3rd Floor Pocket Troubleshooting Guide

This pocket guide is meant to serve as a quick reference for common issues in the 3rd floor lab and their solutions. You should be able to **click on an item in the table of contents below** to jump to that part of the document. If you have a suggestion to be added to this document, please send it to me (Chastity Mantooth) so I can make sure the addition is formatted correctly.

Benchtop Workstations & Equipment

No Power at the Workstation

Reservation is Started: make sure the reservation was started by the TA or student, as the power automation should now be tied to that (Student Access benchtop is not on the interlock and should always have power)
Powerstrip: make sure the power strip is in the on position and the red indicator light is on
Plug: make sure the piece of equipment being used is actually plugged in. The cord will often come loose at the back of the machine if people try to move it around.
Plug is in the right powerstrip: make sure the equipment is not plugged into the next station over if the reservation is for a single workstation
Automation Issue: Since the power automation is new, if you suspect there was an error please inform the floor lead. I want to verify the reservation was started correctly and there is nothing wrong on our end so I can talk to the people who are in charge of the automation about the issue.

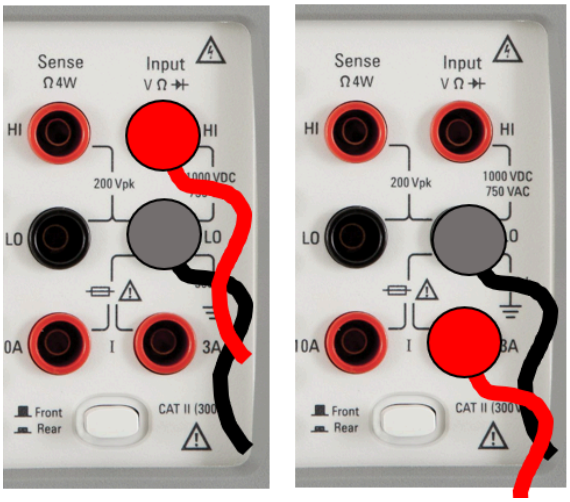
Cables Not Working

Banana Cables: test continuity (How To)
Oscilloscope Probes: test attenuation using the built in function on the scope. If attenuation cannot be adjusted properly, it may be a busted cable. (How To)
BNC Cables: Using an oscilloscope probe that you know is functioning properly, try to produce a clean sine wave. If the wave is not clean, we may have cable that is producing a bad signal. (How To)

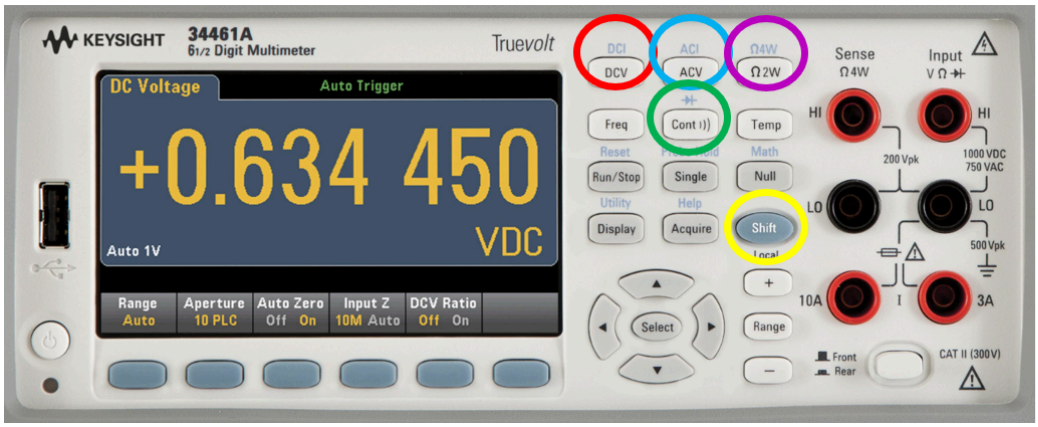
Benchtop Multimeter

Rear Input Button: if this button is pressed in, none of the front facing functions of the meter will work. Check for this **first** when someone says the multimeter is broken or needs a fuse. Since the button is prominent, I think students press it looking for the power button and don't realize that they toggled something.

