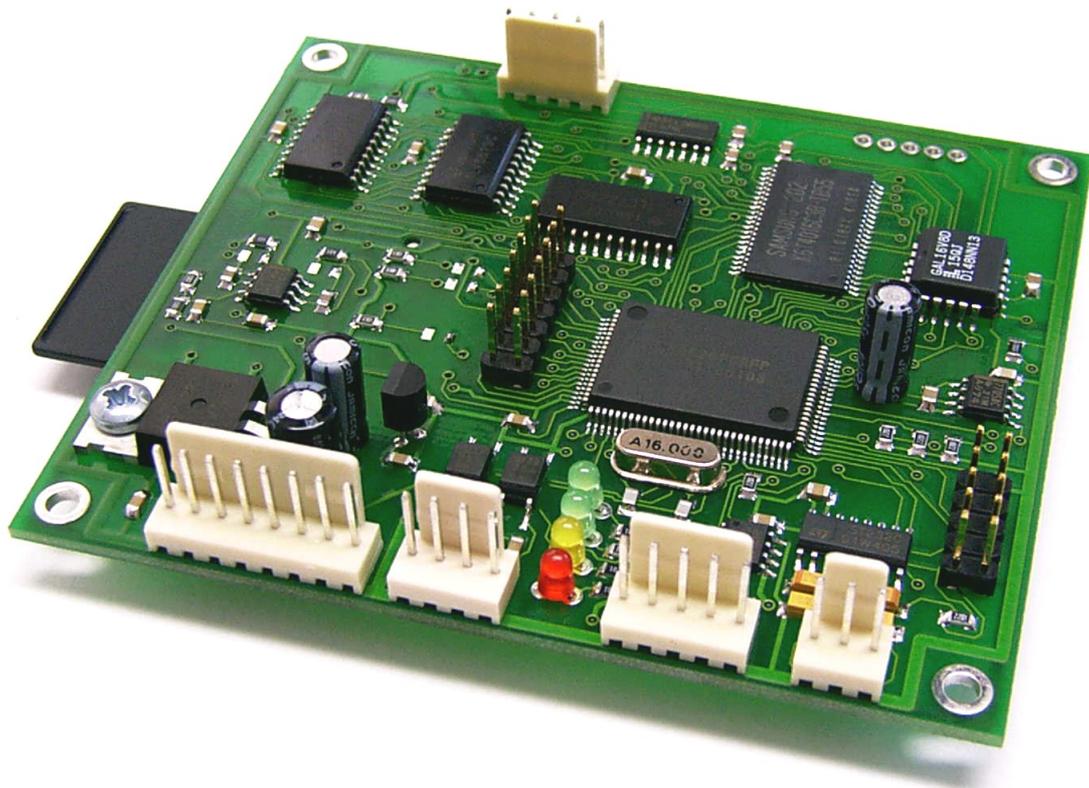# DMX-Lasershowplayer MP12LX

Integrated Lasershowplayer with DMX-Interface

Users Manual

Last modified March 1st 2006

Contents

1 Description

The lasershowplayer MP12LX allows a PC-independent playback of Lasershows in ILDA-format under DMX-control or under control of TTL-signals.
A Multimedia- or Secure Digital Card is used as memory media, on which the shows are stored for playback.
For editing the memorycard and setting up device parameters, a PC with Windows** operating system and a simple flashcard reader is required.
Selection of the show sequences and settings of various showparameters are controlled via DMX.
Also, the MP12LX allows operation without DMX-control by using an 8 Bit parallel interface (TTL) for show selection.

1.1 Features

- High Performance 16Bit-Microcontroller
- 512 Kbytes RAM
- Playbacks all Showsequences in ILDA-Standardformat
- Up to 256 Shows selectable via DMX or Parallelinterface
- DMX-functions use minimum 1, maximum 9 DMX-channels
- 2 additional shows selectable via hardwired, opto-isolated inputs (planned)
- Showlength only limited by capacity of memory media.
- Supports Multimedia- or SD-cards with FAT16 Filesystem up to 2 GB
- X/Y-outputs 12Bit, 16 Millions of picture coordinates
- Coloroutputs RGB 8Bit, 256 out of 16 Million colors
- Outputspeed up to 24000 points per second (pps)
- Dual powersupply +/- 12V DC
- DMX-512 Input
- DMX Fail Protection
- RS232-Interface (optional)
- Board dimensions compatible with Lowcost Scanner M6008

1.2 Starting up

Each device is shipped with a memorycard, where a testframe is programmed as Pause-show (DMX-showselection 0 or DMX-off). This allows an easy check of display functions when starting up.
Before switching-on the MP12LX, insert the memorycard into the slot.
After switching on, output of the testframe starts immediately.
The user should pay attention, that Laser radiation, emitted from the laserprojector will not cause any risk.
The output of the testframe is configured as follows:
- Picture size X/Y 30%
- Output speed 5Kpps
- Blankshifting = 2
- The testframe is a square with diagonal lines and a circle. The colors of the square are red, green, blue, yellow, the diagonals are cyan an magenta and the circle is white (All colors using the Pangolin*-standardpalette)
- Because all other shows are not used, the frame will be outputted independent of the DMX-signal.

2 Connecting MP12LX (Fig.1)

Note: The signal outputs of the MP12LX are not short-circuit protected and should be wired carefully. **Do not short scanneroutputs, colors or blankingsignal to ground or negative voltage!**

2.1 Powersupply and Scanneroutputs

The powersupply inputs +/- 12 V and the scanneroutputs, and also the TTL-blankingsignal are located at an 8-pin connector.
The supplied voltage should be free of noise and transients and should be regulated to +/- 10%.
Current consumption of the MP12LX is 200mA maximum.

The scanneroutputs deliver a maximum output voltage of +/- 10V measured to GND.
The outputted blanking signal is TTL-compatible 0-5V.

