

ThermalCapture MiniAV User Manual

TeAx Technology

Revision: EN-015

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1 Hardware

Overview

This guide describes the features of ThermalCapture MiniAV. ThermalCapture MiniAV is a user-friendly high-performance infrared camera with an analog video output (NTSC, PAL) or serial raw data stream output. For more information about software features see chapter Software on page 9.

The declaration of conformity for this model can be found here: <http://www.thermal-capture.com>.

Intended Use

- This camera is intended for viewing interior areas.
- It is under the responsibility of the user to ensure, that during use as a surveillance camera no personal rights of third parties are violated.
- The camera is designed for use in private and commercial areas.

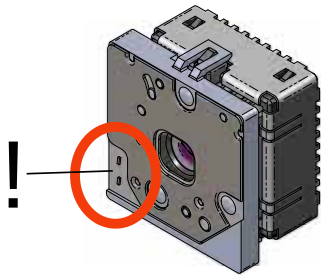
Scope of Delivery

- ThermalCapture MiniAV camera module
 - ThermalCapture MiniAV camera module housing (optional)
- breakout module
- transmission cables:
 - camera module ↔ breakout module and analog video
 - breakout module ↔ 5-pin USB-B
- user guide

Safety Instructions

Failure to follow these safety instructions could result in fire, electric shock, injury, or damage to ThermalCapture MiniAV or other property and persons. Read all the safety information below before using ThermalCapture MiniAV.

⚠ VULNERABLE CONTACTS



Prevent any electrically conducting connection between the shown two Lepton pins. Any form of electrical short between these two pins will damage the device irreparably.

⚠ HANDLING

Please use the product only in its intended manner. Any other use may cause damage to the product or its surroundings. Handle ThermalCapture MiniAV with care. It is made of metal, glass and plastic and has sensitive electronic components. ThermalCapture MiniAV can be damaged if dropped, burned, punctured, crushed, or if it comes in contact with liquid. Do not use a damaged ThermalCapture MiniAV.

⚠ NOT A MEDICAL DEVICE

ThermalCapture MiniAV is not designed or intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease.

⚠ HIGH-CONSEQUENCE ACTIVITIES

This device is not intended for use where the failure of the device could lead to death, personal injury, or severe environmental damage.

⚠ CHOKING HAZARD

ThermalCapture MiniAV and some ThermalCapture MiniAV accessories may present a choking hazard to small children. Keep away from small children.

⚠ OPERATING TEMPERATURE

ThermalCapture MiniAV is designed to work in ambient temperatures between 32° and 95°F (0° and 35°C) and stored in temperatures between -4° and 113°F (-20° and 45°C). ThermalCapture MiniAV can be damaged if stored or operated outside of these temperature ranges. Avoid exposing ThermalCapture MiniAV to dramatic changes in temperature or humidity.

⚠ HOT SURFACE

During normal operation elements of the device may exceed 50° C. Let it cool down before touching it. Keep it separate from flammable or sensitive materials.

 **CLEANING**

Clean ThermalCapture MiniAV immediately if it comes in contact with anything that may cause stains, such as dirt, ink, oil, makeup, or lotions. To clean:

- Turn ThermalCapture MiniAV off and disconnect all cables.
- Use a soft, lint-free cloth.
- Never use liquids.
- Avoid getting moisture in openings.
- Do not use cleaning products or compressed air.

 **ELECTRICAL CONFORMITY**

The ThermalCapture MiniAV has been tested in accordance with the declaration of conformity. If the camera module is integrated in another system such as e.g. integrated in a drone, the system integrator must ensure compliance with the applicable regulations.

Get Started

Unpack and check delivery if all listed contents are present.

Connect ThermalCapture MiniAV

To connect the ThermalCapture MiniAV with a PC and / or the analog video AV, perform the following steps in the order listed (see Figure 10).

1. Use the included cable with the 6-pin connectors to connect the ThermalCapture MiniAV camera module to the breakout module.
2. Use the included USB cable to connect a PC with the breakout module. Connect the breakout module directly to the PC, do not use a USB hub.
3. To confirm that the wiring is ok and the MiniAV is correctly powered, please take a close look at the Lepton sensor when you turn power on: The sensor shutter will visibly and audible close and open several times in the first few minutes. If it does not, the unit is not powered correctly.

After connecting to composite video and power supply the device generates an analog video output signal in NTSC/PAL (configurable via GUI).

