Prepared by:	SOP_USER MANUAL iButtons
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PURPOSE:

The following manual describes the method to measure skin temperature of an individual with the use of iButtons.

EQUIPMENT:

11 iButtons of Maxim Integrated Products, Inc. 120 San Gabriel Drive, Sunnyvale, CA 94086. USA.

Several choices for iButtons and readers are possible. We used the the iButton DS1922L, the adapter **DS9490R** and the reader **DS1402D-DR8**. See the following links for information:

http://www.maxim-ic.com/products/ibutton/products/ibuttons.cfm
http://www.maxim-ic.com/products/ibutton/products/adapters.cfm
http://www.maxim-ic.com/products/ibutton/products/readers_probes_ports.cfm

Software is available for free on: http://www.ibutton.com/software/1wire/OneWireViewer.html (Following the steps 1-5)
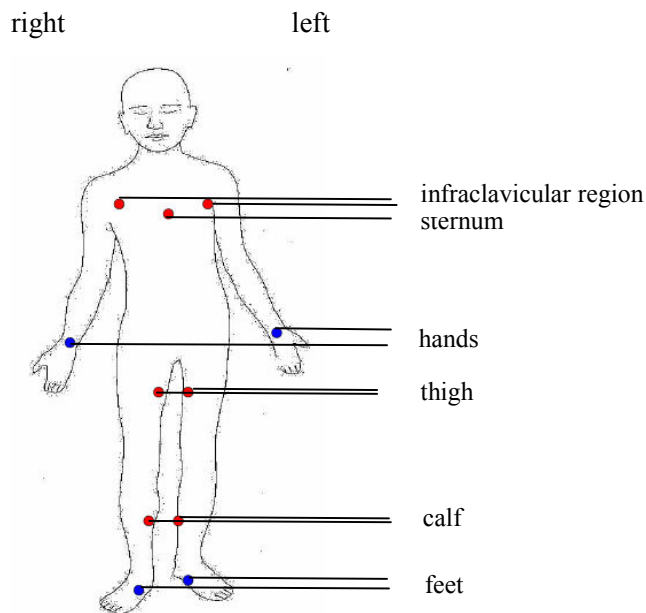
RESPONSIBILITY:

The iButtons can be worn under both laboratory and ambulatory conditions.

PROCEDURE:

1. application

Like demonstrated in picture 1 one iButton will be attached to the sternum and two each to the infraclavicular region, hands, thigh, calf and feet.

right   left

infraclavicular region
sternum

hands

thigh

calf

feet

picture 1: Application of the iButtons

The iButtons should be fixed via eudermic plaster (e.g. Fixomull tape). Subjects should be advised to keep them on every time, even when showering.

2. Programming the iButton

After connecting the USB port kit (the reader) to the PC, the iButton has to be put to one of the blue dots on the reader. If you want to run the program on your PC, first you have to install the one-wire-drivers for windows and "Java 2 Standard Edition (J2SE)". Follow the instructions in these programs, for further interest and questions download "OneWireViewer User's Guide.

The OneWireViewer should be installed via pressing the "launch the OneWireViewer" button.

The picture below (picture 2) shows the 1-Wire Port Adapter screen. You have to choose the adapter and port you use.
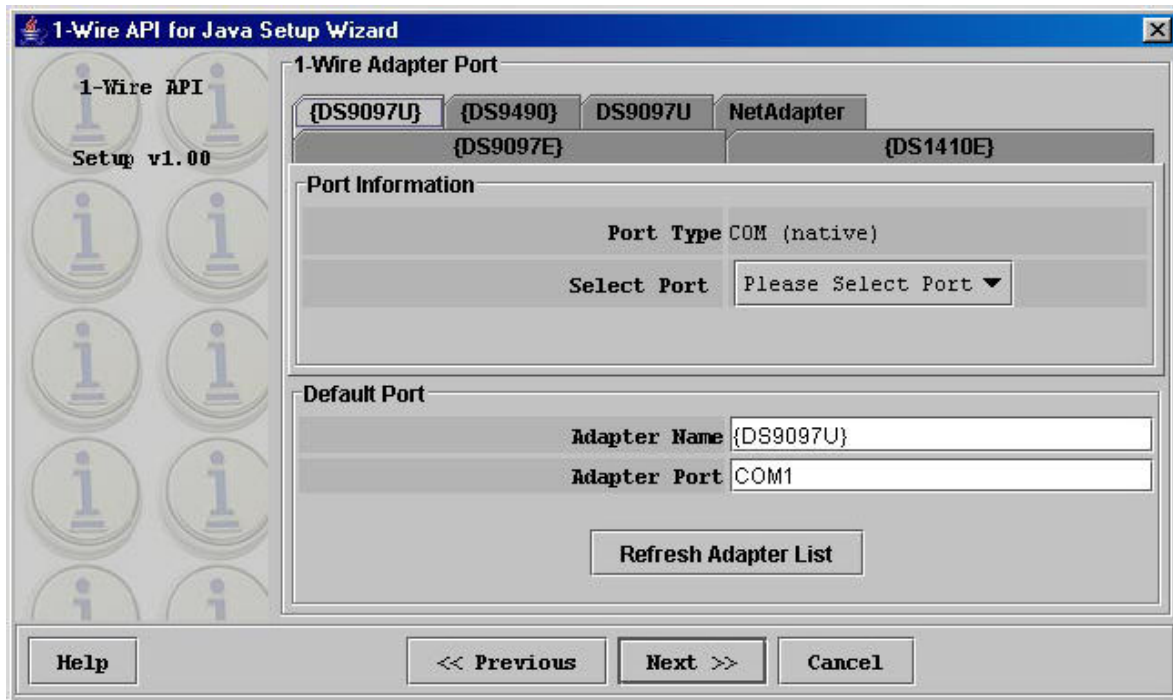
After clicking "Next" you have to choose the polling rate, which means, how frequently the One-Wire line is scanned for arriving or departing One-Wire devices. If 1 second is chosen, it yields a fast response and it is a good choice. Afterwards chose "show normal devices" and finish.

