Release Notes

MDA V8.7.3

Copyright

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1. Introduction

Dear customer, in this document you will find the latest information about MDA V8.7.3.

1.1. Definitions and Abbreviations

Abbreviation	*Definition*
EHI	***E**TAS **H**elp Desk **I**nternational*
FNE	***F**LEX**n**et **E**nterprise*
KIR	***K**nown **I**ssue **R**eport – For severe Problem Reports which occur after a release, ETAS has introduced the Known Issue Report to inform affected customer immediately. The current Known Issues of former versions can be found on the ETAS website: http://www.etas.com/kir*
LiMa	***Li**cense **Ma**nager*
MDA	***M**easure **D**ata **A**nalyzer*
MDF	***M**easure **D**ata **F**ormat*
SP	***S**ervice **P**ack*

1.2. Privacy Disclaimer

Please note that personal data is processed when using MDA. As the controller, the purchaser undertakes to ensure the legal conformity of these processing activities in accordance with Art. 4 No. 7 of the General Data Protection Regulation (GDPR/EU). As the manufacturer, ETAS GmbH is not liable for any mishandling of this data.

Through the use of this product measurement data that may include person-related data can be processed. This measurement data, for example, include vehicle identification numbers (VIN) or vehicle number plates as well as GPS, video, audio or other measuring data. The exact data recorded in each case is determined by you when you configure your measuring system. Note that, in such cases, you are responsible for the legally compliant handling of the data in accordance with applicable national law.

Technical and organizational measures

This product does not itself encrypt the person-related data respectively data categories that it records. Ensure that the data recorded are secured by means of suitable technical or organizational measures in your IT system, e.g. by using classic anti-theft and access protection on the measurement hardware. Person-related data in log files can be deleted by tools in the operating system.

1.2.1. Data Categories

1. When using the ETAS License Manager in combination with user-based licenses, particularly the following person-related data and/or data categories that can be traced back to a specific individual is recorded for the purposes of license management:
   - User data: User ID
   - Communication Data: IP address
2. When using the ZipAndSend functionality for reporting product defects to us the logfiles and user settings file included in the zip file may contain file paths on your system, e.g. the full file path to a measurement file used in MDA. If you use personal data in your file paths (e.g. the user id) and you do not want this data to be sent you will have to remove it manually from the logfiles (via text editor, e.g., notepad) and from the user settings file (via database editor, e.g., DB Browser).
3. When using the GPS instrument, GPS data points are not sent to the external data provider but processed and visualized internally within the tool. Particularly the following person-related data and/or data categories which can be traced to a specific individual is used for the purpose of visualization:
4. Measurement Data: GPS data points, particularly the following person-related data and/or data categories that can be traced to a specific individual is send to the external map data provider (Omniscale GmbH) and used there for the purpose of providing the requested map data and for detecting and preventing malicious attacks on their infrastructure:
   - Communication Data: IP address

1.3. Conventions

The following typographical conventions are used in this document:

Choose **File → Open** Menu / Ribbon commands are shown in boldface.

1.4. User Documentation

For details about the installation, see Chapter 2.4 ‘Installation’ on page 8.

The user documentation for MDA V8 can be found in the installation folder on the PC, namely here: %Program Files%\ETAS\MDA8.x\Documentation.

After installation documents are accessible from MDA V8’s **Home Page** or via the **Help** ribbon.

It includes:

- **What’s New**
  Functionality newly introduced with MDA V8.7.x is described in the “MDA-V8.7.x-Whats-New.pdf” document. The slide set is cumulative, i.e. it includes separate sections for all Service Pack releases of MDA V8.7.
- **Manuals** and **Videos**
  Different documents are provided: MDA V8.7.x user documentation in PDF format, a brief overview of MDA V8 functionality (slides "MDA V8 Functionality Overview"), and several videos demonstrating MDA V8 functionalities.

- **Hot Keys**
  A comprehensive list of supported keyboard short-cuts is provided. The list can be sorted per column, by clicking onto the column header.

