Fallguy *ULTRA AMP 2 MP3 player*

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1. Overview

The Fallguy ULTRA AMP 2 MP3 player (LOETRONIC article no. 0234) is an universal audio player for MP3 files and is based upon the Fallguy ULTRA 2 MP3 module by LOETRONIC ®.

The player has an integrated 2x50W amplifier in Class D design, which has low-noise playback with adjustable amplifier levels. The volume can be adjusted via a stereo potentiometer. Line Level can also be set as the output signal via jumpers in the player and the amplifier can be bypassed. Either an external amplifier is then connected directly or the passive loudspeakers are connected to the cinch sockets using the screw terminal adapters supplied. **When delivered, the amplifier level is set to +21.6dB and the mode for passive loudspeakers is selected!**

Controlling the player can be done by the three buttons on the front or the eight button inputs at the back side, which can be connected to buttons, relais or sensors. Furthermore, 8 GPIOs are available, which can be controlled in different ways.

Time controlled playback (Announcements) using a RTC module (Real Time Clock) or RF controlled playback is also optionally possible.

The ULTRA AMP 2 MP3 player can optionally be equipped with 4 or 8 high-quality reed relay outputs. These are then switched on and off synchronously with the MP3 playback. This also makes it possible, for example, to operate illuminated LED buttons. The relay outputs can be configured differently and can be set to potential-free or with potential (external supply voltage or internal 5 volts) via jumpers.

In the standard condition of the ULTRA AMP 2 MP3 player the standard firmware is programmed and it is internally configured as described in this datasheet.

The ULTRA AMP 2 MP3 player can be controlled using the RS232- or the USB-interface and a Windows software by LOETRONIC (*ULTRA Serial Control*, www.loetronic.com). The MP3 files themselves can be uploaded and deleted to and from the SD card.

If the ULTRA AMP 2 MP3 player is equipped with a RTC module (Real Time Clock), the Windows software *ULTRA RTC Control* by LOETRONIC can be used to assign specific times to the MP3 files (for example for time controlled announcements).

The ULTRA AMP 2 MP3 player can be easily installed using the side mounting rails supplied.

The ULTRA AMP 2 MP3 player consists of the following individual components (LOETRONIC article numbers):

ULTRA 2 MP3 module	-	0186
ULTRA Carrier board AMP	-	0231
ULTRA AMP 2 casing	-	0233
RTC module (Optional)	-	0161
ULTRA AMP Relay board with 4 reed relais (Optional)	-	0239
ULTRA AMP Relay board with 8 reed relais (Optional)	-	0240
RF receiver (Optional)	-	0211
RF remote control with 10 buttons (Optional)	-	0199
RF remote control with 1 button (Optional)	-	0208

2. Technical data

Control- and visual elements:

- 3 front buttons
- 4 status LEDs
- 1 stereo potentiometer for volume controlling

Interfaces:

- 8 button inputs via 9-pin DSUB socket (female)
- 8 GPIOs via 9-pin DSUB socket (female)
- 1 RS232 interface via 9-pin DSUB socket (male)
- 1 USB interface – Control via *ULTRA Serial Control*
- 1 interface for an RTC module (Internally, Optional)
- 8 relay outputs (Optional)
- 1 interface for an RF receiver 868 MHz with Easywave protocol (Internally, Optional)
- 2 Cinch sockets for LINE level **OR** for 2 speakers (Stereo) – 2x50W (4-8 Ohm)

Operating temperature:

- -20 °C to +85 °C

Operating voltage:

- 10-26 Volt (DC) unstabilized

Current consumption:

- 0.15 – 0.75 A (According to the speakers)

Dimensions:

- 105x160x44mm (WxDxH), without side mounting rails

3. Connection possibilities

Buttons Play/Pause, Stop, Next Track

- The buttons are used to control the ULTRA AMP 2 player during operation. Their assignment corresponds to the functions of the standard firmware on the ULTRA 2 MP3 module.

Assignment:

Button	Name	Function
Play/Pause	T1	Play/Pause or Bootloader call
Stop	T2	Stop
Next Track	T3	Next Track

Status LEDs Power, Bootloader, Flashcard, Network

- The status LEDs display important status information.

Assignment:

Light emitting diode	Name	When does the LED light up?
Red	Power-LED	By powering the player
Yellow	Bootloader-LED	By using the bootloader or pressing a button on the RF remote control
Green	Flashcard-LED	At SD card activity (Playback of MP3 files or MP3 upload)
Green	Network-LED	At network activity (RS232 or USB interface)

DSUB socket RS232 (male) or DSUB socket RELAY1 (female)

- The ULTRA AMP 2 MP3 player can be connected to a PC via the RS232 interface and remotely controlled using the Windows software *ULTRA Serial Control* (www.loetronic.com).
- The RS232 interface is set to **115.200 bps with 8N1** (8 data bits, 1 stop bit, no parity). Furthermore a hardware handshake is set (**Hardware handshake RTS/CTS**) permanently.
- The assignment of the 9-pin DSUB connector is described in the datasheet for the *Carrier Board AMP*.
- The ASCII based protocol is defined in the standard firmware and is described inside the datasheet for this firmware.

