UPL16 USER GUIDE

Unpacking

i   **Info**   Remove the protective sheet from the lid of the UPL16.

Warning

Sharp edges   Our cases are milled from plexiglass and anodised aluminum and could have sharp edges !

Fire Hazard   The UPL16 is equipped with a LiPo rechargeable battery with built-in overcharge and short protection circuit (PCM).
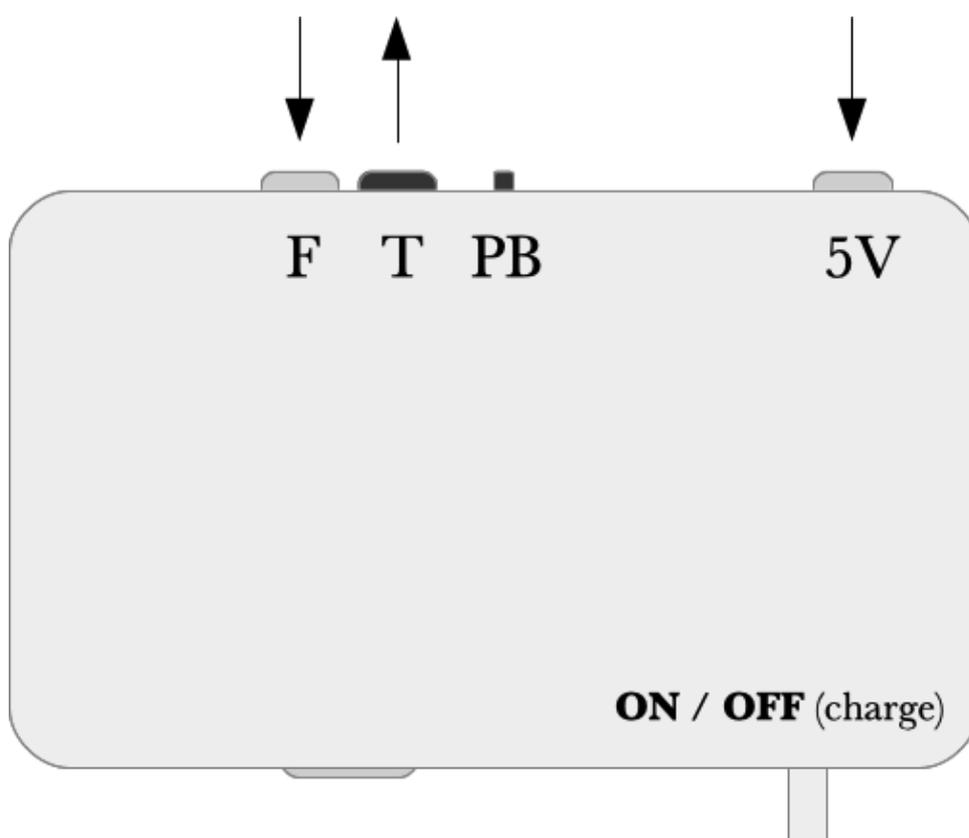
Fire Hazard:
Do not use batteries without built-in protection circuit, this is a fire hazard !

Fire Hazard:
Do not puncture the UPL16 battery, this is a fire hazard !

Connections

F	Firmware update connector USB-A (Do not use for charging, this will prevent UPL16 from working correctly)
T	Toslink 44-96 kHz optical digital output
PB	Push button for use with firmware update
5V	USB-A 5V DC 1A charger input
ON/OFF	ON = Battery connected to UPL16 but completely disconnected from charger OFF = Battery disconnected from UPL16 but connected to charger

Cables

Standard Toslink cable

Mini-Toslink (UTOS)

Charging Cable USB-A to USB-B

Charging Cable USB-A to USB mini B for remote control

Charging

Charger	Use a 5V/1A charger with USB A socket to charge internal battery.
ON/OFF	The UPL16 will only charge when **ON/OFF** switch is in the **OFF** position (switch down). In the **ON** position (switch up) charger is completely disconnected from internal battery.
Cable	Use a thick and not too long **USB A** to **USB B** cable to charge the internal UPL16 battery. Use a thick and not too long **USB A** to **USB mini B** cable to charge the internal RC battery.
Info	Studies have shown that a rechargeable battery lasts longer when charging regularly and frequently, discharging completely before charging reduces the battery life.
Replace battery	If battery needs to be replaced make sure that it is the same type, the battery installed in the UPL16 has build-in protection circuit (PCM) that prevents over charging and short circuit currents. **Batteries without this protection circuit should not be used in the UPL16 (fire hazard)**
RC	The battery in the remote control can be charged using a **USB A** to **USB mini B** cable and a 5V/A1 charger with USB A socket. If the UPL16 does not respond to the RC then you need to re-charge the RC. You can also the use RC when the RC is being charged.

