THC Troubleshooting Flow Chart

Rev. B 6/16 /2021

ZOOM IN TO GET STARTED

START

Is your computer plugged into the CNC electronics box with the supplied USB cable that came with your machine?

- No → You will need to use our approved cable for proper operation before continuing.
- Yes → Have you verified that your plasma cutter is wired up correctly for THC by performing the test checks outlined in the THC VOLTAGE CHECK GUIDE below?
  - No → You will need to perform these checks first before continuing with THC troubleshooting.
  - Yes → Perform THC Health Check by clicking the Red TEST button in the THC Control panel of FireControl. Make sure that your plasma cutter work clamp is connected to the slat bed before proceeding.

Did it measure less than 5V during the ***Resting Voltage Test***?

- No → Did it measure 5-10V?
  - Yes → It's possible that you have a THC wiring issue causing a larger than expected resting voltage. We recommend proceeding to FLAG 4 to make sure that you are wired into the VIM box properly. If you have a resting voltage between 5-10V in FireControl but you are passing the Live Voltage test, your THC unit should still function as normal and no further action is required.
  - No → Did it measure 10-299V?
    - No → Did it measure 300V or greater?
      - Yes → Unplug the THC cable from the Electronics Box and repeat ***Resting Voltage Test***.
        - Did it pass the ***Resting Voltage Test***?
          - No → Unplug the IHS cable from the Electronics Box and repeat ***Resting Voltage Test***.
            - Did it pass the ***Resting Voltage Test***?
              - Yes → You likely have moisture in your IHS contacts that are causing the issue. You will need to use compressed air directed at the white plastic isolator washers in the brass lifter and also between the brass screw head and the lead screw. Perform resting voltage test again with IHS cable plugged back in to confirm that it is dry. **Proceed to Live Voltage Test once fixed.**
              - No → Proceed to FLAG 5 for further troubleshooting.
          - Yes → You likely have something wired wrong on your plasma cutter that is creating a voltage at rest. With the plasma cutter on but not firing, use a multimeter to check DC voltage across the two pins on the THC cable that plugs into the electronics box (see below THC VOLTAGE CHECK GUIDE for more info). If you are measuring more than 135mV DC voltage here your plasma cutter is wired incorrectly. Remove power from your plasma cutter and re-measure the DC voltage to confirm. Consult our Installation Guide to confirm that your Plasma Cutter wiring was done correctly.
    - Yes → Unplug the IHS cable from the Electronics Box and repeat ***Resting Voltage Test***.
      - Did it pass the ***Resting Voltage Test***?
        - Yes → You likely have moisture in your IHS contacts that are causing the issue. You will need to use compressed air directed at the white plastic isolator washers in the brass lifter and also between the brass screw head and the lead screw. Perform resting voltage test again with IHS cable plugged back in to confirm that it is dry. **Proceed to Live Voltage Test once fixed.**
        - No → Unplug the THC cable from the Electronics Box and repeat ***Resting Voltage Test***.
          - Did it pass the ***Resting Voltage Test***?
            - Yes → You likely have something wired wrong on your plasma cutter that is creating a voltage at rest. With the plasma cutter turned on but not firing, use a multimeter to check DC voltage across the two pins on the THC cable that plugs into the electronics box THC port. If you are measuring more than 135mV DC voltage here your plasma cutter is wired incorrectly. Remove power from your plasma cutter and re-measure the DC voltage to confirm. Consult our Installation Guide to confirm that your Plasma Cutter wiring was done correctly.
            - No → Unplug the power cable from your Electronics Enclosure and remove the cover from the enclosure. Visually inspect the THC port and make sure that the gray and white wires connected to this port are properly mated at the blade connectors and are not cross-wired. Inspect the white plug on the Motion Control Board that plugs these white and gray wires into the board (labeled DIV and GND on MCB) and make sure that the wires are properly seated into the plug. Using a multi-meter, verify separate continuity from the two pins on the THC port to the two wires on the white connector (DIV and GND). After fixing any continuity issues, repeat the voltage test with IHS cable and THC cable still removed.
              - Did it pass the ***Resting Voltage Test***?
                - Yes → Re-plug in THC and IHS cables and go back to START.
                - No → Your THC unit is likely malfunctioning. Email support@langmuirsystems.com for further support.

Continue to the ***Live Voltage Test*** in FireControl. Did it pass?

