

## Revision History:

### Ver.: 3.4.0 24.04.25:

#### Features

```
ESP32: Parallel output of LED data on up to 6 channels
change FastLED to a stable version 3.9.12 coming from MobaLedLib github
repository
change source for library ATTinyCore:avr to MobaLedLib github repo
support of the new color test
support of the ESP32 1,3" OLED display
add MobaLedLib RGB-LED ring macro
rp2040 support up to 8 parallel LED channels
improve determination of OneDrive local path
optional display of MobaLedLib time/LDR values on the display
improved selection of old ProgGenerator filename when updating to new
release/beta
on "Import from old program" the Arduino type setting is retained
acceleration of ESP32 start time
add SI_LocalVar to predefined system variables
add replacement of "$" in macro arguments          see
https://www.stummiforum.de/t165060f7-MobaLedLib-LEDs-Servos-Sound.html#msg26
43729
force a rebuild if ALT key is pressed
empty compiler cache if last ATmega build failed  see
https://www.stummiforum.de/t222466f195-MobaLedLib-Arduino-Upload-geht-nicht.
html#msg2649211
update rp2040 board version to 4.4.0
improvement of overall PlatformIO build process
support PlatformIO build for rp2040
experimental support of ESP32 board version 2.0.17
```

display of MobaLedLib time/LDR: [ESP32 Erweiterungen](#)

#### Bugfixes

```
ATmega: bug with wrong send buffer size for SEND_INPUTS fixed
fix detection of first RGB_Heartbeat line while import
"ESP32 and hieroglyphics for MLL time" see To-Dos#21
unnecessary memory consumption due to extensions  see To-Dos#20
error handling didn't work when downloading libraries/boards
upgrade PlatformIO to 6.9.0 to fix build problem with DMX512
fix problem with StartLedNumber update on invisible sheets
improvement of start LED calculation in include sheets
remove wrong platformIO beta warning
fix problem with wrong MP3_Command value MP3_STOP which should be
MP3_ADVERT_STOP
fix problem with PatternConfigurator icons
```

#### Changes

Selectrix pin definition changed to SX\_SIGNAL\_PIN 13 and SX\_CLOCK\_PIN 4 to support both ESP32 Adapter and the new ESP32 main board  
when using PlatformIO don't turn compile window to red in case of build errors to keep colored error output  
changed version string schema to provide platform name

## Neuerungen

ESP32: Parallele Ausgabe von LED-Daten auf bis zu 6 Kanälen  
Änderung von FastLED auf eine stabile Version 3.9.12 aus dem MobaLedLib github Repository  
Änderung der Quellen für die Bibliothek ATTinyCore: avr zu MobaLedLib github repo  
Unterstützung des neuen Farbtests  
Unterstützung des ESP32 1,3" OLED Display  
MobaLedLib RGB-LED Ringmakro hinzugefügt  
rp2040 Unterstützung mit bis zu 8 parallelen LED Kanälen  
Verbesserung der Ermittlung des lokalen OneDrive Pfades  
optionale Anzeige der MobaLedLib Zeit/LDR Werte auf dem ESP32-Display  
verbesserte Auswahl des alten ProgGenerator Dateinamens beim Update auf neue Beta  
bei "Import aus altem Programm" wird die Arduino Typ Einstellung beibehalten  
Beschleunigung der ESP32 Startzeit  
SI\_LocalVar zu vordefinierten Systemvariablen hinzugefügt  
Ersatz von "\$" in Makroargumenten hinzugefügt siehe <https://www.stummiforum.de/t165060f7-MobaLedLib-LEDs-Servos-Sound.html#msg2643729>  
erzwingen einen Rebuild, wenn die ALT-Taste gedrückt wird  
leere Compiler-Cache, wenn der letzte ATmega-Build fehlgeschlagen ist  
siehe <https://www.stummiforum.de/t222466f195-MobaLedLib-Arduino-Upload-geht-nicht.html#msg2649211>  
aktualisiere rp2040-Board-Version auf 4.4.0  
Verbesserung des gesamten PlatformIO-Build-Prozesses  
Unterstützung von PlatformIO-Build für rp2040  
experimentelle Unterstützung der ESP32-Board-Version 2.0.17

Optionale Anzeige der MobaLedLib Zeit/LDR: [ESP32 Erweiterungen](#)

