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**SIPLUS CMS**

SIPLUS CMS X-Tools  
User Manual - 05 - Monitoring System

English  
Release 2012-09

## Safety Guidelines

This document contains notices which you should observe to ensure your own personal safety as well as to avoid property damage. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring to property damage only have no safety alert symbol



### Danger

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



### Warning

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



### Caution

Used with the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

### Notice

Used without the safety alert symbol indicates a potential situation which, if not avoided, may result in an undesirable result or state.

When several danger levels apply, the notices of the highest level (lower number) are always displayed. If a notice refers to personal damages with the safety alert symbol, then another notice may be added warning of property damage.

### Qualified Personnel

The device/system may only be set up and operated in conjunction with this documentation. Only qualified personnel should be allowed to install and work on the equipment. Qualified persons are defined as persons who are authorized to commission, to earth, and to tag circuits, equipment and systems in accordance with established safety practices and standards.

### Intended Use

Please note the following:



### Warning

This device and its components may only be used for the applications described in the catalog or technical description, and only in connection with devices or components from other manufacturers approved or recommended by Siemens. This product can only function correctly and safely if it is transported, stored, set up and installed correctly, and operated and maintained as recommended.

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### Disclaimer of Liability

We have checked the contents of this document for agreement with the hardware and software described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in the manual are reviewed regularly, and any necessary corrections will be included in subsequent editions. Suggestions for improvement are welcomed.

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# 1 Preface

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## 1.1 Purpose of this Document

This document provides detailed information about the functionalities and usage of the software

- SIPLUS CMS X-Tools

of the SIPLUS CMS product line.

In addition to the detailed information about each dialog and functionality of the **Monitoring System** which is found within this document, also the following documentation is available:

- SIPLUS CMS X-Tools - User Manual - 01 - Introduction
  - provides an introduction into the basic functionalities of SIPLUS CMS **X-Tools**
- SIPLUS CMS X-Tools - User Manual - 02 - Master Data System
  - provides detailed information about the functionality which is provided by the **Master Data System**
- SIPLUS CMS X-Tools - User Manual - 03 - Main Management System
  - provides detailed information about the functionality which is provided by the **Main Management System**
- SIPLUS CMS X-Tools - User Manual - 04 - Device Management System
  - provides detailed information about the functionality which is provided by the **Device Management System**
- SIPLUS CMS X-Tools - User Manual - 06 - Analyzing System
  - provides detailed information about the functionality which is provided by the **Analyzing System**
- SIPLUS CMS X-Tools - User Manual - 07 - Storage System
  - provides detailed information about the functionality which is provided by the **Storage System**
- SIPLUS CMS X-Tools - Release Notes
  - provides additional information about the released version of SIPLUS CMS **X-Tools**
- SIPLUS CMS X-Tools - Change Log
  - provides an overview about the changes which have been introduced with the current version of SIPLUS CMS **X-Tools**

## 1.2 Validity of this Document

This document is valid for the following software:

- SIPLUS CMS X-Tools Demo V 03.05
- SIPLUS CMS X-Tools Standard V 03.05
- SIPLUS CMS X-Tools Professional V 03.05

During the following pages, these software packages will be referred to by the term **X-Tools**.

## 1.3 Audience

This document is intended for personnel involved in the commissioning and using of the software:

- **X-Tools**

## 1.4 Notations

The following notations are used within this document:

- ***bold, italic*** text is being used for the main executables of ***X-Tools***
  - examples: ***X-Tools Client, X-Tools Server***
- **bold** text is being used for the software modules of ***X-Tools***
  - examples: **Main Management System, Device Profile Editor, IPE Socket T001**
- **green** text is being used for controls like tables and trees
  - examples: **Main Profile Settings** table, **Device Profile Data** table
- **orange** text is being used for simple controls like a menu button, a single row/column/cell of a table or a branch of a tree
  - examples: **Open...** menu button, **IP Address** column, **Target Device Name** cell, **Interfaces Branch**
- **dark yellow** text is being used for the entries of context menus
  - examples: **Advanced Append...**, **Edit**
- Camel Notation is being used for major terms of ***X-Tools***
  - examples: Main Profile, Interface Profile, User Accounts File, Analyzing Function
- < and > brackets are being used for keyboard keys
  - examples: <Ctrl>, <Alt>, <Shift>, <Del>
- [ and ] brackets are being used for mouse operations
  - examples: [left mouse button down], [mouse move]

## 2 Monitoring System

### 2.1 Monitoring System Explorer

#### 2.1.1 Overview

The **Monitoring System Explorer** (in the following, the **MTS Explorer**) is used in order to visualize and maintain all of the files and modules which are relevant for the **Monitoring System**. It is displayed as a tree which contains all of the relevant and available **Monitoring System** items. Via Drag&Drop the user is able to move items within the **MTS Explorer** and from the **MTS Explorer** to other dialogs of the **Monitoring System**. The following lines provide a short overview about the information that is available from the **MTS Explorer**.