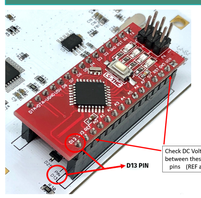
- Yes → Is your issue that you are experiencing infrequent torch rising or dipping during cutting?
  - Yes → It's likely that you are getting water splashing into the brass switch contacts of your IHS in the Z-axis that is affecting the THC voltage reading. Please proceed to FLAG 1 for more information.
  - No → Your THC system is functioning as intended.
- No → Did it measure between 0 - 85V?
  - Yes → Are you using an Everlast Plasma Cutter?
    - Yes → Are you wired into the CNC Port plug for either Divided or Raw Voltage?
      - No → If you are wired directly into the main plasma lugs of your Everlast Plasma Cutter for Raw Voltage wiring (not the CNC port for raw) and still not pass the Live Voltage Test, please proceed to FLAG 4.
      - Yes → Are you measuring between 40-85V when cutting?
        - Yes → Everlast Plasma Cutters are known to measure around 40 - 85V when cutting with our THC system when wired into the CNC port on the plasma cutter. Performance will not be affected and your THC will function as normal. If you wish to achieve a normal plasma cutting voltage measurement, we recommend following our THC VOLTAGE CHECK GUIDE for wiring into Raw Voltage instead.
    - No → Unplug the power cable from your Electronics Enclosure and remove the cover from the enclosure. Make sure to plug back in your USB cable to the electronics box and remove your plasma cutter Work Clamp from the machine frame. Using a Digital Multimeter set to DC Voltage, touch the black probe to the GND pin and the red to the A1 pin on the top pins of the THC unit as shown in the picture below and perform a straight cut while measuring this voltage. Does this voltage match the output voltage measured from your VIM Box from three steps above?
      - Yes → If you are getting (-1-) the same DC voltage out of the VIM box and between A1 and GND on the THC unit, (-2-) you have greater than 10,000ohms of resistance between USB plug shell and slat bed with everything connected, and (-3-) you are still measuring a low Live Voltage in FireControl, we recommend proceeding to FLAG 3 for further troubleshooting. If addressing computer concerns from FLAG 3 still does not solve your issue, it is possible that your THC chip is malfunctioning.

        Please contact langmuirsystems@support.com for further support on this issue. Please reference this troubleshooting step for quicker support.
      - No → Visually inspect the THC port and make sure that the gray and white wires connected to back side of this port are properly mated at the blade connectors and are not cross-wired. Inspect the white plug on the Motion Control Board that plugs these white and gray wires into the board (labeled DIV and GND on MCB) and make sure that the wires are properly seated into the plug. Using a multi-meter, verify separate continuity from the two pins on the THC port to the two wires in the white connector (DIV and GND). One pin on this port should have continuity to the DIV wire on the MCB plug and the other should have continuity to the GND wire on the MCB plug. After fixing any continuity issues, repeat the voltage test between A1 and GND on the THC chip. With everything powered on and connected, repeat the resistance measurement from two steps before this one.
        - If you have positively verified that you are (-1-) getting good THC voltage into the electronics box at the THC port, (-2-) no voltage between A1 and GND on THC chip, and (-3-) greater than 10,000 ohms resistance between the USB plug shell and the slat bed with everything connected then we recommend proceeding to FLAG 3 for further troubleshooting.

          If addressing any computer concerns from FLAG 3 does not solve your issue, it is possible that your Motion Control Board (MCB) is malfunctioning. Please contact langmuirsystems@support.com for further support on this issue. Please reference this troubleshooting step for quicker support.
  - No → Did it measure between 85-230V?
    - Yes → The Live Cutting voltage to your LS-THC unit is within the expected range. Your system should function as normal. If your cutting voltage still seems lower than your plasma cutter's advertised cutting voltages, you may find additional help by going to FLAG 4 for further troubleshooting.
    - No → Did it measure between 230-280V?
      - No → The Live Cutting voltage to your LS-THC unit is higher than expected. Your unit will likely still work as intended but performance may be degraded. We recommend following the steps in our THC VOLTAGE CHECK GUIDE below to verify that your Plasma Cutter is outputting the expected cutting voltages. *Please also be certain that your plasma cutter is set to output a 50:1 voltage divided signal.*

        You may also be getting this result if you did not click the [ARC IS ON] button in time during testing. We recommend repeating this test to double check your result
      - Yes → Did it measure greater than 280V?
        - Yes → FLAG 5
        - No → Unplug the power cable from your Electronics Enclosure and remove the cover from the enclosure. Make sure to plug back in your USB cable to the electronics box and remove your plasma cutter Work Clamp from the machine frame. Using a Digital Multimeter set to DC Voltage, touch the black probe to the GND pin and the red probe to the REF pin on the top pins of the THC unit as shown in the picture below. Are you measuring between 3.9 - 4.3 volts DC here?
          - Yes → Unplug your USB cable from the electronics box and remove the THC chip from the Motion Control Board socket by firmly pulling straight out. Find a suitable paperclip or small wire and stick one wire down into the board socket that would line up to the REF pin on the THC chip if it were still plugged into the socket. Do the same for the GND socket. Make sure these wires are firmly seated down fully into the socket and are not touching each other. Plug back in your USB cable to the electronics box and with your voltmeter measure the DC voltage between these two wires. Are you measuring between 3.9 - 4.3 volts DC here?
            - Yes → The Live Cutting voltage to your LS-THC unit is much higher than expected and this will likely cause problems when cutting and could damage your LS-THC unit. We recommend following the steps in our THC VOLTAGE CHECK GUIDE below to verify that your Plasma Cutter is outputting the expected cutting voltage and that your wiring to the LS-THC module is correct. *Please also be certain that your plasma cutter is set to output a 50:1 voltage divided signal.*

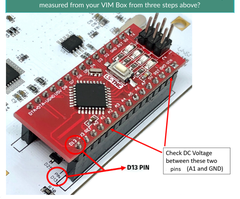
              You may also be getting this result if you did not click the [ARC IS ON] button in time during testing. We recommend repeating this test to double check your result.
            - No → Your THC unit is likely malfunctioning. Email support@langmuirsystems.com for further support.
          - No → Your Motion Control Board unit is likely malfunctioning. Email support@langmuirsystems.com for further support.



