Memento

Memento 9.4.0

Memento
Event Logging Tool

Terms of Use

This documentation is provided with Memento 9.4.0 (doc build 6001).

Contents

1. Setting Up the Application

1.1. Installing Memento

Memento is distributed on the support section of the Euresys website:http://www.euresys.com/support/.

Select the *Coaxlink product series* to display the file list corresponding to the latest available Coaxlink Driver and Memento releases.

Select the *Grablink product series* to display the file list corresponding to the latest available MultiCam Driver and Memento releases.

Three Memento installation setup files are available:

☐ `memento-win-<ma.mi.re.bu>.exe` for Windows (32- and 64-bit)

☐ `memento-linux-x86-<ma.mi.re.bu>.exe` for Linux (32-bit)

☐ `memento-linux-x86_64-<ma.mi.re.bu>.exe` for Linux (64-bit)

Launch the installer tool to install the Memento Driver and the Memento Application files on your PC.

It is not required to re-boot the PC after installation!

If you have an existing Memento already installed, the installer tool prompts you to uninstall it before being able to continue. Otherwise, it prompts you for the selection of the destination folder. The default installation folder is:
- `C:\Program Files (x86)\Euresys\Memento` *for 64-bit Windows versions*
- `C:\Program Files\Euresys\Memento` *for 32-bit Windows versions*

> **Note:** *The Euresys website download area may require user authentication. The user ID and password are not obtained, they are chosen by the user. Access is free and unrestricted.*

For Linux users only

Memento must be installed prior to Coaxlink or MultiCam Driver!

If the Coaxlink or MultiCam Driver is already installed, proceed as follows:

1. Uninstall Coaxlink or MultiCam Driver.

2. Install Memento.

3. Re-install Coaxlink or MultiCam Driver.

1.2. Setting Up the Driver

The connection between the Coaxlink or MultiCam Driver and the Memento Driver is automatically established. The message recording process automatically starts using the **Default Memento Configuration**.

Default Memento Configuration

The default Memento configuration defines a default rule for the input filter with the level argument set to `info`. This rule keeps only the messages of any kind having a verbosity level `info` or higher.

Changing the Configuration

The default configuration is adequate for most use cases.

However, it can be changed at any time using Memento Application though a command line or the graphical user interface.

This command line sets Memento to the highest verbosity level:

```
memento config --reset --verbosity=verbose
```

This command line resets Memento to the default settings:

```
memento config --reset
```

The configuration changes are persistent on Windows.

> **Important:** *For Linux users only! The configuration changes are not persistent. The Memento Configuration reverts to the default settings at every boot.*

1.3. Starting the GUI

To start Memento Application in GUI – Graphical User Interface – mode, click on the Memento icon or use the following command line:

```
memento gui --hide-console
```