- **If the ULTRA AMP 2 MP3 player is equipped with an internal ULTRA AMP relay board with at least 4 reed relays, this is where the DSUB socket RELAY1 is located.**
- **The relay outputs can be configured as potential-free or with potential via internal jumpers. Potential-free means, + and – are closed when activated. Potential means, that + is connected to the external supply voltage or the internal 5 volts, when activated and – is permanently connected to ground.**
- **The configuration of these two modes can be set individually for each output via internal jumpers and the selection of the voltage can be set for all outputs together via one jumper.**
- **Per Default all outputs are configured with potential (external supply voltage), for example for the operation of illuminated 12V buttons.**

Belegung:

Pin-No.	Name	Description
1	RELAY_1 +	Relay output 1 +
2	RELAY_1 -	Relay output 1 -
3	RELAY_2 +	Relay output 2 +
4	RELAY_2 -	Relay output 2 -
5	RELAY_3 +	Relay output 3 +
6	RELAY_3 -	Relay output 3 -
7	RELAY_4 +	Relay output 4 +
8	RELAY_4 -	Relay output 4 -
9	N.C.	Nicht belegt

DSUB socket BUTTON (female)

- The BUTTON interface is used to connect eight buttons, relays or sensors.
- To activate a button input, it must be bridged with ground.

Assignment:

Pin-No.	Name	Description
1	BUTTON_4	Button input 1 (Start of 1. MP3 file)
2	BUTTON_5	Button input 2 (Start of 2. MP3 file)
3	BUTTON_6	Button input 3 (Start of 3. MP3 file)
4	BUTTON_7	Button input 4 (Start of 4. MP3 file)
5	BUTTON_8	Button input 5 (Start of 5. MP3 file)
6	GPIO_1	Button input 6 (Start of 6. MP3 file)
7	GPIO_2	Button input 7 (Start of 7. MP3 file)
8	GPIO_3	Button input 8 (Start of 8. MP3 file)
9	GND	Ground

DSUB socket GPIO (female) or DSUB socket RELAY2 (female)

- The GPIO interface is used to connect additional peripherals. Each individual GPIO can be used as a digital input or output. These function of these GPIOs is determined by the firmware used on the ULTRA 2 MP3 module and is described in the corresponding data sheet for the standard firmware.

Assignment:

Pin-No.	Name	Description
1-8	GPIO_1-8	Digital input or output 1-8
9	N.C.	Not connected

- **If the ULTRA AMP 2 MP3 player is equipped with an internal ULTRA AMP relay board with at 8 reed relays, this is where the DSUB socket RELAY2 is located.**
- **The relay outputs can be configured as potential-free or with potential via internal jumpers. Potential-free means, + and – are closed when activated. Potential means, that + is connected to the external supply voltage or the internal 5 volts, when activated and – is permanently connected to ground.**
- **The configuration of these two modes can be set individually for each output via internal jumpers and the selection of the voltage can be set for all outputs together via one jumper.**
- **Per Default all outputs are configured with potential (external supply voltage), for example for the operation of illuminated 12V buttons.**

Belegung:

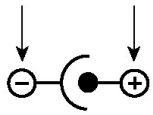
Pin-No.	Name	Description
1	RELAY_5 +	Relay output 5 +
2	RELAY_5 -	Relay output 5 -
3	RELAY_6 +	Relay output 6 +
4	RELAY_6 -	Relay output 6 -
5	RELAY_7 +	Relay output 7 +
6	RELAY_7 -	Relay output 7 -
7	RELAY_8 +	Relay output 8 +
8	RELAY_8 -	Relay output 8 -
9	N.C.	Nicht belegt

USB socket

- Via the USB interface the ULTRA AMP 2 MP3 player can be connected to a PC. Appropriate USB driver can be downloaded from the website (*ULTRA Serial Control* software, www.loetronic.com).
- For controlling the player an ASCII protocol is used, which is identical to the ASCII protocol of the serial interface (RS232). The ASCII based protocol is defined in the standard firmware and is described inside the datasheet for this firmware.

DC socket

- The ULTRA AMP 2 MP3 player is supplied with 10-26 Volt (DC) through this socket.
- **A wrong polarity can damage the player!**



Cinch sockets AUDIO LEFT and RIGHT

- The ULTRA AMP 2 MP3 player is connected to an external amplifier or passive loudspeakers via the LEFT and RIGHT audio cinch sockets. The operation mode (LINE Level or Class D amplifier) is configured internally using jumpers. When delivered, the Class D amplifier is selected for connection to passive loudspeakers and screw terminal adapters to the cinch sockets for connection to the loudspeakers are supplied. The amplifier stage is set to +21.6dB. Further setting options are described in the datasheet for the *Carrier Board AMP*.

Volume potentiometer

- The level of both audio channels can be adjusted through the stereo potentiometer.

4. Getting started

The ULTRA AMP 2 MP3 player must be connected to a voltage source of 10-26 Volt (DC). Two loudspeakers are connected to the screw terminal adapters of the AUDIO LEFT and RIGHT cinch sockets.

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.

5. Firmware updates with the integrated bootloader

To program a new firmware file into the internal flash memory of the ULTRA AMP 2 MP3 player, the firmware file (*.LOE) must be in the main directory of the SD card. There must 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 AMP 2 MP3 player. The player has to be turned off and the front button Play/Pause has to be pressed, while turning the player again on. The ULTRA AMP 2 MP3 player will now boot up the bootloader and the Bootloader-LED will light up. The programming sequence is automatically initiated, this means the player reads the firmware file in the main directory (*.LOE), erases the memory and programs it with the new firmware. As it is ready, the player 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 2 BOOTLOADER V1.03:

1 – Sector cannot be erased -> Player is broken
3 – Sector cannot be programmed -> Player is broken
5 – Firmware file (*.LOE) on the SD card is corrupted
6 – Partitition signature (FAT32) not found -> SD card has to be reformatted
8 – Partitition table (FAT32) not ok -> SD card has to be reformatted
9 – Firmware file (*.LOE) not found in main directory of the SD card
11 – SD card is not available