Small Electronic Equipment Use

MAAV

September 26, 2017

Abstract

MAAV owns and maintains equipment to populate PCBs. This equipment is available for use to all teams/projects with Wilson Center access. This document describes safety rules and general procedures.

Contents

1 Safety .............................. 1

2 General Procedures ................. 1

2.1 Becoming an Authorized User .... 2

2.2 Training ........................... 2

2.3 PCB Assembly .............................. 2

2.4 Operating Test Equipment .......... 2

3 Equipment .......................... 2

3.1 Air Compressor ....................... 3

3.2 Solder Paste Dispenser ............... 3

1 Safety

The term “equipment” refers specifically to the equipment in Table 1.

• Do not use equipment you are not familiar with.

• Do not use any equipment if you are not an authorized user.

• Do not leave the room while any equipment is on.

• Do turn on the LED light strips while working.

• Do turn off equipment not in active use.
• Do ensure the smoke absorber is running while soldering.
• Do email maav-leads@umich.edu if anything is broken.

2 General Procedures

We, the MAAV leads, are more than willing to share the team’s equipment on the following conditions:

• The area is kept clean.
• The equipment is not intentionally mis-treated.
• Hard rock and/or EDM is played on the sound system.
• Email maav-leads@umich.edu if anything is broken, supplies are low, etc. We don’t care who broke/used it; we just want to fix it.

2.1 Becoming an Authorized User

Arrange a meeting with the MAAV leads and demonstrate basic proficiency to become an authorized user. The leads can be reached by emailing maav-leads@umich.edu.

2.2 Training

You may operate the equipment without being an authorized user as long as an authorized user is an active observer. Active observer means the authorized user is solely focused on observing, not doing any other activity at the same time.

2.3 PCB Assembly

• Supply your own solder paste and other resources.
• In a pinch, you may borrow MAAV resources.
• Bring all the required components to the equipment area before starting.
• Ensure the air compressor is charged before turning on the solder dispenser.
2.4 Operating Test Equipment

- When turning on a power supply or changing the voltage of a power supply, disconnect all electronics to prevent accidental damage from unstable voltage.

- Do not power any electronics with both batteries and a power supply at the same time.

- Regularly touch the metal legs of the tables to remove trace amounts of static electricity that can harm electronics.

3 Equipment

Table 1 lists the equipment available for use. It will be updated whenever new equipment is purchased.

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Gun</td>
<td>SparkFun 303D</td>
<td>1</td>
</tr>
<tr>
<td>Hot Plate</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>Logic Analyzer</td>
<td>Saleae Logic Pro 16</td>
<td>1</td>
</tr>
<tr>
<td>Oscilloscope</td>
<td>Fluke ??</td>
<td>1</td>
</tr>
<tr>
<td>Power Supply</td>
<td>B&amp;K Precision ???</td>
<td>1</td>
</tr>
<tr>
<td>Smoke Absorber</td>
<td>Hakko 493</td>
<td>1</td>
</tr>
<tr>
<td>Solder Dispenser</td>
<td>Zephyrtronics ZT-5100</td>
<td>1</td>
</tr>
<tr>
<td>Soldering Iron</td>
<td>Hakko FX-951</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 1: MAAV small electronics equipment

3.1 Air Compressor

The air compressor is used to power the solder dispenser. The switch has two positions: off and auto. When in the “off” position, shown in Figure 1, it does not run.

The air compressor must be off when it is not in use. It is unsafe to keep it on while not in the office, and it is annoying since it will occasionally run. The air compressor, when in the “auto” position (shown in Figure 2), will run when necessary to maintain a full-ish tank.

3.2 Solder Paste Dispenser

The solder paste dispenser requires the air compressor to be on and charged before use. The air compressor is described in Section 3.1. Solder paste syringes are in the fridge, as are the needles for the syringe. Needles should be disposed after use. The solder paste dispenser must be turned on for the foot pedal to work. The air pressure is adjustable; in general, it should be between 40 and 70 psi. The pressure can be adjusted by pulling out the big black knob, turning, and pushing back in. The strength of the “vacuum” function may be changed.
by turning the knob labeled “vacuum”. The “vacuum” function may be tuned to reduce the leakage of the needle while the pedal is not being pressed.

The dispenser can run in two modes: auto and manual. In manual mode, whenever the pedal is pressed, solder will come out. In auto mode, the dial controls how long a single pedal press releases solder. This is incredibly helpful; for doing small pads, the dial may be set to 0.5, and a single pedal press (or a press and hold) will only dispense solder for 0.5 seconds. This, in addition to changing needle size, allows very fine control of dispensing.