Pins
1	+12V In	Powersupply +12V
2	-12V In	Powersupply –12V
3	GND	Powersupply Ground
4	X Out	X-Output max. +/- 10V
5	GND	Ground
6	Blanking Out	Blanking output TTL
7	Y Out	Y-Output max. +/- 10V
8	GND	Ground

2.2 Color Outputs

The outputs for RGB color are located at a 5-pin connector.
The analog output voltage for colors is 0-5 Volts.

Pins
1	Red Out	Red 0-5V
2	Green Out	Green 0-5V
3	Blue Out	Blue 0-5V
4	Intens. Out	Analog Blanking 0-5V
5	GND	Ground

2.3   DMX Interface

Inputs for DMX-512 are located at a 5-pin connector.
A 5-pin XLR-connector (male) or a cheaper 3-pin XLR-connector (male, NOT standard) has to be wired here.

Pins
1. DMX GND   Ground
2. Data +   DMX-Data +
3. Data -   DMX-Data -
4. DMX Term 1   terminating resistor
5. DMX Term 2   terminating resistor

The pins 4 and 5 (terminator) allow to add a 120 Ohm terminating resistor between the datalines. This resistor should be connected to the datalines at the last device of a DMX-chain. By simply connecting the pins 4 and 5 together (by a separate switch or a bridge in the XLR-cable), this on board resistor is connected to the datalines.

Watch the correct wiring of the DMX-signals!
The MP12LX recognizes a valid DMX-datastream and the green LED „DMX" is on.
If there is no recognition of the DMX-signal, maybe the 2 datalines are changed.
Check this by changing the datalines D+ and D-. Some DMX-controllers also have a switch to change these datalines.

2.4   Triggerinputs

Triggerinputs are not activated at this time.

2.5   Serial Interface RS232

The serial Interface is only used for service or customized firmware and is not described here.

2.6 8 Bit Parallelport

A 14-pin connector is placed near the center of the board.
This connector includes an 8 Bit interface (TTL compatible 0-5V) for showselection without using DMX control. Shownumbers are selected in binary order from 0 to 255.
A signal pattern of 0 0 0 0 0 0 0 0 selects shownumber 0 or Pause, 0 0 0 0 1 0 0 0 selects shownumber 8 and 1 1 1 1 1 1 1 1 selects number 255, where 1 represents a voltage of 5V (High)and 0 represents a voltage of 0V or GND (Low).
Output parameters cannot controlled externally in this mode and have to be preset by use of the configuration software.

For activation of this parallel port and disabling DMX control, the input pin SELECT has to be connected to +5V.
The SELECT input is connected to GND via a jumper when the board is shipped from factory. So, DMX control is activated as default.

Important: Never leave these inputs unconnected, when activating the port by SELECT=H. Undefined signals can cause undefined outputs of shows. When switching the portpins to one voltage level (5V or 0V) manually, use pullup- or pulldown-resistors of 4.7KOhm to 10KOhm to ensure a defined signal level at open input.

Pins
1	Data 1	Showselection 1 (lowest significant bit)
2	Data 2	Showselection 2
3	Data 3	Showselection 4
4	Data 4	Showselection 8
5	Data 5	Showselection 16
6	Data 6	Showselection 32
7	Data 7	Showselection 64
8	Data 8	Showselection 128
9	not used	
10	not used	
11	SELECT	Low = DMX control, High = 8 bit interface
12	not used	
13	GND	Ground
14	+5V	+5 Volt from board supply

Important: Input voltage higher than 5V or electrostatic discharge ESD can cause damage.
When using long control cables or external control connectors, it is recommended to place a TTL-buffer (for example 74HCT241 or 74HCT244) between the datalines before inputting signals to the board.

2.7 Status-LEDs

Functions of the LEDs from top to bottom (see board drawing).
Green READY shows correct function of the system.
Yellow DATA shows access to the mass storage media (MMC/SD-card).
Green DMX shows a valid DMX signal input.
Red ERROR shows an error condition.

During error condition, the LEDs offer additional monitoring functions described in section 6 Errors.