2. Using the Interface

2.1. Interface Layout
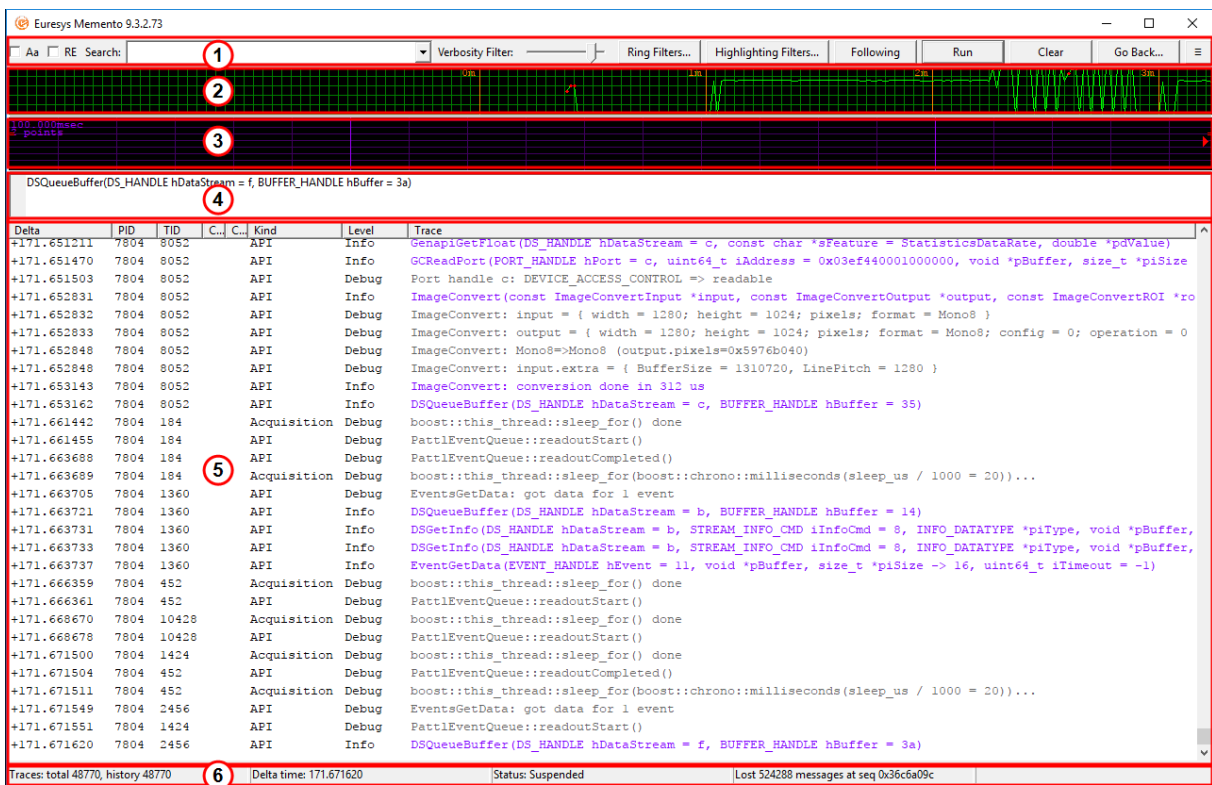
Memento Application – GUI Mode – Main Window

1. **Controls Bar**: a set of buttons, check-boxes, text and slider controls.

2. **Activity Plot Area**: a graphical area showing a time plot representation of the recent activity.

3. **Message Plot Area**: a graphical area showing a time plot representation of a selected set of messages.

4. **Tool-tip Area**: a text area showing the selected message, possibly expanded with tool-tip data.

5. **Message List Area**: a tabular text area showing a time-ordered list of a selected set of messages with their attributes.

6. **Status Bar**

2.2. Control Bar

Memento Application – GUI Mode – Controls Bar

Starting from the left side, the Controls Bar contains the following controls:

Message Search Controls

Use this control to search messages according to the value entered in the Search field.

Aa check-box: When checked, the search operation is case sensitive. It follows exactly the casing of the value entered in the Search field.

RE check-box : When checked, the value entered in the Search field uses the Perl-like regular expressions syntax.

Verbosity Slider
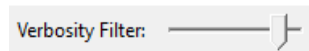
Use this control to change the verbosity level settings of the Viewer.

Moving the slider to the right increases the verbosity. More messages are displayed.

Moving the slider to the left decreases the verbosity. Less messages are displayed.

Ring Filters Button

Use this control to view or change the settings of the verbosity filter of the Memento viewer.

Clicking on the button displays the following dialog box:
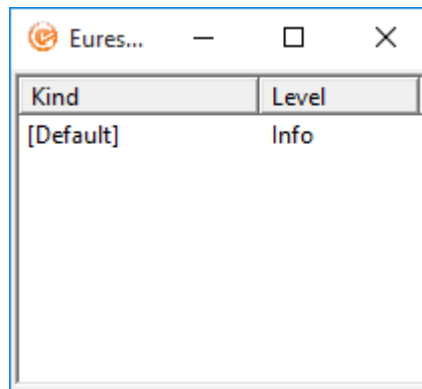
Memento Application – GUI Mode – Ring Filters Dialog Box

The above snapshot shows the default configuration where only the messages having a severity level info or higher are moved from the ring buffer to the viewer buffer.
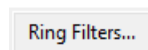
To customize the configuration, right-click and select "Add Kind" to add kind-specific filter rules.
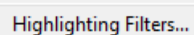
The following snapshot shows a customized filter with 2 kind-specific rules:

Memento Application – GUI Mode – Customized Ring Filters Dialog Box

These settings affect the Memento viewer only. They have no effect on the message recording process into the Ring Buffer!

Highlighting Filters Button

Use this control to view/change the settings of the highlighting filters of the Memento viewer.

