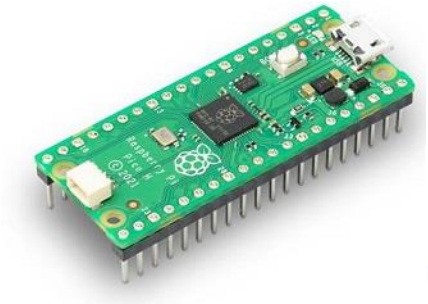
Title: BARC DC Circuit and Micro Transceiver interest group
First Meeting Date: 8 Nov at 6:30 PM

Overall Objective:

Have fun and keep it beginner friendly, with no advanced knowledge required for participants. Any member of BARC should feel comfortable attending regardless of their knowledge or technical expertise. It should also serve as a good resource for experienced members to talk to others about struggles or accomplishments. Also experienced members should be encouraged to help beginner participants.



Session #1

- Soldering abilities/experience on attaching pins to microcontroller and attaching components on to circuit boards is a critical success factor. Dave Kender , KD8WSW will show us the best technique and demonstrate how to solder pins and components to a board.
- Soldering components to a circuit board
- Recommendations on what you should buy will be discussed.
- Attendees can bring their own soldering guns if they have one. We will try to facilitate some participants hands on if possible.
- See some background knowledge. You are not required to watch or read anything prior to the session.

Session #2

- May offer a repeat of session 1 with more hands on if there is an interest.

Discuss with participants potentials for taking group further. All projects will be kept as simple as possible, and we will everything possible to have participants understand what is being discussed.

1. Focus low cost and usable builds with 433 MHz micro transceivers.
2. Example of projects we could take on:
    1. 433 MHz RF Tx-Rx interfaces for a PICO or Arduino. It can have many applications. There is already a lot of documentation and projects. We will

provide any software that needs to be loaded onto the board and explain what it does so it can be changed and shared.

2. Build a TinyGS ground station using Arduino as the trans receiver for low orbiting satellites. No programming knowledge is required. It would involve building a circuit with Arduino and a small homemade ground plane antenna for 433MHz. Cost approximately $75
3. 5W Trans receiver (good soldering skills are essential approximate $200 including battery). Most likely need to work in teams. I own a kit.
4. Join a hackathon as a team.
5. Many more possibilities ……

Dave prepared the following background information for us:

Basic Soldering Tip Tutorials (Videos) Series:
YouTube How Do You Do DIY
https://www.youtube.com/@HowDoYouDIY

PCB Soldering Tips (Videos)

- Three videos depicting good PCB soldering techniques and another video related to PCB boards. Excellent Video Soldering Header Pins to your Raspberry Pi Pico https://www.youtube.com/watch?v=R11QanPDccs (3:54 minutes)
- The EASY WAY to Solder Pins to your Pico, Arduino, Pi, and MORE! https://www.youtube.com/watch?v=kZpN-xN0eW4 (3:44)
- Soldering Headers onto a Raspberry PI Pico https://www.youtube.com/watch?v=YJ687LKtWLg (11:33 minutes)
- Soldering Circuit Boards https://www.youtube.com/watch?v=l9Kbr8cPqOE (3:24 minutes)

Arduino ProtoShield Tutorials

- https://www.youtube.com/watch?v=a3wDEcORRR4 (7:41 minutes)
- https://www.youtube.com/watch?v=yXMBh8mk51g (6:09 minutes)
- https://www.youtube.com/watch?v=czGsopX2CKI (16:07 minutes)

PCB Boards and Pin Tips

- Boards can be scored with a sharp box cutter and snapped along a straight edge (like cutting a pane of glass). For boards with traces between pads, the traces can be interrupted by twisting a drill between your fingers.
    - The lengths of pins are scored between each pin.
    - Pins can be modified to length by snapping at the proper score.
    - I use a pair of needle nose pliers on each side of the score line.
    - Place two rows pins in a breadboard at the correct separating width.
    - Place the Pico on top of the pins.
    - Solder away!

PCB Soldering Tips

1. Use small chisel or cone tip.
2. I use old style (non RoHS) 60/40 leaded solder with rosin core flux, the thinner the better.
3. Use proper heat setting.
4. Clean and tin soldering tip (damped sponge or copper scrubber).
5. Briefly and simultaneously heat the pin and the pad.
6. Briefly touch solder to pin so it flows to pad.
7. Frequently clean and re-tin soldering tip.
8. Inspect solder joints make sure all pins are soldered securely to their respective pads, make sure there are no shorts between pins.

Background on my friend Dave Kender, KD8WSW

- Distinguished Military Career and Silver Star Recipients: https://cecs.wright.edu/~dkender/DMKUSAF/KenderUSAFRetirement.pdf
- Retired Senior Lecturer of Engineering, Emeritus: https://works.bepress.com/david-kender/
- Dave currently serves as advisor for Capstone Senior Design Project teams in the Wright State College of Engineering and Computer Science.
    - The following is a link to a example project "Wright State biomedical engineering students design model sailboat for quadriplegics students and our club" : https://webapp2.wright.edu/web1/newsroom/2022/04/13/wright-state-biomedical-engineering-students-design-model-sailboat-for-quadriplegics/
- Dave is my go to guy for all thing radio and circuits.
- I can name many more of Dave's accomplishments …..

Look forward to many of you attending our 1st session and providing input.

Bob French, AC8ZU