## Fehlerbehebungen

ATmega: Fehler mit falscher Sendepuffergröße für SEND\_INPUTS behoben  
Erkennung der ersten RGB\_Heartbeat-Zeile beim Import behoben  
"ESP32 und Hieroglyphen für MLL-Zeit" siehe To-Dos#21  
Unnötiger Speicherverbrauch durch Erweiterungen siehe To-Dos#20  
Fehlerbehandlung funktionierte nicht beim Download von Bibliotheken/Boards  
Upgrade von PlatformIO auf 6.9.0 um Build-Problem mit DMX512 zu beheben  
Problem mit StartLedNumber-Update auf unsichtbaren Blättern behoben  
Verbesserung der Start-LED-Berechnung in Include-Blättern  
falsche PlatformIO Beta-Warnung entfernt

Problem mit falschem MP3\_Command-Wert MP3\_STOP behoben, der MP3\_ADVERT\_STOP sein sollte  
 Problem mit PatternConfigurator-Icons behoben

## Änderungen

Selectrix-Pin-Definition auf SX\_SIGNAL\_PIN 13 und SX\_CLOCK\_PIN 4 geändert, um sowohl den ESP32-Adapter als auch das neue ESP32-Mainboard zu unterstützen  
 bei Verwendung von PlatformIO wird das Kompilierfenster bei Build-Fehlern nicht rot, um die farbige Fehlerausgabe beizubehalten  
 Versions-String-Schema geändert, um den Plattformnamen anzugeben

## Ver.: 3.3.2 19.12.23:

### Features

LNNet support for Arduino platform (main board >= 1.8.0 mandatory)  
 New macros: Set\_LEDNr, CopyNLEDs, Include, SingleLedSignal, SingleLedSignalEx  
 New icons  
 Support of input type "feedback", process CAN messages from ATTiny\_CAN\_GBM module  
 Store\_Status: support SwitchB, extend max. InCnt to 63  
 Support of DCC/CAN/LNNet momentary buttons (GEN\_BUTTON\_RELEASE mode are now settable in config sheet)  
 Experimental support of MobaLedLib stored in OneDrive folder  
 ATmega328PB support

### Enhancements

fix SwitchC issue with ESP32  
 fix issue that AVR build fails caused by vbcr in LEDs\_Autoprogram.h -> replace by vbcr\n  
 add missing macros InCh\_to\_LocalVar, InCh\_to\_LocalVar1 and Bin\_InCh\_to\_TmpVar1 to sheet Lib\_Macros  
 fix #10763: include marco counts LEDNr wrong  
 fix #10159: wrong line endings in fastbuild.cmd  
 ensure that included sheet uses same protocol as the main sheet

## Ver.: 3.2.1 09.08.22:

### Features

LED simulator  
 Selectrix support for ESP32  
 ColorPicker for Const Makro  
 Macro RGB\_Heartbeat\_Color  
 MobaLedLib Extensions support  
 "Virtual pin" feature  
 Retrigger support for patterns using GOTO mode

## DCC signal state signaled with ESP32 onboard LED

### Enhancements

- fix CAN baudrate issue with ESP32 V1 chips
- fix ESP32 build issue with non-default Arduino home directory
- fix issue in case Arduino home directory doesn't exist
- add missing macros InCh\_toTmpVar1 and BinCh\_toTmpVar1
- fix RandMux bug on ESP32
- fix Set\_ColTab bug on ESP32
- fix issue that Analog Pattern flags were ignored in Goto mode

### Ver.: 3.1.0 28.11.21:

### Features

- New TreeView based macro selection dialog with grouping and icons
- Add feature to control sound modules attached to the mainboard
- Add ServoMP3 feature - sound modules are attached to the servo board and controlled via serial line
- Add feature Pin\_Alias
- Add #define SWITCH\_DAMPING\_FACT to the Lib\_Macros
- Add possibility to scroll with the mouse in the description box of the TreeView dialog
- UserForm\_Other is resizable now

