



## MEGAApplicationTool MAT

Change Log

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## Prologue

This document contains the change log for the application software MEGAApplicationTool (MAT)

In the change log all information about the software releases, which are delivered to the customer, included. Every main chapter will explain one software releases, marked through the topic name, which is the same as the software release number.

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If there are any questions on this document, the device or the MegaApplicationTool (MAT) please contact the support of *MEGA-Line RACING ELECTRONIC GmbH*.

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## Document history

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v009	Chapter 23 v1_5_8437_27799 written	2023-02-03	Stefan Li
v010	Chapter 24 v1_6_8536_39352 written	2023-05-16	Christian Schmidt



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## Index of abbreviations

CCP .....	CAN Communication Protocol
CPU .....	Central Processing Unit
GPU .....	Graphic Processor Units
GUI .....	Graphic User Interface
LMS .....	License Management System
LRF .....	License Request File
MAT .....	MEGAApplicationTool
MSG .....	MEGA-Line Software Group
PDF .....	Portable Document Format
PPI .....	Pixels per Inch
RAM .....	Random Memory Access
ToU .....	Terms of Use, Terms of Use
UCP .....	USB Communication Protocol
USB .....	Universal Serial Bus



## **1. Version v1\_0\_1\_1**

The software version v1\_0\_1\_1 was created on 2018-04-04.

### **1.1. Open new Project**

The functionality to open/create a new empty project was included in this software version. An icon in the main form of the tool was integrated to activate the function

### **1.2. Open existing Project**

The functionality to open an existing project was implemented in this version. An icon in the main form of the tool was integrated to activate the function.

### **1.3. Save existing Project**

The user can save the project under its specified name to update the changes which were made in the workbook. The project file will be updated with the new changes. An icon in the main form of the tool was integrated to activate the function.

### **1.4. Create new Workbook**

It is possible to create a new workbook with this function, which will be integrated in the current project. An icon in the main form of the tool was integrated to activate the function.

### **1.5. Create new Worksheet**

With this functionality the user can create a new worksheet which will be integrated in the current project. An icon in the main form of the tool was integrated to activate the function.

### **1.6. CAN Communication Protocol**

The CAN Communication Protocol (CCP) was integrated to communicate with the devices of the company *MEGA-Line RACING ELECTRONIC GmbH*.

### **1.7. Connection to Device (Online/Offline)**

The tool will detect devices, which can communicate with the tool via CCP. When a device is detected it is possible to connect with the tool to change parameters and check signals. There is no device check at this software version



## 1.8. Dynamic Docking

The MAT Graphical User Interface (GUI) was designed in the way that every sub window can be placed in several areas of the tool. Therefore a dynamic docking possibility was programmed which will align the sub window when the user will put it to a defined place on the screen.

## 1.9. Tree View for Software Versions

The workbook explorer of the tool was designed with a defined tree view for the software versions which are integrated in the project. There are several commands in the tree view integrated which can be activated by a right click mouse request. The following commands can be activated via right click:

- Add device to project
- Import device data setting to project
- Add firmware to project
- Delete device from project or active window
- Delete firmware from current project
- Show active data setting

## 1.10. Drag and Drop for Importing Software Versions

It is possible to import a new software version to the project by using the Drag and Drop functionality from *Microsoft Windows*. The user can place a software version from a folder or the desktop directly into the current project, which is opened in the MAT, via Drag and Drop.

## 1.11. Label

In this software version the label for displaying signals and parameters in the worksheet was integrated.

## 1.12. One dimensional Vector Array

In this software version the one dimensional vector array for displaying one dimensional tables was integrated.

## 1.13. Group Box

The group box graphic element was designed to regroup several labels or other graphical elements of a worksheet together in a separated area which can be provided with a headline.

## 1.14. Label Value Format

The label can support ASCII and float arithmetic numbers formats to display these values.



### **1.15. Drag and Drop for Labels**

The Labels can be placed into the worksheet via Drag and Drop from the toolbox.

### **1.16. Hint Function for Labels**

The hint functionality for labels can be activated by performing a right click event on the label and select the “Help” category in the pop-up menu. The help function will open a several tool, when supported for this label and this software version, which includes information about the label and the source of the signal in the software.