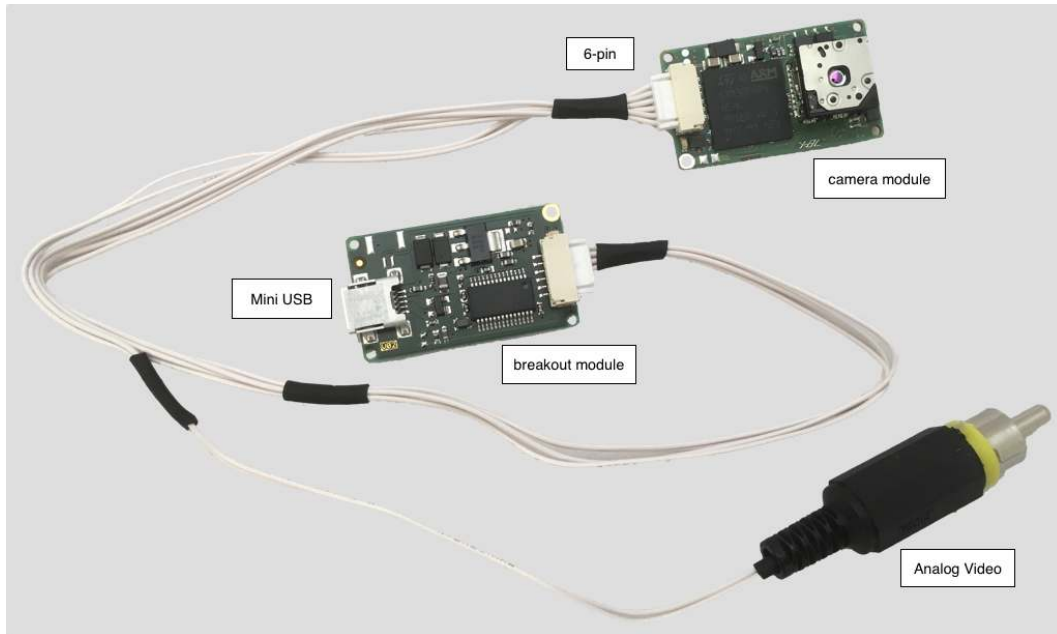


Figure 1: Connections between modules

Product Description and Technical Data

ThermalCapture MiniAV

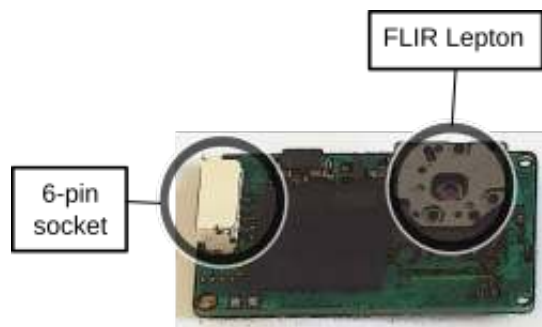


Figure 2: ThermalCapture MiniAV camera module

Occupancy of the 6-pin Connectors

1. video ground
2. analog video output (NTSC-M, PAL-D)
3. serial communication RX
4. serial communication TX
5. electrical ground
6. supply voltage ($3.5 \pm 0,2$ V/DC)

Breakout Module

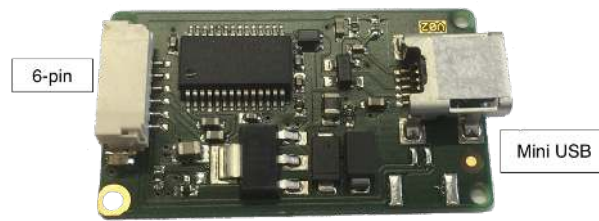


Figure 3: breakout module

Occupancy of the 6-pin Connectors

1. video ground
2. analog video output (NTSC-M, PAL-D)
3. serial communication RX
4. serial communication TX
5. electrical ground
6. supply voltage ($3.5 \pm 0,2$ V/DC)