### Enhancements

- Show please wait screen when loading/updating the tree view
- The macro filter is also activated by typing letters in the list box
- Remove NmraDCC library installation workaround as version 2.0.10 fixes the ESP32, no more need to install from private repository
- Add sheet Platform\_Parameters containing all platform dependent settings
- Add Raspberry Pico Mainboard Leds, Mainboard Buttons, PushButtons
- Add experimental Raspberry Pico support
- Disable Autodetect when changing CPU type to ESP32 or Pico
- Change width of Form and new pos for Buttons at Form Other
- Splited the installation of several board packages into separate calls because otherwise the installation fails.
- Update the filter if a row is selected which already contains a macro to show the macro
- Improved the scrolling in the userform others
- Added a scroll bar to description in the TreeView dialog
- As ESP32 is no longer experimental set library U8g2 to mandatory
- Motorola II protocol for interface Arduino
- Allow relative path in ImageBoxAdder
- Reload all Icons when running GenReleaseVersion
- Support of BETA update directly from github
- Add the build date as a tooltip to the version information cell
- Add Excel version check

## Add library external command processing

### Bugfixes

Solved problem if the user has no additional board installed. In this case the "packages" directory has to be created in  
C:\Users<Name>\AppData\Local\Arduino15\  
Adapted the cmd files to work with 32 bit windows (Arduino is installed to "Program Files" and not to "Program Files (x86)")  
Corrected start focus and tab index of the Userform\_Other (Prior sometimes the 'Abort' button had the focus)  
Added "On Error Resume Next" to prevent crash with Office 365 in  
EnableDisableAllButtons()  
Replaced ".Add2" by ".Add" in Sort\_by\_Column because this new function is not supported by Office 365  
(Hopefully) prevent formatting the "Start LEDNr" as date by setting the NumberFormat to "General" when importing files.  
Fixed bug when loading the Excel File. The Pattern Configurator icons in the lines have been deleted  
Fix issue on Scroll in UserForm\_Other (focus lost)  
Prevent crash when the TreeView is closed with the 'x' button and reopened again  
Fix some typos in start page text  
Fix issue that load of old configuration was not started while a Beta update  
Fix issue #6894 BetaUpdate won't run with UserDir containing blank chars  
Fix LED\_to\_var - Led\_Offs to 31. See #6899  
Fix VB6 FindWindow Issue #6914  
Fix another VB6 Issue in Userform\_RunProgram  
Workaround for Excel 2007 isNumericBug  
Add missing EspSoftwareSerial library  
Fix Platform\_Parameters: with AM328 SPI Pins are only usable if no CAN module is in use

Ver.: 3.0.0 21.04.21:

Release support of ESP32 and up to 49152 single LEDs  
Support controlling DMX512 devices (up to 300 per channel)  
Bootloader Update and "New Bootloader full Mem"  
Up to nine independent LED channels  
Search function in macro selection  
TinyUniProg improvements  
Fixed problem scaling the house dialog for small screens (1366x768)  
Added seven new railway signal macros  
Ability to switch the LED portocol to WS2811 where the Red and Green channel are swapped  
Faster method to download and execute the color test program  
Use only one column for start led number display, may be configured on config page  
Add Macro #define COMMANDS\_DEBUG traces DCC messages  
Corrected the "fire" macro

Fix issue where directory names contain blanks  
Fix DCC offset problem when sending simulated DCC commands  
Speed up ResetTestButtons function  
And many, many more features and bugfixes, ... Let yourself be surprised!

Ver.: 2.1.1 14.11.20:

Removed the old Debug functions to simulate DCC commands  
TEST\_PUSH\_BUTTONS(), TEST\_TOGGLE\_BUTTONS() and TEST\_BUTTONS\_INCH()  
Experimental support for ESP32 added

Ver.: 2.1.0 02.11.20:

8% additional configuration memory by changing the reserved size of the fast bootloader from 2K to 512 byte  
Corrected the support for 64 time entries in the pattern\_Configurator. Unfortunately the prior changes have been made in a wrong worksheet and not in the Main sheet => They have been lost when the release version was build ;-(  
Corrected the importing of data from old Prog\_Generator  
Define at least 20 LEDs to be able to test them with the color test program  
Disabling the Event which is called when Enter is pressed when the workbook is closed. Hopefully this solves the problem that the Pattern\_Config is opened sometimes unintentionally  
Prevent crash if a wrong formula is entered like "-Test"  
Updating the arduino type in the "Options" dialog if the USB Port detection is started  
Charlie\_Buttons and Charlie\_Binary control 3 channels (RGB) instead of 2 (GB)  
Corrected the maximal time for the Blinker function by adding PF\_SLOW  
Disable the mouse scroll function for Office <= 2007 because here excel generates a crash

