style="list-style-type: none">* check if there is sufficient power to the inverter. If not look elsewhere.* confirm proper timing between applying power and ON command* confirm +5vdc* confirm external command output power setting at zero* possible the inverter board has failed
Fault indicator LED's on	Refer to DAT210 LED documentation
Hard fault indicated	Refer to DAT210 LED documentation
Gas inlet chatters rapidly	<ul style="list-style-type: none">* check PLC time delay to open valve* check for flow restrictions
Ozone output low/under spec	<ul style="list-style-type: none">* check if PDM control set correct* confirm oxygen generator producing at least 92%* check if cell is flooded
No ozone output detected	<ul style="list-style-type: none">* confirm there is not a vacuum in the cell* confirm the oxygen supply is sufficient* confirm the ozone monitor has sampled a sufficient flow

Refer to DAT210 Board LED Indicators Programming and Troubleshooting Manual, Troubleshooting section or DAT210 LED Documentation Manual.



DAT210 Start Button Sweep

Demonstrate a start button sweep, normal running conditions

Refer to DAT210 Board LED Indicators Programming and Troubleshooting Manual, Start Button Sweep Section.

Reasons – New installation, diagnose possible failed cell or load fault.

To perform –

Press/Hold Start button

3 LED's flashing (Yellow)

2 more LED's flashing on top (Red)

Release start button, locked light will blink a few times

Unit is sweeping, found optimum running value for unit.

Diagnose a possible load fault light or bad cell

Turn unit on, load fault LED on, perform start button sweep

Confirms cell or load problem (if load fault light persists after sweep).

If unit does not attempt to tune itself, may be further problems

Have about 20 seconds before hard fault indicator goes on



DAT210 Calibration Mode

Must be in semi-auto mode to use calibration mode

Refer to DAT210 Board LED Indicators Programming and Troubleshooting Manual, Performing Calibration Mode section.

Demonstrating how to enter/exit calibration mode and what you can do while in calibration mode.

Reason – power setting not set properly.

Press Start Button, 3 LED's light up, release button, now entered calibration mode

Lock light flashes, heat sink temp light (red) blinks.

Low power or high power light may flash indicating a power set outside the tolerance range of +/- 2%

Set power using voltage pot

Exit calibration mode

Press start button briefly



DAT210 Set Power Point

Demonstrating how to set the power point and program the DAT210 circuit board for auto tune mode. Unit must be in semi auto mode to program the DAT210 Board. *Maximum watts to the Plasma Block varies by model, refer to your manual for this !!!*

Turn unit on...

Inverter “on” light shows up, low power light flickers,

Lock light flashes searching for a set point

Power supply working properly via the +5volt LED on the circuit board.

The T1 pot is where you will adjust your program voltage

To your desired power set point for the unit.

We will set the power/wattage using a power meter or PlasmaVIEW software to determine the power/wattage we have set it at. Screw Driver, Voltage Pot

Once we have established the power we are satisfied with...

To set/program the board...

we push the OP OK button until LOCKED/LOW PWR/HIGH PWR LED'S

light up, when released the LOW PWR/HIGH PWR will alternate on/off

Pushing the button again cycles it from

a power tolerance band of... 40% 20% 10% or off (first push is 40%)

Then when satisfied, we push and HOLD the button

two RED LEDs display. Release it... all LEDs flash,

the board has accepted the program.

Now we can re-install Jumper, we are back in auto tune mode

Turn the unit on and it will now adjust to our program power set point



DAT210 Auto Tune Voltage Change

Demonstrating a change in input voltage (voltage levels vary depending on the product)

Observing power meter...

120volts, 268 watts, demo a voltage drop (again, the 268 watts may be different depending on the product)

Drop voltage to 100 volts, power still at 268 watts. Software Recalculates and adjusts frequency to maintain program power Setting...

Now bring voltage up and show voltage spike, readjusts watts To 270 watts as programmed. This feature will keep unit running Increase system up time, prevent unit shut off or damage to Plasma Block cell.



DAT210 Auto Tune Pressure Change

DAT210 Digital Tune Reaction to Pressure Change

30g unit, DAT210 board, in auto tune mode programmed for 270 watts, 15psi
(voltage/wattage levels vary depending on the product)

Drop from 15psi to 5 psi, then 5 psi back to 15 psi
while looking at the light patterns on the circuit board... then
show same steps looking at the power meter. We will see how the
Unit readjusts to maintain its programmed power setting.

First, watch lights while we drop pressure from 15 psi to 5 psi
Lock light blinks and recalculates back to it's program setting ...

Now increase the pressure again, may see a low power light this time, because
our power setting dropped, after recalculating it brought the The power setting
back up and maintained auto tune mode as programmed.

Now as we watch the power meter...

We see power watts at 268, at 15 psi, now drop to 5 psi
Power level adjust a little, but maintains the power setting.

Now increase the pressure back to 15 psi , power setting increases
Then drops back to our power setting.



DAT210 New Profile Procedure

Reason for a new profile...

PTI authorization OR

Board problem (debris)

causing board to revert to a pre-program state. In this case the old profile is still there, but the board won't use it unless you engage it.

A problem with the PCB can be dangerous in the sense that if debris is not cleared/cleaned this can cause further circuit damage.

Profile – operating parameters for optimum performance and to prevent damage to the Plasma Block unit.

LED light pattern telling you profile must be engaged (confirmed)

To engage the profile...

OP OK button

light pattern confirmed profile has been engaged (accepted)

Prior to this, set approximate power set point



Gen2 Plasma Block®

Internal changes on a Gen2 block

Significant improvement in watt hours/lb of ozone

Higher volume or concentration

(concentration of 10 - 12wt% on air-cooled units)



Gen1 Enhanced Plasma Block®

Upgrade for all Plasma Block products

Internal changes to block

Improved oxygen flow

Less contamination sensitivity

Longer service life anticipated

Optimum performance is at 10psi or less



Hands On Quiz (Take notes)

Eric will change something on the unit causing it to malfunction. Attendees will diagnose and fix.