Clicking on the button displays the following dialog box:
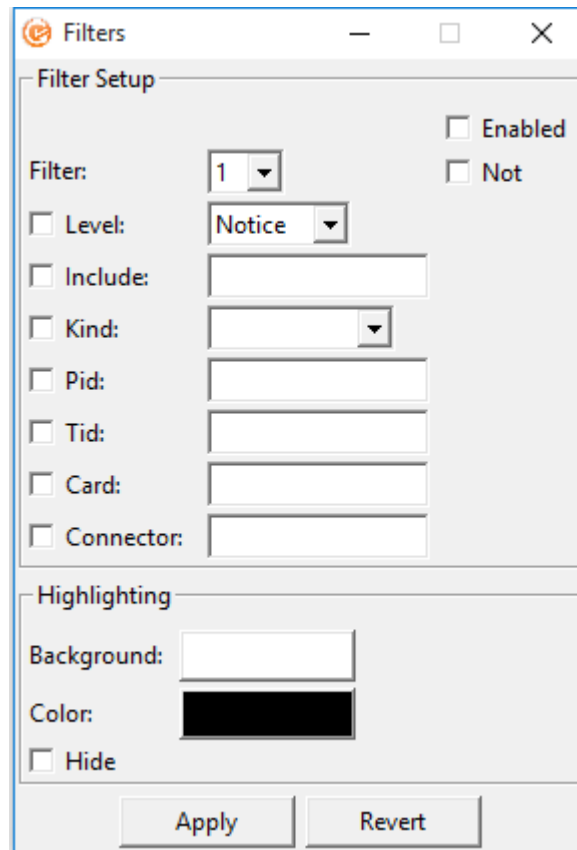
Memento Application – GUI Mode – Highlighting Filters Dialog Box

The above snapshot shows the default configuration of the highlighting filter #1.

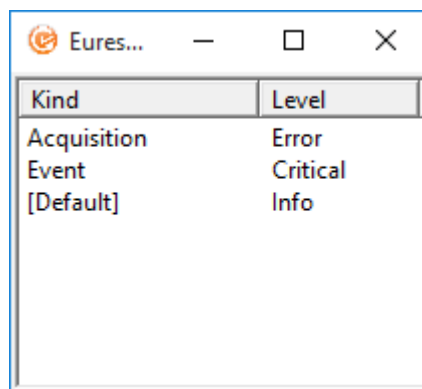To view the settings of the other filters, use the "Filter" drop-down box to select any of the 16 highlighting filters.

By default:

- Filters 1 to 8 are disabled.

- Filters 9 to 16 are enabled and implement the default highlighting scheme.

To customize the highlighting scheme, configure one or more filters as follows:

1. Define a rule using any of the message attributes

2. Define a highlighting action

3. Possibly, invert the rule by checking the "Not" check-box.

4. Enable the rule by checking the "Enabled" check-box.

5. Click on the Apply button.

For instance, the following snapshot shows a customized configuration of the highlighting filter #1 to highlight in orange messages of CoaXPress kind having a severity level higher or equal to debug:
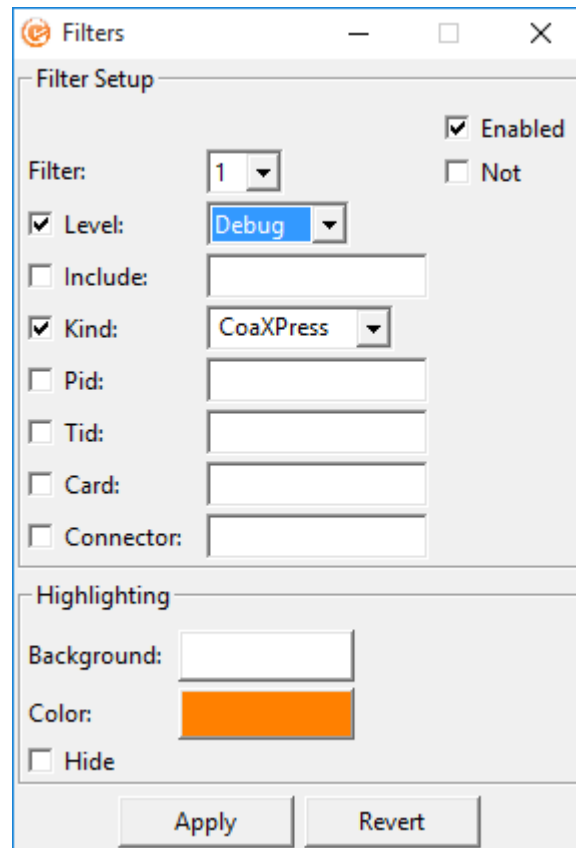
Memento Application – GUI Mode – Customized Highlighting Filter Dialog Box

Follow | Following Button

Use this toggle button to control the auto-scroll of the message list.