The following screenshot shows an example of a **MTS Explorer**:

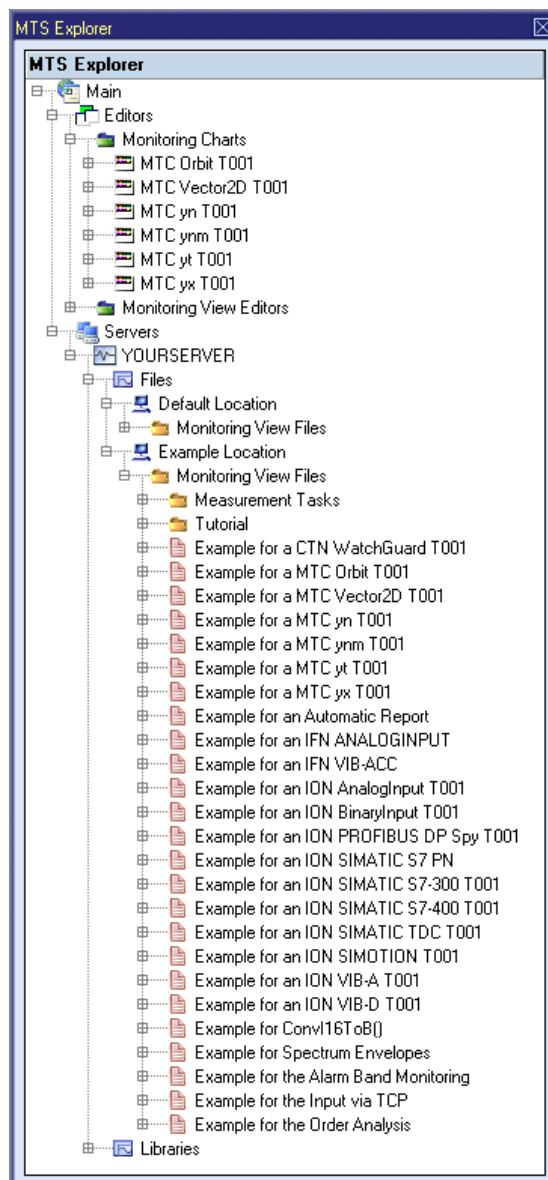


Figure 1: Example of a MTS Explorer

Each branch of the **MTS Explorer** has a defined task and provides certain functionalities. The following major branches are provided by the **MTS Explorer**:

- Main Branch
- Editors Branch
- Monitoring Charts Branch
- Monitoring Chart Branch
- Monitoring View Editors Branch
- Monitoring View Editor Branch
- Servers Branch
- Server Branch
- Files Branch
- File Location Branch
- Monitoring View Files Branch
- Libraries Branch
- Monitoring Process Modules Branch
- Monitoring Process Module Branch

### 2.1.2 Main Branch

The one and only **Main Branch** provides all of the other items of the **MTS Explorer**. It can be expanded and collapsed in order to show or hide its sub-items.

### 2.1.3 Editors Branch

The one and only **Editors Branch** provides all of the editors which are available within the **Monitoring System**.

### 2.1.4 Monitoring Charts Branch

The one and only **Monitoring Charts Branch** provides all of the **Monitoring Charts** which are available within the **Monitoring System**. The tree of shown **Monitoring Charts** is updated automatically whenever a chart file at the local disk is added/removed/modified.

### 2.1.5 Monitoring Chart Branch

Each **Monitoring Chart Branch** represents one available **Monitoring Chart**. Dragging of a **Monitoring Chart Branch** into the **Monitoring System** workspace opens an empty chart of the dragged type. After the chart has been opened, any of the present data of correct type can be dragged into it for visualization.

The following specific context menu items are provided:

Context Menu Item	Description
Open	opens a <b>Monitoring View Editor</b> within the <b>Monitoring System</b> workspace, creates a new Monitoring View, initializes it with default values and opens an empty <b>Monitoring Chart</b> of the chosen type within the new Monitoring View
New Monitoring View > ...	opens a <b>Monitoring View Editor</b> within the <b>Monitoring System</b> workspace, creates a new Monitoring View, initializes it with default values and opens an empty <b>Monitoring Chart</b> of the chosen type within the new Monitoring View

### 2.1.6 Monitoring View Editors Branch

The one and only **Monitoring View Editors Branch** provides all of the **Monitoring View Editors** which are available within the **Monitoring System**. The tree of shown **Monitoring View Editors** is updated automatically whenever an editor file at the local disk is added/removed/modified.



