Fallguy *ULTRA Carrier Board HP*
EXPANSION BOARD
WITH HEADPHONE AMPLIFIER

Hardware Version Rev.A 10/2012
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Table of contents:

1. Overview

The Fallguy ULTRA Carrier Board HP is a simple Expansion Board for the universal Fallguy ULTRA MP3 module by LOETRONIC.
It offers a connection for a headphone, a connection for up to 8 external buttons and a power input (5-12 DC).
Controlling the module could be done by the eight button inputs. The internal firmware of the module could be adapted to the customer needs. The playback behaviour is defined through the programmed firmware.
Please inform yourself about the different configuration possibilities of the ULTRA MP3 module by reading the firmware datasheet! The configuration of the button inputs must be possibly set up before starting the whole device!

Article numbers:
Fallguy ULTRA Carrier Board HP   -   0152

2. Technical data

Control- and visual elements:
- 2 status LEDs

Interfaces:
- 8 button inputs
- 1 headphone jack plug (Stereo)

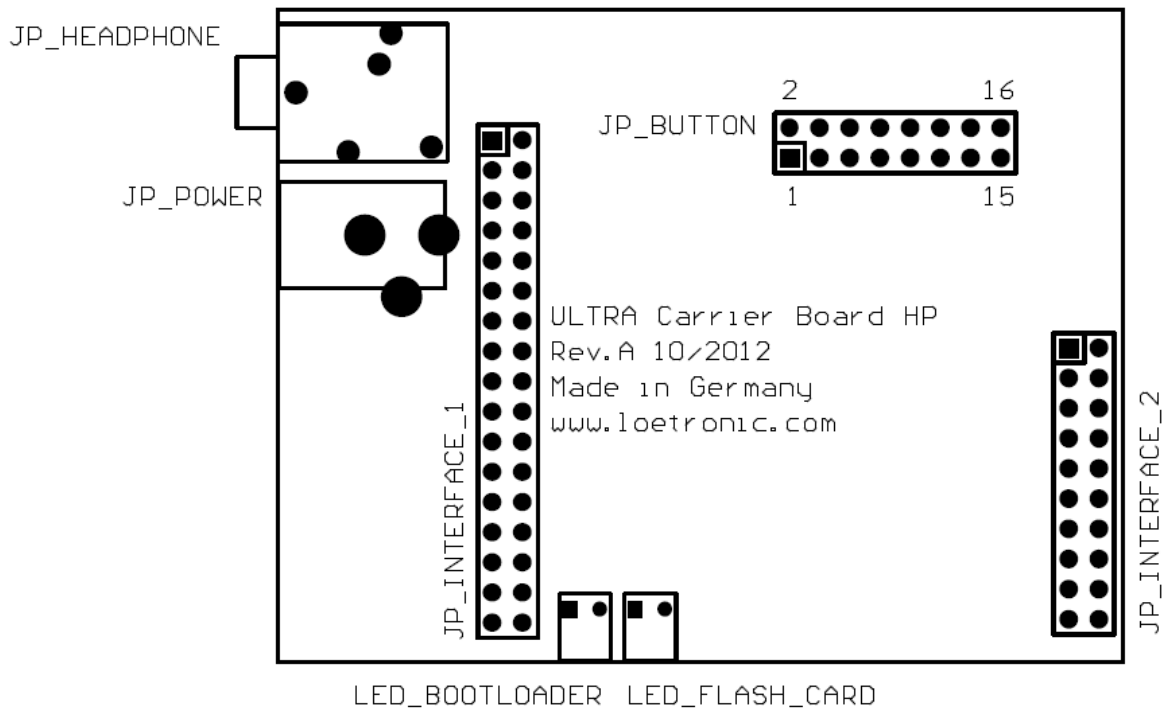### Operating temperature:
- -20 °C to +85 °C

Operating voltage:
- 5-12 V (DC) unstabilized

Current consumption:
- 100 mA

3. Connection possibilities

Picture 3.1 Fallguy ULTRA Carrier Board HP Rev.A – Connections and control/visual elements

Status LEDs LED_POWER, LED_BOOTLOADER, LED_FLASH_CARD, LED_NETWORK

- The status LEDs display important status information.