Clicking on the Follow button enables the auto-scroll. The message list is updated as soon as a new message arrives in the Viewer Buffer: the message list follows the Viewer Buffer.

Clicking on the Following Button disables the auto-scroll. This allows older messages to be read.

Run | Pause Button

Use this toggle button to control the filling of the Memento Viewer buffer.

Clicking on the Pause button pauses the extraction of the messages from the Memento Ring Buffer and the filling process of the Viewer Buffer.

Click on the Run button to resume message extraction.

Clear Button
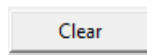
Use this button to clear the buffer of the Memento Viewer.

Go Back Button
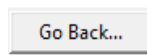
Use this button to reload the viewer buffer with older messages of the Memento Ring Buffer.

To setup and start a "go back":

- Click on the Go Back Button.

- Select the Go Back Setup options.

- Click on the OK button.

Clicking on the Go Back button opens the following dialog box:
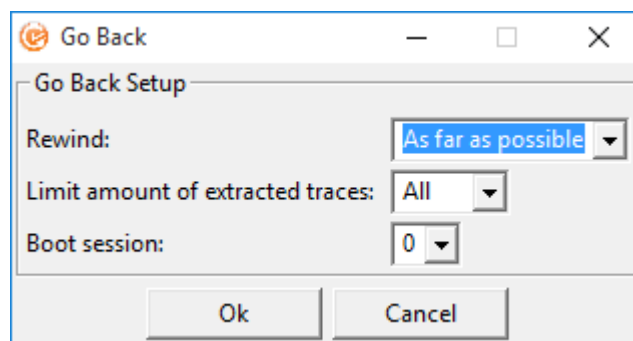
Memento Application – GUI Mode – Go Back Dialog Box

Go Back Setup Options

Rewind Option

This option determines the number of positions to rewind the Memento Ring before starting to read data.

Possible values are:

Value	Description
No	No rewind, wait for new messages. **Default setting.**
As far as possible	Rewind as far as possible within the data of the specified boot session.

Value	Description
10, 100, 1000, 10000, 100000	Rewind 10, 100, 1000, 10000, 100000 positions.

"Limit amount of extracted traces" Option

This option specifies how many messages are to be extracted starting from the rewound position in the Memento Ring Buffer. By default, all traces of the specified boot session are extracted.

"Boot session" Option

This option specifies the number of boot sessions to rewind to.

Possible values are:

Value	Description
0	Current Boot Session **Default setting.**
1, 2, 3 …	Previous boot sessions (if available).

Menu Button

Clicking on this button opens a dialog box providing the following functions:

- **Clear Search History** to clear the Message Search expressions history.
- **Dump Memento data to file...** to dump the content of the Ring Buffer to a file. Refer to "Dump Memento data to file..." below
- **Inject current time trace** to inject a UTC time trace into the Memento Ring.
- **About** to view the version number of Memento.

Dump Memento data to file...

Use this button to setup and start a dump of all or a selection of the Memento Ring Buffer data to disk files.

To setup and start a "dump":

- Click on the Dump Button.
- Setup Dump, Dump Rotation, and File options.
- Click on the Start button to start the dump.

The "dump" stops when exiting the Memento Application.

To stop the "dump" without exiting the Memento Application, click on the Stop button.