Ver.: 2.0.0 18.10.20:

Support for the new buffer gate on mainboard version 1.7 added

Ver.: 1.9.6 K 16.10.20:

Don't gray out the other rooms in the House/Gaslight dialog. Instead the important buttons use bold font  
User interface:  
Corrected the entering of selextrix data and the position of the USB simulation buttons  
Corrected the "Dialog" Button. The "Type selection" dialog was called twice in DCC mode.  
Disabled the "ENABLE\_CRITICAL\_EVENTS\_WB" to hopefully get rid of the crash which is generated if lines are deleted in the Pattern\_Configurator. By disabling this events the LED numbers are not updated if lines are hidden or

shown again.

Corrected the NEON\_DEF2D entry. Channel 1 was used instead of channel 2. This caused the occupation of a new RGB channel if NEON\_DEF1D and NEON\_DEF2D was used in a sequence

Improve the detection probability in "DetectArduino()". Prior the arduino was not always detected at the first trial.

Corrected the error detection for the ATtiny upload

Increased the number of Time entries from 30 to 64 and corrected the entries 24-30

New Charliplexing software which supports the 64 time channels

Ver.: 1.9.6 J 11.10.20:

The Mainboard\_LED function also accepts the arduino pin numbers D2-D5, D7-D13 and A0-A5

Ver.: 1.9.6 I 10.10.20:

Possibility added to ignore problems with the baud rate detection

Ver.: 1.9.6 H 10.10.20:

Improved the loading of MLL\_pgf files

Ver.: 1.9.6 G 10.10.20:

Added additional pins to the Mainboard\_LED function. Now nearly every pin could be used as LED pin (New channels 0, 5-16).

New method "LED\_to\_Var()" to set variables controlled by the LED values.

Improved the "Mainboard\_Hardware\_Test.MLL\_pgf". Now the mainboard could be tested without the PushButton4017 board.

Ver.: 1.9.6 F 07.10.20:

Programming of the fast bootloader added

Jürgen has added "Update\_Start\_LedNr" to the end of Read\_PGF\_from\_String\_V1\_0() because otherwise NUM\_LEDS is 0

New function "Mainboard\_LED(MB\_LED, InCh)" which could be used to use the mainboard LEDs as status LEDs

Added macro "WeldingCont()" which continuously flickers while the input is active.

Don't use the Heartbeat LED at PIN A3 if the CAN bus is used AND the SwitchB or SwitchC is used.

Generate an error message if Mainboard\_LED(4..) is used together with SwitchB or SwitchC.

Created an example file to test the MobaLedLib main board:

"Mainboard\_Hardware\_Test.MLL\_pgf" This file is stored in the directory "Prog\_Generator\_Examples" which is copied to the library destination at startup.

Added DayAndNightTimer which could be used with then Scheduler function

Ver.: 1.9.6 E 07.08.20?:

Deleted >100000 columns in the DCC sheet which slowed down the loading of .MLL\_pfg files  
Added a status display when loading the .MLL\_pfg files  
Don't read/save the "Examples sheet from/to .MLL\_pfg file"

Ver.: 1.9.6 D 04.08.20:

Limit the maximal servo value to 210 (Old 220) to avoid problems with measurement errors at 2kHz  
Additional Delay and check if the old directory has been deleted when updating the Beta version

Ver.: 1.9.6 C 28.07.20:

Corrected Servo programming (Flash was erased when setting the Reset pin as output)  
Corrected decimal separator problem when loading pattern examples  
New macros for servo with SMD WS2811 Herz\_BiRelais\_V1...

Ver.: 1.9.6 22.07.20:

Preview LEDs in the Pattern\_Configurator could be moved on top of a picture or under a transparent picture (by Misha)  
Speedup building and uploading of the Arduino program 10 sec. instead of 23 sec. (by Juergen)

Ver.: 1.9.5 15.06.20:

The versions 1.0.2 - 1.9.4 are not released test versions.  
Since there are a huge number of changes since version 1.0.1 all details are described here:  
<https://www.stummiforum.de/viewtopic.php?f=7&t=165060&sd=a&start=2410>

Ver.: 1.9.4 14.06.20:

Added Misha's Multiplexer to the Prog\_Generator

Ver.: 1.0.7 07.06.20:

Corrected the LED Animation, the "Start LedNr" in combination with "HerzHerz\_BiRelais()"

Ver.: 1.0.6 06.06.20:

Added Mishas LED Preview and Mux functions to the Pattern\_Configurator  
Using Harold's new pyProgGen\_MobaLedLib  
Using the new USB port detection also in the Pattern\_Configurator

Ver.: 1.0.5 31.05.20:

Automatically install all libraries  
Using the Sketchbook path for the working directory

Ver.: 1.0.4 23.05.20:

Automatically detecting COM port the Arduino is connected to  
Improved the HV\_Reset() in the Tiny\_UniProg according to Juergens tipp  
New macros InCh\_to\_TmpVar1() and Bin\_InCh\_to\_TmpVar1() which start with state 1 instead of 0  
New macros for Servos and Herzstueck polarisation  
New Push Button macros which read DCC and hardware buttons  
Added macros Andreaskreuz with lamp test

Ver.: 1.0.3 01.05.20:

Test of additional LED channels and EEPROM Storage

Ver.: 1.0.2 18.04.20:

Test of switch and variables

Ver.: 1.0.1 17.01.20:

Corrected the upload in version 1.0.0 because some files have not been update ;-(

Ver.: 1.0.0 16.01.20:

New Charlieplexing program for the Servo\_LED module which could be used to drive Viessmann and other "Multiplexed" light signals  
Configuration upload from the Pattern\_Configurator over the LEDs "Bus" to the Charlieplexing module. The module is configured on the railway layout.  
Direct programming support for the Tiny\_UniProg module from excel (One click to install the software)  
Flashing of the software for the Charlieplexing Module from excel (One click to install the software)  
Enhanced Color Test program with a lot of new features  
New Black and White TV simulation (configurable)  
Simulation of defective neon lights added  
1001 of other small changes and improvements

Ver.: 0.9.3 08.12.19:

Engagement of Pattern\_Configurator and Program\_Generator => Easy exchange between the tools  
CheckColors function: Live view of the colors and brightens of the LEDs  
Existing lines could be edited in the Prog\_Generator

Ver.: 0.9.2 30.10.19:

Corrected the XPattern function (used in the Light signals)  
Corrected the Excel Programs

Ver.: 0.9.1 06.10.19:

Corrected the functions Flash(), RandWelding() and PushButton\_w\_LED\_0\_? in the Prog\_Generator  
Corrected single LEDs in the House() and GasLights() function.

Ver.: 0.9.0 27.09.19:

New Excel User interface to configure the LEDs  
Single LED functions for the House() macro  
Macros for Light signals, Construction lightning, ... added to the library

Ver.: 0.8.0 16.07.19:

Added new assembly document for the main PCB from Alf and Armin

Ver.: 0.7.9 09.07.19: Moved the Pattern\_Configurator to the „extras“ directory and updated the excel version.

Nice graphical display of the LED brightness and the Goto mode  
Reduced the size by extracting the examples  
Added a menu to save/load/delete example sheeds  
User interface is automatically switched to English (Example descriptions still German)

Ver.: 0.7.8 09.04.19:

Added examples  
00.Overview  
25.Analog\_Push\_Button

Ver.: 0.7.7 17.02.19:

Added Support for Sound modul JQ6500  
Corrected the random mode of the Counter() function  
Improved the serial input debug function  
Moved the Heartbeat function in own H-file"  
12.03.19:  
added ButtonNOff() macro

Ver.: 0.7.5 19.01.19:

Added examples:  
Burning house (Push button action with fire, smoke, sound and fire

truck). Shown in the video: <https://vimeo.com/311006857>  
DCC (Digital Command Control) decoder example with two Arduinos. Shown in the video: <https://vimeo.com/311996452>  
Added function Bin\_InCh\_to\_TmpVar() and RGB\_Heartbeat2()  
Added zip file with the RGB LED distribution PCBs  
Improved the fire algorithm  
Corrected the binary mode of the counter (CF\_BINARY)  
Corrected the initialization of the Pattern function if the Goto mode is used.  
Updated the English documentation to the same state like the German.  
Using the correct version of the Pattern\_Configurator.xlsb

Ver.: 0.7.0 20.12.18:

First released version

From:  
<https://wiki.mobaledlib.de/> - **MobaLedLib Wiki**

Permanent link:  
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