FLAG 1

FLAG 2

- Unplug the power cable from your Electronics Enclosure and remove the cover from the enclosure. Make sure to plug back in your USB cable to the electronics box and remove your plasma cutter Work Clamp from the machine frame. Using a Digital Multimeter set to DC Voltage, touch the black probe to the GND pin and the red to the A1 pin on the top pins of the THC unit as shown in the picture below and perform a straight cut while measuring this voltage. Does this voltage match the output voltage measured from your VIM Box from three steps above?



FLAG 3

- What type of computer are you using to run the machine?
  - Desktop PC → If you are experiencing lower than expected voltage and have confirmed that everything is wired correctly, it is likely that your Desktop PC and/or Monitor is affecting the voltage readings to your THC chip. In order to confirm, we recommend trying to cut with a laptop on battery power only and checking to see if this fixes your low voltage issues. If it does, we recommend running your Desktop PC and monitor on an uninterruptible power supply (UPS) or running your electronics enclosure from a USB Voltage Isolator (can be purchased from us or from retailers like Amazon). If you require further assistance, please contact langmuirsystems@support.com for further support on this issue. Please reference this troubleshooting step for quicker support and please take pictures of your setup so that we can review what could be causing your issue.
  - Laptop → Unplug your laptop charger from the laptop. If your laptop is on a laptop stand or other surface that could be touching the machine frame, place a piece of cardboard between your laptop and the laptop stand to electrically isolate it. Repeat the Live Voltage Test on only laptop battery power. Did it solve the issue?
    - Yes → If you are experiencing lower than expected voltage and have confirmed that everything is wired correctly, it is likely that the ground prong on your laptop charger is causing bad THC readings. We recommend running your machine on laptop battery power to prevent this issue. If that is not possible, we recommend plugging your laptop charger into an uninterruptible power supply (UPS) or running your electronics enclosure from a USB Voltage Isolator (can be purchased from us or from retailers like Amazon). If you require further assistance, please contact langmuirsystems@support.com for further support on this issue. Please reference this troubleshooting step for quicker support and please take pictures of your setup so that we can review what could be causing your issue.
    - No → Do you have an external monitor or TV screen plugged into your laptop?
      - Yes → If you are experiencing lower than expected voltage and have confirmed that everything is wired correctly, it is likely that your monitor or TV screen is affecting the voltage readings to your THC chip. Try unplugging the monitor or TV from your laptop and see if this fixes your issue. If it does, we recommend either running your monitor or TV screen on an uninterruptible power supply (UPS) or running your electronics enclosure from a USB Voltage Isolator (can be purchased from us or from retailers like Amazon). If you require further assistance, please contact langmuirsystems@support.com for further support on this issue. Please reference this troubleshooting step for quicker support and please take pictures of your setup so that we can review what could be causing your issue.
      - No → You likely have a THC wiring issue. Please see ***FLAG 2*** for further help.
  - No → Remove the USB cable from the electronics box and remove the work clamp from the slat bed. Repeat the previous Resistance measurement. Is it still less than 10,000 ohms?
    - Yes → Your Electronics Enclosure is not properly isolated from the machine frame and USB Ground is making connection to the machine frame. Temporarily remove the electronics box from the leg by removin the 3 screws in order to remove contact and try cutting again. Did this fix your low voltage issue?
      - Yes → Your Electronics Enclosure is not properly isolated from the machine frame. Temporarily remove the electronics box from the leg to remove contact and try cutting again. If this fixes your low voltage issue, you need to make sure when mounting the box that the mounting screws are not digging into the box sheet metal and creating continuity. Your electronics box should be mounted to the leg with the supplied boomerang-shaped plastic isolator mount. If you did not receive this mount or are unsure what it is, please contact support@langmuirsystems.com. Please reference this troubleshooting step for quicker support.
      - No → Go to ***FLAG 3***. If those solutions do not fix your issue then you likely have a THC wiring issue. Please see ***FLAG 2*** for further help.
    - No → Set your digital Multimeter (DMM) to measure resistance. Touch one probe to the outside silver shell of the USB plug down at the electronics box where the plug exits the enclosure. Touch the other probe to the slat bed where the work clamp is connected. Make sure that your USB cable is connected to your computer and that it is turned on. Are you measuring a resistance less than 10,000 ohms?
      - Yes → To support the following tests, set the machine up ready to cut with everything powered up and all cables installed. This includes all THC connections, IHS cable, USB cable connected between computer and electronics, and plasma cutter turned on with work clamp connected to slat bed.
        - Is the DC voltage across Pins 1 and 2 of your VIM Box THC Output Cable measuring between the ranges of +0.8 to +2.8 VDC with a multimeter when performing a straight cutting test? You will need to toggle off the THC Control panel in FireControl in order to test this.