Correct Ports: Students are here to learn and will make this mistake often. Ask what the student is trying to measure and make sure the cables are set up correctly for that. For reading current, the red cables should go in the 3A or 10A port. For all other basic measurements (Voltage, resistance, diodes, continuity), the red cable goes in the top input.



Correct Selections: Students do not always realize that they need to select different settings to read different things. Ask what the student is trying to measure and make sure the device is set to read that.For most of our DMMs, the selected setting should be displayed at the top of the screen.



DC Voltage
Shift: DC Current

AC Voltage
Shift: AC Current

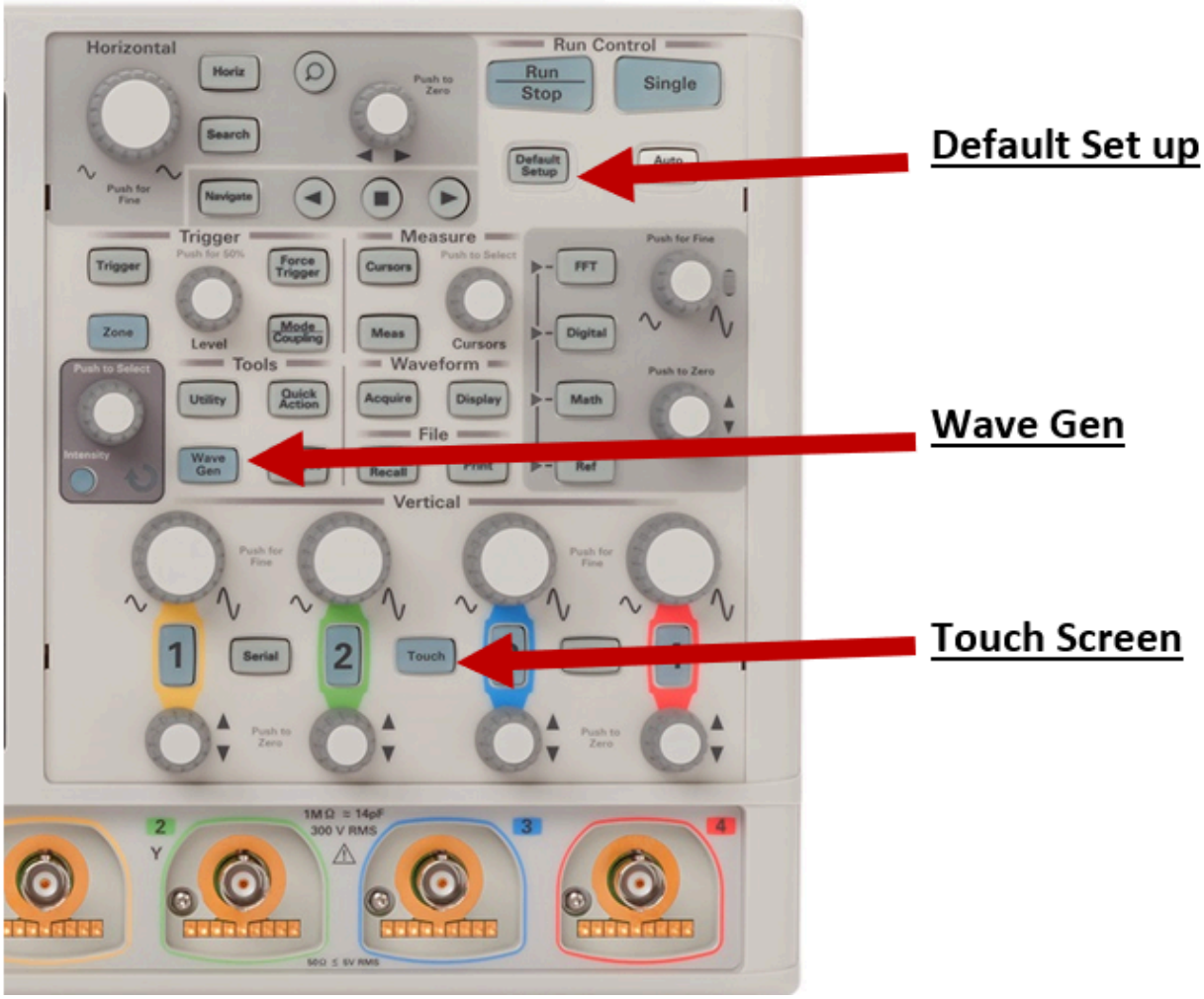
Resistance

Continuity
Shift: Diode test

Bad Cables: test continuity on banana cables. If signal is not continuous, swap out cables and put the bad one in the bad cable box

Oscilloscope

Default Setup: Ask if the student hit the default setup before they begin. If not, do this now. This fixes 70% of oscilloscope issues because the device will remember the settings of the previous user. If there is something enabled that the student is not accounting for, they may get weird results.