### **1.17. Log Window**

The Log Window was integrated in the software in this version to record important information about the software handling and the events, which are happening while the tool is running.

### **1.18. Update of Firmware Version**

The algorithm to update the firmware version of an active device via CCP was integrated.

### **1.19. Work to Reference Command**

The procedure to copy data settings from the Random Access Memory (RAM) to the Flash page of the device was implemented and can be activated by clicking the icon in the main menu of the tool.

### **1.20. Reference to Work Command**

The procedure to copy date settings from the Flash page to the RAM of the device was implemented and can be activated by clicking the icon in the main menu of the tool.

## **2. Version v1\_0\_1\_2**

The software version v1\_0\_1\_2 was created on 2018-04-19.

### **2.1. Include Option Windows**

Option Windows for the function workbook explorer, properties, labels and log file were integrated that it is easier for the user to change several settings of these features.



## 2.2. Improvement Data Setting Handling

In this software version the handling for data settings was improved. Therefore an algorithm was designed, which will check maximum and minimum limits for value in the data setting so that the user cannot set invalid values for parameters.

## 2.3. Extension Data Setting Handling

It is possible to use data settings with different functions. The user can export a data setting to a matcex, which can be handled in *Microsoft Windows* and also can be imported in other project files of the MAT. The user can check data settings directly in the MAT with the show function which will display the complete data settings and all its values in a separate tool window and it is possible to copy data settings directly to an active device. Furthermore it is possible to compare data settings with others to check the differences.

## 2.4. Export Log File

The tool can export the information of the log window into a text file which will be placed to the path C:\Users\All Users\Megaline\MegaApplicationTool\MegaLog\....

# 3. Version v1\_0\_1\_3

The software version v1\_0\_1\_3 was created on 2018-05-09.

## 3.1. Extension Data Setting Handling

In this version the function to edit and save/export a data setting directly from the workbook explore via a right-click command was integrated.

## 3.2. Auto Detect for Connection to Device

To improve the connection to devices the Auto Detect function was designed which will automatically detect a device, which fits to the imported software tree, and will start to connect to this device.

## 3.3. Cut, Copy and Paste Functions for Label Movement in Worksheet

The functions to cut, copy and/or paste a label in the worksheet were integrated to get a better handling to move labels.



### 3.4. Selection of Workbook Components

The possibility to select more than one component in the worksheet was developed to improve the way of designed worksheets by marking groups of labels and other components to copy and paste them or move the group to another place in the worksheet or workbook.

### 3.5. Import/Export Worksheet/Workbook

It is possible to export several worksheets or workbooks from a project, save them in the *Microsoft Windows* file format and import them back into another project.

### 3.6. Integration Textbox Element for Toolbox

A textbox element was created which can be placed like a label on every worksheet. The user can write own comments in the textbox with different fonts, styles or colors.

## 4. Version v1\_0\_1\_4

The software version v1\_0\_1\_4 was created on 2018-06-25.

### 4.1. Bugfix Log Window

The Log Window could not be placed back into Main Form by docking. The issue was fixed in this version.

### 4.2. Extension Log File

The export of the log file can be placed in every path and directory of the customer computer now.

### 4.3. Extension Data Setting Handling

In this version the functions for uploading data settings from the device to the MAT and downloading data settings from the MAT to the device are integrated.

### 4.4. Multidimensional CCP

A new type of CCP was designed to work together with more than one device at the same time. The multidimensional CCP can communicate with different devices in separate workbooks. With this feature the user can communicate with more than one *MEGA-Line* devices at the same time.



#### **4.5. Multidimensional Workbook Explorer**

The workbook explorer was designed to work with more than workbook at the same time to integrate different types of software versions in several trees to communicate with different devices at the same time. Every workbook in the explorer can be equipped with individual worksheets and software version trees. Therefore all functions which were integrated in a single workbook were integrated in the multidimensional workbook explorer.

#### **4.6. Extension Update of Firmware Version**

After update is done the user has to select a data setting which will be placed on the device as an initial setting for startup. The device will stay in Flashloader until an initial setting is selected by the user.