### 2.1.7 Monitoring View Editor Branch

Each **Monitoring View Editor Branch** represents one available **Monitoring View Editor**. Dragging of a **Monitoring View Editor Branch** into the **Monitoring System** workspace opens an empty editor of the dragged type. After the editor has been opened, any of the present files of correct type can be dragged into it for visualization and/or editing.

The following specific context menu items are provided:

Context Menu Item	Description
Open	opens an empty <b>Monitoring Editor</b> of the chosen type within the <b>Monitoring System</b> workspace
New Monitoring View > ...	opens a <b>Monitoring View Editor</b> of the chosen type within the <b>Monitoring System</b> workspace, creates a new Monitoring View and initializes it with default values

### 2.1.8 Servers Branch

The one and only **Servers Branch** provides all of the **X-Tools Servers** which are connected at the moment. The tree of shown **X-Tools Servers** is updated automatically whenever an **X-Tools Server** is attached or detached.

### 2.1.9 Server Branch

Each **Server Branch** represents one of the currently connected **X-Tools Servers**.

### 2.1.10 Files Branch

The **Files Branch** of each connected **X-Tools Server** provides all of the files which are available within the **Monitoring System**.

The following specific context menu item is provided:

Context Menu Item	Description
Add Location...	opens the <b>Add Location</b> dialog and adds a new Configuration File location afterwards

### 2.1.11 File Location Branch

Each **File Location Branch** provides all of the **Monitoring System** specific files which are available from the directory to which the Configuration File location points.

The following specific context menu items are provided:

Context Menu Item	Description
Delete Location	deletes the chosen file location from the hard disk
Remove Location	removes the chosen file location from <b>X-Tools</b> but keeps it at the hard disk

### 2.1.12 Monitoring View Files Branch

Each **Monitoring View Files Branch** provides all of the Monitoring Views which are available from the directory to which its Configuration File location points. The tree of shown Monitoring Views is updated automatically whenever a Monitoring View at the disk is added/deleted/modified.

Drag&Drop can be used in order to copy/move Monitoring View directories and Monitoring View files. The default Drag&Drop operation within an **X-Tools Server** is "move", but when the <Ctrl> key is pressed a "copy" operation is performed. The default Drag&Drop operation from one **X-Tools Server** to another is "copy", but when the <Shift> key is pressed a "move" operation is performed.

Monitoring View directories and Monitoring View files can be copied/moved within **Monitoring View Files Branches** (either within one **X-Tools Server** or over different **X-Tools Servers**) but they can not be copied/moved to another files branch. As the unique name of each Monitoring View also includes its storage directory, multiple Monitoring Views with matching file names can be stored in different Monitoring View directories.

Dragging of a Monitoring View into the **Monitoring System** workspace opens the **Monitoring View Editor** for the dragged Monitoring View.






In case a **Monitoring View Directory Branch** (or any of its sub-branches) contains a suspended Monitoring View, the icon of the **Monitoring View Directory Branch** shows an according overlay. When there is no suspended

Monitoring View but there is at least one started Monitoring View, the icon of the **Monitoring View Directory Branch** shows an according overlay also.

The following specific context menu items are provided:

Context Menu Item	Description
New Monitoring View > ...	opens a <b>Monitoring View Editor</b> of the chosen type within the <b>Monitoring System</b> workspace, creates a new Monitoring View and initializes it with default values
Edit	opens a new <b>Monitoring View Editor</b> for the chosen file within the <b>Monitoring System</b> workspace
Cut	cuts the currently selected items
Copy	copies the currently selected items
Paste	pastes currently copied/cut items
Delete	deletes the selected items from the disk
Rename	allows to rename the selected item directly within the <b>MTS Explorer</b>
New Directory...	opens the <b>Add Directory</b> dialog and creates a new directory afterwards
Start	starts the currently selected items
Restart	restarts (= stops and starts) the currently selected items
Pause	pauses the currently selected items
Continue	continues the currently selected items
Stop	stops the currently selected items

The following icons are provided and indicate the current status of each Monitoring View:

Icon	Description
 (stopped)	The Monitoring View is stopped and does not perform any operations.
 (started)	The Monitoring View is started and creates a report.
 (paused)	When the Monitoring View is paused it finishes an eventually already started report and does not create any further reports until it is being continued.
 (suspended)	The Monitoring View is suspended because it has detected an error condition (e.g. because the trigger data became unavailable, ...). The Monitoring View will resume after the error condition has been solved.  In case the Monitoring View is suspended and its according Monitoring View File at the disk is being updated, the updated Monitoring View File is being loaded and the Monitoring View uses the updated configuration for its further processing.
 (triggering)	The Monitoring View is triggering and does not create a report yet. As soon as the specified start event occurs the creation of the report is being started.