Wavegen Default Setup: If the waveform generation is the issue, resetting the wavegen to default will sometimes work for the same reasons as the scope default setup. (“Wave Gen” Hard Button > “Settings” on Screen > “Default Wave Gen” on Screen)
Wavegen Not Producing a Signal: Make sure the “Wave Gen” button is lit. Students sometimes do not realize it has to be turned on and will just input their parameters and be confused when the wave is not produced. If that is not the issue, try changing out the cable.
Touch Screen: Not all of the scopes have a touch screen. If they do, the touch screen button can be turned on and off. If it is not lighting up, press it to turn it on.



Student Access Benchtop Equipment

Measuring Capacitance on Multimeter: The different models of multimeter have different ways of doing this.

- **Fluke**: there is a dedicated capacitance button
- **Keithly**: hit “shift” and then the frequency button
- **HP**: this one does not have a capacitance function. Let the student borrow one of the LCR meters from EC to measure capacitance.

Negative Voltage on Power Supply: If the

- Keithly:
- Rigol:
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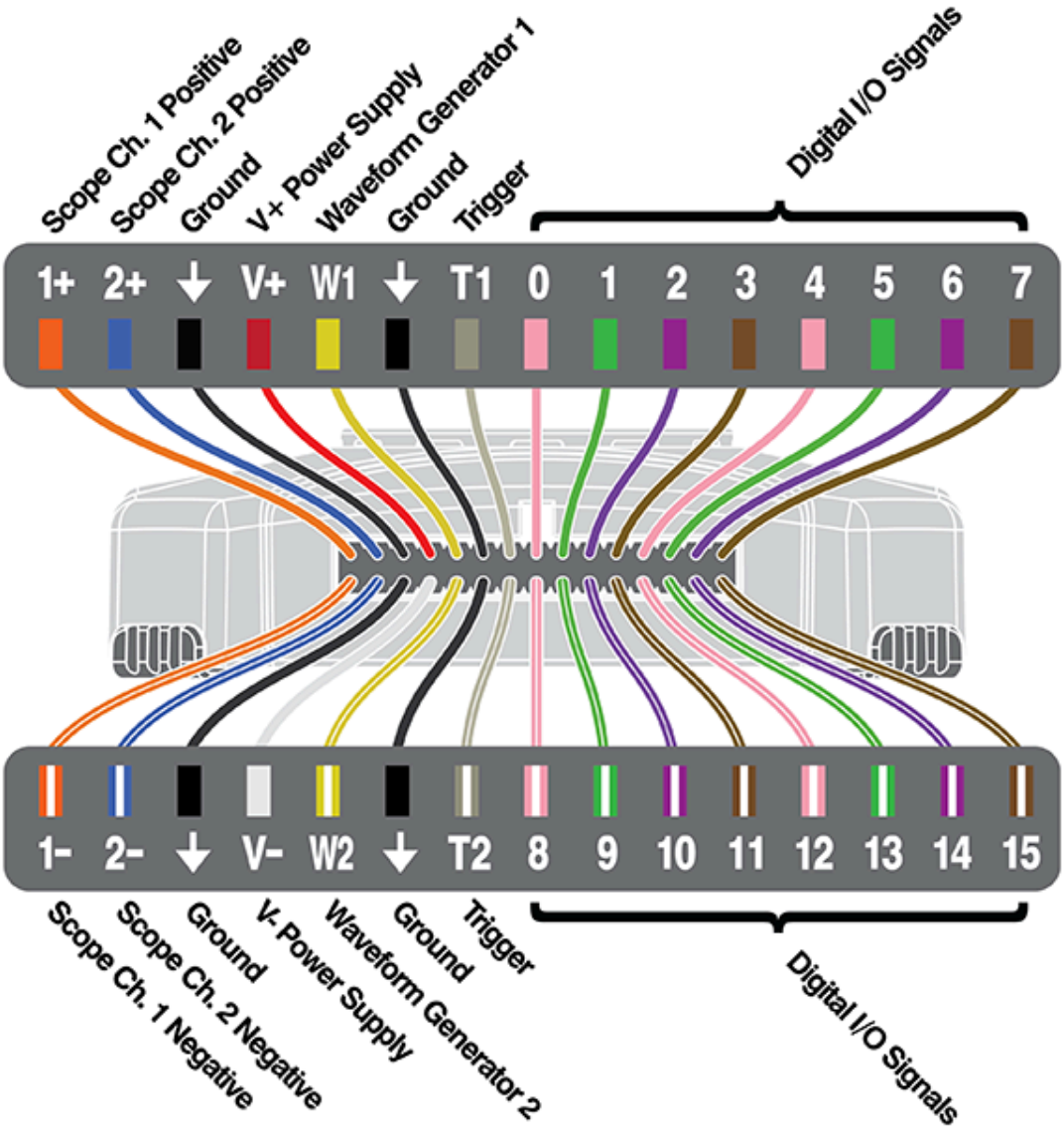
Other Lab Equipment