Occupancy of the 5-pin Mini USB-B Socket

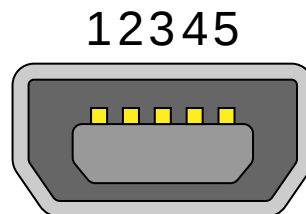


Figure 4: Mini USB-B socket

1. VBUS (+5V)
2. D- (Data -)
3. D+ (Data +)
4. (reserved)
5. GND (Signal ground)

Connection Cable Camera Module ↔ Breakout Module and Analog Video

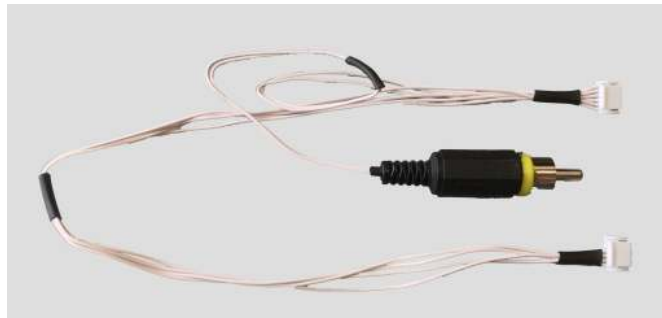


Figure 5: Connection cable camera module ↔ breakout module

Six-core cable with two 6-pin board connectors (JST Sales America Inc. GHR-06V-S) and one RCA connector for analog video output.

2 Software

USB Serial Port Configuration

Due to the high communication speed between *ThermalCapture MiniAV* and the configuration software it might be required to adopt some driver settings for the usb serial port connection with the *breakout board*. In the following a picture sequence of the steps to do.

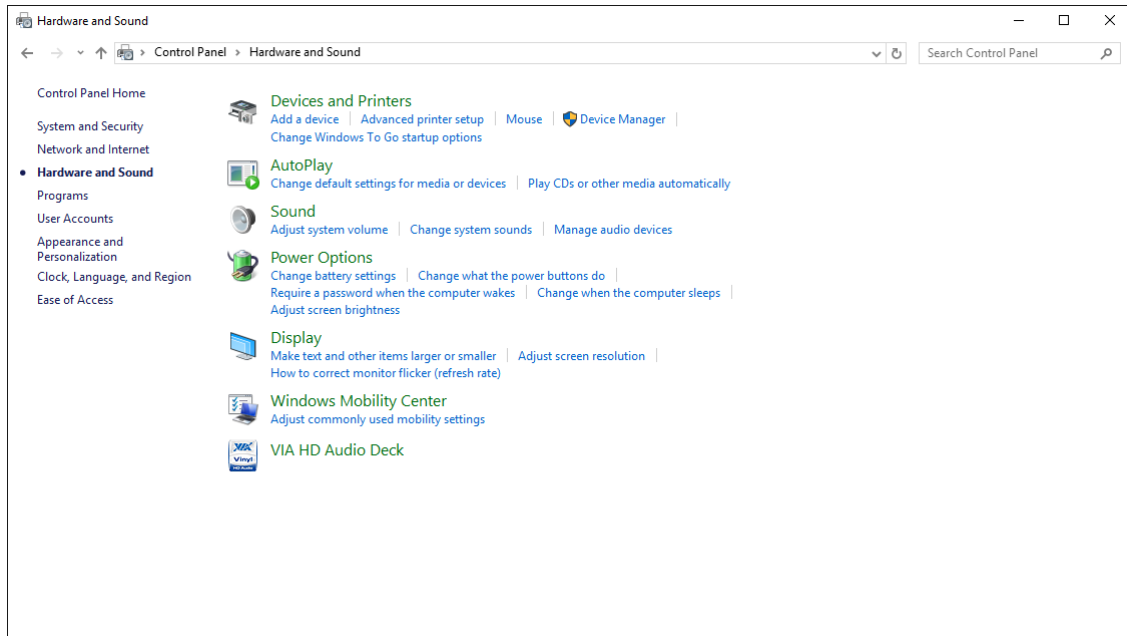


Figure 6: Category *Hardware and Sound* in *Control Panel*

Opening of the Control Panel After opening the *Control Panel* go to the section *Hardware and Sound* (see Fig. 6) and choose the *Device Manager*.