Red Out

Green Out

Blue Out

Intens. Out

GND

Parallel Inputs

SD/MMC
Flash Card

14 13
12 11
10 9
8 7
6 5
4 3
2 1

Status

+12V In

- 12V In

GND

X Out

GND

Blanking Out

Y Out

GND

RXD

TXD

GND

DMX Term 2

DMX Term 1

DMX Data -

DMX Data+

DMX GND

Trigger 2 -

Trigger 2 +

Trigger 1 -

Trigger 1 +
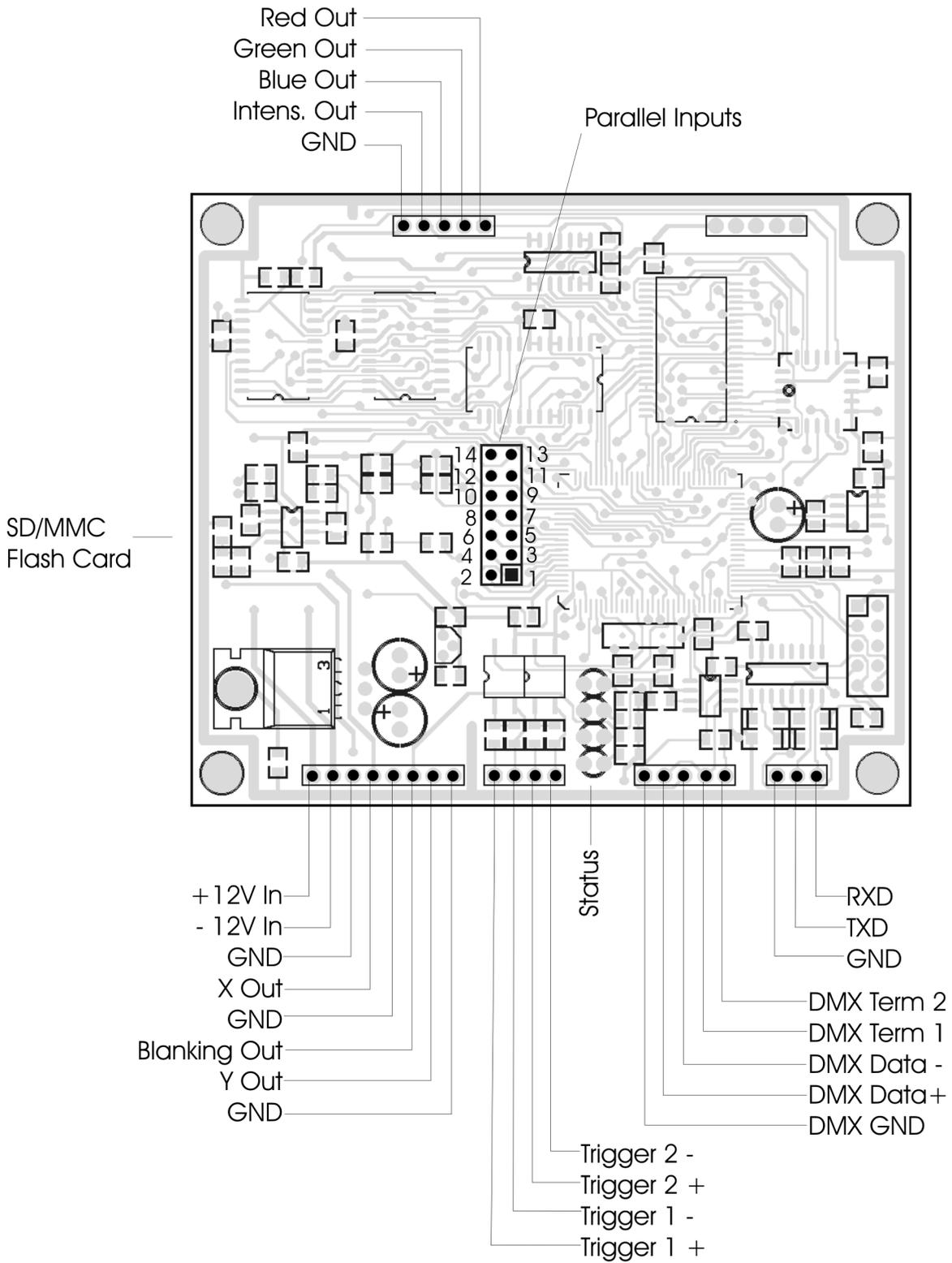
Fig. 1 Boardlayout

3   Memorycard (MMC-/SD-Karte)

Multimedia- or SD-cards up to a maximum capacity of 2 Gigabytes (!) can be used.

Important: The card has to be formatted with FAT16 filesystem only.
The manufacturer recommends the use of high quality cards.
No-name cards can cause read errors. Please see chapter COMPATIBILITY
for details.

All cards shipped together with the MP12LX are formatted correctly and must NOT be reformatted.
Caution: When using own cards or reformat cards by using a PC with Windows** operating system,
it is not ensured, that the cards are formatted FAT16. Depending on the memory size of the card,
Windows** can format these to FAT12, FAT16 or FAT32 filesystem.
The MP12LX will not work with other filesystems than FAT16.

Avoid formatting the card by the use of a PC with Windows operating system!**

No subdirectories are supported by the MP12LX!

All showfiles and configuration files must be placed in the rootdirectory of the card.
Subdirectories are allowed, but cannot be found by the MP12LX-system.
There may be not more than 260 files located in the rootdirectory. It is recommended not to store
more files as necessary on the card.

Only short filenames will be processed (8.3-format) by the MP12LX!

The showplayer does not support long filenames.
The name of the files should be not longer than 8 charcters plus the extension (for example ILD).
When copying files to the card, both long and short filenames are created. The MP12LX only reads
the short names. The long names need additional space in the rootdirectoy. To avoid loosing space
(and limiting maximum possible number of files), the names should be kept as short as possible.
Short filenames are not case sensitive!

3.1   Reserved Filenames

Some filenames are reserved for device control. These files will be read out by the MP12LX
automatically and must NOT be deleted or renamed.
The following filenames are reserved:

CONFIG.DAT   Contains output settings for the MP12LX.
FLASHMP.BIN   Control program for firmwareupdate.
FWUP12LX.BIN   File for a specific firmwareupdate. When this file is found, the MP12LX
automatically updates the firmware. After this procedure, this file will be
deleted automatically by the MP12LX.

4 The Showmanagement of the player

The complete management of the show output is controlled by the configurationfile CONFIG.DAT. This file is the heart of the showcontrol and must be placed on the card!
When the operating system of the MP12LX will not find this file, an error occurs (see section 6 Errros).

The configurationfile is created or modified by the use of a free softwaretool (Windows9x-XP**). Always store a backup of the card on your PC for saving the contents of the card in case of a card failure.

4.1 Basics of DMX-control

Note the difference between DMX-channels (addresses) and DMX-data (value):
The channel is equivalent to the fader of the DMX-controller and the data represents the wiper position of the fader.

DMX-512 allows the use of 512 channels (faders) maximum.
On stage, many different devices, like moving heads, lamps etc. need many different channels.
These channels are normally grouped together by function.
The DMX-receivers for these different functions all occupy a fixed number of channels.
The BASEADDRESS of every device sets the beginning address for this device inside the whole range of 512 channels. The individual channel number of each device is added to this baseaddress.
Receivers set to the same baseaddress will respond to the same faders of the control desk.
Fader channels of simple control desks mostly start from address 1.

The Showplayer MP12LX allows the placement of a group of 16 channels maximum inside the range of 512 channels.
Example: Baseaddress = 48. Control functions can be placed to individual channels 1-16, which means physical channels from 48 – 64.

The MP12LX needs one DMX-channel minimum, when operating in DMX-mode.
All additional control channels are optional.
Any number of individual channels 1-16 can correspond to any selected control function.
Overlapping of channels is possible. So, different control functions can be placed to the same channel (fader). But this normally does not make sense.