RC

The infrared RC has two multi-function keys

Pressing on the corners of the big multi-function keys operates a single key with a corresponding function.

Pressing on the sides of the multi-function keys operates two key simultaneously and provides the same key with another set of functions. For the side buttons, quickly press with finger towards (but not on) the middle of the key area.

All functions of the UPL16 will be controlled by the RC.

Functions of the upper multi-function key
- previous/next CD
- fast reverse/fast forward playing track by 10 seconds
- previous/next track
- force sleep mode (power save)

Functions of lower multi-function key
- stop playing track
- play/pause
- track info (in stop mode) / track, time past, time left (in play mode)
- shuffle CDs, shuffle tracks or normal sequential play
- lower keys are reserved for controlling volume and mute SVC so both UPL and SVC can be controlled from a single infrared RC

File system requirements on USB stick

The UPL16 only supports fat formatted usb sticks

The UPL16 reads from the inserted USB stick in read-only mode and cannot write or modify the USB stick in any way.

The UPL16 can only
* **read folders** starting with 01 to 99 (using the first 2 positions of the folder name)
* **read tracks in folder** starting with 01 to 99 (using the first 2 positions of the track name)
* **read id.txt** in root

So:
 folder MUST start with 01 to 99, but may contain extra text in folder name like artist + album name
 track MUST start with 01 to 99, but may contain extra text in track name like song name

Note:
 UPL16 does not check extensions and assumes there are only WAV files in folders
 It's ok to add other files (like artwork) in folders, as long as they do not start with 01 to 99, otherwise they will be opened as track, but will fail to play.

Example:
 01 Dire Straits - Brothers In Arms
   01 Money For Nothing.wav

Also see "WAV File on USB stick" on page 10

Card ID

The UPL16 tries to read **id.txt** in the **root** of the USB stick, the first 4 chars are displayed at startup or when the USB stick is inserted in the UPL16.
Create the id.txt in a plain text editor and type the stick id as a number e.g. 0003
Do not save as RTF, this will not work.

If there is no valid **id.txt** in the root the UPL16 will display **0. 0. 0. 0.** for stick id

The id will be used to recognise the USB stick when inserting.
After power up of the UPL16 the complete USB stick structure is read in memory including id.txt

When not playing, usb stick can be temporarily removed e.g. to lookup cd/track in PC and then can be re-inserted into UPL16, if id is the same as the id that was last in the UPL16 then the card is not re-read and will continue where left off.

Note that changes to the USB stick since it was removed are ignored, if you added cds/tracks then switch UPL16 off/on or insert different USB stick to force re-read of stick.

Operating instructions

Sleep mode
- Sleep mode (moon icon) can be used to put UPL16 in sleep mode, but you will have to stop current file playing before you can activate sleep mode
- You can wake the UPL16 from sleep by pressing any key on the RC, the next key press on the RC will have normal function
- In sleep mode the current drawn will be reduced to 10 mA (37 mW)
- In sleep mode de display will be off except the lower right decimal point
- The UPL will auto switch to sleep mode after 10 minutes if player is idle (stop mode)

Info key
- When a cd/track is selected (shown on display) but is not playing, the info key (*i*) displays samplerate and bitdepth. e.g. **4 4.1 6.**
  After 4 seconds track time will be displayed e.g. **0.2.1 4**
- When a cd/track is selected (shown on display) and is playing, the info key *(i)* can be used to switch from cd/track display to track time increment or, by pressing again, track time left. Pressing the *(i)* key again will switch back to normal cd/track only display mode.