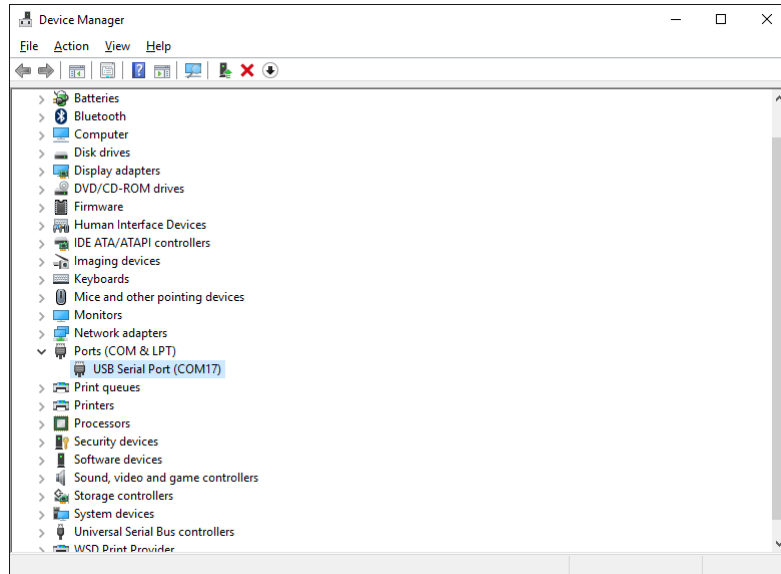


Figure 7: Connections (COM) of *Device Manager*

Choosing the usb-serial connection If you have opened the *Device Manager* have a look for *USB serial port (COM)* (see Fig. 7) right click on it and choose *Properties* of the interface. In case there is more than one com device you can identify the *Breakout Board* by un- and replugging the usb connection (you can see the com port disappear/appear).

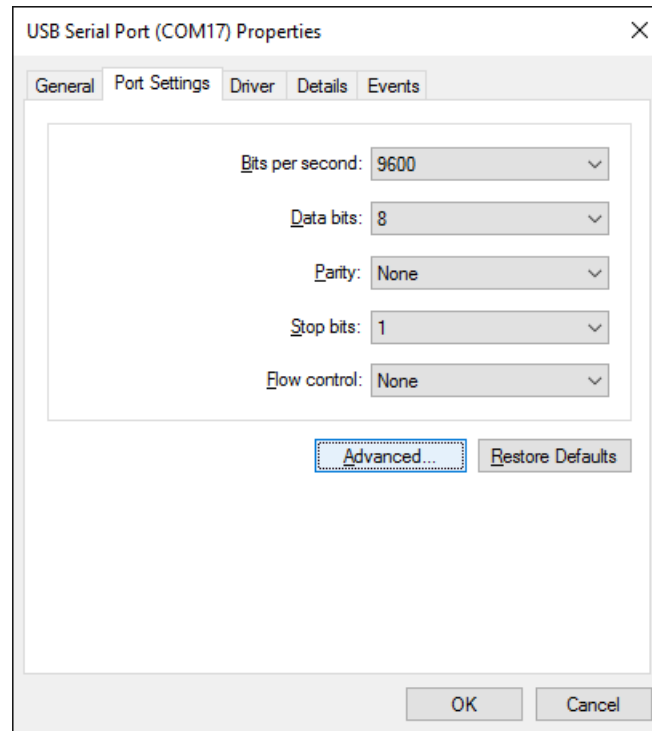


Figure 8: *Properties* of interface (COM)

Properties of usb serial connection Next open the *Advanced Settings* in *Port Settings* of the interface *Properties* (see Fig. 8).