2. Product Definition

2.1. Functions at a Glance

MDA V8.x represents the new generation of ETAS' measure data analysis tool. It offers

- High performance and user-friendly operation concepts
- Support of different measure file formats, best performance can be achieved using MDF V4.x format version in combination with ASAM Standard indexing
- Support to read and interpret CAN / CAN FD bus trace files (BLF and ASC format) in combination with or without a bus description file (DBC or ARXML format) (add-on required)
- Applying a time offset on measure file level, or for individual signals
- Export of measure data and measure file format conversion, including customer-specific textual file formats, and equidistant re-sampling of time stamps
- Several instruments to visualize recorded data
  (e.g., oscilloscope, scatter plot, table, battery imbalance table, battery imbalance graph, battery imbalance histogram, basic statistical data, event list, GPS map, video (add-on required) …)
- Persistency of many settings selected by the user to reduce configuration efforts
- Flexible definition of rule sets for truncating signal display names selectively
- Support of calculations, namely by creation of so-called calculated signals, usage of predefined calculations, and usage of (ASCMO or Simulink) models by means of FMU files
- Interoperability with INCA V7.x (preferably V7.5.x):
  Opening of MDA with last recording from INCA Experiment, or during recording as so-called 'snap-shot' (MDF V4 only)
- Interoperability with EHANDBOOK-NAVIGATOR (preferably version V12.2 should be used):
  Open interactive documentation from signal level in MDA, and synchronized cursors
- Comfortable usage of configuration templates. i.e. using the same configuration in multiple instances with different measure files
- Export of a configuration and all files assigned to it in one zipped file (ZDX format)
- Export of oscilloscopes, scatter plots and tables into XDA format for import in older MDA versions
- Import of
  - compatible MDA V8 configurations whereby contents can be selected for import like assigned files, layers and instruments, calculations, or display name rule sets
  - INCA and MDA V7 configurations (*.xda files, and *.xcs file)
- Additional command line tools for GUI independent measure file handling:
  - mdfconvert.exe for conversion of formats, extraction of signals or time range, and resampling with equidistant time stamps
  - mdfcombine.exe for merging or appending of MDF files

2.2. General Description

2.2.1. System Prerequisites

The following minimum system prerequisites have to be met:

Required Hardware	2 GHz dual-core processor, 2 GB RAM *Graphics card with a resolution of 1280 x 1024, 1GB RAM, 32 bit color and DirectX 9*
Required Operating System	WINDOWS® 10 (64 bit) Version 1803 or higher WINDOWS® 10 Enterprise (64 bit) LTSC 2016 or higher WINDOWS® 11 WINDOWS® Server 2016 (64 bit) * WINDOWS® Server 2019 (64 bit) * WINDOWS® Server 2022 (64 bit) *
Required Free Disk Space	*5 GB (not including the size for user application data)*

The following system prerequisites are recommended:

Recommended Hardware	3,0 GHz quad Core processor or equivalent, 16 GB RAM *Graphics card with a resolution of 1280 x 1024, 1GB RAM, 32 bit color and DirectX 9*
Recomm. Operating System	*WINDOWS® 10 (64 bit) Version 1803 or higher*
Recomm. Free Disk Space	*>10 GB*

*Note: See also section 2.5 ‘Licensing’ on page 9.

2.2.2. Software Prerequisites

Administrator Privileges

To install the program, you need administrator privileges.

User Privileges

To work with the program, each user must have read and write access for the following folders and directories:

- %ProgramData%\ETAS\
- %LocalAppData%\ETAS\

2.2.3. Restrictions

Other or older versions of WINDOWS® operating system than mentioned in the System Prerequisites (see section 2.2.1 ‘System Prerequisites’ above) are not supported.

Installation is only possible on a native 64 bit operating system.

2.3. Delivery

MDA V8.7.3. is delivered with an installation routine, including MDA software, documentation, tools, utilities, and further information. All software documentation is available in the Portable Document Format (PDF), which requires Adobe® Reader®.

In the main folder of the unzipped installation package “MDA_8.7.n” the installation itself and the documentation are available. Do not change the folder structure!

There the file “setup.exe” is provided to install or update the MDA related software. The file “MDA-V8.7.n-Whats-New.pdf” describes new features implemented in the new MDA version.

In the sub-folder “Readme” additionally the Release Notes, the Installation Guide, and documentation about Open Source Software can be found.

2.3.1. Used 3rd Party Software

The 3rd Party Software used by MDA V8.7.x is listed in the folder:
\ReadMe \OpenSourceSoftware \... of the installer.

After installation of MDA the document can be found in the folder:
\Program Files \ETAS \MDA8.x \Documentation \OpenSourceSoftware \...

2.3.2. Used Components

Together with MDA V8.7.3 the following components are shipped and optionally installed:

- DirectX V9
- .Net-Runtime Environment 4.8
- ETASSHARED (IPManager only) 14
- ETAS License Manager (LiMa) V1.8.12
- MCD Core V1.6.0
- Visual C++ 2019 Redistributable(x64)

ETAS software products are sharing one installation of ETAS License Manager (LiMa). Accordingly, each product installation installs the LiMa software only if there is an older or no version available on the target computer. Another ETAS software product might update LiMa to a succeeding version.