#### **4.7. Extension Textbox Element**

The full support for the textbox element was built in this version. It is now possible to cut, copy and/or paste a textbox element in the worksheet/workbook.

### **5. Version v1\_0\_1\_5**

The software version v1\_0\_1\_5 was created on 2018-12-14.

#### **5.1. Optimization Multithreading**

For reducing the Central Processing Unit (CPU) load the multithreading of the MAT was optimized in this version. With the changes, which were made, the load from a standard PC (MEGA-Line internal testing unit) could be reduced from 30% to 6%. Values are not strict numbers for the user PC, depending on hardware and software of the user PC.

#### **5.2. Circular and Linear Gauge Elements for Toolbox**

In this software version circular and linear gauges were implemented which can be selected from the toolbox and placed on every worksheet via Drag and Drop. Also the possibility to set format, style, range and design for every gauge element via the properties GUIs is given now.

#### **5.3. Extension Value Format for Graphic Elements**

It is now possible to select a value format like "true/false" and others for every graphical element which can be placed in the worksheet.



## 5.4. Extension Menu Features

The features for import a data setting, export a data setting and copy a data setting to device was implemented in the menu of the MAT.

## 5.5. Refresh Firmware Version

The feature to refresh or reload a firmware version in the workbook was designed and integrated in this version.

## 5.6. Save Request Dialog on Tool Termination

When the MAT is terminated/closed by the user and unsaved changes on the workbook are recognized the tool will open a pop-up to give the user the possibility to save the changes, close to tool without saving changes or abort the close command.

# 6. Version v1\_2\_1\_7

The software version v1\_2\_1\_7 was created on 2019-02-18.

## 6.1. USB Communication Protocol

The communication with device which work with Universal Serial Bus (USB) was programmed in the USB Communication Protocol (UCP) for the tool . This will work with the Bulk-Transfer which is designed for *Microsoft* Windows USB Devices, called WinUSBDevice. All Features, like programming a device or automatic reconnect with a device, which were programmed for CCP are also integrated now for UCP in the MAT.

## 6.2. Changing Table Identification in A2L

The identification for tables, which are placed at the topic of every table, is set to directly integration in the A2L.

## 6.3. Export Data Setting to PDF

It was a function designed to export a data setting from a device into a Portable Document Format (PDF) which can be stored to document the setting. For the activation of the function an icon in the main form of the tool was designed.



#### **6.4. Firmware Type Restriction for Workbook**

A restriction to one firmware type for every workbook was designed to reduce the confusion of the selection for automatic device detection selected by the user. It is possible to add every branch of this firmware type in the tree of the workbook explorer because all of them will work with the same communication protocol.

#### **6.5. CCP and UCP parallel Communication**

The communication in different workbooks at the same time was expanded that the tool can work with CCP and UCP at the same time in different workbooks.

#### **6.6. Decimal Configuration**

The decimal configuration was strictly set to “.” until now. In this version it was changed to the decimal configuration which is set in *Mircosoft* Windows.

#### **6.7. Graphical Tool Design**

The graphical design of the tool was remastered to a more customer friendly design. All icons were changed and remastered.

#### **6.8. Initialization Tool Procedure**

The procedure how the tool is initialized was changed to another style to avoid long waiting times for the customer or unexpected behavior of the graphical interface while starting.

#### **6.9. Pixels per Inch Graphic Interface**

The Pixels per Inch (PPI) interface was changed to optimize the tool for more types of screens and Graphic Processor Units (GPU).

### **7. Version 1\_3\_7052\_51707**

The software version v1\_3\_7052\_51707 was created on 2019-04-23.

#### **7.1. Extension Software Identification Number**

The software identification number for the tool was changed to a compiler-based system.



## 7.2. Extension Auto Detect for Connection to Device

The automatic detect function for the connection to devices was changed to check the current software version of the device and perform a comparison to the imported firmware versions of the workbook to check if connection, going online or updating the firmware is possible.

## 7.3. Extension Firmware Tree Layout

The layout of the firmware tree and the active device was changed to a simpler version where the customer can identify which version is placed on the device at the moment and which software version is used by the tool selected through the workbook explorer.