### 2.1.13 Libraries Branch

The **Libraries Branch** of each connected **X-Tools Server** provides all of the libraries which are available for the **Monitoring System**.

### 2.1.14 Monitoring Process Modules Branch

The **Monitoring Process Modules Branch** of each connected **X-Tools Server** provides all of the **Monitoring Process Modules** which are available for the **Monitoring System**. The tree of shown **Monitoring Process Modules** is updated automatically whenever a **Monitoring Process Module** at the disk is added/removed/modified.

### 2.1.15 Monitoring Process Module Branch

Each **Monitoring Process Module Branch** represents one available **Monitoring Process Module**.

The following specific context menu item is provided:

Context Menu Item	Description
New Monitoring View	opens a <b>Monitoring View Editor</b> within the <b>Monitoring System</b> workspace, creates a new Monitoring View, initializes it with default values and opens an empty <b>Monitoring Chart</b> of the chosen type within the new Monitoring View

## 2.2 Monitoring Charts

### 2.2.1 MTC Orbit T001

#### 2.2.1.1 Overview

The **MTC Orbit T001** is used in order to visualize, create and edit orbit visualizations within a **Monitoring View Editor**. Multiple charts of this type can be opened and used simultaneously within one **Monitoring View Editor** and/or within multiple **Monitoring View Editors**.

The following screenshot shows an example of a **MTC Orbit T001**:

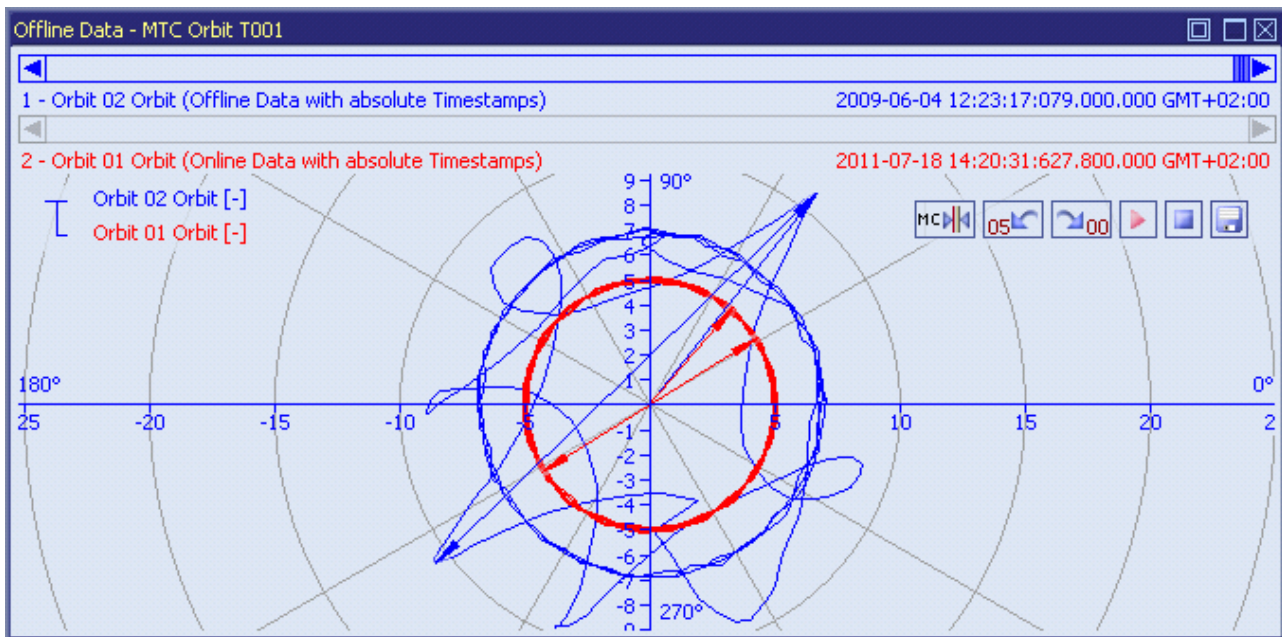


Figure 2: Example of a **MTC Orbit T001**

Each control of the **MTC Orbit T001** has a defined task and provides certain functionalities. The following major controls are provided by the **MTC Orbit T001**:

