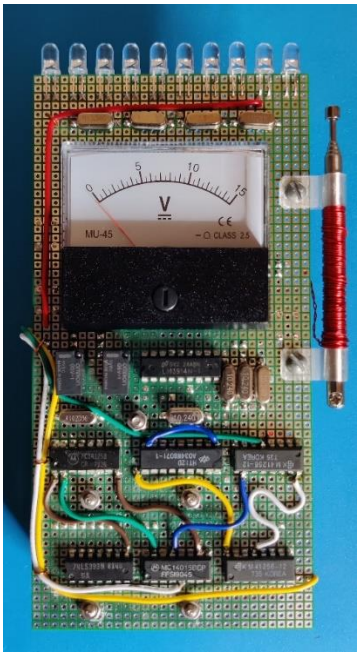
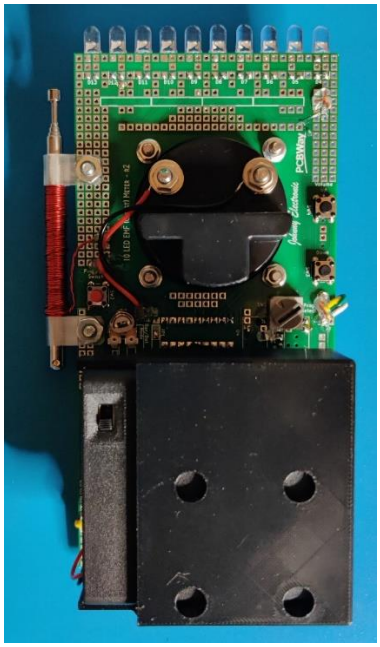
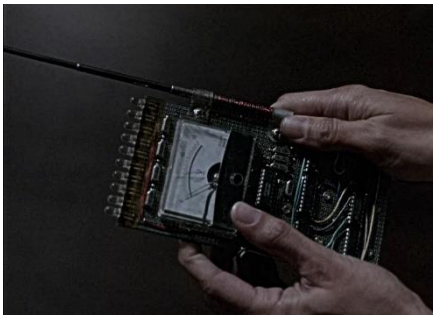
10 LED EMF Meter User Guide (r2)







This meter is based on Olivia's meter from season 4 episode 2 of the Supernatural TV series. This is a prop only EMF meter that can manually create EMF events by pressing the program switch or it can run a selection of pre-programmed sequences.

Olivia's EMF Meter (S4 E2, 2:22 min)

Meter Details

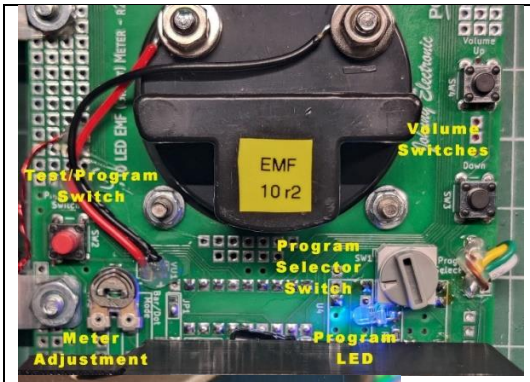
- PCB Dimensions: 79 mm x 158 mm
- Meter is a DC 0-15 volt
- 10 LEDS in BAR mode
- 9 RF crystals, cosmetic
- LM3914N IC – functional
- 6 random IC's, cosmetic
- Right side mounted antenna, cosmetic
- 2 low voltage signal relays, cosmetic
- Volume Up/Down switches
- Test/Program switch for creating EMF events (9 Pre-programmed events included)
- Rotary selector switch for setting pre-programmed sequence
- ATTiny1604 to control the meter deflections and DFP sound board
- SD card with MP3 sound files
- 4 AA batteries needed to provide 6v power

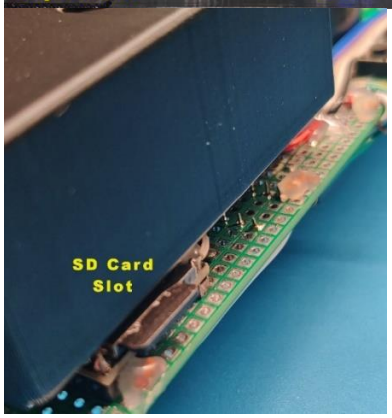
Meter Operation

If you purchased an assembled unit then all adjustments have already been made and a programmed SD card has been included. Otherwise review the EMF Meter Adjustments and Power Up section in the build guide.