The next picture (picture 3) reflects the working screen of the OneWireViewer.
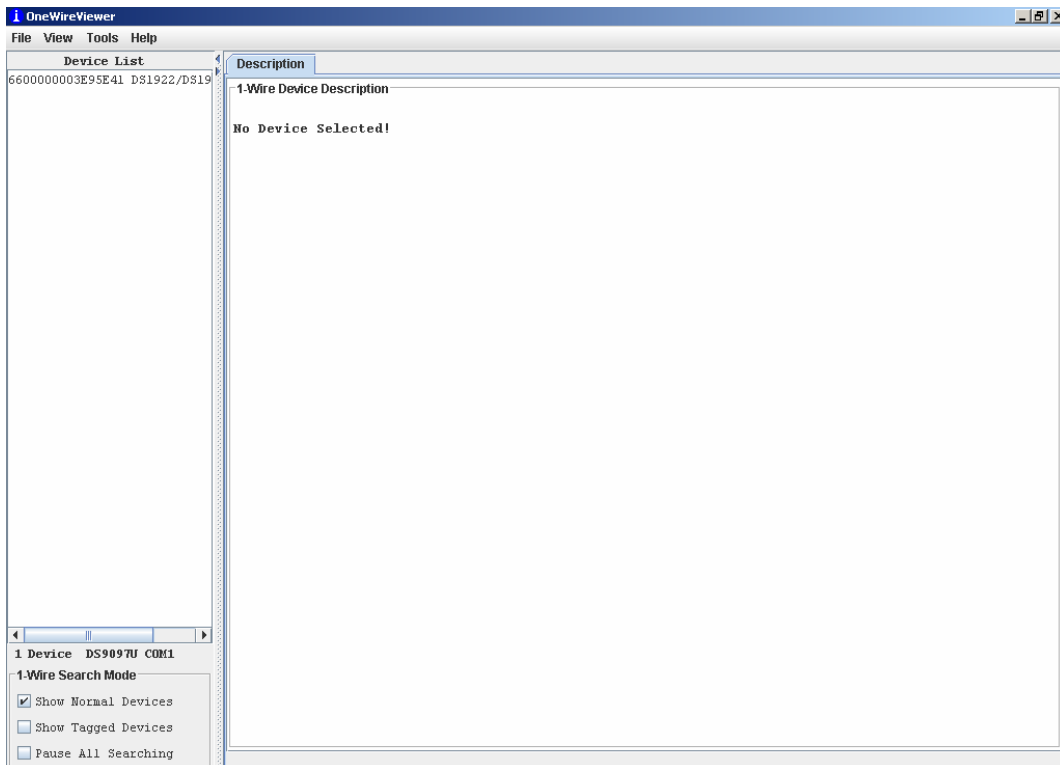
As described on the homepage the OneWireViewer automatically finds iButtons on your system and displays their serial numbers with a description of relevant features and menu options." In the Device List the serial number has to be chosen (click on it) and a new mission can be started (please choose the "mission" feature). The panel displays the general mission and the mission channel temperature. Please eliminate the checkmark from the "enable rollover" (otherwise your first recorded data will be overwritten) and choose a sampling rate and start delay (to ensure, that all buttons run at the same time). Best results can be obtained by a resolution of 0.0625. It is important that you checkmark "Synchronize Real-time-clock" to make sure that the PC-clock and the chosen iButton have the same time. You can choose this here, or you can synchronize time under the "Clock feature", a panel like the mission feature. If you confirm your setting and the data are displayed, the iButton can be removed and the other ones should be programmed in the same way.

3. Information output:

First press "mission disable" from the mission option (same software as used for programming). Choose "temperature" from the mission option and click via right mouse button. Choose "copy data with labels" and paste data in every word processor you want to (for example excel). If you use statview, please paste the data from the clipboard to a new file. Export the file into a .txt file and import it (choose only "spaces", "commas" and "return" "4"). First column is the date, 2nd time, 3rd one can be deleted and the 4th one is the column with temperature data.