Assignment:

Light emitting diode	Name	When does the LED light up?
LED_BOOTLOADER	Bootloader-LED	By using the bootloader function
LED_FLASH_CARD	Flashcard-LED	At SD card activity (Playback of MP3-files or MP3 upload)

JP_BUTTON

- The interface JP_BUTTON is for connecting up to eight buttons, relais or sensors. The assignment is defined though the firmware on the ULTRA MP3 module.
- To activate an input it must be bridged with ground.
- The socket of this interface is a 8x2-socket in RM2,54. Appropriate sockets for use with crimped ribbon cables are available for example at www.reichelt.de (PFL 16).
- **All inputs have 0 – 3.3 Volt level!**

Assignment:

Pin-No.	Name	Description
1	BUTTON_1	Button input 1
2	GND	Ground
3	BUTTON_2	Button input 2
4	GND	Ground
5	BUTTON_3	Button input 3
6	GND	Ground
7	BUTTON_4	Button input 4
8	GND	Ground
9	BUTTON_5	Button input 5
10	GND	Ground
11	BUTTON_6	Button input 6
12	GND	Ground
13	BUTTON_7	Button input 7
14	GND	Ground
15	BUTTON_8	Button input 8
16	GND	Ground

JP_INTERFACE_1

- The JP_INTERFACE_1 interface together with the JP_INTERFACE_2 interface is for connecting the Fallguy ULTRA MP3 module to the Carrier Board. The MP3 module has to be clipped simply on the Board. The lines in detail are described in the datasheet of the ULTRA MP3 module.

JP_INTERFACE_2

- The JP_INTERFACE_2 interface together with the JP_INTERFACE_1 interface is for connecting the Fallguy ULTRA MP3 module to the Carrier Board. The MP3 module has to be clipped simply on the Board. The lines in detail are described in the datasheet of the ULTRA MP3 module.

JP_POWER

- The Fallguy ULTRA Carrier Board HP is supplied with 5-12 Volt (DC) through the socket JP_POWER.
- **A wrong polarity, non conforming voltage or electrostatic discharge could destroy the complete Carrier Board or the components!**
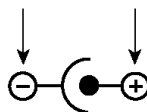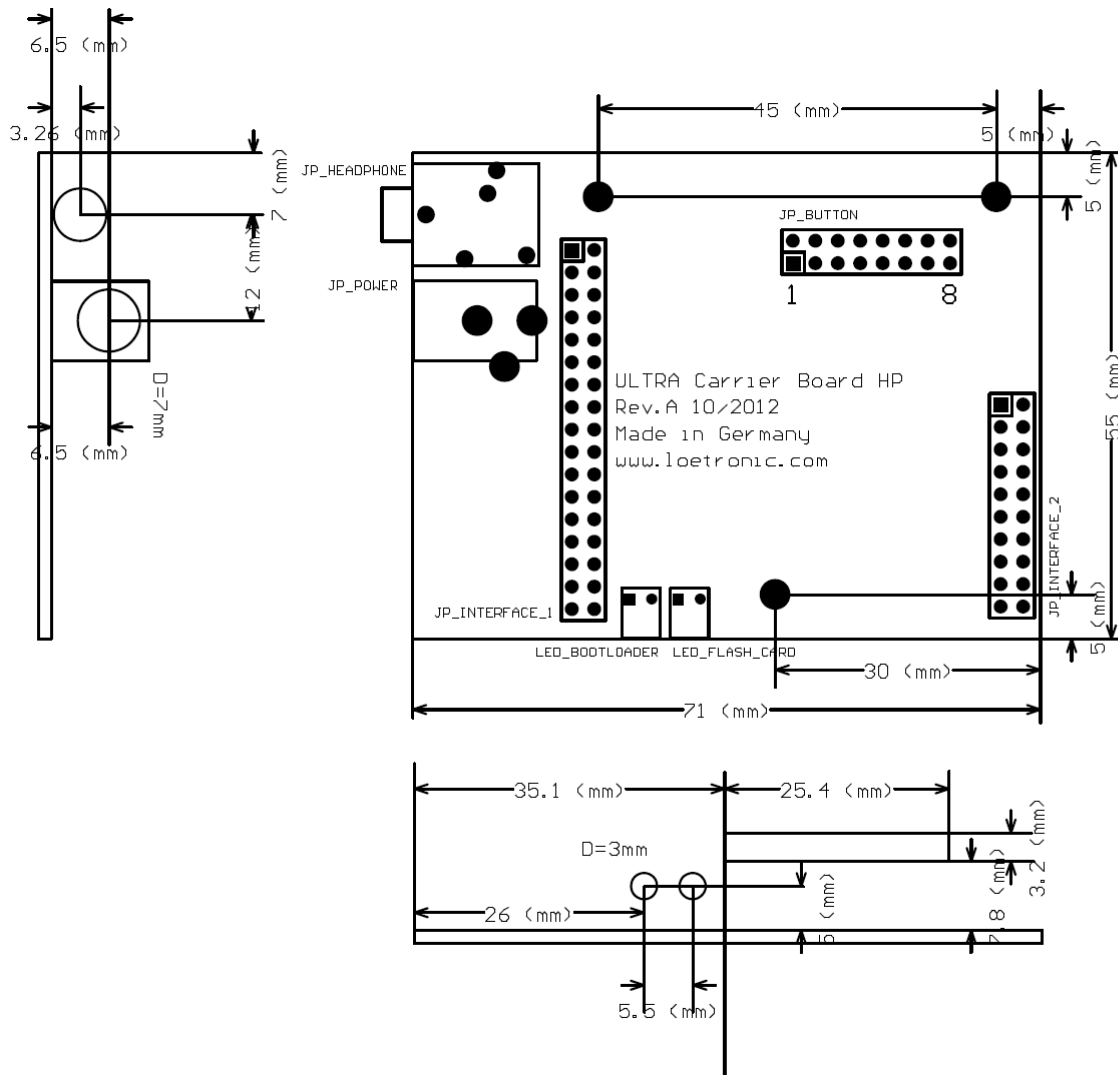