Clicking on the Dump button opens the following dialog box:
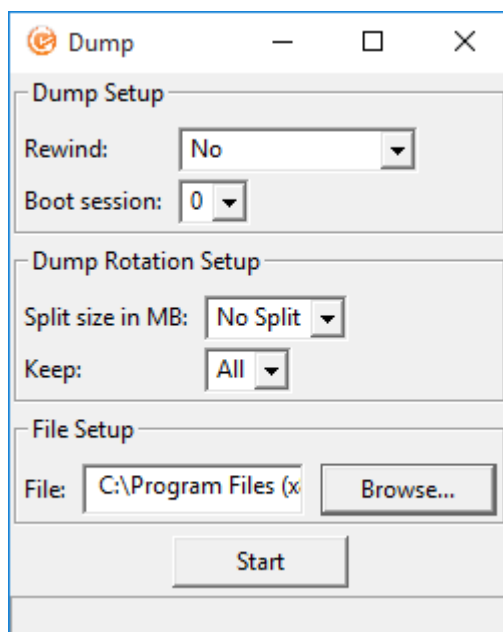
Memento Application – GUI Mode – Dump Dialog Box

Dump Setup Options

Rewind Option

The **Rewind** option determines the number of positions in the Memento Ring to rewind before starting to dump data.

Possible values are:

Value	Description
No	No rewind. **Default setting.**
As far as possible	Rewind as far as possible within the data of the specified boot session.
10, 100, 1000, 10000, 100000	Rewind 10, 100, 1000, 10000, 100000 positions.

"Boot session" Option

The **Boot session** option specifies the number of boot sessions to rewind to.

Possible values are:

Value	Description
0	Current Boot Session **Default setting.**
1, 2, 3 …	Previous boot sessions (if available).

Dump Rotation Setup Options

"Split size in MB" Option

This option allows to split the dumped data over multiples files by specifying a size limit.

Possible values are:

Value	Description
No Split	One file per dump session. **Default setting.**
256, 512, 1024	Allows splitting the dump into multiple files having a maximum size of respectively 256, 512 or 1024 Megabytes

Keep Option

This option allows to limit the number of dump files to keep.

Possible values are:

Value	Description
All	Keeps all the dump files. **Default setting.**
10	Keeps only the 10 most recent dump files.

File Setup Option

This option allows to select another file name and location.

The default file name is: `dump.memento`.

The default file location is the Memento Application directory.
`%USERPROFILE%\memento\dump.memento\`.

Euresys recommends to keep the filename suffix `.memento`.

2.3. Activity Plot Area
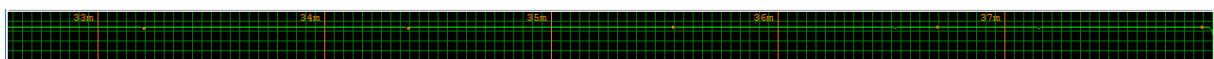
Memento Application – GUI Mode – Activity Plot Area

The **Activity Plot** area of the Memento GUI gives an idea of the recent activity of the message logging.

Horizontal Axis

The horizontal axis of the Activity Plot represents the time.

The axis has a **fixed scale** with major divisions of 1 minute and minor divisions of 2.5 seconds. The major divisions are labeled with the Memento time value expressed in minutes.

The activity plot shows the most recent time window: the rightmost end of the time scale is the actual time.

Vertical Axis

The vertical axis of the Activity Plot represents the number of messages per second that are effectively logged into the Memento Ring Buffer.

The axis is a logarithmic scale covering five decades:

- The first horizontal grid line is at 10 events per second

- The second horizontal grid line is at 100 events per second

- …

Trace Dots

The trace is composed of trace dots.

The dot color reflects the severity level of the logged messages:

- The **green** color means that the highest severity level of the logged messages is lower than `warning`.

- The **orange** color means that the highest severity level of the logged messages is `warning`.

- The **red** color means that the highest severity level of the logged messages is greater than `warning`.

Activity Monitoring Control

The Activity Plot has two operation modes:

- Accurate Activity Monitoring Mode (Default mode)
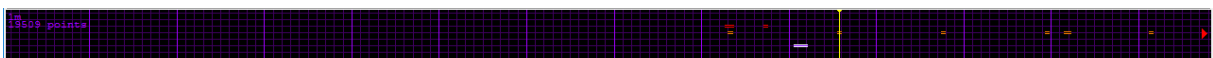- Fast Activity Monitoring mode

The activity plot area can be clicked to plot messages chronologically close to that point in time. This can be convenient to investigate about errors appearing in red in the activity plot area.

2.4. Message Plot Area

Memento Application – GUI Mode – Message Plot Area

The **Message Plot** area of the Memento GUI gives a time plot representation of a selected set of messages.

Horizontal Axis

The horizontal axis of the Message Plot represents the time.

