Personal ECG monitor (KM-1) and the FA mob application (*Designed to monitor the heart rhythm of the affected person*)

User Guide for iPhone and iPad

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Attention:

! **Do not use the ECG monitor while charging the smartphone.**

! **After completion of work, you must remove the ECG monitor cable from the smartphone so as not to discharge the battery.**

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APPOINTMENT

An **ECG monitor** and a smartphone with the **FA mob** application solve the problem of reliably determining the presence or absence of people's heart activity in heart attacks, accidents, injuries, terrorist acts or on the battlefield. When using the device, it is not necessary to grope for the victim's carotid artery and, very importantly, do not interrupt heart massage and artificial respiration for periodic monitoring.

Practice has shown that the method of manual indication of the pulse is not reliable, especially in extreme conditions. Heart massage in the case when it works, is not only not needed, but can be dangerous! Reliable information about the pulse helps to make a decision about the appropriateness of cardiopulmonary resuscitation. When using an ECG monitor, the actions of other people during primary resuscitation before the arrival of the doctors ("First Aid") become much more effective.

CONTENTS OF DELIVERY

1. Personal ECG monitor
2. Software - FA mob app for smartphone
3. Instruction
4. Case for storing and carrying the device
5. Adhesive ECG electrodes, 6 pieces per bag and 2 connected to the electrode cable (fig. 1). Covidien electrodes, type H92SG (with solid hydrogel) or another type with similar characteristics
6. Cable adapter for iPhone without headphone jack (Apple Lightning to 3.5mm)

Figure 1 — **Contents of delivery.**

PRINCIPLE OF OPERATION

The cardiac activity of the victim is evaluated by an electrocardiogram (ECG), which is removed from the electrodes glued to the patient's wrists, this allows not to undress a person, which is very important in an extreme situation (fig. 2). The wrist ECG corresponds to the first standard arm-to-arm lead. The ECG monitor enhances the biocurrents of the heart, encodes them and transmits it via cable to the headphone jack of the iPhone. Such a connector is in iPhones 4, 5, 6 and some others, as well as in iPades. For those iPhones that do not have a headphone jack (7, 8, X and others), a signal is inputted to the socket for charging the smartphone using an adapter cable (fig. 1). Surrounding people who provide first aid to the victim, on the iPhone displays get the necessary information.

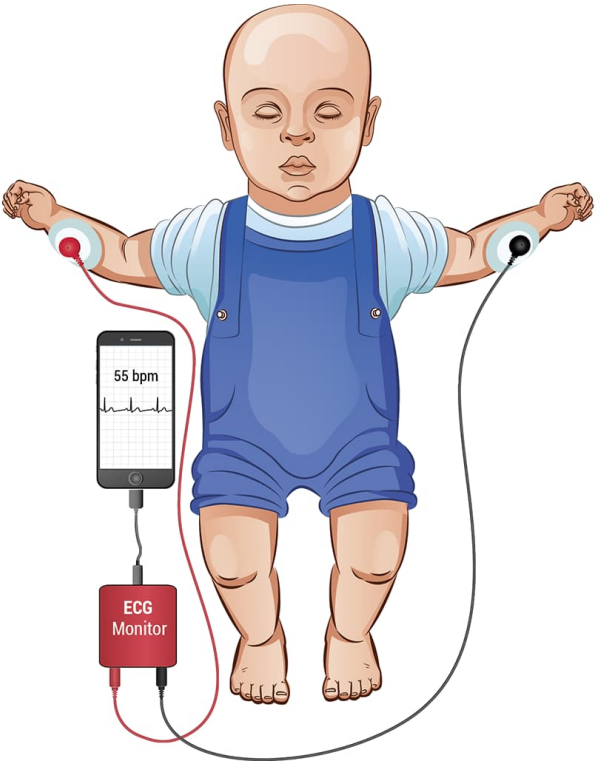

Figure 2 — **The principle of the system.**

ECG MONITOR DEVICE

1. Instrument case
2. Cable for connecting to an iPhone or iPad with a headphone jack
3. Cable - adapter for connecting an ECG monitor to the connector for charging iPhone
4. Electrode cable with push-button connectors for connecting to ECG electrodes
5. Adhesive ECG Electrodes with Solid Gel
6. Holes on the monitor ECG housing for audio output