4.2 Setting up showparameters

All settings of the showparameters are global, when enabled for DMX-control.
But different shows often need different settings.
To ensure every show be outputted under the right settings, the settings should be stored as a scene on the DMX-desk together with the showselection.
When showparameters are not directed to a DMX-channel, a fixed value can be set and this value is global for all shows.
Also, DMX-faders can jump between 2 values, even when the fader is left untouched. This results in changing showselection and output parameters. For this reason, a direct (life) operation of the DMX-desk is not the best way. A better solution is storing all settings as scenes (presets) on the desk. Calling these scenes by keyboard or chaser ensure a stable showplayback.

4.3   Showselection via DMX

Practically, it does not make sense to place all 256 possible showselections one one fader channel.
It is too different to select one of 256 faderpositions.
The MP12LX uses 2 channels for showselection.
Using the first channel (Showselect L), shownumbers 0 to 15 can be accessed and the second
channel (showselect H) selects one bank out of 16. So, 16 banks containing 16 Shows each, can be
selected.

Examples:
Showselect H = 0, Showselect L = 8 (fader center position): shownumber = 0 x 16 + 8 = 8
Showselect H = 8 (center position), Showselect L = 3, shownumber = 8 x 16 + 3 = 131
Showselect H = 15 (fader max), Showselect L = 15 (max): Shownummer = 15 x 16 + 15 = 255

Shownumber zero (both faders placed to minimum) represents a special condition.
This shownumber is called PAUSE, because output is shut down when no show corresponds to this
showselection. But also a show can be played for pause, when this selection contains a valid show.
This allows to play a show even whithout using DMX-control or parallel interface.
The MP12LX always playbacks PAUSE, when show number 0 is selected or when any other
shownumber does not correspond to a showfile (showtable is empty).

4.4   DMX Fail Protection

The MP12LX automatically recognizes a valid DMX512-signal. When signal fails in case of
interruption of the DMX connection, the showoutput automatically switches to PAUSE.
When a show is placed in PAUSE, this show will be outputted, even when there is no valid DMX-
connection.

4.6   Showselection via parallel interface

Shownumbers are selected in binary order from 0 to 255.
A signal pattern of 0 0 0 0 0 0 0 0 selects shownumber 0 or Pause, 0 0 0 0 1 0 0 0 selects
shownumber 8 and 1 1 1 1 1 1 1 1 selects number 255, where 1 represents a voltage of 5V
(High)and 0 represents a voltage of 0V or GND (Low).
Output parameters cannot controlled externally in this mode and have to be presetted by use of the
configuration software. The parameters set in the global settings and in the showtable will be used.

For activation of this parallel port and disabling DMX control, the input pin SELECT has to be
connected to +5V.
The SELECT input is connected to GND via a jumper when the board is shipped from factory. So,
DMX control is activated as default.

5 Creating the Configurationfile CONFIG.DAT

The free softwaretool, shipped together with every MP12LX, allows the creation and modification of the configurationfile. DMX-baseaddress can be set and every control parameter can be directed to a specific DMX-channel inside the group of 16 channels. Also, DMX-control of every parameter can be disabled and a fixed value can be set instead.
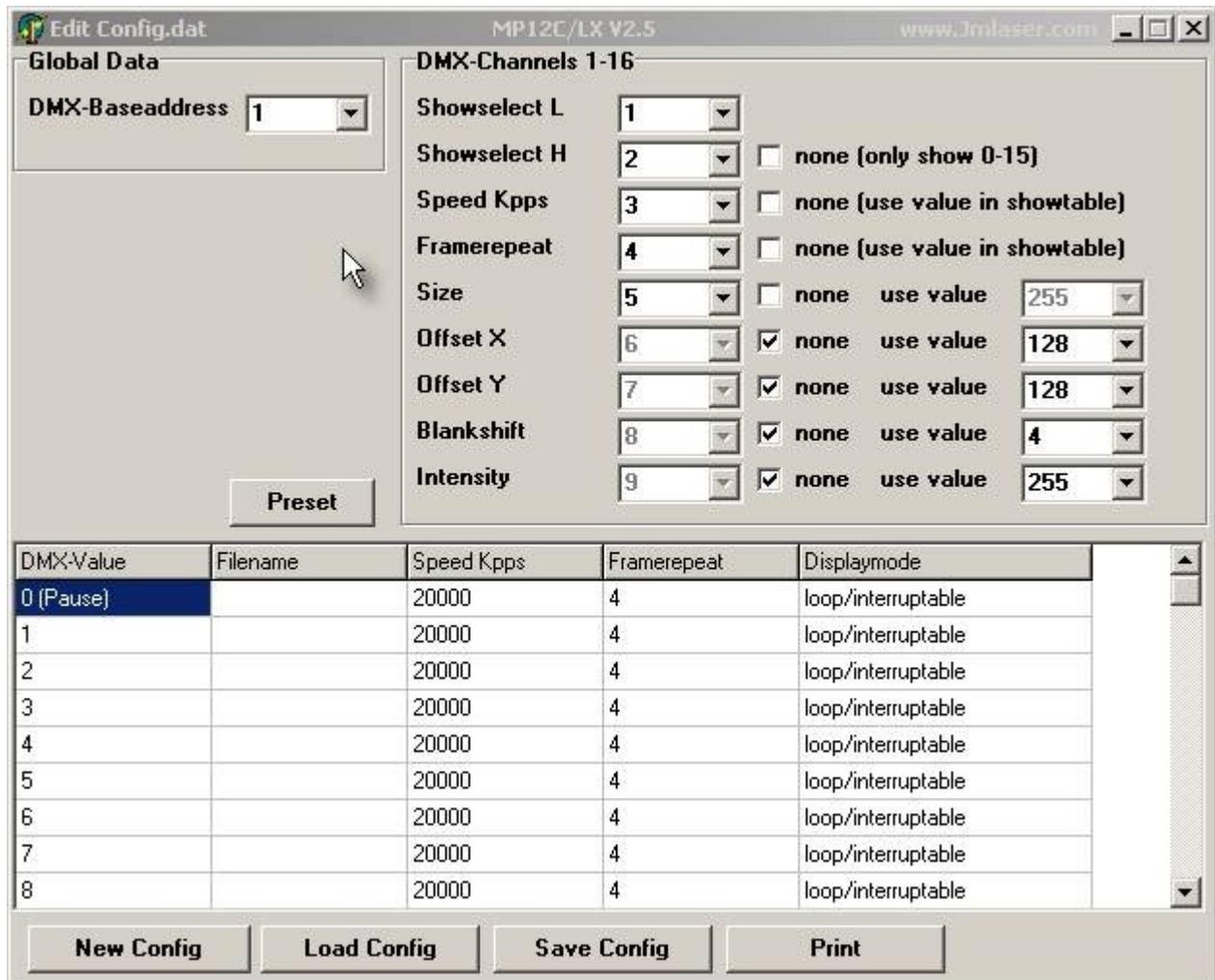