The axis has a **variable scale** with adaptive major and minor divisions. The current time scale unit is displayed on the top left corner of the plot area:

- The first line declares the time unit for the major divisions

- The second line shows the number of display points in 1 major division

The left and the right bounds of the horizontal are controlled by selecting a **message plot option** in the contextual menu of a message displayed in the Message List or by selecting a recent time position in the Activity Plot

Vertical Axis

The vertical axis of the Trace Plot represents the severity level.

Message Symbols

A message is represented by a '='' symbol.

The symbol color uses the highlighting background color settings defined into the **view filters**.

Pan / Zoom Control

The following methods are available:

- Hover mouse position in the Plot Area and use the mouse control wheel to zoom and the left button to pan.

- Right-click on a selected a message in the Message List Area and select a plot option (from, to, view, all).

Time Measurement Tool

The time interval between two messages can be measured using the shift-key in combination with the left-button of the mouse.

Message Data

Hovering a message symbol shows up the message text and the corresponding time stamp.

CTRL-click on a message jumps to the message details in the Message List.

2.5. Message List Area

Delta	PID	TID	C..	C..	Level	Kind	Trace
+53.736624	5100	6764			Info	API	ImageGetPixelFormat(unsigned int iValue = 0x1080001, unsigned char *sFormat, size_t *piSize
+53.736634	5100	6764			Info	API	ImageGetBytesPerPixel(const char *sFormat = Mono8)
+53.736850	5100	6764			Info	API	ImageConvert(ImageConvertInput *input, ImageConvertOutput *output, ImageConvertROI *roi_det
+53.737544	5100	6764			Info	API	GenapiGetFloat(DS_HANDLE hDataStream = f, const char *sFeature = StatisticsFrameRate, doubl
+53.737710	5100	6764			Info	API	GCReadPort(PORT_HANDLE hPort = f, uint64_t iAddress = 0x03ee440001000000, void *pBuffer, si
+53.738055	5100	6764			Info	API	GenapiGetFloat(DS_HANDLE hDataStream = f, const char *sFeature = StatisticsLineRate, double
+53.738257	5100	6764			Info	API	GCReadPort(PORT_HANDLE hPort = f, uint64_t iAddress = 0x03f1440001000000, void *pBuffer, si
+53.738413	5100	6764			Info	API	GenapiGetFloat(DS_HANDLE hDataStream = f, const char *sFeature = StatisticsDataRate, double
+53.738527	5100	6764			Info	API	GCReadPort(PORT_HANDLE hPort = f, uint64_t iAddress = 0x03ef440001000000, void *pBuffer, si
+53.738765	5100	6764			Info	API	DSQueueBuffer(DS_HANDLE hDataStream = f, BUFFER_HANDLE hBuffer = 23)
+77.265427	5100	7832			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, und
+77.268423	5100	14692			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.271421	5100	10280			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.272433	5100	2332			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 3, unq
+77.285436	5100	7832			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.288434	5100	14692			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.291439	5100	10280			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.292443	5100	2332			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 3, unq
+77.305450	5100	7832			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.309449	5100	14692			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.312439	5100	10280			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.313454	5100	2332			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 3, unq
+77.327449	5100	7832			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.330460	5100	14692			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.332462	5100	10280			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.334455	5100	2332			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 3, unq
+77.347468	5100	7832			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.351569	5100	14692			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.353459	5100	10280			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+77.355455	5100	2332			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 3, unq
+148.575992	5100	7832			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq
+148.582280	5100	14692			Warning	DMA	Cannot prepare DMA transfer because the input pool is empty (buffers in output fifo: 2, unq

Memento Application – GUI Mode – Message List Area

The **Message List** area of the Memento GUI displays a time-ordered list of a selected set of messages.

The area has a tabular structure. There is one table row per message. There is one column per message data field.

Data Fields

The following data fields area available for display into in the Message List:

- **Seq**: the **Sequential Number** assigned by Memento when a message is entering the Memento Ring Buffer.

- **Time**: the **Time attribute** value assigned by the message contributor and expressed in seconds with 6 decimals.

- **Delta**: the time offset relative to the **user-defined time reference**; the value is expressed in seconds with 6 decimals.