## 7.4. Active Device Window

The active device, which were placed in the workbook tree, will now be shown in a separate window, called active device window, which will show all necessary information of the device.

## 7.5. Extension Data Setting Handling

The handling of data setting was expanded with the function to drag and drop a data setting in format of a matcex file from the *Microsoft* Windows file system to the workbook tree of the workbook explorer.

# 8. Version v1\_3\_7053\_47359

The software version v1\_3\_7053\_47359 was created on 2019-04-24.

## 8.1. Bugfix Auto Detect for Connection to Device

The automatic detection for the connection to a device was not working when an update of the firmware version was the only option, which was possible. The issue was fixed in this version.

## 8.2. Encryption for Log File

The file format for the log information was changed to an encrypted file which can be exported from the MAT.

# 9. Version v1\_3\_7054\_56559

The software version v1\_3\_7054\_56559 was created on 2019-04-25.



### **9.1. Bugfix Auto Detect for Connection to Device**

The automatic detection for the connection to a device was not working correctly if a device was to offline mode and replaced by another device. Connection to the new device was possible without MAT performing any checks for firmware compatibility. The issue was fixed in this software version.

### **9.2. Termination Firmware Version**

If a firmware version should be deleted from the firmware tree and a active device is connected to the tool with this type of firmware the device will be set to offline mode.

## **10. Version v1\_4\_7067\_52066**

The software version v1\_4\_7067\_52066 was created on 2019-05-08.

### **10.1. Device Data Setting History**

The function device data setting history was implemented to give the user the possibility to store data settings from a device in a separated tree which will document the setting with date, time and place where it has been integrated in the history.

The device data setting history is placed in an own window which is docked on the main form of the MAT and will be part of the project file. The history can be exported in a file which can be imported in another project.

### **10.2. Bugfix Auto Detect for Connection to Device**

After a device set to offline, which was connected to the workbook before, there was no more responding of the software. The issue was fixed in this version.

## **11. Version v1\_4\_7073\_43953**

The software version v1\_4\_7073\_43953 was created on 2019-05-14.

### **11.1. Extension CCP/UCP Life Message Check**

The CCP/UCP life message check was changed in its architecture that the check is only activated after a device is identified from the automatic identification function.



## 11.2. Firmware Update Algorithm for PIC microcontrollers

In this software version an own firmware update algorithm for the *MEGA-Line* devices, which are using a *MICROCHIP* PIC microcontroller, was developed and implemented. These types of microcontrollers will not work with the standard firmware update algorithm.

## 12. Version v1\_4\_7076\_31633

The software version v1\_4\_7076\_31633 was created on 2019-05-17.

### 12.1. Bugfix Save Request Dialog on Tool Termination

The save request dialog will close the tool even when the user will select the abort option of the dialog. The issue is fixed in this version.

### 12.2. Administrator Rights

It is not longer necessary to use the tool in administrator mode or with administrator rights. The internal folder architecture has been changed to avoid the need of administrator rights.

### 12.3. Bugfix Data Setting Handling

The edit and export function of the data setting handling will not work when there is no standard data setting included in the firmware. The issue is fixed in this version.

### 12.4. Bugfix Firmware Update

MAT firmware update algorithm stucked when the tool was minimized while a firmware update was running. The issue is fixed in this version.

## 13. Version v1\_4\_7082\_58146

The software version v1\_4\_7082\_58146 was created on 2019-05-23

### 13.1. Extension Firmware Update

Until this version the firmware update will abort the procedure if there is an error while programming. With this version the procedure is changed that the algorithm will repeat the section, where the bug has happened, three times and will only abort if it is not working after three tries.



## 13.2. Extension Workbook Tree

The functionality for adding a new device and deleting a device were added to the workbook tree pop-up menu.

## 14. Version v1\_4\_7095\_49979

The software version v1\_4\_7095\_49979 was created on 2019-06-05.

### 14.1. X-Y Chart

The chart function was designed to make signals from a device visible in a X-Y-Graph. Therefore a new icon was designed and added to the toolbox explorer where the user can place the chart to a worksheet.