          Please see the THC VOLTAGE CHECK GUIDE below for instructions on how to perform this measurement. This measurement is Step 3 in the Divided Wiring section and Step 2 in the Raw Voltage Wiring section.
          - Yes → Are you using a PrimeWeld Plasma cutter?
            - Yes → We have discovered an issue where PrimeWeld Plasma cutters do not output the correct voltage over the voltage divider CNC port which can damage the VIM box and cause bad readings from the output port. We highly recommend wiring your plasma cutter with the Raw Voltage configuration if you have a PrimeWeld cutter according to our THC VOLTAGE CHECK GUIDE. Please refer to our THC VOLTAGE CHECK GUIDE below and follow the instructions for RAW VOLTAGE WIRING.

              Proceed to the Start of this guide after wiring into Raw Voltage to troubleshoot any remaining issues.
            - No → You do not have a good voltage output from your VIM box and this is likely due to improper wiring. Follow the THC VOLTAGE CHECK GUIDE below to correct any wiring issues with your setup and return to the start once corrected. If you have verified that you are wired correctly and getting a good voltage into the VIM box but not out of it, then it is possible that you have a VIM box failure. Please contact langmuirsystems@support.com for further support on this issue. Please reference this troubleshooting step for quicker support.
          - No → FLAG 4
      - No → FLAG 2

FLAG 4

FLAG 5

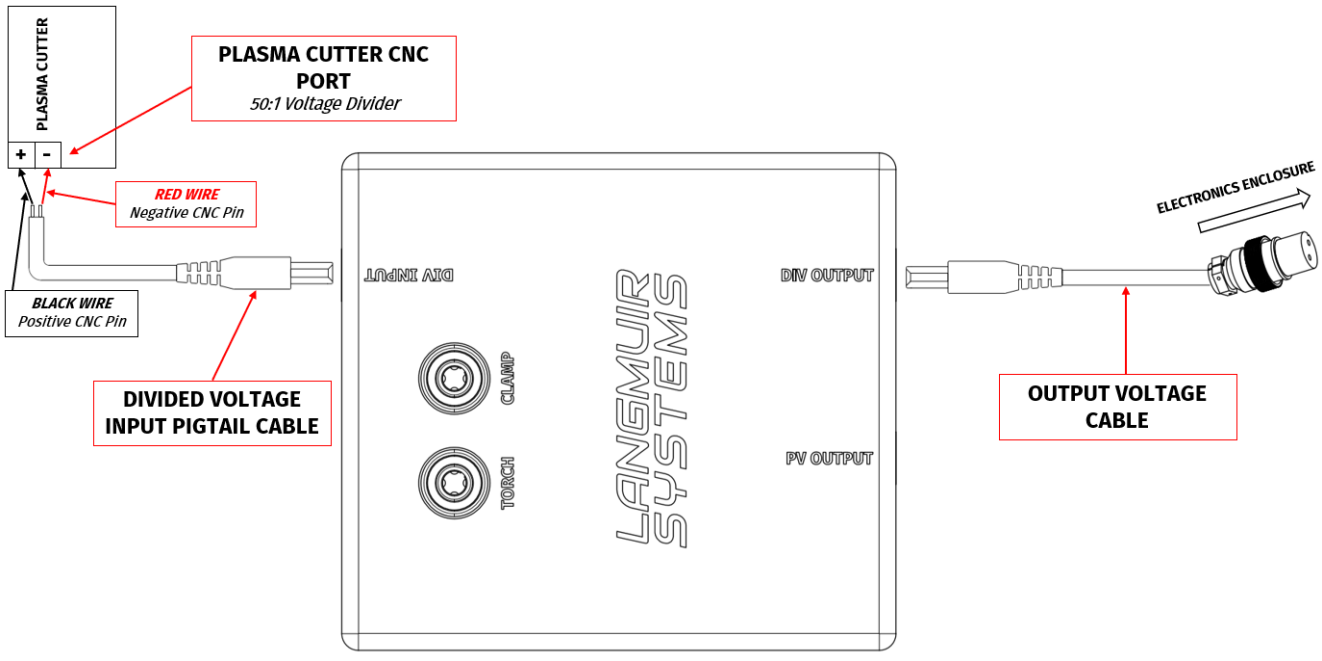
THC VOLTAGE CHECK GUIDE *Rev. A*

Purpose:

The purpose of this guide is to ensure that your plasma cutter/THC wiring is correct and also that all of your components are functioning properly. There is a separate guide for both of the input methods; Divided Voltage and Raw Voltage. You will need a digital multimeter (DMM) that is capable of measuring DC Voltage and continuity in order to perform the below troubleshooting steps.

