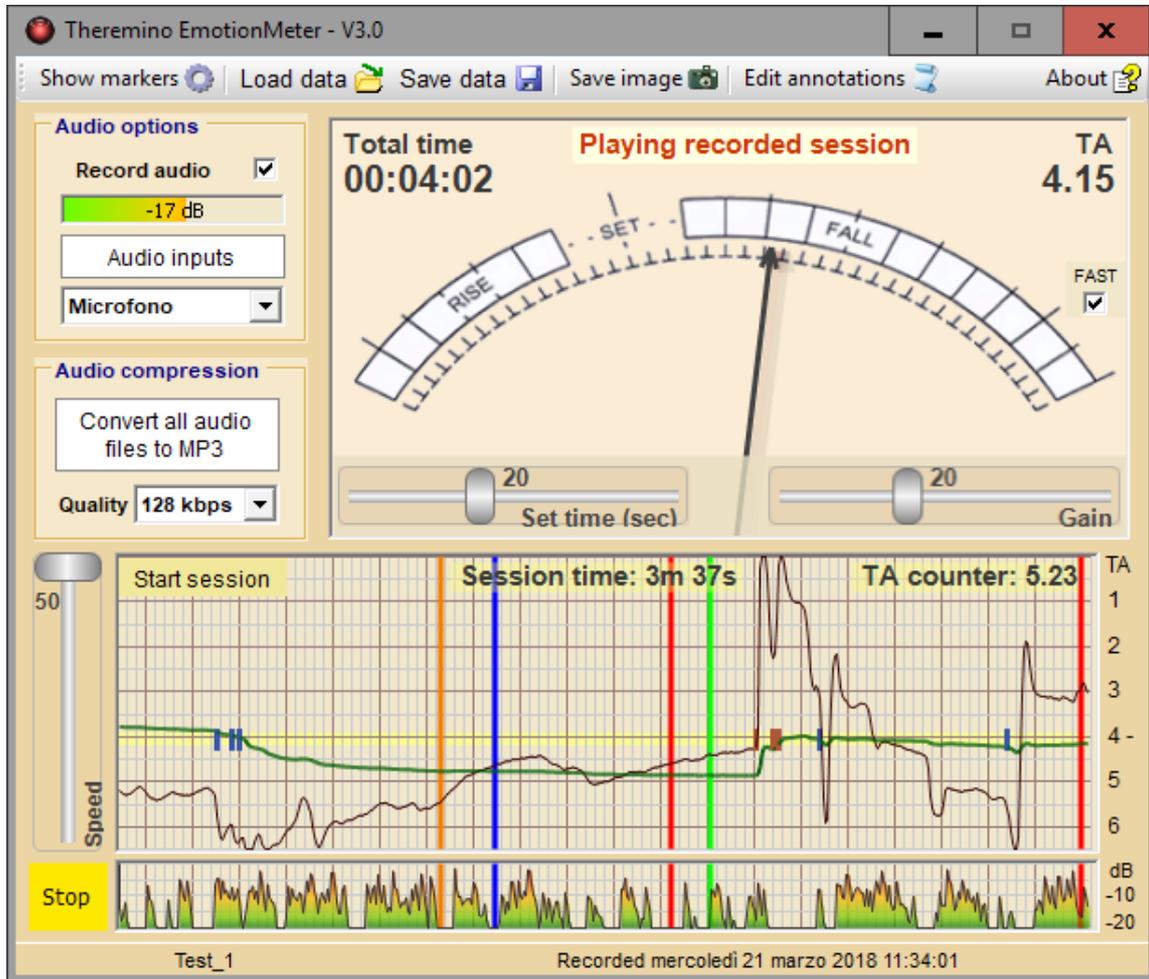


System Theremino



Emotion Meter History

Preliminary notes

The information, wiring diagrams, and images used by Theremino team are all in the public domain and freely available on the Internet.

The Ron Hubbard original E-meter patent ([US Patent n. 3290589](#) of the December 6 1966), has far exceeded the 20 years of validity, so the technologies specified by him may be used freely.

Moreover our implementation is totally different from the original E-Meter, which are unnecessarily complex, expensive and technically unreliable, as explained in [This Wikipedia Page](#) and confirmed by numerous publications such as [Autopsy of an E-meter](#) or [This Page](#), or also [This](#).

Sometimes these pages disappear, if you can not load them for you to browse on WebArchive, such as this: [Autopsy of an E-meter](#).

On these issues they are at stake and powerful interests powers, even able to force the deletion of web pages.

Therefore we would like to clarify that our implementation is totally different from any similar device. The only common point is the measurement of skin resistance.

And also we point out that our Emotion-Meter application was written just for making experiments about detection of biological parameters, and only for scientific and technological research purposes.