There are two types for charts for the moment.

- The user can select one signal from the active device which will be shown in the chart on the Y-axes and the timeline will be placed on the X-axes of the chart. In this type of chart it is possible to measure a signal of the device for a specified time.
- The second style of a chart is that the user can place a one dimensional vector array on the X-Axes and another one on the Y-Axes to see the graph. It is important that both arrays will have the same count of elements.

The chart can be placed in the project like all other elements of the toolbox and can be handled like all other elements of the toolbox.

### 14.2. Toolbox Elements disabled

Several toolbox elements and features were disabled until the prototype phase of these elements are done.

### 14.3. Device Datasetting History disabled

The Device Datasetting History was disabled until the prototype phase of this function is done.

### 14.4. Graphic Interface Label List

The icons for the label list were changed to a new graphic interface which fits better to the design of the complete tool.

## 15. Version v1\_4\_7180\_51933

The software version v1\_4\_7180\_51933 was created on 2019-08-29.



### 15.1. Bugfix Label

The label value for signed value was not displayed in the correct quantization when changing to negative values. The raw values were transmitted correctly to the device. The issue was fixed in this version.

### 15.2. Bugfix 1-D Vector Array

The 1-D vector array values for signed values were not displayed in the correct quantization when changing to negative values. The raw values were transmitted correctly to the device. The issue was fixed in this version.

## 16. Version v1\_4\_7327\_38983

The software version v1\_4\_7327\_38983 was created on 2020-01-23.

### 16.1. Device Datasetting History released

The Device Datasetting History was released and can be used to store datasettings from the active device in the history. The GUI for the history was placed in the Tabsheet "Device Datasetting History" as a child tab of the Labels GUI element. By performing a left mouse click on the Tabsheet the user can activate the feature in the GUI.

### 16.2. Device Datasetting History – Datasetting Selection

In this version it is possible to import datasettings from the active device to the history. It is not supported to import other settings in the history.

### 16.3. Extension Datasetting PDF Export

The PDF Export for datasettings was changed in its layout. The pictures for MSG and *MEGA-Line RACING ELECTRONIC GmbH* were set to a higher resolution.

### 16.4. Military Standard Encryption for MAT Filesystem

The MAT Filesystem was set to the encryption standard which is used to encrypt military files and documents to bring highest possible safety to all customer projects, avoiding misbehaviour through third parties.



## 16.5. License Management System (LMS) – Main Information

In this software version the License Management System was integrated, which allows the User to work with different features specified through the License Class.

It is possible to check which License Class is activated by clicking the “License” button in the Tabsheet “Extras”. After pressing the button a module window will open which shows the two main functions of the LMS. In the left area, named “Current License State” the system will give the user all information about its current License, which is used by the MAT. If the MAT cannot find any License File it will work in “Basic” version.

In the right area it is possible for the user to produce a License Request File. With this type of file the user can request a upgrade for its MAT version to work with more features.

For further information about the LMS and how to request a license file the user should contact the support of *MEGA-Line RACING ELECTRONIC GmbH*.

Figure 1 : License Management System GUI

## 16.6. LMS GUI

In this version the LMS GUI was changed in several topics

- Font of all strings set to Times New Roman
- Changing background colour of all Panels to MSG standard colours
- Integration of Privacy Statement in LRF area



## 16.7. Extension Toolbox Elements Worksheet Handling

The elements of every worksheet, which can be used by the customer, was synchronized to the rights of its license.

## 16.8. Flash Firmware Request Check

The MAT will ask for a confirmation before starting a firmware update when the „Flash Firmware“ button is pressed. With this confirmation the customer gets the possibility to cancel the firmware update request. This will avoid unintentional activation of a firmware update.

## 16.9. Flash Firmware Datasetting Request Check

It is necessary to upload a datasetting on the device directly after a firmware update is done. To avoid issues with that feature the tool will check if there is a datasetting in the firmware integrated before the firmware update is started. If there is no datasetting in the firmware integrated the MAT will not allow to update the selected firmware version.