Fig. 2 Configurationsoftware

5.1   DMX-Baseaddress

Input here the DMX-baseaddress, from where the group of 16 control channels starts.
Possible values are 1-512. Maximum sum of baseaddress plus highest used control channel is 512.
Any overflow will be watched by the software and a message will be displayed.

Fig. 3 Global settings

5.2   Colorpalette

This function is currently not supported by the MP12LX.
All shows will be outputted using the Pangolin*-colorpalette.

5.3   Setting up DMX-channels (Fig. 4)

Each parameter control can be placed to any channel starting from the baseaddress.
By checking NONE, DMX-control can be disabled and a fixed value can be used.
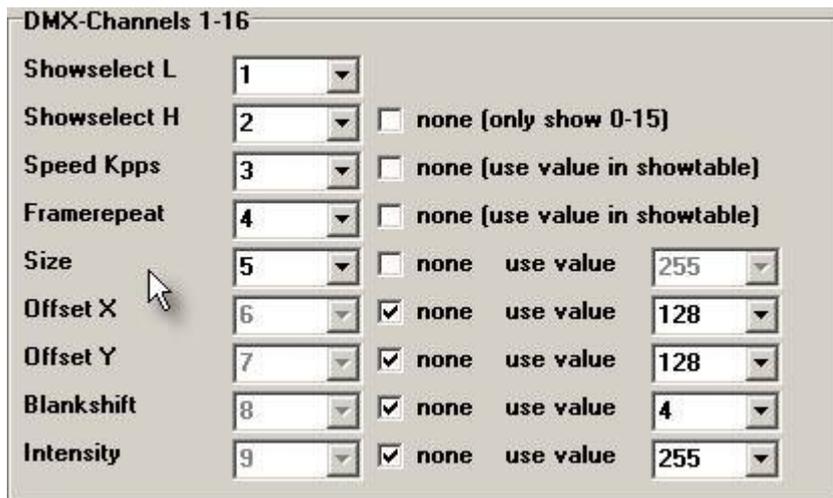

Fig. 4 DMX-channel selection

Showselect L

This DMX-function cannot be disabled!
Input here the channel for showselection.
When just this channel is used for showselection, one of the first 16 shows (including Pause) can be selected.

Showselect H

Input the channel number corresponding to this function here.
16 banks of shows, 16 shows each, can be selected using this function.
When DMX-control of this function is disabled, only shows number 0 (pause) to 15 are selectable from the control desk.

Speed Kpps

Input the channel number corresponding to this function here.
This function controls the output speed (points per second).
The MP12LX can output a maximum speed of 12000 points per second and 1000 points per second minimum.
Keep in mind that changing the point output speed also will change the speed of the displayed animation and also will influence the blanking settings (blankshifting). For this reason, the speed should be adjusted carefully.
When DMX-control of this function is disabled, the value set in the showtable individual for every show is used.

Framerepeat

Input the channel number corresponding to this function here.
Shows in ILDA-format do not contain any timing information. When all frames of a show are outputted one after the other, the animation speed is too fast.
By repeating every frame a number of times, the speed of the animation movement can be controlled. Common used values are 3-6. Values by DMX-control are 1 to 16.
When DMX-control of this function is disabled, the value set in the showtable individual for every show is used.

Size (projection size)

Input the channel number corresponding to this function here.
When changing size by the use of DMX-control, a faderposition of 0 (minimum) can cause a standing laserbeam. This can be a dangerous condition!
It is recommended not to use this DMX-control and use the fixed global value instead, or to use laserprojectors with a scanner safety circuit only.
This ensures the laser emission being shut down during dangerous conditions.
Also the scanners can be overloaded when increasing the scan angle at the same scan speed.

DMX only allows a refreshrate of 50 Hz.
Moving a controlfader fast will result in jumps of the display settings.

Offset X (horizontal position)

Input the channel number corresponding to this function here.
This setting has an unsigned value. A value of zero results in the maximum negative offset.
128 is the center position and 255 is the maximum positive offset.
When changing this value via DMX, the projected display can jump, because DMX signal rate is slow.
When DMX-control of this function is disabled, the value set behind „global Value" will be taken.
For centerpostion, use a value of 128!

Offset Y (vertical position)

See Offset X.

Blankshift

Input the channel number corresponding to this function here.
This function can be controlled in 16 steps.
Here, the timing of the blanking (Laser = off) and the colors can be controlled.
Because the scanners are slower than the changes of colors or blanking, these changes has to be delayed. Common used values are 2 to 5. Possible values are 0 to 15.
When DMX-control of this function is disabled, the value set behind „global Value" will be taken.
A global value for all shows often is critical, because different shows need different settings.
The best solution is to adjust the value via DMX and save the settings together with the showselection as a scene on the DMX-desk.

Note: Changing the point speed (Kpps) will also make it necessary to change blankshifting.

Intensity

Intensity and the strobe effect are deactivated at the player MP12LX!

5.4   The Showtable (Fig. 5)

In the showtable, all DMX-values of the channels ShowselectH and ShowselectL are listed, giving a maximum count of 256 shows plus 2 separate shows for Trigger inputs.
A showfile and several showparameters can be allocated to every DMX-value.
When only using ShowselectL for showselection, rows from 16 to 255 don't care, because only 15 shows plus Pause can be accessed by DMX-control.