Divided Voltage Wiring

Follow the steps below to verify that **(-1-)** the CNC port on your plasma cutter is working properly, **(-2-)** that you have wired correctly into this port, and **(-3-)** that your VIM Box is wired correctly and generating the correct output voltage. Making sure that your THC port is being fed a known-good-voltage from your plasma cutter is essential to troubleshooting the THC system. *Below is a wiring diagram for a typical Divided Voltage wiring installation.*



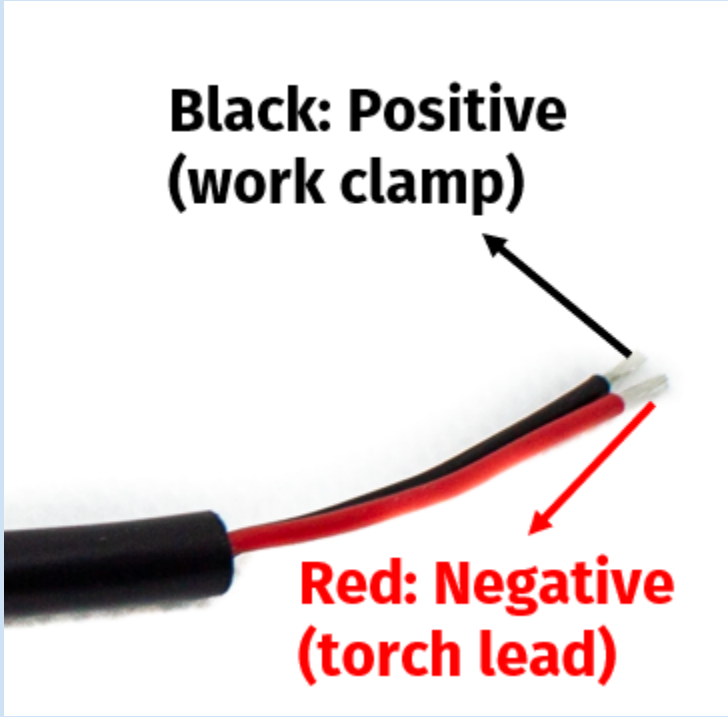
1.) Verify that your plasma cutter's 50:1 voltage divider port is functioning properly while cutting.

If your plasma cutter is equipped with a 50:1 voltage divider in the CNC port (called a CPC port on Hypertherm), we will use your Digital Multimeter (DMM) to measure the DC Voltage across the two pins of this port while the plasma cutter is cutting. Place the black electrode of the DMM on the negative pin (torch) of your voltage divider port, and place the red electrode on the positive pin (work clamp). *You may need to check your*

plasma cutter documentation to verify which pin is which on your CNC port. Next, using the STRAIGHT CUT feature in FireControl perform a straight line cut with your machine with the THC panel toggled off in FireControl and measure the DC voltage across these two pins. Depending on your plasma cutter, the typical arc voltage while cutting will range between 60-150V and since the voltage divider is 50:1, you should see an output voltage of around +1.2 - 3V. If your voltage value is within range but is a negative reading, you have your two pins switched (positive and negative are reversed). If you are not getting the expected voltage here, contact your plasma cutter manufacturer to remedy the issue. *NOTE: Some plasma cutters have an adjustable internal voltage divider. You will need to make sure that your voltage divider is configured to 50:1 to work with our system. Most modern plasma cutters have the CNC port configured to 50:1 for THC by default.*

2.) Verify that your Divided Voltage Input Pigtail Cable is wired correctly

Next, you will need to use the provided ‘Divided Voltage Input Pigtail Cable’ for wiring up to the divided voltage port that you tested in step 1 (if you purchased a pre-made THC cable for your cutter from us you will use that here instead). Per the instructions, the red wire should be connected to the negative pin, and the black wire should be connected to the positive pin (see pic below). *NOTE: Yes we know this is reversed from a color perspective but please make sure that you are wiring this cable correctly according to the picture below or you will get no voltage reading!*