## 16.10. Bugfix Thread Destructor on Tool Close Request

In earlier versions of the MAT there was the possibility that a Thread will stay active in the *Microsoft* Kernel system which will lead to issues and instability when using the MAT again. In this version the issue is fixed and all Threads will be stopped and deleted by the Destructor when closing the tool.

## 16.11. Save Project Request on Tool Close Request

The dialog for saving a changed project before closing the tool was redesigned and integrated in the *MEGA-Line* messages library. The function for the dialog is the same how it is in older versions.

## 16.12. Integration of *MEGA-Line* Messages Library for Pop-Ups

With this software version the MAT was equipped with the *MEGA-Line* Messages Library to show message boxes and dialogs in the MSG format.

## 16.13. Separation Dialog Request for Saving Project or Datasetting

A separate dialog was designed to perform the request of the datasetting export, which is different from the dialog of saving a project file to give the user more flexibility in using the *Microsoft* file system with different paths.



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## 16.14. Separation Dialog Request for Opening Project or Datasetting

A separate dialog was designed to perform the request of the datasetting import, which is different from the dialog of opening a project file to give the user more flexibility in using the *Microsoft* file system with different paths.

## 17. Version v1\_4\_7338\_45160

The software version v1\_4\_7338\_45160 was created on 2020-02-03.

### 17.1. Changes on Standard Label Frames

The colour of the Edit Label was changed to the standard *MEGA-Line* colour.

### 17.2. Bugfix Standard Label Frames

A bugfix for the visualization of signed values in standard labels was done. The “-“ sign was not shown correctly.

### 17.3. Style Changes of Font

The complete font of the whole project was set to “Tahoma”. All strings and components will be shown now in this type.

### 17.4. Privacy Statement of LMS License Request

The privacy statement of the LMS was changed to the current version which is used from *MEGA-Line*.

### 17.5. Changing Text for LMS License Panel

The Texts, which are shown in the LMS license state panel, were changed to a politically correct version.

### 17.6. Changing *MEGA-Line* Messages Library

Every message and pop-up, which will be shown with the *MEGA-Line* Messages Library, will check the current position of the parent tool on the screen and will calculate the correct position to be shown in the middle of the parent tool.



## **17.7. Update- and Program-Algorithm for IAS added**

It is now possible to work completely with the IAS in the MAT and perform Software Updates or datasetting changes.

## **17.8. Firmware Check for \*.devdt-File**

Every firmware, which is imported in the tool, will be checked for a \*.devdt-File. If there is no such file it will be not possible to work with this firmware.

## **18. Version v1\_4\_7339\_38844**

The software version v1\_4\_7339\_38844 was created on 2020-02-04.

### **18.1. Changing LMS**

The LMS will check for an activated Ethernet module for License File verification. If there is no active ethernet module the LMS will use another algorithm License File verification. For Requesting a license a active Ethernet module is required.

## **19. Version v1\_4\_7404\_34456**

The software version v1\_4\_7404\_34456 was created on 2020-04-09.

### **19.1. Going-Online Procedure Changes**

It is now possible to go Online with Device Classes and Types without checking for example the Customer Number or the Project Number. The types of numbers which must be check for Going Online are specified in the Firmware Version of the Device. Numbers which should not be checked will be set to zero.

### **19.2. Firmware Update Procedure Changes**

The Firmware Update Procedure was changed so that Device Classes and Types without checking for example the Customer Number or the Project Number can be updated. The tool will only check the numbers which are specified in the Firmware Version of the Device. Numbers which should not be checked will be set to zero.



### 19.3. Copy-Datasetting to Device Procedure Changes

The Copy-Datasetting to Device Procedure was changed so that Device Classes and Types without checking for example the Customer Number or the Project Number can be updated with the selected Datasetting if these conditions are specified in the Firmware Version of the Device. Numbers which should not be checked in the Datasetting will be ignored.

### 19.4. Save Project Request Changes

Adding a Datasetting from an active Device to the Workbook-Explorer will now lead into a Save Project Request when closing the Project or the Tool.

### 19.5. Changing *MEGA-Line* Messages Library

Every Pop-Up and Message, which are shown from the *MEGA-Line* Message Library, is now equipped with Icons which will show the user the meaning of the Pop-Up.