- Curve Area
- x-Axis Area
- y-Axis Area
- Slider Area
- Legend Area
- Toolbar Area
- Measurement Cursors
- Measurement Cursors Table
- Chart Options Dialog
- Chart Styles Dialog
- Data Style Dialog
- Select Style Dialog
- Manual scale x-Axis Dialog
- Manual scale y-Axis Dialog
- Manual scale Renderer Dialog
- Drag&Drop sensitive Areas

### 2.2.1.2 Curve Area

The **Curve Area** of the **MTC Orbit T001** is used in order to visualize orbit data. Via mouse and keyboard operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **Curve Area** of a **MTC Orbit T001**:

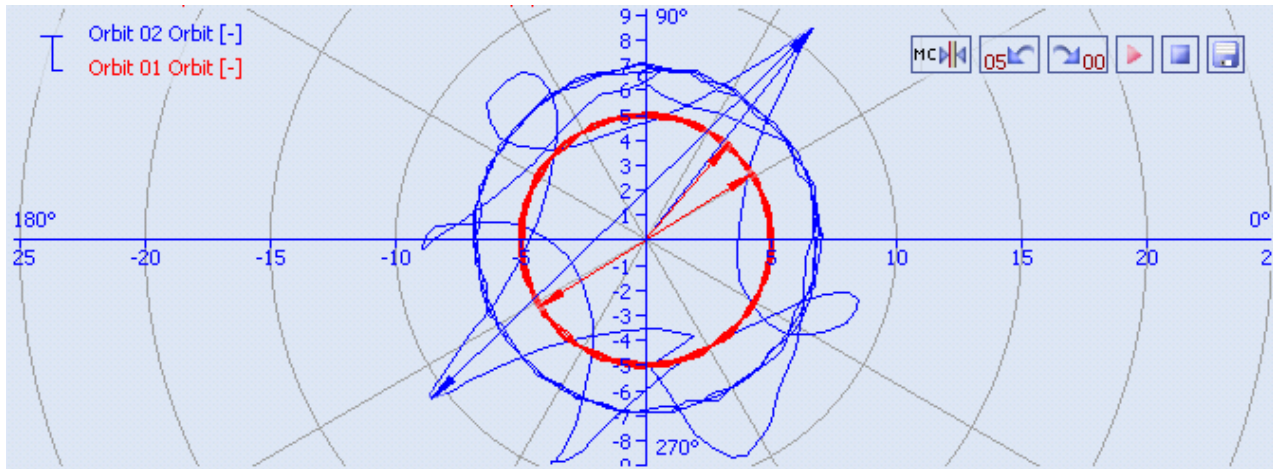


Figure 3: Example of the **Curve Area** of a **MTC Orbit T001**

#### Background Grid

The background grid of the **MTC Orbit T001** consists out of circles which have their center in the origin of the x- and y-axes and which are being displayed in the background of the **Curve Area**.

The appearing and scaling of the background grid is configured via the **Manual scale x-Axis** dialog and via the **Manual scale y-Axis** dialog.

In case the current background grid configuration is set to “manual” and the grid lines can not be drawn (because the grid lines would be too close to each other), the background grid automatically switches to automatic distribution of the grid lines. The manual settings are used again as soon as the scaling of the **MTC Orbit T001** reaches a value which allows using the manual configuration.

#### Curve Visualization

The data interpolation defines how two successive points of an already rendered data are connected when they are displayed. All supported data interpolation modes are defined by the description of the **Data Style** dialog.

The data style defines how a data is visualized graphically. It contains the parameters for the color/strength/style of the line as well as the parameters for the color/strength/style of the mark and the rendering method. The styles of each data can be defined at different levels by the user.