Shuffle key
The shuffle key can be used to switch between normal sequential playback, cd shuffle mode or cd/track shuffle mode

- **CD shuffle** mode will randomise all detected CDs in the root folder
  For each CD folder, the tracks in the folder will be played sequentially, playback stops after last cd/track is played
- **CD/track shuffle** will randomise all detected CDs and tracks
  Each track on the USB-stick will be played in a random order, playback stops after last cd/track is played
- When in CD shuffle mode a short animation using first 2 displays will be seen when going to the next shuffled track
- When in CD/track shuffle mode a short animation using all 4 displays will be seen when going to the next track
- When switching back to sequential mode a fixed figure will be shown on all 4 displays

Play next
Pressing **next track** followed by pressing **play** while playing in shuffle mode will force next track in shuffle mode to be played.

Note: It is not possible to goto previous track in CD/track shuffle mode.

Error messages   The UPL16 will display an error message in case of a situation that might prevent the UPL16 from continuing.

UPL16 error messages:
E. 01 = NO OR INVALID ID (no id.txt found for card number)
E. 10 = UNSUPPORTED SAMPLE-RATE/BIT-DEPTH (e.g. UPL16 can play 44.1/16 and 48/16, for all other sample-rates this error will be shown, unsupported track is skipped.)
E. 20 = RX init error
E. 21 = TX init error
E. 50 = Clock oscillator error
E. 51 = Timer error
E. 52 = Time base start error
E. 70 = File open error
E. 71 = FAT init error
E. 72 = FAT error
E. 73 = ID not found
E. 80 = Wave player init error
E. 90 = I2S callback error
E.100 = I2S callback error, player needs to be reset

WAV files on USB stick

Convert WAV

WAV files on usb stick should be canonical WAV format and should not contain any meta data. See link below for more info:

`http://www.lightlink.com/tjweber/StripWav/Canon.html`

If you already have a lossless music collection you can use conversion software to convert e.g. FLAC/ALAC to WAV.
Here you must make sure that **no meta data** is written to end af WAV file, this will result in (loud) plops/clicks between tracks.

When converting audio tracks to WAV check the settings of your conversion software and disable adding of extra INFO/ID3 tags.
- For XLD check WAV > option > uncheck "Write Tags" checkbox.
- For dBpoweramp Music Converter check Configure > Codecs > WAV Tag Creation (set to none).
- Foobar under Converter Setup > Other > uncheck "Transfer Metadata (tags)".

Rip CD to WAV

Ripping an official CD to WAV is a reliable way to get WAV files for USB stick. When the rip software is setup correctly, it is often possible to rip a cd to a folder and at the same time name the tracks to start with 01 to number of tracks + album + track text. The folder where the tracks are stored often contain artist + album. You only need to pre-pend the required cd number.
Make sure your rip software has access to CDDB database so auto naming of files and tracks can work, e.g. iTunes uses grace note database to lookup the CD to rip and names tracks and folders automatically.

Example folder structure

```
01 Dire Straits - The Best of Dire Straits & Mark Knopfler - Private Investigations
    01 Sultans of Swing.wav
    02 Love Over Gold.wav
    03 Romeo & Juliet
    04 Tunnel of Love (Intro_ The Carousel Waltz).wav
02 Dire Straits - Love Over Gold
    01 Telegraph Road.wav
    02 Private Investigations.wav
    03 Industrial Disease.wav
id.txt
```

Display

Display for UPL16	
Sleep mode	.
Track play	**0 1.0 9**
Error (example of unsupported sample-rate)	**E .1 0**
No card inserted	**-. -. -. -.**
Card Number (example)	**0.0.0.1.**
Track time	**0 4.2 1**

Specifications

Width	24 cm
Length	15 cm
Height	3.1 cm
Weight	666 gr
RC Width	5.5 cm
RC Length	16.8 cm
RC Height	1.5 cm
RC Weight	175 gr
Power supply	Built-in re-chargable Lithium Polymer battery 3.7V
Power consumption	244 milliwatts while playing 44.1/16 WAV, 37 milliwatts in stand-by
Charger (not included)	DC 5V/1A - USB A socket + cable to USB B
RC Charger (not included)	DC 5V/1A - USB A socket + cable to mini USB B
Output sockets	1x Toslink
Input sockets	1x USB B socket for charging, 1x USB B socket reserved for firmware update
USB stick socket	1x USB A socket (front)
Supported file format	canonical WAV (only header + data, no embedded track info) http://www.lightlink.com/tjweber/StripWav/Canon.html
Supported sample rates	44.1 / 48
Supported bit-depth	16
Sample rate accuracy	200 ppm (0,02%)