### 19.6. Datasetting Device History Changes

It is now possible to check the Notes, which the user can made, when adding a Datasetting to the Datasetting Device History, in the Workbook Explorer of the Datasetting Device History for every Node.

## 20. Version v1\_4\_7425\_33611

The software version v1\_4\_7425\_33611 was compiled on 2020-04-30.

### 20.1. LMS Changes

The License Management System was changed. The algorithm to detect the Ethernet Adapter was changed to a standard *Microsoft* Windows method which can be used on every Windows system which is working with version of Windows like Windows 7 or higher.

The algorithm which was used before could cause strange system behaviour when generating a License Request File.

## 21. Version v1\_5\_7851\_34088

The software version v1\_5\_7851\_34088 was compiled on 2021-07-01.



### 21.1. Added ToU when starting MAT

After starting MAT the ToU opens directly after the MAT logo if the ToU of the respective version was not already accepted. The acceptance as well as the version are saved as a encrypted XML-file in the same directory as the executable.

The ToU window consists of a pdf viewer, which contains the ToU pdf included as a resource to the project, a checkbox to accept the ToU and 2 Buttons. The first button is the "Confirm" Button which can be pressed after checking the checkbox to accept the ToU and start MAT. The other button is the "Cancel" Button which closes the app.

After accepting the ToU an encrypted XML file is created which contain the information of the version number and if this version number was accepted. This information is checked when starting the MAT program.

If the Terms of Use will not be accepted, by pressing the "Cancel" Button, the MAT will be closed.

### 21.2. Bugfix Cutting File Extension

There was an error where when importing files the name was cut at the last point even if there is no file extension in the name. The code was changed by checking if the ".matcex" string is contained in the filename. If the string is found the file extension is cut out, else the filename is used as it is.

The same error occurred when saving the data setting from the device to windows or the device history, if the name of the saved file did not contain a file extension. This is now fixed too.

### 21.3. Changing Names of MAT Files in *Microsoft Windows File System*

In the previous version, when changing a name of a MAT file, like a data setting \*.matcex file, in the *Microsoft Windows File System* would end in an unacceptable file for the MAT. With this version the MAT will integrate the file in the MAT system with the changed name of the *Microsoft Windows File System*.

### 21.4. Changes to Chart Functionalities

Some changes were done to increase the usability and visual design of Charts in the MAT.

#### 21.4.1. Add Visualization of Arrays

It is now possible to drag arrays and parameter arrays into the axis of the chart. Provided that both arrays have the same length, the first array needs to be dragged from the label format into the y-axis first. The second array can then be dragged into the x-axis afterwards. Dragging an array into the y-axis of an existing chart resets the charts and adds the array label to the y-axis of the chart. For better visuality for array charts the line thickness was increased and the measurement points indicated with points.



The visualization of arrays now also shows up when device is offline or during “Driver failed active”.

#### **21.4.2. Set Maximum Size for Charts**

The maximum chart size is limited from 5000 pixel for height and width to 1200 pixel width and 600 pixel height.

#### **21.4.3. Bugfix Delete Error for Charts**

User with a prime license or higher are now eligible to delete Linear- /Circular Gauges and Charts.

#### **21.4.4. Added Notifications**

The following notifications were added:

- When inputting a size bigger than the maximum/smaller than the minimum width or height of a chart a notification is send and the size is set to the maximum/minimum value.
- When an array is dragged into the x-axis of the chart with a different array size than the array in the y-axis.
- When dragging an array into the x-axis while the y-axis does not have a label, the notification points out that the y-axis needs to be filled first.

### **21.5. Multiple Parameter value changes**

In the previous version when changing different parameter values at the same time, only the selected one was changed while all other were reset to its old value when pressing the ENTER key.

To address this problem all changed values are added into a StringList. When the ENTER key is pressed for all entries in the StringList are then looked up in the workbook and changed to inputted value in the workbook.

An error occurred where it was not possible to change the values of labels and arrays inside GroupBoxes and other container. This error is now fixed.