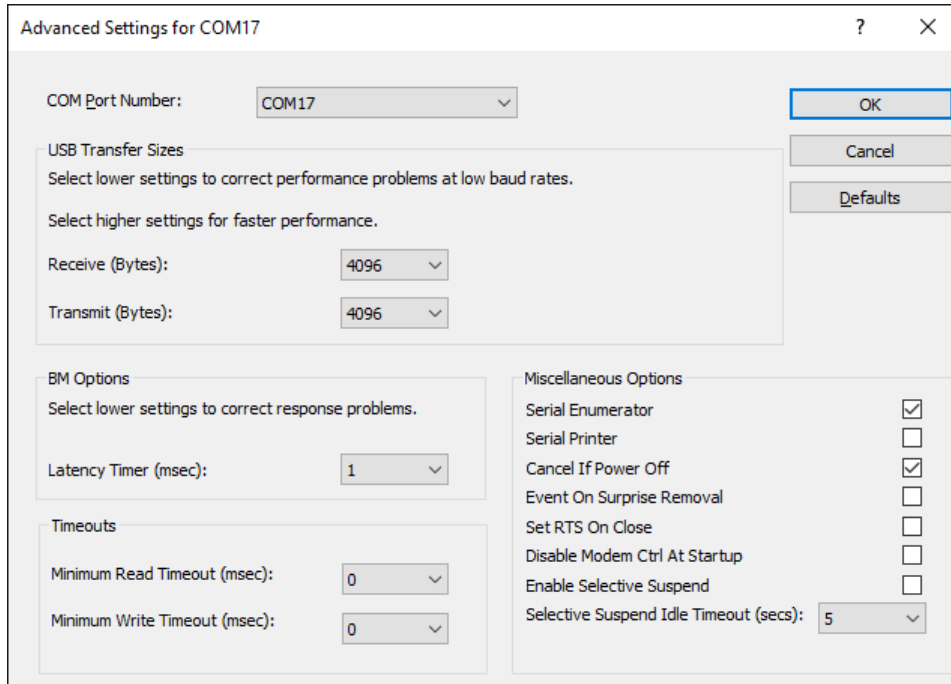


Figure 9: *Advanced Settings* of interface (COM)

Setting details of USB serial port If you see the *Advanced Settings* of the interface (see Fig. 9) choose a *Latency Timer* of 1 msec in the *BM Options*. The *USB Transfer Sizes* for receive and transmit should be set to 4096 bytes. Additional changes of the settings are not required.

Start Configuration

The accompanying software for the ThermalCapture MiniAV is located at <http://www.thermal-capture.com/>

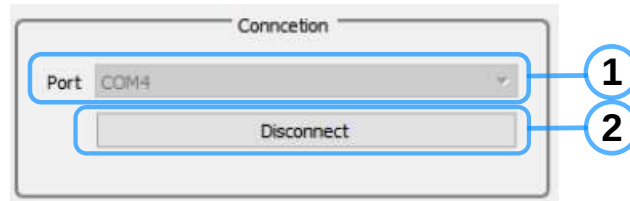


Figure 10: Start configuration

To configure the thermal capture MiniAV (see Fig. 10):

1. Connect the MiniAV with a PC as described on page 5.
2. Start the configuration software.
3. Select under *Connection*→*Port* ① the COM-Port which is designated to MiniAV by the operating system and press the button *Connect/Disconnect* ②.

Please make sure that your Microsoft Windows setting for the USB driver are set correctly, see section 2 on page 9. Otherwise the communication between PC and MiniAV can be corrupted. If you can confirm that the MiniAV is powered and the configuration software still keeps showing an error message, you need to take a look at your USB connection. The MiniAV uses a high speed serial connection for communication which is sensitive to corruption. Cheap USB-cables and several multi-USB-Hubs have been identified to corrupt the communication between MiniAV and PC. Please ensure that you have connected the breakout board directly to your PC without any other hardware between them.

Configuration Options

Set Default Configuration

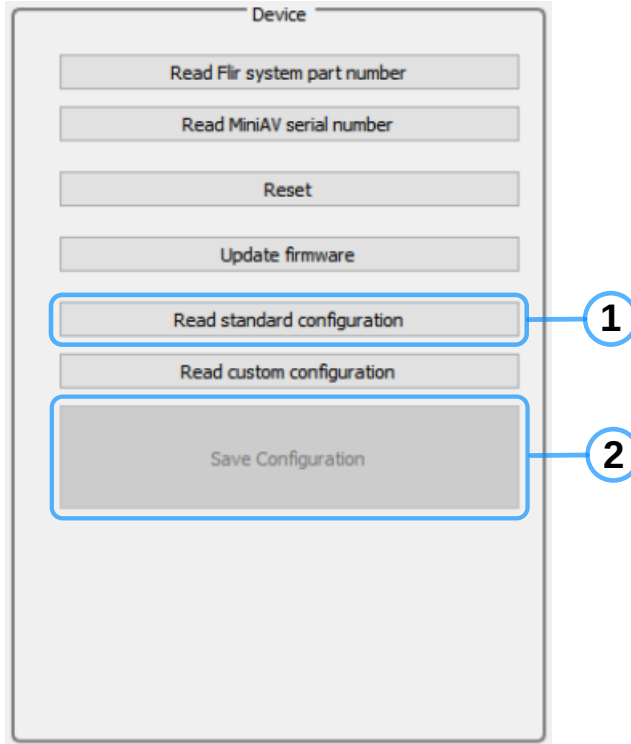


Figure 11: Set default configuration

To restore the default configuration of the MiniAV (see Fig. 11), press the buttons *Device*→*Read standard configuration* ① and after that *Device*→*Save configuration* ②. This operation overwrites any custom settings of the video display.