Analog Discovery 2/ AD2 (215 Kit)

Rainbow Cable is visibly broken: If the end of the cable has broken or come off, we can fix these. Leave the body of the AD2 with the student. Exchange the rainbow cables (New ones are in the AD2 replacements box in the back of EC, broken ones go in the “broken AD2” bin on top of the silver shelf in EC).
Not reading value/ Not producing voltage/ etc: Make sure the student is using the correct wire for what they are trying to do. If they are using the AD2 correctly, trade AD2 with them (New ones are in the AD2 replacements box in the back of EC, broken ones go in the “broken AD2” bin on top of the silver shelf in EC. **Record what the issue was** so that we can verify that the AD2 is actually broken or if there was a user error by putting a note on the device).



AD2 not powering on/ not connecting to computer: If the AD2 is not powering on or connecting, you can try these things.

- With the AD2 connected to the computer, try closing out of the Waveforms software and reopening it.
- Change out the micro USB cable
- Try using a different port of the computer if there is more than one
- Lastly, try using a different AD2 (if you suspect the AD2 is the problem after changing out the AD2, put it in the “Broken AD2” bin in EC with a note saying that it would not power on or connect to the computer

Handheld Multimeters (215 Kit)

Multimeter not getting correct reading: Ask what the student is trying to measure and make sure the cables are set up correctly for that. Students are here to learn and will make this mistake often. If student is testing AC or DC voltage, verify that they measured on the right setting, since most students put it on either one randomly and expect it to measure correctly

Multimeter not getting correct reading (verified): test against a known value.This is easy if they are trying to test for resistance [use a 1k resistor] or voltage [use a power supply], but current would need a circuit to test for. If the issue does not exist on a known value, there may be something wrong with the circuit.

Dead/Dying Battery: DO NOT give the student or TA the battery. You can give them a working handheld DMM (top shelf of the workbench in EC) and take the one that needs a new battery. Use a screwdriver to take the back off the DMM and change the battery. Put the DMM in the bin with the other working ones.