2.4. Installation

MDA V8.7.x can be installed independently or using INCA Service Pack Installer.

Details for the installation are described in the document “MDA_InstallationGuide.pdf” which can be found in the \ReadMe \... folder of the installation package or can be downloaded from the ETAS Download Center.

2.4.1. Installation Hints

Installation of MDA V8.7 Service Pack 3 replaces any former Service Pack of MDA V8.7.x..
An existing installation of e.g. MDA V8.6.x is not changed.

Depending on the actually installed software and components a reboot might be required after installation but before MDA V8 can be started.

2.5. Licensing

MDA V8.7 is protected by means of an electronic licensing.

In order to run and use the product, a valid license file is required that needs to be installed via the ETAS License Manager. The license manager is opened during the installation and can also be started at a later point as an external program located in the ETAS program folder in the Start menu.

Independent from the Operating System, and the kind of used electronic license,
only one instance of MDA can run on one machine at a time.

The license file can be obtained through a self-service portal on the ETAS website by using the software entitlement you received during the order process, or it is provided by your tool coordinator.

For using MDA V8.7.x a valid MDA V8.7 license is required.
A valid license for INCA V7.5 includes usage of MDA V8.7.x.

Since MDA V8.6.0 in case of a machine-based license only an FNE license is accepted.

3. Changes

This chapter describes changes with respect to the previous version of MDA V8.

3.1. What's New

New functionality introduced with MDA V8.7.3 is documented in the "What's New" slide set. The slide set is cumulative, i.e. it includes What's New slides of all former MDA V8.7.x versions. It can be found in the installation folder on the PC, and is accessible in the application itself via the Home Page → or Help → What's New.

3.2. Compatibility to Earlier Releases

MDA V8.7.x supports to load and reuse configurations from any former (i.e. older) MDA version since V8.2.x or higher.
Configurations saved with MDA V8.7.x cannot be opened directly with a former MDA V8.x version.

To provide main contents of an MDA V8.7.x configuration for older MDA installations, the Export functionality can be used to create a file in the XDA format. It will include oscilloscopes, scatter plots and table instruments. Other instruments, calculated signals, time offsets and layers are not exported into the XDA file.

3.3. Fixed Problems

This section describes the set of fixed problems of the released version of MDA V8.7.3.

3.3.1. MDA V8.7.3

EHI Number	Title
700760	MDA8_Text_importer_for_MDA8
735739	Plugins not found when PRODDATAINSTDIRALL is modified in MDA8 InstallationDefaultSettings.xml file
737789	1 x #1536573429>>>System.ArgumentException: An item with the same key has already been added.
740971	Model in FMU format is not usable
769349	When trying to apply an offset to a single signal from a custom .1Hz file, a walkback is encountered
770982	Calculated Signal with name "time" not written in mf4 file-independent from formula
771681	[Ex-ID: #3259594726 System.NullReferenceException: Der Objektverweis wurde nicht auf eine Objektinstanz festgelegt.]
772163	MDA changing the Layer leads to losing the Map in GPS Instrument
775224	Mapping dialogue appears, although all devices and signals can be mapped automatically
775463	1 x [Ex-ID: #3527625269] System.FormatException: Die Eingabezeichenfolge hat das falsche Format.
767194	Unit and performance issue with Battery instruments/Table
776260	Device mapping shows not all devices from measurement file

3.3.2. MDA V8.7.2

EHI Number	Title
642232	Support of CAN Trace ASCII files
726595	MDA 8.6.4/1 Build 644 Device Mapping Issue
729047	Mapping Dialog use case 1:N
729702	MdfConvert.exe support lab file v1.3

738743	GPS-Map instrument shall display partial routes which fulfill a condition.
739189	Not possible to replace all signals in existing XDX with measurement with similar content
747227	Log scale for battery consumption analysis
760347	5 x Ex-ID: #691201842
762656	MDFCombine: Appending of files show overlaps for ‘big’ jobs, but not for ‘small’ jobs
762662	MDA device mapping window does not open and variables are greyed out
764092	Statistical data instrument shows incorrect minimum and maximum values for signals containing NaN values
764944	XDA files with multiple layers are not imported in MDA 8 with unique layer names
767322	Tooltip for reduced/interpolated data display no longer works
767400	Adding a variable to an oscilloscope causes the other values to be no longer displayed
767656	AsciiFormat.ini: Timestamp in format "%H%M%S%f" not readable correctly
767721	MDA8.7.1 issue EVENT_COMMENTS single can not be displayed in oscilloscope
767849	Ex-ID: #4290020809: Customer FMU leads to crash