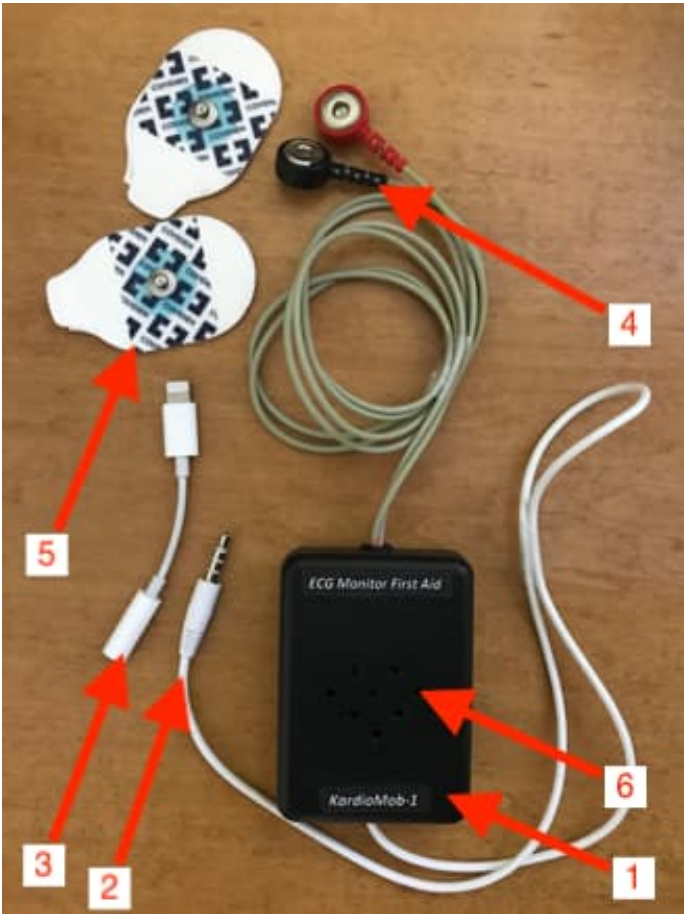

Figure 3 — **Monitor for First Aid**

INSTALLING THE SOFTWARE

To work with the device on your iPhone or iPad, you need to install the FA mob application. The application is installed in the standard way from the App Store service, as a result, the icon of this application will appear on the iPhone screen.

Figure 4 — **"FA mob" icon on the smartphone screen.**

When you first start the application, an alert will appear for one-time application configurati (fig. 5). You must **allow the FA mob** to use the microphone.

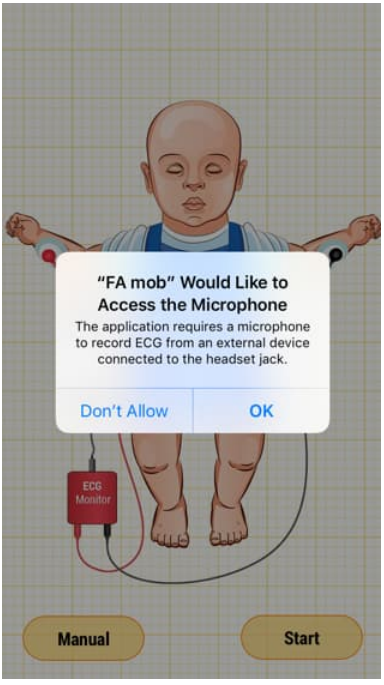

Figure 5 — **The page that appears when you first start the application.**

ECG REGISTRATION.
HEART RHITHM OF THE AFFECTED PERSON

1. Remove the ECG monitor from the cover, unravel the wires. Adhesive ECG electrodes must be attached to the electrode cables in advance.
2. Remove the protective coating from the electrode attached to **the black button** (save it by placing it in the case) and glue the electrode to the victim's **left wrist**, as shown in fig. 6. At the same time, the electrode must be carefully smoothed.
3. Remove the protective coating from the electrode attached to **the red button** (save it by placing it in the case) and glue the electrode to the victim's **right wrist**, as shown in fig. 6. At the same time, the electrode must be carefully smoothed.