The change of skin resistance induced by psychic stimuli is a confirmed validity [Observable](#), demonstrated by numerous scientific studies and used for decades in [Polygraphs](#).

The use made with these measures is beyond the scope of this work, and Theremino team assumes no responsibility.

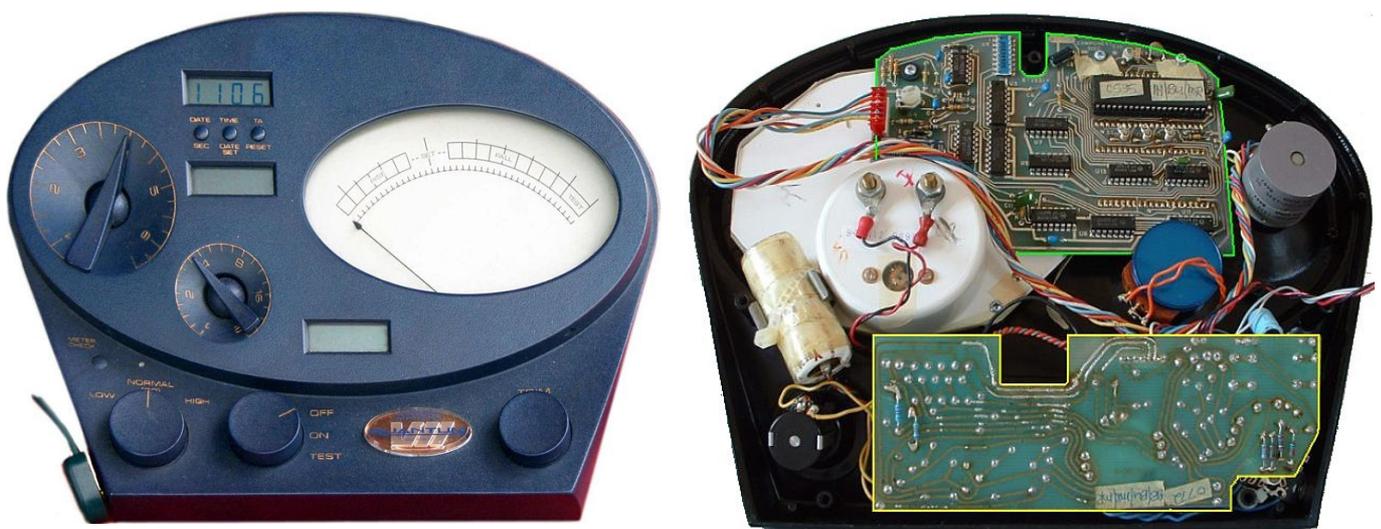
In particular, our research does not give any credit to pseudo-scientific and potentially dangerous ideas, spread by religious [Multi-level](#) organizations and the many sites that deal with these topics.

General description

The Theremino Emotion-Meter is inspired by the tool called E-meter, used by a well-known religious movement.

The original instrument was using a dial, to display the changes in skin resistance, stimulated by emotions.

Technically it is an expanded scale resistance meter (a Wheatstone bridge), that show, with the needle movements, small changes in skin resistance of the subject.



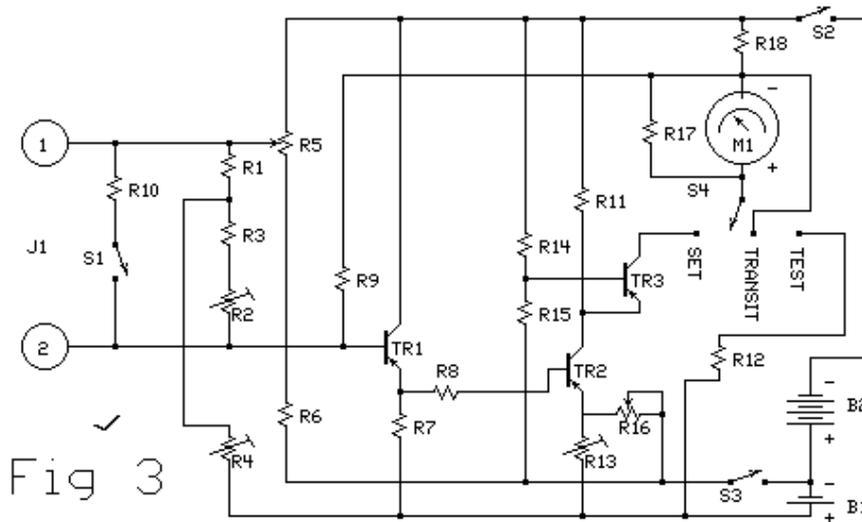
In the original equipment, and also in the Theremino Emotion-Meter, the resistance is measured by means of a weak electric current, in the order of tens of microamperes. A completely harmless and not perceptible current .

The normal use of these devices involves the presence of two persons, one that uses the instrument and the other connected to it through two electrodes.