3.3.3. MDA V8.7.1

EHI Number	Title
725243	One more implausible mapping case (RB MDG1)
744524	Oscilloscope updates are extremely delayed; high CPU and increasing memory usage
746847	[Requirement] Re-read File on Replace File
749053	1 x Ex-ID: #4030161448>>>System.InvalidOperationException: The cache was modified with an identical key during entity preparation
749227	1 x [Ex-ID: #1813691989] Ice.ConnectionLostException: Data: System.Object = null
752567	Replace single raster measure with multi raster not recognized the value - value is greyed out
757732	Overlaped signal analysis on Oscillo
758319	MDA8 All signals in the oscilloscope are unavailable and new signals added there are also not available

759245	After switching cursor navigation mode, the menu item text itself does not change to the other mode text
759314	Ex-ID: #3470903134 Copying calc signal in JP caused system down
759528	MDA mdfcombine.exe issue
760250	Wrong value shown for calculated signal if one of signals contants "n/a"
760460	mf4 file can´t be used in MDA V8.7.0 instead of MDA V8.6.7 worked
761017	1x [Ex-ID: #2359897311] >>>System.Runtime.InteropServices.COMException: Data on clipboard is invalid (Exception from HRESULT: 0x800401D3 (CLIPBRD_E_BAD_DATA))>>> Data: System.Object = null>>>
761060	Implausible mapping dialogue
762314	1 x [Ex-ID: #1015565880] System.ArgumentOutOfRangeException: Index was out of range. Must be non-negative and less than the size of the collection.
763239	MDA 8 comes with Error Message from a converted PCAP2MDF File
763943	Signals not displayed in Oscilloscope
764396	MDA Bus Trace shows wrong measure values

3.3.4. MDA V8.7.0

EHI Number	Title
712608	MDA8 Exported File Name Path
714298	Time Shift of Calculated Signal lead to disappear of signals
720469	MDA8 after multiple replacements the oscilloscope display of measure date is not correct anymore, looks like load interruption and MDA8 will hang up while closing
731215	MDA does not map matching signals after replacing measure file
731719	6 x MDA 8.6.5 report Ex-ID: #4005156041 System.NullReferenceException: Object reference not set to an instance of an object.
737655	Feature Request - Always display device ID with replace variable window
739189	Not possible to replace all signals in existing XDX with measurement with similar content
744231	MDA_GPS_Signals are not valid
744875	Double-click doesn't replace a single measure file directly when it is deleted and in no-match state

747199	V867: exception happens when loading ZDX file & V866: Calculated Signals are not visible when Function Instance is created
747763	2 x [Ex-ID: #3347935828] Die Sequenz enthält mehrere übereinstimmende Elemente.
749624	1 x [Ex-ID: #3894481634] System.ArgumentNullException: Unexpectedly, the argument of type Etas.Eee.McdClient.Targets.MeasureFiles.Configuration.BL.Model.IMeasureFilesEntity is `null` in .ctor
750292	MDA: the possibility to save a configuration in the MDA with the compatibility for older MDA version
750858	1 x [Ex-ID: #3384892049] System.ArgumentNullException: Value cannot be null.
754200	1 x [Ex-ID: #3347935828] Die Sequenz enthält mehrere übereinstimmende Elemente.

3.4. Known Issue Reports

If a product issue develops, ETAS will prepare a Known Issue Report (KIR) and post it on the internet. The report includes information regarding the technical impact and status of the solution. Therefore you must check the KIR applicable to this ETAS product version and follow the relevant instructions prior to operation of the product.

The Known Issue Report (KIR) can be found here:
http://www.etas.com/kir

3.5. Known Issues

This section describes known problems of the released version of MDA V8.7.3.

3.5.1. Software related Items

General:

- With older versions of Windows® 10 problems when waking up from sleep mode can happen. These Windows versions are not supported any longer by MDA (see section 2.2.1 'System Prerequisites' on page 7).
- If MDA reacts with an exception when connecting to, or disconnecting from an external monitor, optionally combined with sleep mode of the computer, an update of the driver for the graphical card is recommended.
- In the category 'Custom Filter(s)' of the Variable Explorer a LAB file appears only if at least one of the entries in the LAB file matches to one of the signals of any source file.

