

Picture of a face profile,  
taken with the HTPA32x32d L5.0

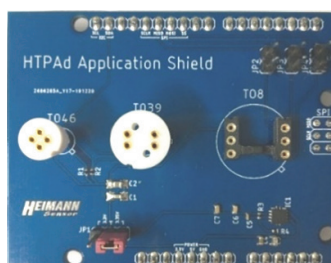
## HTPAd Application Shield

### Arduino based software development kit (SDK)

This Application Shield can be used with an Arduino or STM32 Nucleo board. It is designed to facilitate the access to our thermopile arrays and provides a quick way to receive the sensor's thermal image.

We provide the complete C++ code as open source software. It includes all required steps from reading the EEPROM to the calculation of the thermal image. The code can be viewed and modified via the Arduino IDE.

The PCB is designed as an Arduino extension and supports the boards Arduino Due and STM32F446RE Nucleo.



### Supported Sensor Types

	TO46	TO39	TO8
I2C	8x8	8x8d 16x16d 32x32d	/
SPI	/	/	80x64d 120x84d*

You can choose between two modes: Ethernet mode and Serial mode. The following table shows which modes are available for each sensor:

Array Size	8x8	16x16	32x32	80x64	120x84*
Ethernet Mode	x	x	x		
Serial Mode	x	x	x	x	x

\* Only for STM32F446 Nucleo-64

### Required Hard- & Software

#### Package Content:

- Application Shield
- Sensor of choice
- GUI „Heimann Sensor ArraySoft v2“
- User manual

#### Additional Requirements:

- Microcontroller platform; the PCB was created and tested for: Arduino Due + STM32F446RE Nucleo-64
- W5500 Ethernet Shield when utilizing Ethernet mode
- USB and Ethernet cable

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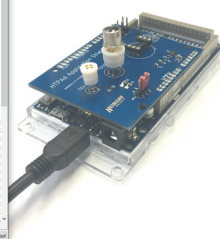
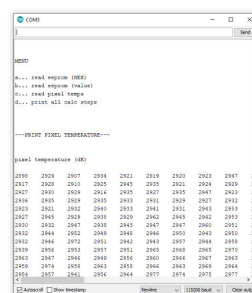
**Internet**  
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### Serial Mode

This mode prints all results on the serial monitor of the Arduino IDE. Here, the content of the EEPROM and the sensor voltages can be visualized. All that is required is an Arduino Due or STM32F446RE Nucleo board. The serial mode only reads new data upon request to show which calculation steps are required and in which order.

#### Benefits:

- Shows EEPROM content in hexadecimal or associated data type (float, short, long, ...)
- Prints results after each calculation step



### Ethernet Mode

In Ethernet mode, an I2C sensor can be connected to the Heimann Sensor GUI for continuous streaming. The sample code establishes a connection via DHCP or it is possible to use a local network card. An Arduino Ethernet Shield and an Arduino Due or STM32F446RE Nucleo board are required. In the GUI, it is possible to stream the sensor images in temperature or voltage mode. Also, user settings like clock, ADC resolution and the emissivity factor can be altered.

#### Benefits:

- False color visualization of images
- Continuous streaming
- Switch between temperature and voltage mode
- Record/replay
- Change of user settings