- **PID**: the **Process ID attribute** value optionally assigned by the message contributor

- **TID**: the **Thread ID attribute** value optionally assigned by the message contributor

- **Card**: the **Card ID attribute** value optionally assigned by the message contributor

- **Connector**: the **Connector ID attribute** value optionally assigned by the message contributor

- **Stream**: the Sream ID value optionally assigned by the message contributor

- **Level**: the **Level attribute** value assigned by the message contributor

- **Kind**: the **Kind attribute** value assigned by the message contributor

- **Trace**: the text of the message body

- **Comment**: a user-editable data field

Data Fields Visibility Settings

The user may display or hide each data-field column separately. The dialog box opens by right-clicking on the column headers.

> **Note:** *The column order cannot be modified.*

User-defined Time Reference

The user may use the time stamp of a message as the time-reference for the **Delta** data field.

This is achieved by right-clicking on a message to open a dialog box and then clicking on "Set time reference".
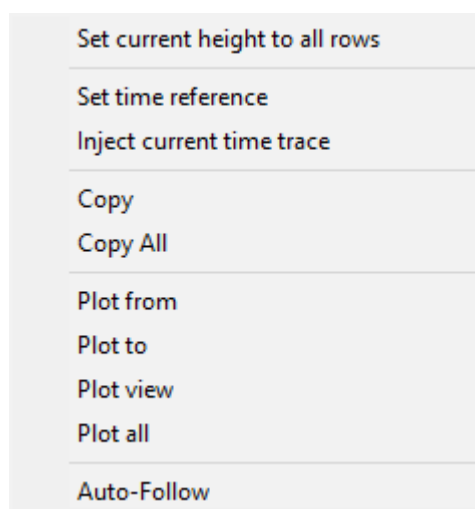
Injection of Current Time

The user may request Memento to inject a message containing the UTC time and date in the Memento Ring.

This provides a sync point between the Memento time scale and the System time, itself possibly synchronized to an Internet Time Server.

This is achieved by right-clicking on a message to open a dialog box and then clicking on "Inject Current Time Trace".

Right-click Menu

The following pop-up menu appears when right-clicking in the message list:

Set current height to all rows
Set time reference
Inject current time trace
Copy
Copy All
Plot from
Plot to
Plot view
Plot all
Auto-Follow

Memento Application – GUI Mode – Message List Area Pop-up Menu

Possible actions are:

Row resizing

To resize rows:

1. Select a row by clicking inside.

2. Adjust the row height by selecting top or bottom edge and dragging up or down the row boundary.

3. Click on "Set current height to all rows" to uniformize the row height.

Set time reference

To define the time reference for the time shown in the "delta" column of the message list:

1. Select a row by clicking inside.

2. Click on "Set time reference".

Inject current time trace

- Click on "Inject current time trace" insert a "UTC Time message" level in the Memento Ring.

Copy to clipboard

To copy a selection of messages to the clipboard:

1. Select one message using the left click.

2. Optionally, select more messages using the shift-left click or the shit-right click.

3. Click on "Copy".

To copy all messages of the viewer buffer to the clipboard:

- Click on "Copy all".

Plot From | Plot To | View |All

To plot a set a messages in the message plot area:

1. Select the first message using the left click.

2. Click on "Plot from".

3. Select the last message using the left click.

4. Click on "Plot to".

The message plot area is resized to fit the messages set. The first message appears on the left-side and the last message appears on the right-side of the message plot area.

To plot the messages that are currently displayed in the Message List:

- Click on "Plot View".

To plot the messages that are stored in the Viewer Buffer:

- Click on "Plot All".

Auto-Follow | No Auto-Follow

To adjust automatically the left- and right-limits of the Message Plot to follow the arrival of new messages:

- Click on "Auto-Follow".

To stop the automatic adjustment:

- Click on "No Auto-Follow".

2.6. Status Bar

| Traces: total 19887, history 19887 | Delta time: 77.265427 | Status: Running | |

Memento Application – GUI Mode – Status Bar

The **Status Bar** area of the Memento GUI displays:

- **Traces: total #.** The total number of Memento traces that have been recorded in the Viewer Buffer.

- **Traces: history #** The number of Memento traces that are currently available in the Viewer Buffer.

- **Delta time.** The time difference between the selected message and the time reference. This value is also displayed in the delta column of the message list.

- **Status.** The operating status – Running – or – Suspended -- of the Memento Application.