DMX-Value	Filename	Speed Kpps	Framerepeat	Displaymode
PAUSE		20000	4	loop/interruptable
1		20000	4	oneshot/interruptable
2	CREAT1 .ILD	20000	4	oneshot/interruptable
3	GHOST .ILD	20000	4	oneshot/interruptable
4	GRID .ILD	20000	4	oneshot/interruptable
5	MEDIA .ILD	20000	4	oneshot/interruptable
6	COLOR .ILD	20000	4	oneshot/interruptable
7		20000	4	oneshot/interruptable
8		20000	4	oneshot/interruptable

Fig. 5 Showtable

When clicking in a row under Filename, a dialog openes for selecting a file (Fig.6).
The same file can be used in different rows of the table.
Watch that the card (removeable media) is selected as the path. Then you can be sure, that your showfile is available on the card.
It is also possible to work in a backup directory on the harddisk and then copy the whole content to the memorycard. But then, it must be sure, that there are short filenames available. This is normally only sure, when using FAT-filesystem. Otherwise, Windows** will create a short filename, when copying data to memorycard, and the names would be changed. The player then will not find the filename on the card.
It is better, first to place all showfiles on the memorycard and then selecting them directly from the card!
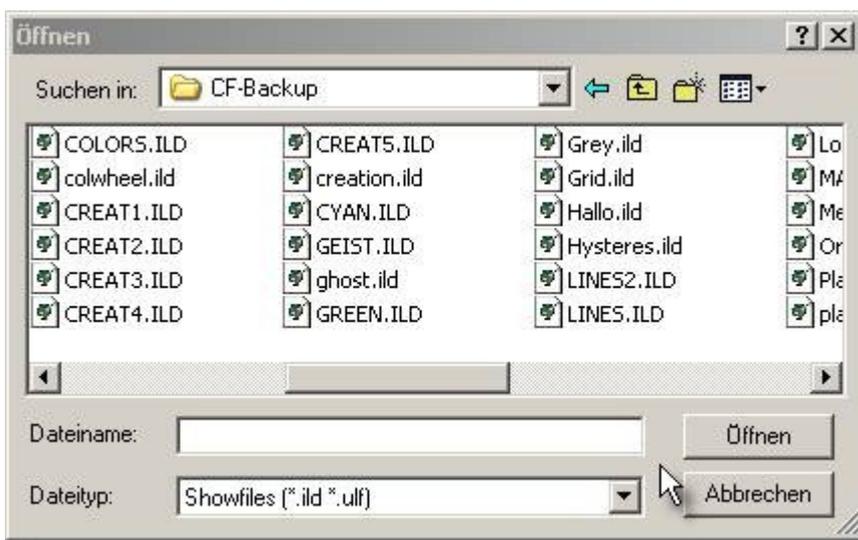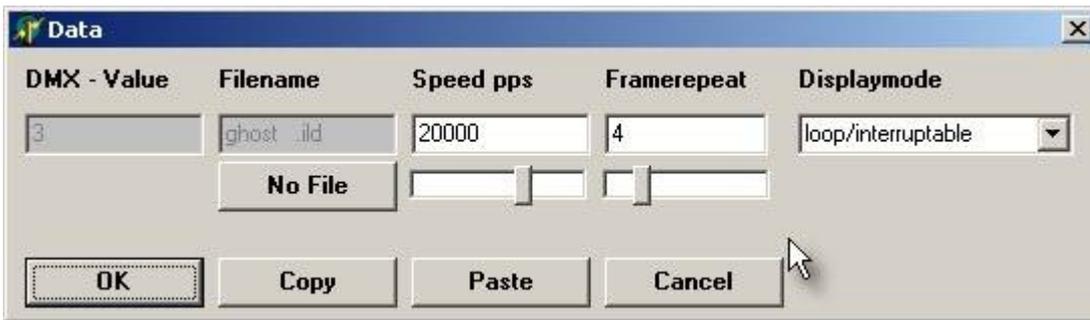

Fig.6 Filedialog

Note for Windows 2000 or Windows** XP with NTFS-filesystem:**
NTFS will not create short filenames or change the names when copying files to the card.
It is recommended first copying all showfiles to the card and then select all files directly from the memorycard, when making configuration.

Sapeed, Framerepeat and Displaymode

When clicking on this fields in the showtable, a new dialog openes (Fig.7).
Here the values corresponding to the selected show (line in table) can be set.
Copy and paste can be used to copy all values of a row into another row of the showtable (Fig. 6).

Fig. 7

"No File"-Button

Use this button to delete Showentries from the showtable. This cannot be done in the filedialog, so this additional button was added.
This is important, for example, to remove a show from the Pause-field (Show 0).

Speed Kpps

This is the outputspeed (pointrate) for the current show.
This value only will be used, when the speed is not controlled by DMX-channel.
The lasershowplayer MP12LX supports a maximum output speed of 16 Kpps (16000 points per second). When using a value greater than 16000, the player limits the speed to 16K internally.

Framerepeat

This value only will be used when framerepeat is not controlled by DMX-channel.

Displaymode (Fig. 8)
Here, one of four possible displaymodes can be selected.
PAUSE is fixed to one mode.

Displaymode is the combination of 2 showmodes and 2 prioritymodes.

Fig. 8

The 2 showmodes are Loop or Oneshot.

Loop
When using this mode, playback of the show will be repeated as long as no new show will be selected.
For example, when the show only consists of one single frame, this frame will be displayed permanently.

Oneshot
The selected show will be displayed exactly one time.
When the show only consists of one single frame, htis frame will be displayed n-times, where n is the value under Framerepeat.
When playback of the show or frame is finished and no new show is selected for playback, the player automatically will switch to PAUSE (show 0).

The 2 showmodes can be combined with 2 output prioritoes.
These are Complete and Interruptable.

Complete
The current running show will be outputted completely, before any new showselection is possible.