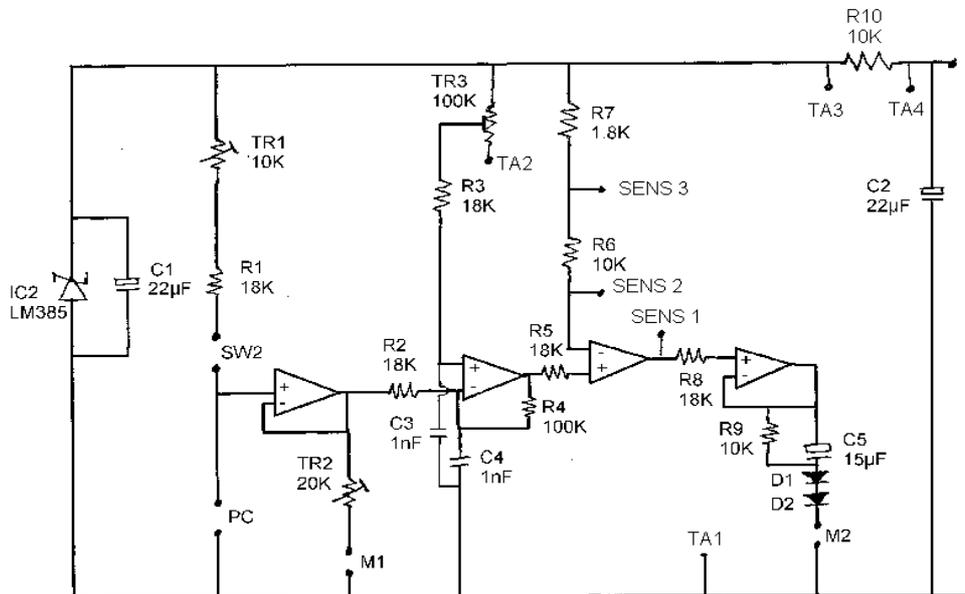
The operation is very similar to the lie detectors, which, however, in addition to skin resistance, are also using other biological parameters such as heart rate and breathing. In addition, the lie detectors (also called polygraphs) records all readings on paper traces.

The schematics of the classical eMeters

Let's take a look at these schematics in order to better appreciate the simplicity of our version.



This is the original scheme, the Hubbard patent. There are five trimmer to adjust and uses germanium transistors which change the characteristics just looking at them. Despite to you adjust well, it will always be very inaccurate.

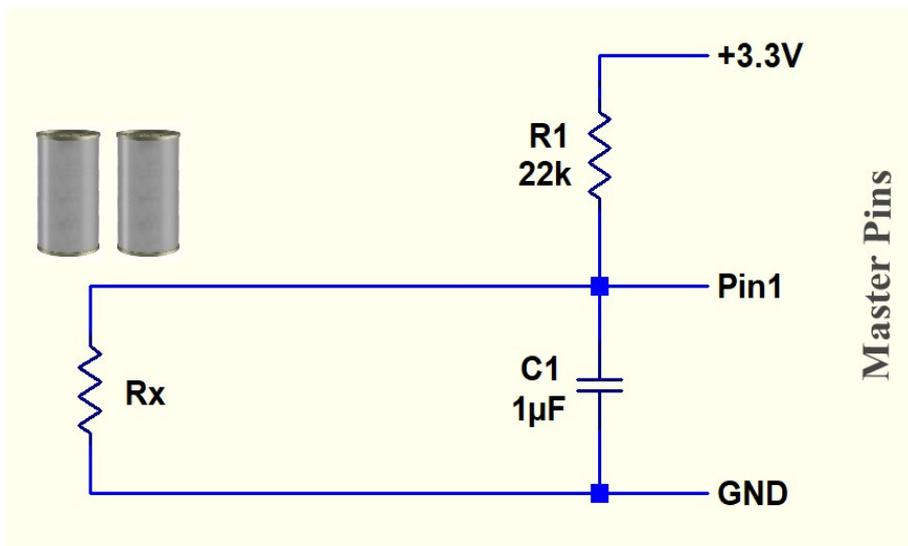


This is a more recent scheme, much better, but with three calibration points, therefore difficult to adjust accurately and fairly sensitive to changes caused by the component's aging.

Theremino Emotion Meter schematic

The original eMeter, built with technologies of the 70s, discrete components and some ICs, they cost more than 5,000 euros. Current copies cost from 300 euros up.

With Theremino system we can build a great eMeter with just three components, a master module, a capacitor, a resistor (and two cans of food for cats).



This scheme minimizes the critical components and moves everything possible in firmware and software.

So you get great accuracy, no calibration and a cost of just over ten euros.

