System Board 6657

# MAXREFDES220#: FINGER HEART RATE AND PULSE OXIMETER SMART SENSOR WITH DIGITAL SIGNAL PROCESSING

Active: In Production.

Design Resources

## Quick Start Guide

**Installation Procedure**

1. Assemble and connect the reference design hardware.
    a. Remove the MAX32630FTHR and MAXREFDES220# sensor board from the package.
    b. Connect the MAX32630FTHR and Smart Sensor Boards together.
    c. Connect a mini-USB cable between the PC and the MAX32630FTHR.

2. Verify the operation of the MAX32630FTHR host
    a. Immediately after connecting the USB cable, observe the LED on the MAX32630FTHR.
    b. If the LED briefly turns yellow, and then blinks green, the MAX32630FTHR is programmed correctly and ready for use.
    c. If the LED blinks yellow, then the MAX62630FTHR has been initialized but the sensor board is not responding. Unplug the USB cable. Separate and then reconnect the sensor board and MAX32630FTHR, and then connect the USB cable again. If the condition persists, please contact Maxim technical support for assistance.
    d. If the LED turns red or blinks any other pattern or does not illuminate at all, update the MAX32630FTHR as described below.

3. Download and install the Maxim licensed MAX32644A firmware.
4. Download and install the Maxim DeviceStudio GUI software.
    a. Navigate to the Maxim Integrated website, enter MAXREFDES220# into the search tool. Select the entry for MAXREFDES220# in the Product Results section.
    b. On the product QuickView page, select Design Resources and download the files under “Software Files”.
    c. Extract the downloaded files into any directory.

## Operating the GUI

1. After the hardware and software installations have been completed, make sure the MAX32630FTHR is connected to the PC using the USB cable.
2. Launch the Maxim DeviceStudio application.
3. Uncheck “ADB“ under Scan Options
4. Press the scan button to auto-detect the Smart Sensor board that shows as PPG under "Connected Devices".
5. Click "Launch Tool" to run the MAXREFDES220#-specific features.
6. Configure the PPG settings as desired. Do not change the FIFO settings from their default values.
7. Select “Accelerometer Data” to display X-axis and Y-axis accelerometer results from the Sensor Board.
8. Select “Algorithm Data” to display the data from the IR and red LED sensors.

## Updating the MAX32630FTHR firmware

These steps are only necessary if the MAX32630FTHR does not initialize as described above.

1. Navigate to the Maxim Integrated website, enter MAXREFDES220# into the search tool. Select the entry for MAXREFDES220# in the Product Results section.
2. From the product page, select Design Resources and download the files under "Firmware Files".
3. Extract the .bin file into any directory.
4. Connect one end of the ribbon cable to the black header J4 on the MAX32630FTR.
5. Examine the other end of the ribbon cable carefully. One side of the cable going into the black header SWD is marked by the red wire. Connect the cable and SWD header, making sure the red wire is furthest from the letters SWD.
6. Connect a mini USB cable between the USB connector labeled HDK and the PC.
7. Open a File Explorer window. The programming adapter shows as a new USB drive.
8. Drag and drop the downloaded .bin file onto the icon for the new USB drive. The LED begins to flash red while the MAX32630FTHR is being programmed.
9. When the LED stops flashing, remove the ribbon. Press the reset button on the MAX32630FTHR and verify the operation of the MAX32630FTHR.

## All Design Files

Download All Design Files

## All Hardware Files

Download All Hardware Files

**Hardware Files:**

Schematic
Bill of Materials (BOM)
PCB Layout
Gerber Files

The ARM mbed development environment is supported for developers who want to customize the operation of the platform. The companion programming adapter that ships with the platform provides driverless drag-and-drop programming for firmware updates as well as a virtual UART interface and CMSIS-DAP compatible debugger. More details on firmware development and source code examples ›

**Software**
MAXREFDES220 Software v2.0.1 for Win10
MAXREFDES220 Software v2.0.1 for Win7

Resources

PARTS USED