Interruptable
The current running show will be aborted, when a new show is selected.

The following combinations are possible:

Loop/Complete
The current show always is displayed completely and will restart from the beginning, when no new showselction is reconized at the end of the show.

Loop/Interruptable
The current show will be repeated, when no new show is selected. When selecting a new show, the current running show will be aborted.

Oneshot/Complete
The show will be displayed completely, exactly one time

Oneshot/Interruptable
The show will be displayed exactly one time, but will be aborted when a new show is selected.

Exceptions

Show number 0 (Pause) is always Loop/Interruptable.

Note

When a show is running in Complete-mode, all parameters like speed, size, offset, framerepeat and blankshift will be held (also when controlled by DMX).
Otherwise, the parameters would be changed when selecting a new show during playback of the current show.

The Pauseshow

Normally, the filename at shownumber 0 (Pause) is left blank.
When selcting Pause or after finishing playback, the laser is blanked and the output is stopped.
In some special cases, for example when using the system as an advertising display without DMX, it could be necessary to playback a show without any additional control.
When placing a showfile to show number 0 (pause), this show always will be outputted, when no other show is selected.

Triggershows 1 und 2 (currently not implemented!)

Useful combinations of displaymodes

Long shows should be interruptable to allow changing to another show.

Short shows or short effects should be set to Complete.

Single frames should be set to Loop, because otherwise they just will be displayed parts of a second.

Special sequences as a highlight of a show should be set to Oneshot.

The Preset Button (Fig.9)

Using this button, settings in the showtable can be set for all shows simultaneous.
For example, when all shows should be run at 10000 pps, this value will be set under 'Speed' and will be set for all shows or rows in the table by clicking 'Preset Speed'.
The same can be done for Framerepeat or Displaymode.
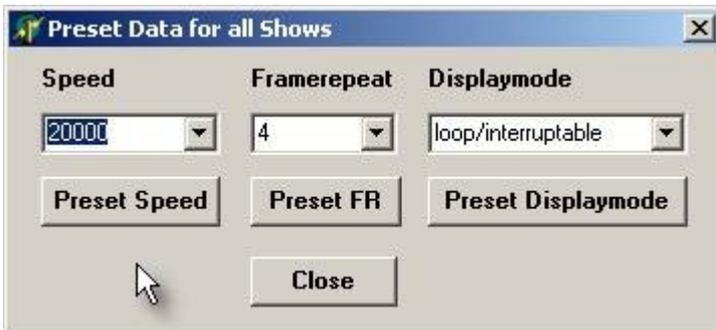**Note**: This functions cannot be undone!

Fig.9 Preset Button

6   Errors

If any errorcondition occurs, a code will be displayed on the status-LEDs (see table).
Not all errors will cause a stop of playback.

Errors from the memorycard (read/write) will cause a total shutdown of the player.
If there is no card or the card is not inserted correctly of if there is no right format or filesystem, the player functions will be shut down.

When there is no file allocated to a selected shownumber, this is no errorcondition and the player will switch the output to Pause (Shownumber 0 PAUSE).

When the accessed showfile is not valid or corrupted, the playback will be switched off.
All other functions keep running and the selection of another show is possible.

6.1   Errorcodes on Status-LEDs

Ready	DMX	Error	Data	
-	-	Red	-	No MMC/SD-card
-	-	Red	Yellow	Filesystem FAT16 not found
Green	-	Red	Yellow	Dataerror when reading MMC/SD-card
Green	-	Red	-	File not found or invalid file
Green	-	-	x	No DMX-signal
Green	Green	-	-	Ready
-	-	-	Yellow	Firmwareupdate currently running

7   LED-Panel

Fig. 10 Panel

The panel is available as an option for the MP12 and can be connected using a 10pin flatcable.

The panel can be used to acces some important parameters for the ILDA-players MP12 directly, without the use of the configfile of the flashcard.
The panel is recognized automatically, once the player is switched-on and the panel is connected correctly.
If the panel is not connected, the parameters from the configfile are used.

All settings are stored in the panel.
When trying to connect to the player (or if there is no connection possible), the panel displays "---".
If the memory of the panel is empty, it displays "Err" at power-on.

At normal function, if parameters are set, the panel displays the actual DMX-baseaddress, for example "001".

There are 3 keys from left to right:

1. Mode

By pressing Mode, the actual parameter for changing is selected.
There are 3 parameters currently available:
"Adr" = DMX-baseaddress
"Int" = max. Intensity for color- and intensityoutput laser
"Ort" = orientation of the projection

2. Select

After selected the parameter with Mode, press Select and the current stored value will be displayed.
By pressing Select again, the digit for changing will blink.
Pressing Select multiple times will activate all digits by blinking one after the other.

3. Up

Use this key to change the current number in the blinking digit. The number will be increased.
When reaching the maximum number (9), the number will be start from zero again.

Example:
Setting DMX-baseaddress to 200.

Press "Mode" until "Adr" blinks
Press "Select" until current value is displayed and right digit blinks
Press "Up" until "0" is reached.
Press "Select" to go to middle digit
Press "Up" until "0".
Press "Select" until left digit blinks
Press "Up" until "2" is reached.
Press "Mode" for exit this parameter. The value is stored automatically.

All values are stored and activated when exit the parameter input by pressing "Mode".
After not changing anything in the parameter input routine, the panel will return to main routine after about 10 seconds without storing value to memory.

Note that playback of longer shows may be interrupted (stopped) when changing parameters at the panel during showoutput. Display of single frames of short sequences normally will not be interrupted.

Limits

DMX-baseaddress   1 – 512
Intensity   0 – 99
Orientation   0 – 7

Limits will be controlled automatically by the panel. If trying to set a value beyond the limits, the panel automatically corrects to an allowed value during input.

Intensity

The value under "Int" sets the maximum intensity for the laser.
All show values for RGB-outputs and analog blanking output will be devided by this value linear.

Orientation

There are 8 different values possible, allowing all possible projection orientations.
This is important for backprojections or if it is not clear how the projector is installed at the location.