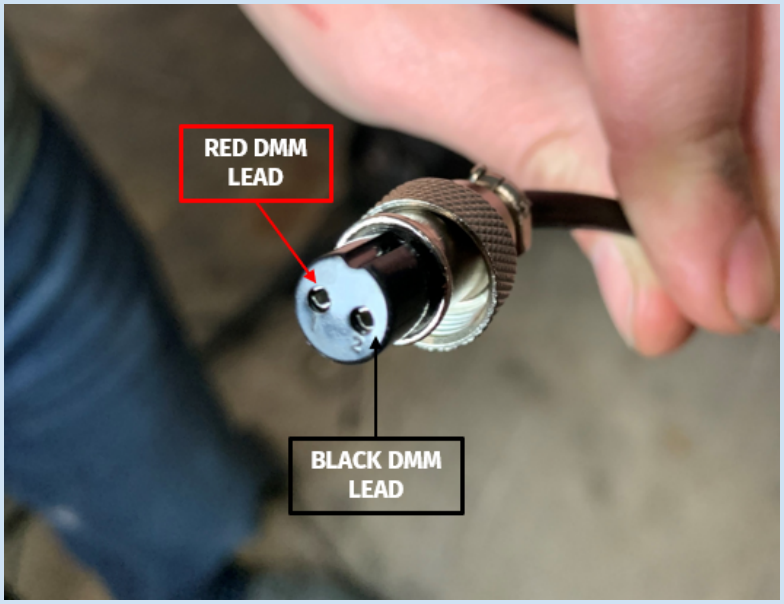


Once you’ve fashioned a suitable plug onto this bare-wire end for connecting to your voltage divider port, use your DMM to verify that your wiring is correct. Touch the red electrode of the DMM to the inside of the barrel connector and the black electrode to the outside of the barrel connector. *The DC voltage that you measure here should be identical to the value measured in step 1 above. If you are getting a negative voltage here but the magnitude of this value is correct, you need to switch the polarity of your wiring on the plug to the 50:1 voltage port. Failure to do so will result in no voltage reading in FireControl; the THC module can only measure positive voltage.*

3.) Verify that your VIM Box is wired and operating properly

Plug the barrel jack end of your Divided Voltage Input Pigtail Cable into the **DIV INPUT** socket on the VIM Box. Next, plug in the supplied Output Voltage Cable into the **DIV OUTPUT** socket on the VIM Box. *STOP: MAKE SURE THAT YOU ARE PLUGGING IN THE CORRECT CABLE INTO THE CORRECT SOCKET ON THE VIM BOX OR YOU WILL NOT GET THE CORRECT VOLTAGE OUTPUT. IF YOU ARE UNSURE, CONSULT THE WIRING DIAGRAM AT THE BEGINNING OF THIS GUIDE.*

Next, locate the free end of the Output Voltage Cable and note the pins labeled 1 and 2 on the front face of this aviation connector plug. Using the DMM, touch the Red DMM lead to pin 1 and the black lead to pin 2. Perform the same straight line cut as before with the THC Control panel toggled off in FireControl and measure the DC voltage between these two pins as shown in the pictures below. For safety, do not touch the exposed leads of your DMM when performing this test.Again, this voltage value should be positive! Your test setup should look exactly like the pictures below:


RED DMM
LEAD
BLACK DMM
LEAD

You will notice that the DC voltage that is coming out of the VIM will be less than the input voltage that you measured in step 2. This is because the VIM further divides the voltage for an effective total voltage division of 73:1. **To figure out the ballpark voltage that you should be getting, multiply the voltage you found in step 2 by 0.685 to get the value you should expect in step 3**. For example in step 2 we measured +2.16V multiplied by 0.685 gives us an expected voltage of +1.47V which is very close to the +1.45V we measured in the picture above.

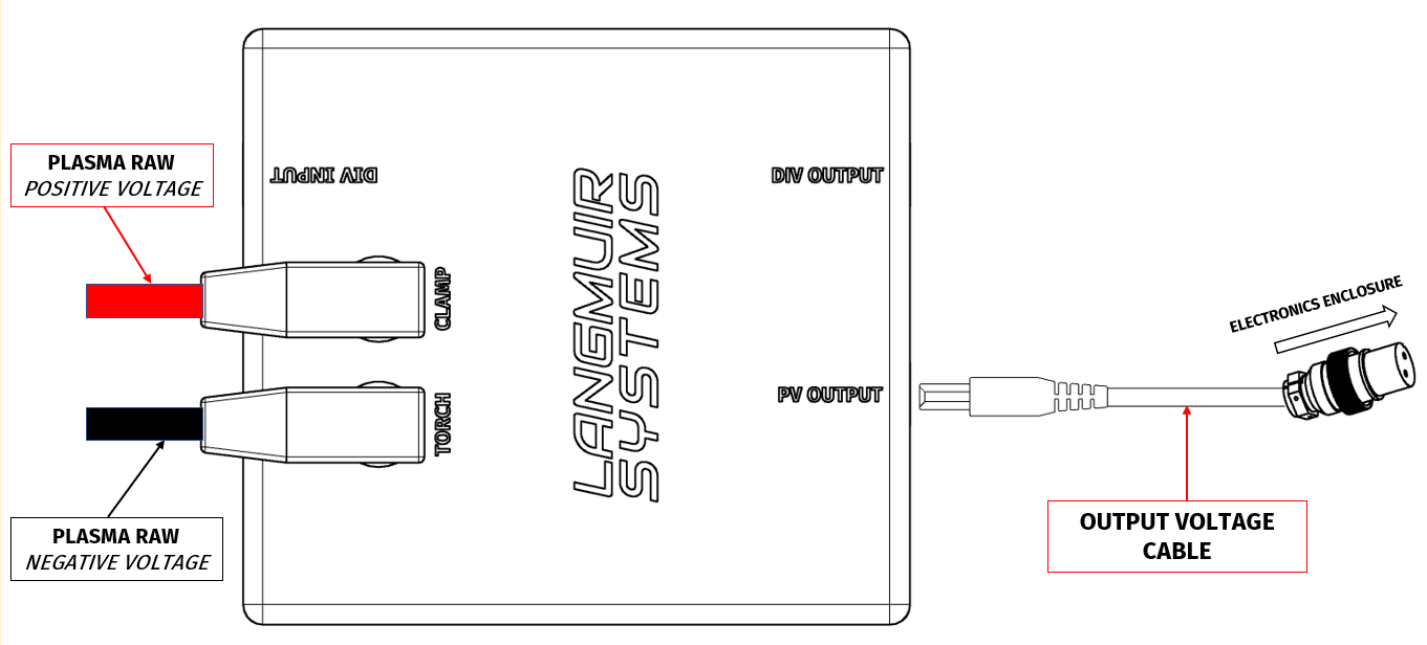
If you are getting good voltage values in steps 1 and 2 but measure no voltage or an unexpected voltage coming out of the VIM box, double check the continuity of the two wires in the Output Voltage Cable. Also, verify that your Output Voltage Cable is plugged into the DIV OUTPUT socket on the VIM BOX and not the PV OUTPUT socket. If everything else looks good with the cable and you are getting a good input voltage in step 2, you are more than likely experiencing a VIM module failure; contact support@langmuirsystems.com for next steps. *NOTE: We have discovered an issue where PrimeWeld Plasma cutters do not output the correct voltage*