### **21.6. Bugfix Color-coding when changing multiple Parameter**

Changed, but not saved parameter are highlighted in blue, after pressing enter unaccepted values are changed to red, while accepted values switch back to white. After pressing enter again the parameter reset to their original value and switch back to white again. In previous versions of the MAT the color-coding for this behaviour was not strict regular in all situations. This bug is now fixed.



### 21.7. StringList changes

After changing the Worksheet the UpdateStringList is cleared. Since the TStringList-Find function did not work reliably, a function was written which compares the String of the changed parameter to each entry of the StringList.

### 21.8. HexFile Reading Error

Access error when setting devices to active. Fixed by also incrementing the elemental address at the same time the address is incremented.

### 21.9. Integration of 16 Bit CCP for uC with 16 Bit Memory Storages

In this version a 16 Bit CCP was integrated for microcontroller types which will work with an memory storage type of 16 Bit.

## 22. Version v1\_5\_8350\_41004

The software version v1\_5\_8350\_41004 was built on 2022-11-14.

### 22.1. Bugfix Signal Arrays Readout with 16 Bit CCP

When Reading Signal Arrays in 16bit CCP mode, the ECU Address was incremented by 2 per 16bit Word. Now the ECU Address is incremented by 1 in 16bit mode and 2 in 8bit mode.

### 22.2. BugFix Hex-Module 16bit

For TI C2000 Controller the HEXByte Array has to be initialised with 0xff instead of 0x00, also the check if a section has to be programmed has to be checked with the condition "!= 0xff".

ElementAddress for 16bit Controller should only be incremented for every second byte readout of Hex-File.

### 22.3. Adding Modal Windows to Taskbar

Previously after switching away from MAT sub windows can only be found by switching windows using ALT+Tab. Now normal sub windows are always on top of the main window and modal windows can be found in the taskbar.



## **22.4. Compare Loaded Datasetting with A2I when flashing Firmware**

Routine added where when flashing of the firmware the contents of datasetting and A2I are compared. If there are any parameter differences the process is stopped and an error message is given out where the missing variable is shown.

## **23. Version v1.5.8437.38674**

The software version v1.5.8437.38674 was built on 2023-02-03.

### **23.1. Loading Charts while loading project file**

When loading project files charts are now also loaded with their respective X and Y Axis. Problems where the chart content was not visible the first time a worksheet was opened has been solved by adding a routine where whenever a graph is being added from the project file to MAT the worksheet with the chart switches to the active page.

## **24. Version v1.6.8536.39352**

The software version v1.6.8536.39352 was built on 2023-05-16.

### **24.1. Adding Warning Message for Routine “Flash Firmware”**

If the routine to flash a firmware version to a connected device will fail, there will be a message, designed in a pop-up, which will inform the user about the error situation and will give the user a more detailed feedback than the notification window. The user must acknowledge this message by clicking the button in the message window.

### **24.2. Adding Warning Message for Routine “RAM to Flash”**

If the routine to flash a data setting to a connected device will fail, there will be a message, designed in a pop-up, which will inform the user about the error situation and will give the user a more detailed feedback than the notification window. The user must acknowledge this message by clicking the button in the message window.

### **24.3. Bugfix Chart Handling in MAT-Projects**

In this version a bugfix for the usage of charts in the project files was integrated. With this fix it is now possible to use several charts at the same time in a project file.



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## **24.4. Adding Program Interface for IMX Processors**

With this version it is now possible to communicate and flash IMX processors, which are used in ML devices, via USB interface.

## **24.5. Changing Program Interface for PIC Microcontrollers**

The programming interface for PIC microcontrollers was changed in that version. In earlier version the usage of the programming interface of PIC microcontrollers was coupled to defined device classed in the tool. Now, with this version, it is possible to use the interface for every device class.

## **24.6. Changing Data Setting Handling for Users**

The handling of data settings was changed for the users in this version. Making the handling and usage of data settings easier for users, the new version will only show parameters which can be changed and used by the user directly in every compare and change window of the tool.

## **24.7. Changing MAT-Project File Format**

Since this version the format for the MAT-Project file was changed. That means it is not possible to use MAT-Project files, which were stored or designed with this version of the tool in an older version (below v1.6.xxxx.xxxxx).