– normal
– X invert
– Y invert
– X and Y invert
– X and Y changed
– X and Y changed and X invert
– X and Y changed and Y invert
– X and Y changed and both inverted

7.1 Mechanische Abmessungen Bedienteil

DMX-Panel mechanical dimensions
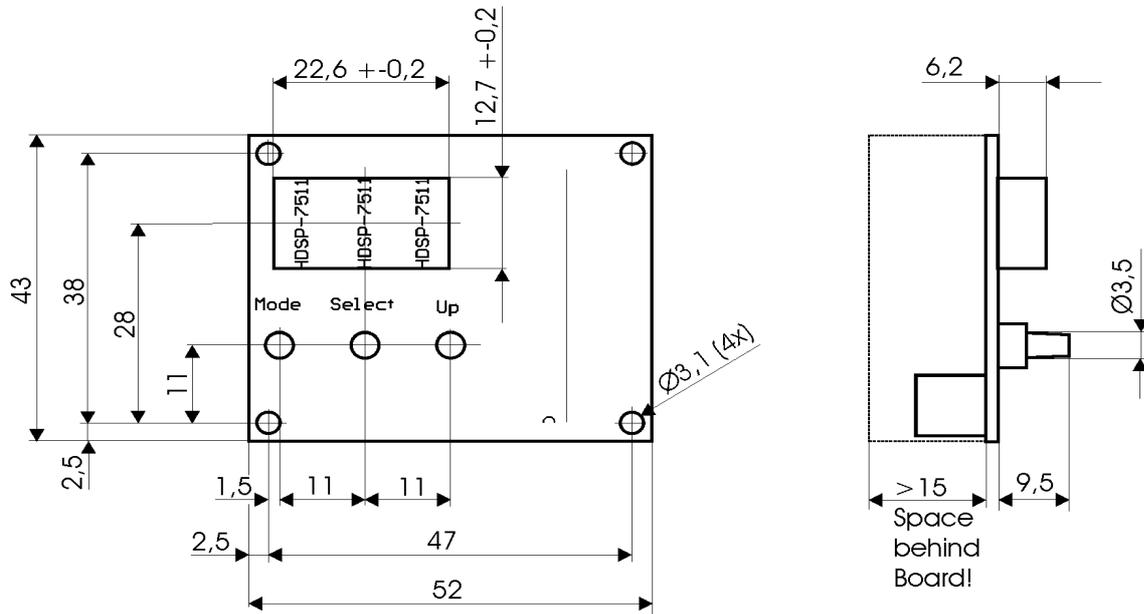
Fig. 11 mechanische Abmessungen Bedienteil

8   Firmwareupdate

All players of the MP12-series (MP12C, MP12LX) can be updated to a new firmware release.
This allows eliminating softwarebugs and adding new features, as soon as available from the manufacturer.

The procedure for firmwareupdate is very simple and runs nearly automatically.

8.1   Updateprocedure

The operating system of the device is stored in the internal memory of the microcontroller.
To change this program, the internal memory has to be erased and reprogrammed.

The following is necessary to do an update:
- A FAT16-formatted MMC/SD-card
- A file named FWUP12LX.BIN stored on the card
- A file named FLASHMP.BIN stored on the card

The 2 files can be downloaded from the website of the manufacturer.
Note that all versions use the same filename, so the MP12 can find the file.
All files are packed in archives using the name of the release.

The file FLASHMP.BIN is the same for all showplayers.
The firmwarefile FWUP12LX.BIN will be deleted from the memorycard after update!

Note: Only files with exactly these names will be recognized by the player:
- FLASHMP.BIN is a programming tool for all devices of the MP12-series.
- FWUP12LX.BIN is the update file just for the MP12LX

Never modify or rename these files!

So you need these 2 files.
These 2 files should be placed on the memorycard.
The normal card for shows can be used for this.

It is recommended to use a tested and reliable memorycard for doing updates!

The card now should be inserted into the cardslot and the player should be switched on.

The device now checks the availability of these files.
Is one ore both files missing, the player starts its normal operation.
When both files are found, the update procedure starts automatically.

The files will be verificated.
When a file is corrupted, the player continues its normal operation.

When all securitychecks are successful, the update begins.

During update procedure, **only the yellow** LED os on.
This can take a few seconds.

Avoid shutting down the power for the player or removing the card during this time! This will cause malfunction and will destroy the firmware. A new update procedure will be necessary. Under worst case conditions, the memory of the microcontroller can be damaged.

When the update is successful, the updatefile is deleted from the memorycard automatically.
This prevents the system to be updated, when it is powered-on the next time.
The file FLASHMP.BIN can be left on the card.

The player now starts its normal operation.
Check all functions, after doing an update.
When an update is not successful, another update is possible. But first, the updatefile must be copied to the memorycard again.

8.2   Troubleshooting

When an error occurs during firmware update, the procedure stops and all LEDs are on.
When the internal memory of the microcontroller is corrupted, the player may be without any function.
Try another firmwareupdate.
When there is no function after 2-3 updates, please contact the manufacturer.

Remember to switch off the device before removing the card and first insert the card in the slot before switching on the device again!

9   Compatibility

The MP12LX needs a fast read/write-timing of the Flashcard.
It is recommended to use brand products only.
If a card of a brand manufacturer will not work, please inform us.
A classification of noname cards is difficult, because their manufacturers could change as well as the test results.

A few cards, tested with the MP12LX, are listed as followed.
The size indicates just the size of the tested cards. Normally, other sizes of the same manufacturers give the same or similar test results.
Use this information only as a reference without any guarantee:

Infineon MMC 16-32MB   okay
Hitachi MMC 16MB   okay
SanDisk Multimediacard 32MB   okay
SanDisk SD-card 512MB   okay
SanDisk SD-card 2GB   okay
Kingston 128MB   okay
Kingston Elite pro 256MB   okay

We currently don't know cards which don't work with the MP12LX

* Pangolin is a trademark of Pangolin
** Windows is a trademark of Microsoft