- Install the batteries in the battery pack if you have not already done so.
    - To remove the battery pack just pull it straight out from the holder.
    - To insert slide the pack in so the power switch is facing out and the clasps are at the edges of the pack. Slide in until it locks into place.
- Check that the SD card is inserted properly. It should clink into the slot.
- If the battery pack power switch is not on, move it to the ON position.
- You should see the meter deflect briefly and the EMF start up sound is played.
- Use the Test/Program switch to create an EMF event.
    - Holding the switch will begin to deflect the meter. The effect can vary by using a shorter or longer press of the switch. When held for a longer duration the meter level will fluctuate between higher values for a more realistic effect.
    - A quick switch press will trigger one of the pre-programmed EMF event sequences. A blue LED will light when a programmed sequence is running.
    - With the selector switch at 0, each quick press will play the next sequence in order.
    - With the selector at 1-9 that sequence will play for each switch press.
- There is a VOLUME UP and DOWN to control the meter sound.
    - The sound level will be retained between power cycles if after adjustment a long press of the Program/Test switch is completed. If the level stored was too low it will be reset on the next power cycle.
- Review the remaining sections for adjustments of the meter.
- This meter was designed as a novelty item

Meter Settings





Left Back Side of Meter
Test/Program Switch (Red)

- Long press will create EMF sounds and meter deflections
- Quick press triggers pre-programmed EMF sequences.

Meter Adjustment – Adjusts the maximum meter deflection. CW increases deflection.

Right Back Side of Meter
Volume Control Switches (Black)

Up/Down – Used to control the volume level of the meter sound

Program Selector – Selects 1-9 pre-programmed sequences. 0 runs sequentially from last run sequence.

Program LED (Blue) – This LED indicates that one of the pre-programmed sequences is running.

SD Card – Contains sound files for meter operation. If you do not hear any sound check that the SD card is inserted properly. Press in to release and insert. You should hear a click when inserting.

Pre-programmed Sequences (Cycles through 1-5 with each button press)

1. High,End - Start, High 1.4 second, End (Also used for meter adjustments)
2. Highs,Lows,End - Start, High 1 second, Low, End, 2 cycles
3. High,Low,High,End - Start, High 1.5 second, End, Start, low, High 0.5 second, Higher 2 seconds, End
4. Single Mid/Low/End - Start, Mid, End
5. Dual chirps - Start, Low1, Low2, End, Pause 0.5 seconds, Start, Low1, Low2, End
6. Start/Long Mid/Low/End - Start, Low, High 2 second, Low1, Low2, End
7. Olivias S4 E2 sequence – 16.5 second sequence inspired by episode
8. Deans S1 E11 sequence – 15.4 second sequence inspired by episode
9. S4 E13 sequence - Low tone / High tone, lots of meter movement

SD Card (Sound Files, MP3)

The sound files are stored in a folder named /mp3 on the SD card. Six files are available but only five are used in the program for the EMF meter. This table lists the files, functionality, and associated code define. The sound files are available in Github. The link is in the references section at the end of this document.

File Name	Define Name	Function
0001_emf start.mp3	EMF_TONE_START	Initial startup when a signal is detected or test button pressed, 0.238s
0002_emf low short.mp3	EMF_TONE_LOW	Used for mid-point signals that are neither high or low, 0.238s
0003_emf steady short.mp3	EMF_TONE_STEADY	Short High tone - Not used
0004_emf steady long.mp3	EMF_TONE_STEADYL	Long high tone when signal reaches maximum, 1.435s
0005_emf steady end.mp3	EMF_TONE_END	Signal going back down to off, 0.282s
0006_emf power up.mp3	EMF_POWER_UP	Used for initial setup/power on (5 LED meter)
0007_emf power up2.mp3	EMF_CHARGE_UP	Used for initial setup/power on (10 LED meter)

References

- **Github: Development board documentation, schematics, and related files.**
  - **https://github.com/JohnnyElectronic/EMF_Meters/**
- **YouTube: Board assembly and project videos that are related to this project.**
  - **https://www.youtube.com/@Johnny_Electronic**

Disclaimer

This information is provided “as-is” with no representation or warranty of any kind whether express or implied. However, I’ve tried to make this document (as well as the supporting videos) as useful and accurate as possible. If you find something that is incorrect or confusing, please let me know as I would like to make the correction so others will not have the same issue.

This meter is for entertainment purposes only and there is no representation as to the accuracy of the meter readings.

Feel free to email me any time for issues you may have with this build.
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