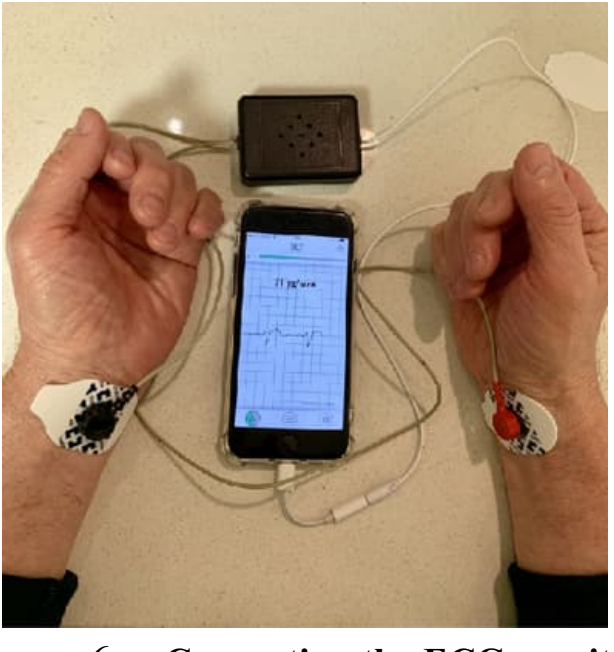

Figure 6 — **Connecting the ECG monitor.**

4. Connect the ECG monitor to the iPhone (see Fig. 2 and Fig. 6 and the Principle of operation section).

! **Make sure the cable inserted into the connector to the end.**

5. Put the ECG monitor next to the victim, ***make sure that the holes for the sound to be on top***.

6. Open the "FA mob" application by clicking on its icon on the iPhone's screen (Fig. 4), the first page will appear (Fig. 5). There are two buttons on the bottom - **Manual** and **Start**. It is assumed that you have already studied the instructions.

7. Click the **Start**, button, the page shown in Fig. 7. The ECG is displayed in the center of the page. If there is an ECG, a green message **Has Pulse** appears at the top of the page on the left. The pulse is in the center, a green light flashes in the center along with the heartbeat and the monitor's ECG speaker generates sound pulses **(the volume can be adjusted with the iPhone buttons)**, and the heart rate is displayed at the top right. The ECG can be stopped by clicking on the button  .

This is done in order to, if necessary, to view the ECG in the last 15 seconds. For this view you need to move the ECG with your finger to the right. When you stop, this button will look like this  . If you press it again, the ECG will start moving again.

