

Revision History:

Ver.: 3.5.0 05.11.25:

Features

```
support RP2040 Raspberry PICO platform
speed up application loading
allow led channel selection with multiplexer
LED2Var uses long addresses on ESP32/PICO platform
support German names in USB device detection
```

Bugfixes

```
fix export to file issue "Error... when saving an MLL file (.pgf)" see
https://forum.mobaledlib.de/viewtopic.php?t=134
fix rebuild failed - Tastendruck erforderlich see
https://forum.mobaledlib.de/viewtopic.php?t=182
fix Error message when creating a pushbutton function see
https://forum.mobaledlib.de/viewtopic.php?t=193
fix Error message for random commands see
https://forum.mobaledlib.de/viewtopic.php?t=161
fix issue that simulator is not starting
```

Changes

```
mail address changed to forum
```

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#msg2643729
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

LNet 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/LNet momentary buttons (GEN_BUTTON_RELEASE mode are now setable 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_Autoprog.h -> replace by vbcrLf
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 DDC 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 Harolds 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

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