Is important to note that the electrical impedance seen by the patient and also the measuring current, as well as the bandwidth and even the needle mechanical inertia simulated in software, are exactly the same as original equipment.

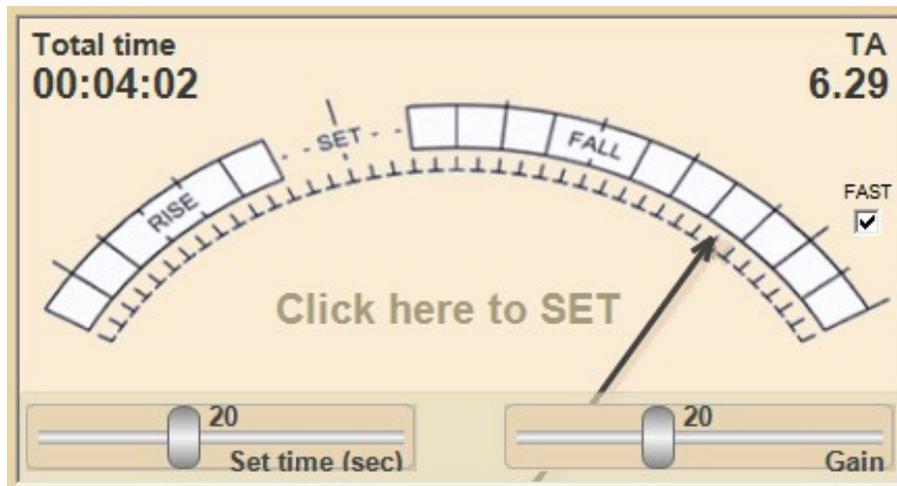
So, unless there are ghosts, which is quite unlikely and never demonstrated by any serious experiment, the measurements obtained with our version are exactly the same that would be obtained with the original equipment.

Innovations

The Theremino Emotion-Meter works similarly to the original instrument, but with many innovations, to improve accuracy and simplify operation.



One of the known problems of the original instrument was the need to frequently reset the needle, due to the slow drift of the resistance of the subject during use. The Emotion-Meter application explores a new way to represent the resistance changes, by displaying the derivative.



The continuous zeroing produced by the derivative of the signal and an automatic autorange, make it much easier to use the instrument also for solo use.

There is no need of adjustments and the tool can be used with both hands to hold the electrodes. The needle movement reflects the variations of the resistance of the subject and the display is focused on the effects of emotional stimuli.

Technical features

- ◆ Calculation of skin resistance with a mathematical formula in the software.
- ◆ Digital and precise measurement without any calibration.
- ◆ Operation with the derivative of the signal, or with automatic zeroing.
- ◆ Ability to work even in a totally manual way, just like the original instruments.
- ◆ Recording of TA changes (Tone Arm) and needle position using a method analogous to the sliding of the paper of the truth machines.
- ◆ Calculation of the TA counter (sum of all the variations of TA that move the pointer to the right).
- ◆ Possibility of audio recording of the session.
- ◆ Ability to record sessions and review them again later.
- ◆ Ability to simultaneously see the whole session or enlarge the details, until you see (and hear) the smallest variations, also lasting for fractions of a second.
- ◆ Colored markers to label and find the points of particular interest.
- ◆ Markers for out of scale and manual SET.
- ◆ Ability to control all the settings with voice commands. Voice commands are especially comfortable reset "SET" point and to change the sensitivity, without moving your hands.
- ◆ Simple hardware (only three components) and no trimmer to adjust.
- ◆ Ability to self-build a "DIY" instrument in minutes, and spending little, just over ten euros.
- ◆ Open Source Software, so you can see what's inside, to make sure it does not contain malware, and also modify it if needed.

Bibliography

The Emotion Meter Theremino page on the site: [*EmotionMeter*](#)

The Wikipedia page on the E-Meter: [*Wikipedia E-Meter - Inglese version*](#)

Autopsy of an E-Meter, of Leonardo Semi: [*Vers. Italian - Inglese version*](#)

A site with lots of information and useful links: [*The E-Meter*](#)

An interesting Italian site: [*E-Meter Service Italy*](#)

Inside the Mark Super VII: [*The Mark Super VII*](#)

The latest versions of Ralph_Hilton: [*Build Your Own E-Meter*](#)

The Wheatstone bridge on Wikipedia: [*Wikipedia Wheatstone Bridge*](#)

Notes on the Wheatstone bridge: [*What's a Wheatstone Bridge?*](#)

Calibration of the MK4 of Ralph_Hilton: [*The Mk4 meter*](#)

A page with information and some prices: [*The Meter*](#)

An e-shopping Meter similar to ours: [*Theta Meter Theta Meter video*](#)

Hubbard Patent: [*US Patent n. 3290589*](#)

The true inventor of the E-Meter is not but Hubbard: [*Volney Mathison*](#)