Fuse is Bad: DO NOT take a student or TA at their word on this issue. Before we change the fuse, we check to see if the DMM is reading a known current source correctly or not. If it is, the fuse is good. (a lot of people get an incorrect reading and immediately jump to “the fuse is bad” if they are not sure why they are getting that reading.

Fluke Digital Multimeter

- For reading Volts and Current, make sure you have it set correctly for reading AC (curved line) and DC (straight line over straight dashed line)
- If you suspect your red and black banana cables are bad, you can test continuity by using this setting and touching the ends of the cables together.
- For reading Current/ Amperage, make sure the red lead is moved to the current input. All other measurements use the other input. For any measurement, the black lead should be in COM, the ground socket.
- If the battery is dead, you can take the DMM to Equipment Checkout to be exchanged.

Breadboards

Bad or Loose Connection/ melted places: Our breadboards will wear out over time and will need to be replaced. If a student is having issues with a breadboard, we will replace it. Take the key to unlock the board (hanging by the door in EC), swap it out with a breadboard from the “Good Breadboard Box” (Under the silver shelf in EC), and put the bad breadboard in the “Bad Breadboard Box” (under the silver shelf in EC). When the box starts getting full, we will fix the bad breadboards.

Components

ICs/ Chips/ Integrated Circuits: We have an IC tester in EC (in one of the plastic drawers sitting on the desk). This will work for most of the ICs we have in stock (the ones that will not work with this device are written on the back). Put the chip in with the notch pointed to the top, lock into place with the black lever, turn it on by hitting “Enter”, hit “Enter” **again** to read the chip. If you do not get an error code, the chip should work. Note: when the chip is read, it may not display the exact code on the chip. As long as

the reading does not start with “Er”, it should be working. If a student brought the chip to you to test and it reads as working, there may be an issue with the students code.
LEDs/ Diodes/ Electrolytic Capacitors: Make sure the student knows that these are polarized components, meaning it matters which direction they are placed in the circuit and usually have something to indicate which way is positive or negative (i.e. on leg is longer, there is a notch in one side, there is a line or plus sign on one end, etc). If they are pretty sure it is broken, give them a replacement.
Any Other Small Circuit Components: If a student is requesting a replacement for a component on their list, give it to them. These parts are small, break easily, will burn out if wired incorrectly, etc. If they end up bringing it back saying that there was just an error in their circuit design, cool. If not, we budget for extras so they can request replacement parts.

Computers

Computer Not Coming On/ Monitor Stuck on Standby

Reservation is Started: make sure the reservation was started by the TA or student, as the power automation should now be tied to that (Student Access benchtop is not on the interlock and should always have power)
Powerstrip: make sure the power strip is in the on position and the red indicator light is on
Cables are plugged in and monitor/ computer is powered on:

- Make sure the monitor and computer are turned on.
- Make sure the cables are plugged into the correct place (I have seen display cables go from one port on the computer to another, instead of one port on the computer to the back of the monitor).
- Make sure the power cable is not coming loose from the back of the monitor.
- Make sure the mouse and keyboard are working.

Monitor Input set to Display: This will mostly apply to student access stations. ECEN 350 students will switch the display to HDMI to use the Raspberry Pis. They may not always switch it back.
Hard Restart: If the monitor is on and the computer is properly connected, but there is still no response, hard restart the computer. Hold the power button for 10 second, let go and wait just a couple more seconds, and then power it back on. Sometimes you will also need to do this if the display cable comes unplugged and the monitor does not respond once it has been plugged back in.

Cannot Log In to Computer

Linux Computer:

1) Make sure the computer is connected to the ethernet.
2) Make sure the student has set up their home directory. There are instructions on how to do this on the login screen of the linux computers. If they have, move to #3.
3) Ask if they are in 248 or 449/749 if they are not currently sitting in class. If they are not enrolled in one of those classes, they will not be able to log in.
4) Have them try logging in without any capital letters in their NetID. NetIDs are case sensitive.
5) If they have not logged in yet this semester, they may need to email Linux (linux-engr-helpdesk@tamu.edu) to have their account access granted. If a lot of students in the same section are having this issue, the TA should email Linux IT with everyone's TAMU NetID.