over the voltage divider CNC port which can damage the VIM box. We highly recommend wiring your plasma cutter with the Raw Voltage configuration if you have a PrimeWeld cutter. Please refer to the section below and follow the instructions for RAW VOLTAGE WIRING.

If you are getting the expected positive voltage values in steps 1, 2, & 3 but still showing no voltage in FireControl, consult the above THC Troubleshooting Flow Chart to pinpoint the downstream issue with your system.

Raw Voltage Wiring

Follow the steps below to verify that **(-1-)** your Raw Voltage Input Pigtails are connected to your plasma cutter correctly and that **(-2-)** your VIM Box is wired correctly and generating the correct output voltage. Making sure that your THC port is being fed a known-good-voltage from your plasma cutter is essential to troubleshooting the THC system. *Below is a wiring diagram for a typical Raw Voltage wiring installation.*



!STOP! VOLTAGES HAZARDOUS TO HEALTH AND LIFE ARE PRESENT INSIDE A PLASMA CUTTER CHASSIS.

Connection to the main terminals of your plasma cutter either inside or outside of the chassis can expose you to deadly voltages. Our LS-THC operating manual should be read in its entirety before attempting to install this hardware. If you are unqualified to perform the installation and subsequent testing, we recommend working with a qualified professional electrician to perform this installation. Langmuir Systems will not be held liable for damage or bodily harm as a result of improper installation.

Making modifications to your plasma cutter in order to connect to the main plasma terminals may or may not violate your plasma cutter's warranty. Langmuir Systems does not provide instructions for hooking up to the

main terminals of your plasma cutter. It is your responsibility to check with your plasma cutter manufacturer regarding the terms of the warranty and whether or not executing the wiring procedure violates those terms. Langmuir Systems will not be held responsible for warranty violations.

Once the Raw Voltage Pigtail Cables are connected to your Plasma Cutter, they are live and carrying high voltages. The sheathed banana connectors protect against exposure to high voltages ONLY when installed into the VIM module. YOU WILL BE ASKED IN THE BELOW GUIDE TO MEASURE DC VOLTAGE BETWEEN THESE UNINSTALLED BANANA CONNECTORS TO VERIFY INSTALLATION; BE CERTAIN TO NEVER TOUCH THESE EXPOSED LEADS WHEN THE PLASMA CUTTER IS UNDER OPERATION OR YOU RISK EXPOSURE TO HIGH VOLTAGES THAT CAN KILL YOU.

Completing the wiring procedure may require you to open up the cabinet of your plasma cutter power supply which will expose you to high powered electrical components. It is your responsibility to make sure that all work is done safely and with the power disconnected and discharged. If you have any doubts regarding your ability to safely perform this work, we strongly urge you to solicit the services of a professional electrician. Langmuir Systems will not be held responsible for any injury or death resulting from the incorrect or unsafe execution of this procedure.

!STOP! VOLTAGES HAZARDOUS TO HEALTH AND LIFE ARE PRESENT INSIDE A PLASMA CUTTER CHASSIS.