The style of each data can be set at the following levels, where the settings of a higher level overwrite the settings of a lower level (top = high, bottom = low):

- **Data Style** dialog of the **MTC Orbit T001**
- default data style of the **MTC Orbit T001**

## Keyboard Operations

The following operations can be performed via the keyboard:

Keyboard Operation	Description
<+>	zooms into the x- and y-axis simultaneously
<Shift> + <+>	zooms only into the x-axis
<x> + <+>	behaves like <Shift> + <+>
<Ctrl> + <+>	zooms only into the y-axis
<y> + <+>	behaves like <Ctrl> + <+>
<->	zooms out from the x- and y-axis simultaneously
<Shift> + <->	zooms only out from the x-axis
<x> + <->	behaves like <Shift> + <->
<Ctrl> + <->	zooms only out from the y-axis
<y> + <->	behaves like <Ctrl> + <->
<F>	fits the scaling of the x- and y-axis simultaneously
<L>	toggles the aspect ratio between locked and unlocked
<Shift> + <F>	fits the scaling only of the x-axis
<x> + <F>	behaves like <Shift> + <F>
<Ctrl> + <F>	fits the scaling only of the y-axis
<y> + <F>	behaves like <Ctrl> + <F>
<Ctrl> + <Z>	undoes the latest operation from the undo buffer
<Shift> + <Ctrl> + <Z>	undoes all operations from the undo buffer
<Ctrl> + <Y>	redoes the latest operation from the redo buffer
<Shift> + <Ctrl> + <Y>	redoes all operations from the redo buffer
<Cursor left>	in case the measurement cursor is turned on, this key moves the measurement cursor to the next lower x-value at the curve
<Cursor right>	in case the measurement cursor is turned on, this key moves the measurement cursor to the next higher x-value at the curve
<Cursor down>	in case the measurement cursor is turned on, this key moves the measurement cursor to the next lower y-value at the curve
<Cursor up>	in case the measurement cursor is turned on, this key moves the measurement cursor to the next higher y-value at the curve

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. While the left mouse button is kept down, a rectangle is shown in order to indicate the zooming area. The actual zooming is performed when the left mouse button is released:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move] zooms into the specified area of the x- and y-axis simultaneously</li> <li>• &lt;Shift&gt; + [left mouse button down] + [mouse move] zooms only into the specified area of the x-axis <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [left mouse button down] + [mouse move] behaves like &lt;Shift&gt; + [left mouse button down] + [mouse move]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [left mouse button down] + [mouse move] zooms only into the specified area of the y-axis <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [left mouse button down] + [mouse move] behaves like &lt;Ctrl&gt; + [left mouse button down] + [mouse move]</li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without changing of any axis scaling</li> </ul>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Curve Area</b> opens the context menu for the <b>Curve Area</b> .
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move] moves all curves within the <b>Curve Area</b> into the direction of the mouse move <ul style="list-style-type: none"> <li>○ when the &lt;Shift&gt; key is being pressed during the shift operation, the curves are shifted only in horizontal direction <ul style="list-style-type: none"> <li>▪ when &lt;x&gt; key is being pressed during the shift operation, the behavior is like if the &lt;Shift&gt; key is being pressed during the shift operation</li> </ul> </li> <li>○ when the &lt;Ctrl&gt; key is being pressed during the shift operation, the curves are shifted only in vertical direction <ul style="list-style-type: none"> <li>▪ when &lt;y&gt; key is being pressed during the shift operation, the behavior is like if the &lt;Shift&gt; key is being pressed during the shift operation</li> </ul> </li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul> <p>Shifting of the <b>Curve Area</b> is possible only in case the origin is not locked.</p>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>Curve Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] zooms out of the current mouse position of the x- and y-axis simultaneously</li> <li>• [mouse wheel up] zooms into the current mouse position of the x- and y-axis simultaneously</li> <li>• &lt;Shift&gt; + [mouse wheel down] moves all curves within the <b>Curve Area</b> to the left <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel down] behaves like &lt;Shift&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Shift&gt; + [mouse wheel up] moves all curves within the <b>Curve Area</b> to the right <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel up] behaves like &lt;Shift&gt; + [mouse wheel up]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel down] moves all curves within the <b>Curve Area</b> up <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel down] behaves like &lt;Ctrl&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel up] moves all curves within the <b>Curve Area</b> down <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel up] behaves like &lt;Ctrl&gt; + [mouse wheel up]</li> </ul> </li> </ul>