Firmware Update

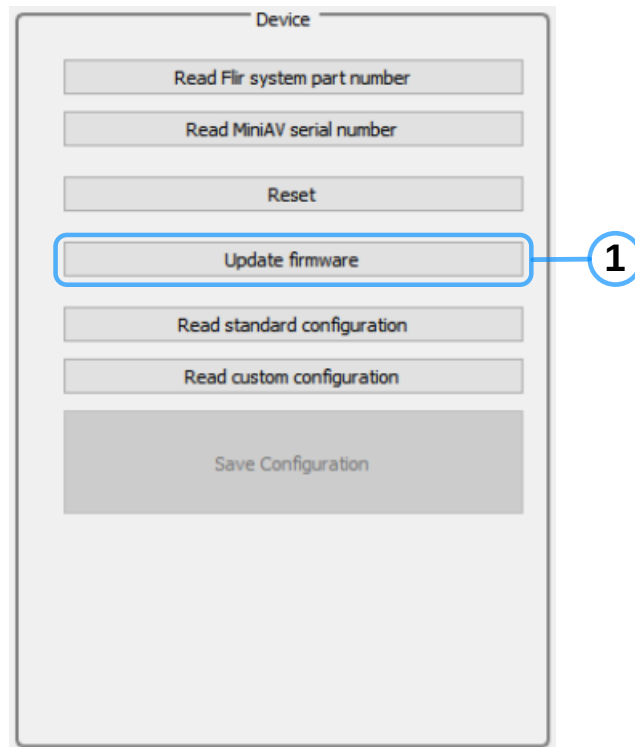


Figure 12: Firmware update

To upgrade the firmware of MiniAV press the button *Device*→*Update Firmware* and pick the new firmware file. A successful update is indicated by a message window.