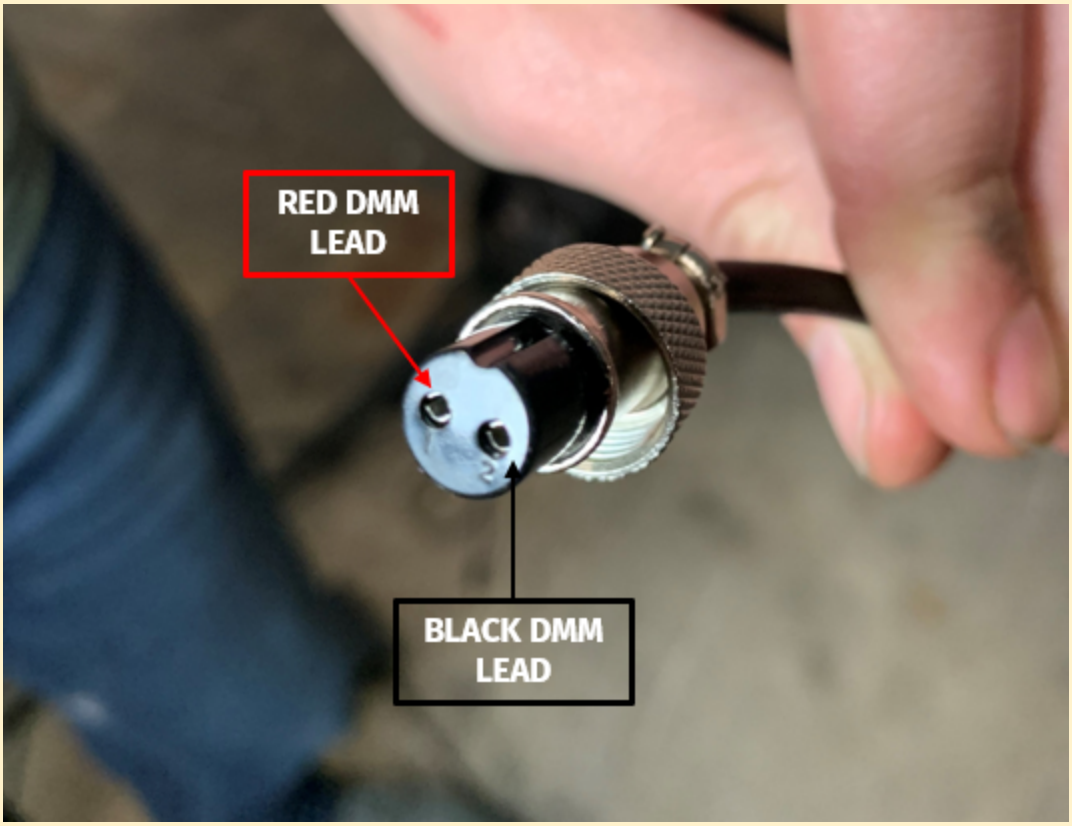
1.) Verify that your Raw Voltage Pigtail Cables are connected correctly

In this step we need to verify that you have successfully connected to raw voltage inside your plasma cutter and that the polarity of this wiring is correct. Using a DMM, connect your black DMM lead to the black raw voltage banana connector and connect your red DMM lead to the red raw voltage banana connector (as shown below). DO NOT TOUCH OR CONNECT THESE EXPOSED BANANA CONNECTORS OR DMM LEADS WHILE CUTTING! Next, Next, using the STRAIGHT CUT feature in FireControl perform a straight line cut with your machine with the THC panel toggled off in FireControl and measure the DC voltage across these two connectors. Depending on your plasma cutter, the typical arc voltage while cutting will range between 60-150V. If you are getting a negative voltage reading here, you need to switch the connection points inside your plasma cutter or FireControl will read 0V (FireControl can only read a positive voltage). If you are getting no voltage reading at all, you will need to contact your plasma cutter manufacturer or a qualified electrician for better guidance on how to hook-up to raw voltage inside your cutter.

2.) Verify that your VIM Box is wired and operating properly

Plug the banana connector ends of the Raw Voltage Pigtail Cables into the corresponding color sockets on the top of the VIM box. Next, plug in the supplied Output Voltage Cable into the **PV OUTPUT** socket on the VIM box.

Next, locate the free end of the Output Voltage Cable and note the pins labeled 1 and 2. Using the DMM, touch the Red DMM lead to pin 1 and the black lead to pin 2. Perform the same straight line cut as before and measure the DC voltage between these two pins as shown in the pictures below. For safety, do not touch the exposed leads of your DMM when performing this test. Again, this voltage value should be a positive voltage!


RED DMM
LEAD
BLACK DMM
LEAD

You will notice that the DC voltage that is coming out of the VIM will be much less than what you measured in step 1. This is because the VIM divides the raw voltage input for an effective voltage division of 73:1. To figure out the ballpark voltage that you should be getting, divide the voltage you found in step 1 by 73. For example in step 1 if you measured 110V, divide this by 73 and you should expect roughly 1.5V DC across the plug pins.

If you are getting a good voltage value in step 1 but measure no voltage or an unexpected voltage from the VIM box, double check the continuity in the Output Voltage Cable and that your Output Voltage Cable is plugged into the socket markets PV OUTPUT.. If everything looks good with the cable, you are more than likely experiencing a VIM module failure; contact support@langmuirsystems.com for next steps.

If you are getting the expected positive voltage values in steps 1 and 2 but still showing no voltage in FireControl, consult the above THC Troubleshooting Flow Chart to pinpoint the downstream issue with your system.