Linux, Vivado, and Zybo Boards

Zybo Boards Hardware

Board will not turn on: Take the board and make sure the blue power pin is set to "wall" and plug it in. Switch it to on (I have seen students who did not realize they needed to switch the board to "on" because the other times they tried it was already on). If the board still does not have power, try switching out the power cable (there are extras in EC on the shelf in the back). If the board still does not have power, try giving them a new Zybo board.

Cannot Connect to the Board in Vivado

Solution: First try refreshing the catalog and look for "Zybo Z7-10".

Otherwise, someone who has used the same Linux workstation may have forgotten to clear the /tmp folder and created some lock files that the current user has no access to. A reboot of the computer clears out those lock files automatically.

If the board is not showing up in Project Parts following these steps, they might need to refresh:

- Make a new project
- Call it something generic

- Go to boards (near top of popped up window)
- Search zybo
- Reset filters
- Select and install the zybo-z10
- The board should show up now in the other file the student was working on, or they can copy their files over to this new project if not

Student says there is no valid license for Vivado when they tried to generate the bit stream

Solution: Student did not select the board; they should go to settings and select the zybo board.

- Go to Project Manager
- Project Part
- Select the Zybo-z10 board

Cannot Open Vivado or cannot open Vitis

Solution: Have the student open the command terminal and type the following commands (case and spaces matter; hit enter at end of lines)
cd
mv .Xilinx .Xilinx_bak
Then have the student retry opening Vivado/Vitis the way they usually would without making changes to the process

Student tries to open a program and it is opening off screen (it may look like it is not opening but showing that there should be a window open)

Solution: This is an issue with the operating system. We cannot fix it, but we have a work around for when this happens.

- Click on the program that we are trying to open (i.e. Text Editor)
- On the keyboard hit Alt+Space
- An option panel should pop up; hit “move”
- Click once on the desktop background to bring the window into view

Spring Share

Students and Personal Reservations

Student Cannot Make Reservations: There are a few different reasons this can happen. Go down the list and confirm everything has been done.

- Did the student take the quiz?
- Did they take the quiz and get a 100%? (If a student gets a question wrong, it will make them select the right answer before they can continue, but it will record the incorrect answer. If they select an incorrect answer the first time, they will need to retake it and put the right answer).
- Did they take the quiz on a Safari browser? (this has been causing an issue and may not update their permissions. If they can retake it on a different browser, it should work. If I am available, I can confirm their submission and update their permissions)
- Where are they trying to reserve? (if they are trying to reserve the course use area on a day other than Sunday, they will not be able to. If it is an area that is available, we can make a reservation for them that ends 15 minutes before the next class time starts, or they can make a reservation for Sunday)

Students Reservation was Canceled: If they are more than 15 minutes late for a reservation, it will be canceled.

Student did not receive the email: Make sure the student has a reservation on Spring Share for the time they are saying they have a reservation. If they did not get all the way through the process of making a reservation, they would not get the email. If they have a reservation in Spring Share, have them check their spam folder. If they still do not see the email, record their **Name and TAMU Email Address** and send it to the Floor Lead. Go ahead and manually check them in for their reservation. I will try to figure out why they are not getting emails.

No power at Student Access workstation: Make sure the student started their reservation. Do not override the power if they have not checked in for their reservation.

Students & Checking In For Scheduled Lab

Student cannot check in/ "Your account does not have permission to register for this event" : This will happen is a student clicked on the wrong event. Ask what class they are here for. If they say something besides the class they clicked on, this is the issue.

Student cannot check in/ "Event Registration is full" : Try to refresh the browser and try again. If that did not work, let them in and tell them to see if it happens again next week. If it is doing this for a large number of students, inform Floor Lead.

TAs and Spring Share

TA Cannot Check-in: If they are trying to check in more than 15 minutes early, it is not open yet. If they are more than 20 minutes late, their reservation is canceled.
TA did not receive the email: Check their reservation in Spring Share. Make sure there is not a typo in their email address for the reservation. Have them check their spam folder if the reservation is confirmed correct.