Data:

- MDF standard indexing is beneficial for data display, missing index impairs performance.
- MDA supports scalars only including Enumerations, String, Events.
  Arrays and Structs (e.g. maps/curves from calibration recording) are not supported.
- Not supported conversion types are:
  - Signals with nested conversions, except STATUS_STRING_REFs
  - Free form
  - Text-to-Value
- Export of EVENT signals from MDA user interface is not supported.
  MdfConvert.exe provides a specific argument to include Events.
- For drawing the signal curve of a STATUS_STRING_REF signal in an oscilloscope the numeric conversion formula is used even when the sample has a verbal conversion.
  The textual value is shown in the cursor tooltip and cursor column of the signal list. When using the STATUS_STRING_REF signal as input for a calculated signal, samples with a textual value result in invalid samples of the calculated signal.
- Time channel physical values must be in seconds. Due to nano-seconds precision time stamps of more than ~1Mio seconds (~10 days) are not supported.
- Time channel data type must be of Floating point 64 bit.
- For files with a virtual master channel, file indexing is not used, thus performance might be lower.
- Delay State function supports a positive delay only. In case of a negative delay value, no data is displayed. For a signal time offset use calculated signal's 'Output Options'.
- Individually shifted signals are ignored when determining the complete time range.
- For MDF3 files the DISPLAY_IDENTIFIER contains the device name.

- When exporting / converting files in DXL format into MDF V3 format, the process might be extremely slow, and does not react on 'Cancel'.
- MDF files for usage in MDA must have the time signal defined as the master channel, and time stamps must be increasing.

Instruments & Layers (General):

- Instrument drawing in MDA V8 is optimized for many layers with few instruments per layer. With many oscilloscopes on one layer bad loading and updating times can be observed. Then it is advisable to distribute the oscilloscopes onto separate layers.
- Synchronization is limited to one mode and one synchronization group.
- When storing a configuration having layers arranged side-by-side, the arrangement of the layers gets lost, and cannot be restored when opening the configuration again.

Oscilloscope & Scatter Plot:

- In case of problems while creating an oscilloscope, please update your graphic device driver, if needed manually.
- Oscilloscope: If a sample is flagged as 'invalid' no signal curve is drawn for this pixel column. This causes that also other samples falling on the same pixel column will not be visible. Especially on high zoom levels this can hide extreme values. In case you observe a gap in the signal curve: zoom-in until samples get drawn individually, or use a table instrument to check the proximity of the invalid sample.
- Limitations of Scatter Plot instrument:
  - Cursor synchronization is not supported.
  - Per strip only one signal can be assigned to the y axis.
  - Samples are drawn based on time relation of signals on x and y axes, therefore signals should be from the same measure file and preferably acquired in the identical measure raster.

Event List:

- Event List Instrument: when using cascaded calculated signals the calculation might take long until data is displayed in the instrument.

GPS Map:

- To enable a download of maps for the GPS map instrument, Port 443 (over https) and URL: maps.omniscale.net must be unblocked in the firewall / network settings.
- GPS Map instrument has a time-out of 5 seconds. If the longitude and latitude values are not available within this time range, the track is handled as invalid. This might happen for example if the measure file is a textual file format with many samples for the signals, or if the file is stored on a network share.
- As indication signal for coloring the GPS track only Boolean and analog numeric signals can be used. The type enumeration signal is not supported as indication signal so far.

Import and Calculated Signals:

- From XDA files only yt-oscilloscopes, xy-oscilloscopes, tables, Video instruments, and 'Battery' instruments are imported. The export into XDA format from MDA V8 is limited to yt-oscilloscopes, xy-oscilloscopes, tables. A message in the status bar resp. the Notifications window lists just the instruments which were exported.
- Import of calculated signals from *.xda or *.xcs files fails if the configuration contains already a calculated signal with the same name. A message in the status bar informs about not imported calculated signals. Rename the existing calculated signal and retry the import.
- Calculation results might differ slightly from those in INCA or MDA V7, especially if the calculation requires an initial value. For details see the Appendix of the User Manual.