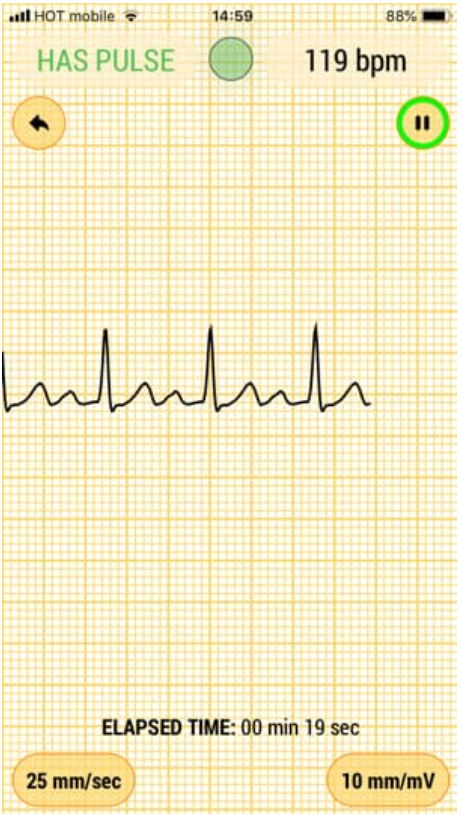

Figure 7 – **ECG, the inscription: “Has Pulse”, heart rate 119 beats / min**

At the bottom of the page of Fig. 7 there is a clock that reports the time of the ECG recording, as well as two buttons with which you can change the amplitude (right button) and ECG scan over time (left button). By default, these values are set optimally (25 mm/s and 10 mm/mV) and in most cases adjustments are not required.

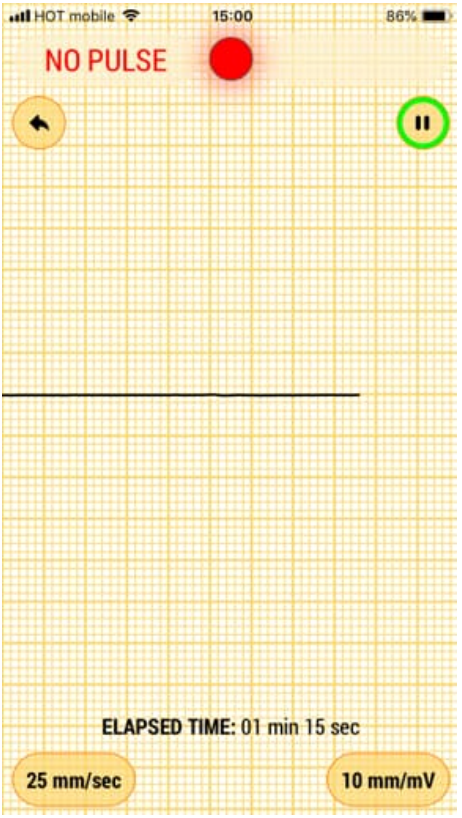

Figure 8 – **ECG is absent, the inscription: "There is no pulse".**

If there is no cardiac activity, then a straight line goes along the center of the page (sometimes noise may be imposed on it). In this case, an inscription appears in red: No pulse (fig. 8), the light stops flashing and constantly lights up in red, the figure showing the heart rate disappears, there are no sound pulses. This means that the victim's heart is not reduced and **it is necessary to begin to give him artificial respiration and heart massage**. Therefore, this important decision is made on the basis of the following events:

a) Lack of ECG (straight line, fig. 8)
b) The appearance of the inscription No pulse (fig. 8)
c) The light is constantly red (fig. 8)
d) There are no beeps with the pulse

8. And in the presence of a pulse and in its absence, at any time you can stop the ECG registration process and go to the first page (fig. 5), if you click on the button located at the top left  (fig. 7 and fig. 8).

9. After work with the device is completed:
a) Disconnect the cable from the iPhone
b) Peel the ECG electrode off the victim's wrist and immediately cover its adhesive part with a protective coating (which you previously placed in the cover). The electrode does not need to be disconnected from the cable, it can be used up to 3 times.
c) The second electrode do the same, that in paragraph b)

d) Straighten the cables and all three wires together with the ECG electrodes carefully wind along the body of the device and in this form, not allowing the cables to jump off the body, place it in the cover and fasten the zipper (fig. 9).

Figure 9 — **Cables are wound on the instrument case, the device is placed in the cover.**

BATTERY OF POWER AND ITS REPLACEMENT

The device is powered from one lithium battery CR 2032 with a voltage of 3 V. One battery is enough for continuous operation of the device for 300 hours. The storage life of a battery in an idle device is at least 10 years. To replace the battery, you must contact the service department. If this is not possible, then you need to unscrew the screws with a cross-head screwdriver and remove the housing cover. Then take out the old battery by hooking it with your finger or a small flat screwdriver and install the new battery plus up.