Color, Saturation, Contrast, Brightness, Sharpness, Position

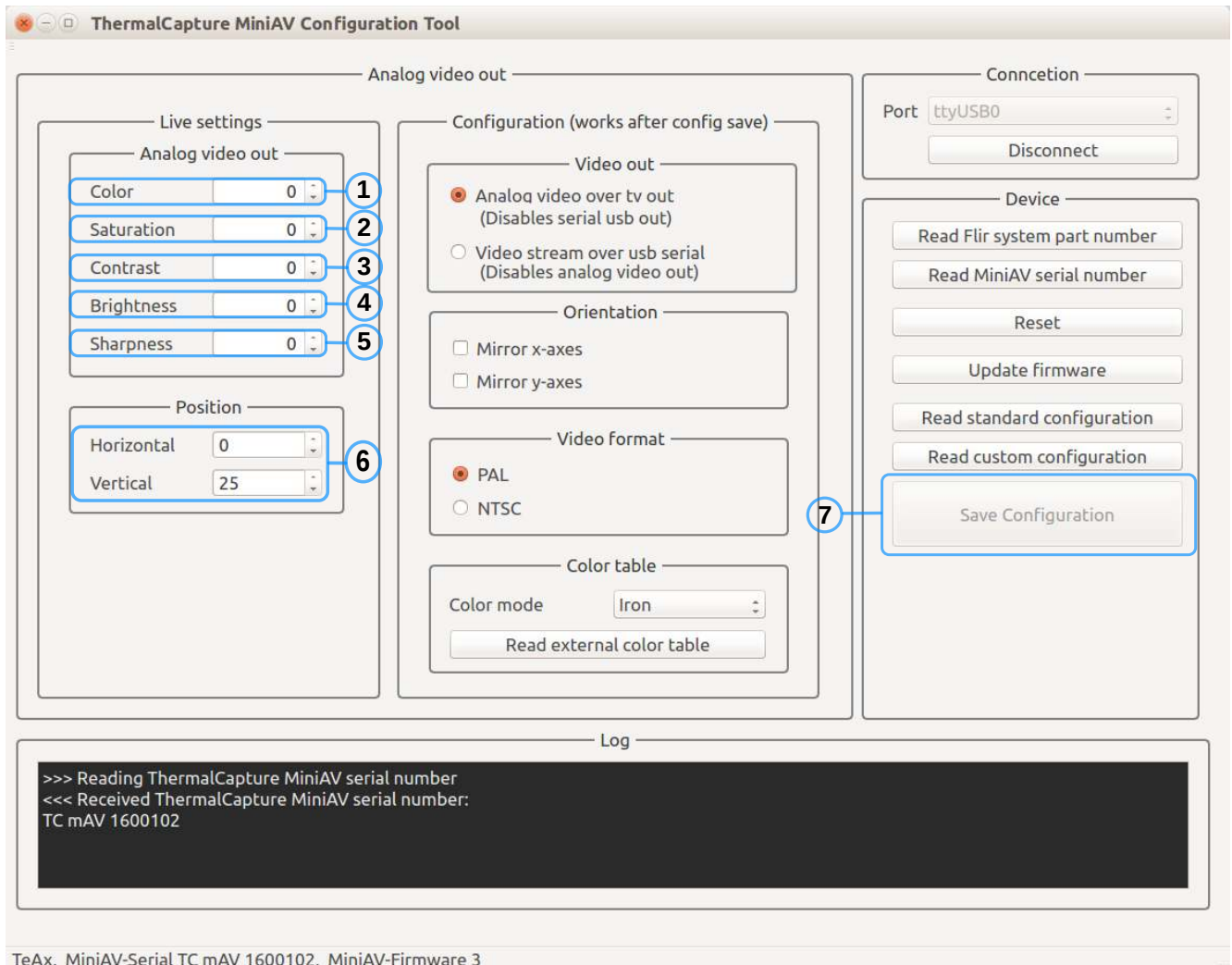


Figure 13: Color, Saturation, Contrast, Brightness, Sharpness, Position

The setting options under *Live-Settings* allow a live view on updates (changes can be seen immediately). It is possible to set color (1), saturation (2), contrast (3), brightness (4), sharpness (5) and position of the video output (6). If the set options are to be saved on the device, the button *Device*→*Save configuration* (7) must be pressed, otherwise all options are set to the last saved configuration upon device reset.

