HTPAd Application Shield (WiFi)
Arduino based WiFi software development kit (SDK)

This WiFi Application Shield is designed to facilitate remote access from our thermopile arrays. The Shield enables a fast way to get a thermal image stream from the sensors. It can be used with an ESP32 development board and thus offers WiFi connectivity to our ArraySoft v2 GUI. This allows the highest degree of flexibility to evaluate the sensors for various applications.

The full code is provided and completely open source. It includes all required steps from reading the EEPROM to the calculation of the thermal image.

The C++ code can be viewed and modified via the Arduino IDE. The PCB is designed as an ESP32-DevkitC-32D extension.

Supported Sensor Types

	TO-46	TO-39	TO-8
I2C	8x8d	16x16d	
		32x32d	
SPI	/	60x40d	80x64d
			84x60d
			120x84d

The source code includes two ways to interact with the sensor:
- via **WiFi** you can stream thermal images in our GUI
- via the **serial monitor** you can observe the sensor data as text output

Both modes are contained in the same code and you can activate one or both by activate the matching define.

Required Hard- & Software

What you get:
- HTPAd Application Shield
- GUI „Heimann Sensor ArraySoft v2"
- User manual
- Access to ALL supplementary data for development

What you need additionally:
- ESP32 development board: ESP32-DeckitC-32D
- Arduino IDE
- USB micro-B cable (power supply & serial monitor)

Serial Monitor

This mode prints all results in the serial monitor of the Arduino IDE. Here the EEPROM/Flash content and sensor voltages can be visualized. It's easy to interact with the sensor by sending the characters depending on the menu function you want.

Benefits:
- Show EEPROM/Flash content in hexadecimal or associated data type (float, short, long, …)
- Print results after each calculation step
- Understand the calculation from raw pixel voltages to the final calibrated thermal image
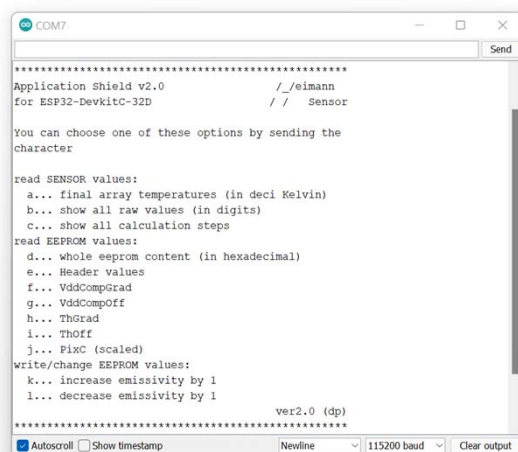

WiFi

Operating in WiFi-mode you can connect your thermopile with the Heimann Sensor GUI to stream continuously. With the GUI streaming the sensor images in temperature or voltage mode is possible. At the same time you can manipulate sensor settings, like clock, ADC resolution and emissivity factor and use all advanced features of our GUI.

Benefits:
- False color visualization and post-processing of thermal images
- Continuous streaming
- Switching between temperature and voltage mode
- Record/replay of thermal images and videos
- Change sensor settings
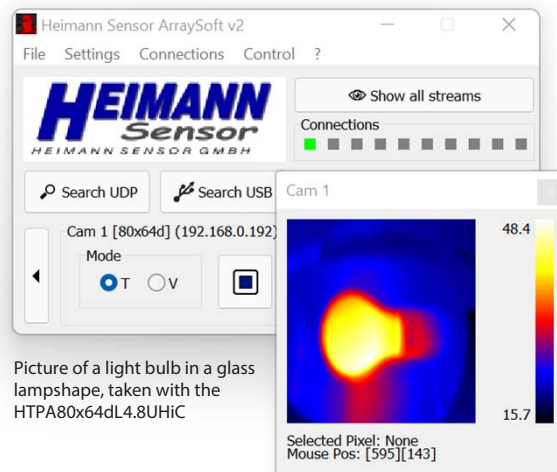
Picture of a light bulb in a glass lampshade, taken with the HTPA80x64dL4.8UHiC