JP_HEADPHONE

- Using the stereo jack plug JP_HEADPHONE a stereo headphone could be connected to the Fallguy ULTRA Carrier Board HP.

4. Mechanical dimensions

Dimensions:

- Length: 71 mm / 2.80 inch, Width: 55 mm / 2.17 inch, Height: 25 mm / 0.99 inch (With Fallguy ULTRA MP3 module clipped on)

Picture 4.1 Fallguy ULTRA Carrier Board HP Rev.A - Dimensions

5. Getting started

The Fallguy ULTRA Carrier Board HP with Fallguy ULTRA MP3 module clipped on must be connected to a voltage source of 5-12 Volt (DC) at JP_POWER. A headphone can be connected at the jack plug JP_HEADPHONE.

Any SD flashcard – type SD or SDHC - can be used. The SD card must be formatted in **FAT32** with standard settings and there must only be one partition on it.

The playback attitude is defined through the programmed firmware and is not described in this datasheet. Every ULTRA module is equipped with the standard firmware or a customer specific firmware and is delivered with a datasheet describing all functions and settings.

6. Firmware updates with the integrated bootloader

To program a new firmware file into the internal flash memory of the microcontroller, the firmware file (*.LOE) must be in the main directory of the SD card. There should be only one firmware file in the main directory!
Deleting and programming the internal flash memory is done by the internal bootloader of the ULTRA module. When the module is off, the first button input must be bridged with ground and then it must be turned on while bridging the input with ground. The ULTRA module will now boot up the bootloader and the Bootloader-LED (LED_BLD) will light up. The programming sequence is automatically initiated, this means the module reads the firmware file in the main directory (*.LOE), erases the memory and programs it with the new firmware. As it is ready, the module will boot up the new firmware and the Bootloader-LED will go off.

To display errors and to diagnose them, the Bootloader-LED is used. It will blink every 0,5 s up, if there was a problem initialising the SD card or programming the flash memory. The counts of blinking up represent the error and will repeated every 3 s.

Error messages ULTRA BOOTLOADER V1.00:

1 – Sector cannot be erased
2 – Erased sector cannot be verified
3 – Sector cannot be programmed
4 – Programmed sector cannot be verified
5 – Firmware file (*.LOE) is not correct
6 – Partition signature not found
7 – Partition table not found
8 – Partition table not ok
9 – Firmware file (*.LOE) not found in main directory
10 – SD card is not formatted in FAT32
11 – SD card is not present