- When for a calculated signal the formula is imported, and the calculated signal was recorded into a measure file, MDA V8 displays the result of the re-calculation in MDA. The recorded calculated signal can be selected independently from the measure file.
- The result of a calculation additionally depends on whether the input signal has 'No Value' or is in 'Invalid' state. A detailed overview is given in the Appendix of the User Manual.
  - Valid samples with value result usually in valid samples with value
  - Valid samples without value ('No Value') are treated as if they are not present at all, i.e., the result of the calculation is also a valid sample but without value
  - 'Invalid' samples (with and without value) represent errors and will be processed, possibly also causing the state of the resulting calculation to go into invalid state
- When layers, instruments and signals are copied via Configuration Manager, also calculated signals are copied and pasted, but only the assignment of the calculated signals to instruments, and not the definition of calculated signals.
  Alternatively an Import of the instruments and the calculated signals can be done.
- When a calculated signal is imported from an *.xdx configuration file, or if it is copied from the Calculated Signals docking window and pasted into another configuration, MDA checks whether source and target have a reference to one measure file only.
  If so the reference to the original measure file is mapped to the one available measure file in the target configuration. In case there are multiple files defined in the source or available in the target the reference of the input signal(s) remains unchanged, i.e. the imported or the pasted calculated signals cannot be used without a manual adaptation of the input signal's reference.
  Additionally, when the imported or pasted calculated signal has a reference to another calculated signal, the calculated signal with the same name is used as input signal automatically. This might be incorrect, if calculated signals were renamed.
- For calculated signals imported from INCA with a data type defined as UINT32 the imported formula must be adapted. The imported formula needs to be combined using a logical AND with a bitmask: "(Imported Formula) & 0xffffffff".
  Then the result in MDA V8 corresponds to a UINT32 data type.
- With MDA V8.6.0 a change in the internal handling of variables from a CDF files was done. This can cause that in configurations loaded for the first time in MDA V8.6 maps and curves used in calculated signals as look-up tables are not mapped automatically.
  A manual remapping solves the problem and the calculated signal can be used again.
- With MDA V8.6.4 a special handling was introduced for samples which are flagged as invalid and appear at the very beginning of a measure file. These samples are ignored, i.e. handled as not available. The invalid flag is supported only in MDF V4.x format, but not in MDF V3. Invalid flags cause that a calculation result is also flagged as invalid. By handling such initial invalid samples as not available, the result of a calculation with history (e.g. an average, or integral) can be different between MDF V3.x and MDF V4.x files.

Functional Mockup Units (FMUs)

- FMUs must be according to FMI standard V2.
- ASCMO V5.8 or higher is required to create FMUs from ASCMO models for the usage in MDA V8.
- Possibly FMUs created with other applications than ASCMO might fail when being used in MDA V8. In case you face problems with your FMU files, please inform the ETAS support team.
- Typically, FMUs created from Simulink models expect as initial time stamp the exact value of 0. Most measurement files do not include a time stamp of exactly 0. Then all input signals are time shifted by MDA in such manner that at least one input value can be provided to the FMU. After the calculation done by the FMU its outputs are shifted back to be aligned to the input signals.
- Only FMUs can be used which contain a 'DefaultExperiment' block.
  Optionally such a block can be inserted manually in the XML file:

  ```
  <DefaultExperiment startTime="0.0" stopTime="100" stepSize="1"/>
  ```

  Afterwards the adapted XML file must be stored again in the zipped FMU file.

  The "stepSize" parameter is often crucial for a proper calculation. The value "1" listed above is just an example. Its value must be set according to the needs of the FMU.
  Values of startTime and stopTime are just placeholders, the calculation is adapted to the actual time range of the measure file and the measure data.

- Input signals for functions must be numeric. If an enumeration signal shall be used, first create a calculated signal: Calculated Signal = Raw (Enumeration Signal). This converts the input signal to its decimal value. Then the calculated signal can be used as input for the function.
- There are sometimes problems when displaying enumeration signals and the output signals of FMUs in the same oscilloscope or table instrument. Then assign the signals to different instruments. Please inform the ETAS Support team in case you observe such problems.
- When applying a time offset to an output of a Function, MDA creates automatically a calculated signal and applies the time shift to the Calculated Signal.

User Interface & Operation:

- For some areas keyboard operation is not supported so far, e.g. Variable Explorer, or Video instrument. A complete list of all supported hotkeys is given via CTRL+F1.
- To benefit from the latest improvements in MDA – EHANDBOOK-NAVIGATOR coupling, usage of EHB-NAVIGATOR V12.3 is recommended.
- For some UI elements it might happen that terms are given in English language only. Translation is in progress and enhanced with every new MDA V8 version.

4. Contact, Support and Problem Reporting

For details of your local sales office as well as your local technical support team and product hotlines, take a look at the ETAS website:

ETAS subsidiaries	www.etas.com/en/contact.php
ETAS technical support	www.etas.com/en/hotlines.php