Image orientation, PAL/NTSC, Color Table

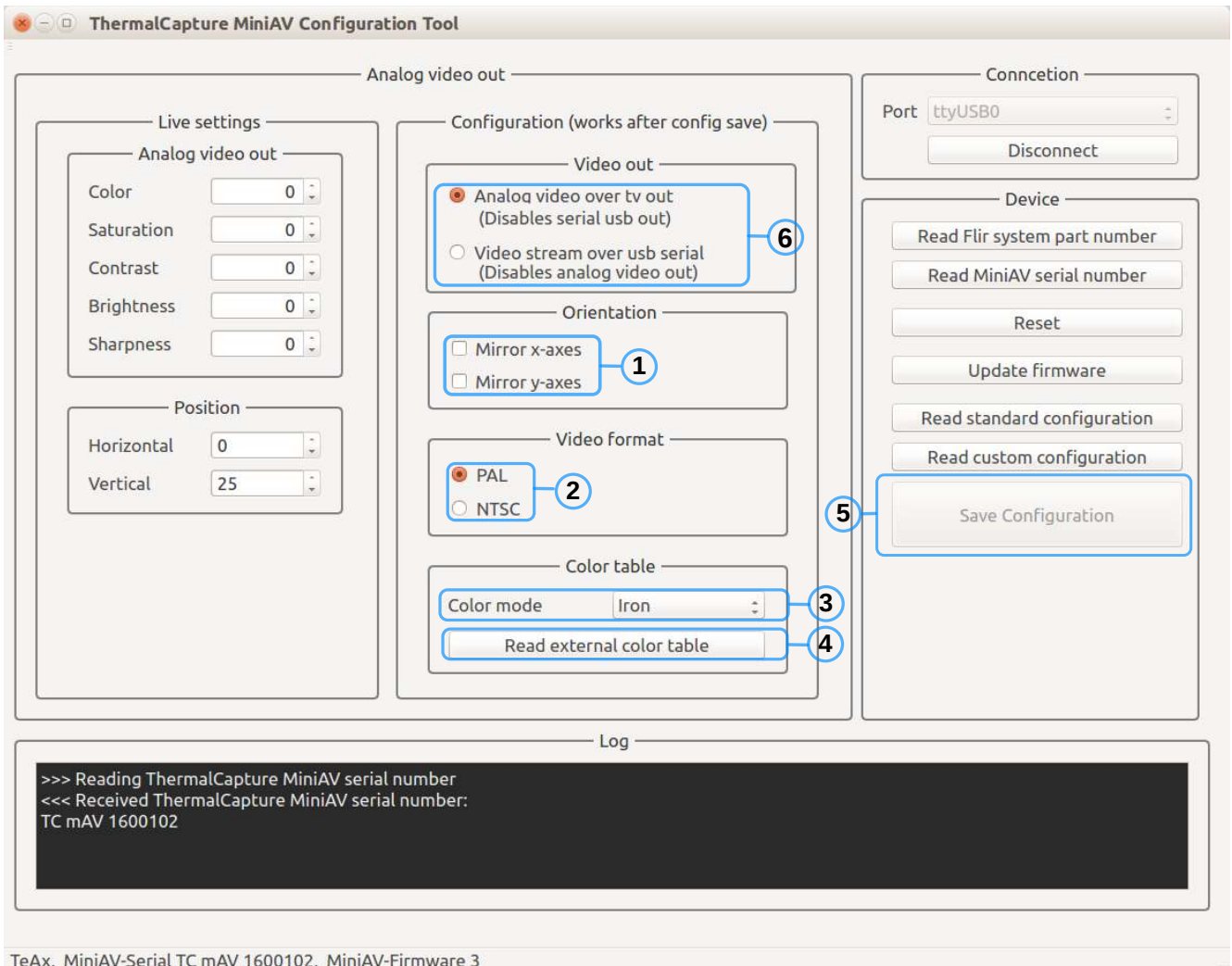


Figure 14: Image orientation, PAL/NTSC, Colortable

The setting options under *Configuration* allow to change the orientation of the image (1), the video output format (PAL-D, NTSC-M) (2) and the color table (3) used for the video image. Additionally the output mode can be switched between analog video out and usb serial data out (6). If analog video out is enabled the usb serial out is inactive and vice versa. It's not possible to use analog video out and usb serial data out at the same time. A user-defined color map can be implemented by creating a text file with the ending `.teax`. An example file is included in the software bundle in the subfolder `/ColorModes`. If the set options are to be saved on the device, the button *Device*→*Save configuration* (5) must be pressed, otherwise all options are set to the last saved configuration upon device reset.

3 Raw-data stream

The *ThermalCapture MiniAV* is able to output the raw-data stream of the FLIR Lepton sensor. Further information to this topic can be found in the software-SDK available from info@teaxtec.de.

4 FAQ

Table 1: Troubleshooting

| error | reason | remedying |
|---|---|---|
| The device is not working. | The device is not supplied with electricity. | Connect the provided plug for power supply. |
| There is no picture. | The receiving device is incorrectly configured. | Check the TV or the monitor: Is the AV mode set? |
| | Plug not seated correctly. | Check the connection and make sure that all connectors are properly connected. |
| | The camera is damaged. | Check the camera if it must be replaced. |
| The image is distorted. | Wrong video standard used. | Check the video standards: Is it a NTSC or PAL device? |
| | There are radio interferences. | Turn off other radio devices in the nearby surroundings. |
| Transfers to the PC abort. | A USB hub disrupts transmissions. | Connect the breakout module directly to the PC, without the interposition of a USB hub. |
| The device “clicks” clearly audible during operation several times. | The sensor triggers the shutter. | The clear click of the shutter corresponds to normal operation and serves for calibrating the sensor. |

5 Technical data

| Designation | Value |
|-----------------------|----------------------------------|
| horizontal resolution | 160 pixels |
| vertical resolution | 120 pixels |
| TV-formats | NTSC-M, PAL-D |
| supply voltage | $3.5 \pm 0,2$ V/DC |
| current consumption | typ. 240-400mA |
| storage temperature | -4° to 131°F -20° to 55°C |
| operating temperature | 14° to 113°F -10° to 45°C |
| atmosphere | non-corrosive, non-condensing |
| weight | 5g |

Protection class

IP20

6 Disposal and recycling information

You must dispose of ThermalCapture MiniAV properly according to local laws and regulations. Because ThermalCapture MiniAV contains electronic components, ThermalCapture MiniAV must be disposed of separately from household waste. When ThermalCapture MiniAV reaches its end of life, contact local authorities to learn about disposal and recycling options.

European Union — Disposal Information



The symbol above means that according to local laws and regulations your product and/or its battery shall be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. The separate collection and recycling of your product and/or its battery at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

7 Contact

TeAx Technology UG (haftungsbeschränkt)
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57234 Wilnsdorf
Germany

Internet: <http://www.thermal-capture.com/>

E-mail: support@teax-tec.de

WEEE: DE47944405

Please provide the following information about the device when you make an inquiry:

- Name and manufacturer of your system
- Item and serial no. of the product

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