## Drag&Drop of Data

When a time series data is dropped into the **Curve Area**, it is added to the currently present data of the **MTC Orbit T001**:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the legend.
- In case the current Drag&Drop operation has been started within the **MTC Orbit T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC Orbit T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC Orbit T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC Orbit T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Fit to Chart	sets the scaling of all t- and y-axes so that the complete values of all data within the <b>MTC Orbit T001</b> become visible
Fit to Charts	sets the scaling of all <b>Monitoring Charts</b> within the parent <b>Monitoring View Editor</b> so that the complete values of all data within all <b>Monitoring Charts</b> become visible
Zoom in	zooms in at all t- and y-axes simultaneously; the new scaling interval is half of the old scaling interval and the center of the zooming is the current mouse position
Zoom out	zooms out at all t- and y-axes simultaneously; the new scaling interval is the double of the old scaling interval and the center of the zooming is the current mouse position
Lock Aspect Ratio > ...	sets the locking of the aspect ratio to the value which is specified via the submenu of this item
Lock Origin > ...	sets the locking of the origin to the value which is specified via the submenu of this item
Manual scale Renderer...	opens the <b>Manual scale Renderer</b> dialog
Chart Options...	opens the <b>Chart Options</b> dialog
Copy Chart Options	copies the options of the <b>MTC Orbit T001</b> below the current mouse position
Paste Chart Options	pastes the currently copied <b>MTC Orbit T001</b> options onto the <b>MTC Orbit T001</b> below the current mouse position
Chart Styles...	opens the <b>Chart Styles</b> dialog
Copy Chart Styles	copies the styles of the <b>MTC Orbit T001</b> below the current mouse position
Paste Chart Styles	pastes the currently copied <b>MTC Orbit T001</b> styles onto the <b>MTC Orbit T001</b> below the current mouse position
Show Background Grid > ...	sets the visibility of the background grid to the state which is specified via the submenu of this item
Show Legend > ...	sets the visibility of the <b>Legend Area</b> to the state which is specified via the submenu of this item
Show Toolbar > ...	sets the visibility of the <b>Toolbar Area</b> to the state which is specified via the submenu of this item
Show x-Axis > ...	sets the visibility of the <b>t-Axis Area</b> to the state which is specified via the submenu of this item
Show y-Axis > ...	sets the visibility of the <b>y-Axis Area</b> to the state which is specified via the submenu of this item
Show Sliders > ...	sets the visibility of the <b>Slider Area</b> to the state which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Orbit T001</b>

### Lock Aspect Ratio

In case the aspect ratio is locked, the scaling of the x- and y-axes always is kept synchronized so that the same amount of pixels are being used at the x- and y-axes for the same interval of values. Changing of the scaling of one axis automatically also changes the scaling of the other axis in case the aspect ratio is locked.

### Lock Origin

In case the origin is locked, the origin of the x- and y-axes always is being kept in the middle of the **MTC Orbit T001**. In this mode, zooming is not possible via the left mouse button except when the left mouse button is being moved directly above an axis. In addition, shifting via the right mouse button is not possible in this mode.

#### 2.2.1.3 x-Axis Area

The **x-Axis Area** of the **MTC Orbit T001** is used in order to display the scaling of the present x-axis. Via mouse operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **x-Axis Area** of a **MTC Orbit T001**:

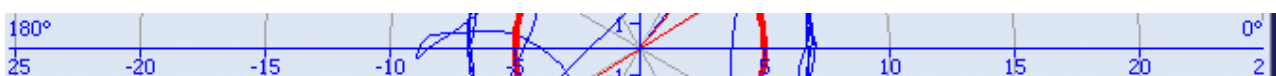


Figure 4: Example of the **x-Axis Area** of a **MTC Orbit T001**

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Single and multiple x-axis can be selected/deselected through a left mouse button click:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] above any x-axis selects the below x-axis</li> <li>• in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the <b>x-Axis Area</b>, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected</li> </ul>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. The actual zooming is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move right] zooms out of the x-axis from the x position where the left mouse button has been pressed</li> <li>• [left mouse button down] + [mouse move left] zooms into the x-axis from the x position where the left mouse button has been pressed</li> <li>• &lt;Esc&gt; cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started</li> </ul>
double click	<p>A double click of the left mouse button onto any x-axis opens the <b>Manual scale x-Axis</b> dialog for the x-axis below the current mouse position.</p>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>x-Axis Area</b> opens the context menu for the <b>x-Axis Area</b>.</p>
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move right] moves the x-axis right</li> <li>• [right mouse button down] + [mouse move left] moves the x-axis left</li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul> <p>Shifting of the <b>x-Axis Area</b> is possible only in case the origin is not locked.</p>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>x-Axes Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the x-axis left</li> <li>• [mouse wheel up] moves the x-axis right</li> <li>• &lt;Shift&gt; + [mouse wheel down] zooms out of the x-axis from the current x position of the mouse cursor</li> <li>• &lt;Shift&gt; + [mouse wheel up] zooms into the x-axis from the current x position of the mouse cursor</li> </ul> <p>Shifting of the <b>x-Axis Area</b> is possible only in case the origin is not locked.</p>

## Drag&Drop of Data

When a data is dropped onto an existing x-axis, it is added to the currently present data of the **MTC Orbit T001** as if the data would have been dropped directly into the **Curve Area** (see point 2.2.1.2).



## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show x-Axis > ...	sets the visibility of the <b>x-Axis Area</b> to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the x-axis shall automatically adopt its scaling so that always the complete values of its contained data are visible
Fit to Axis	sets the scaling of the x-axis so that the complete values of its contained data are visible
Lock Aspect Ratio > ...	sets the locking of the aspect ratio to the value which is specified via the submenu of this item
Manual scale Renderer...	opens the <b>Manual scale Renderer</b> dialog
Manual scale x-Axis...	opens the <b>Manual scale x-Axis</b> dialog
Copy x-Axis Scaling	copies the scaling of the x-axis below the current mouse position
Paste x-Axis Scaling	pastes the currently copied x-axis scaling onto the x-axis below the current mouse position
Rescale x-Axis after Open > ...	sets the rescale type of the x-axis after opening of the Monitoring View File to the type which is specified via the submenu of this item
Rescale x-Axis after Action > ...	sets the rescale type of the x-axis after an action to the type which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Orbit T001</b>

### 2.2.1.4 y-Axis Area

The **y-Axis Area** of the **MTC Orbit T001** is used in order to display the scaling of the present y-axis. Via mouse operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **y-Axis Area** of a **MTC Orbit T001**:



Figure 5: Example of the **y-Axis Area** of a **MTC Orbit T001**

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Single and multiple y-axis can be selected/deselected through a left mouse button click:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] above any y-axis selects the below y-axis</li> <li>• in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the <b>y-Axis Area</b>, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected</li> </ul>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. The actual zooming is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move down] zooms out of the y-axis from the y position where the left mouse button has been pressed</li> <li>• [left mouse button down] + [mouse move up] zooms into the y-axis from the y position where the left mouse button has been pressed</li> <li>• &lt;Esc&gt; cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started</li> </ul>
double click	<p>A double click of the left mouse button onto any y-axis opens the <b>Manual scale y-Axis</b> dialog for the y-axis below the current mouse position.</p>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>y-Axis Area</b> opens the context menu for the <b>y-Axis Area</b>.</p>
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move down] moves the y-axis down</li> <li>• [right mouse button down] + [mouse move up] moves the y-axis up</li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul> <p>Shifting of the <b>y-Axis Area</b> is possible only in case the origin is not locked.</p>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>y-Axis Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the y-axis up</li> <li>• [mouse wheel up] moves the y-axis down</li> <li>• &lt;Ctrl&gt; + [mouse wheel down] zooms out of the y-axis from the current y position of the mouse cursor</li> <li>• &lt;Ctrl&gt; + [mouse wheel up] zooms into the y-axis from the current y position of the mouse cursor</li> </ul> <p>Shifting of the <b>y-Axis Area</b> is possible only in case the origin is not locked.</p>

## Drag&Drop of Data

When a data is dropped onto an existing y-axis, it is added to the currently present data of the **MTC Orbit T001** as if the data would have been dropped directly into the **Curve Area** (see point 2.2.1.2).

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show y-Axis > ...	sets the visibility of the <b>y-Axis Area</b> to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the y-axis shall automatically adopt its scaling so that always the complete values of its contained data are visible
Fit to Axis	sets the scaling of the y-axis so that the complete values of its contained data are visible
Lock Aspect Ratio > ...	sets the locking of the aspect ratio to the value which is specified via the submenu of this item
Manual scale Renderer	opens the <b>Manual scale Renderer</b> dialog
Manual scale y-Axis...	opens the <b>Manual scale y-Axis</b> dialog
Copy y-Axis Scaling	copies the scaling of the y-axis below the current mouse position
Paste y-Axis Scaling	pastes the currently copied y-axis scaling onto the y-axis below the current mouse position
Rescale y-Axis after Open > ...	sets the rescale type of the y-axis after opening of the Monitoring View File to the type which is specified via the submenu of this item
Rescale y-Axis after Action > ...	sets the rescale type of the y-axis after an action to the type which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Orbit T001</b>

### 2.2.1.5 Slider Area

The **Slider Area** of the **MTC Orbit T001** is used in order to configure the currently visualized point in time. The total width of each slider represents the oldest and the newest available time of the current data of its time domain and the inside slider button represents the currently visualized point in time out of the total time interval of the data. By dragging of the slider button, the currently visualized time is modified.

The following screenshot shows an example of the **Slider Area** of a **MTC Orbit T001**:



Figure 6: Example of the **Slider Area** of a **MTC Orbit T001**

### Time Domains

Within the **Slider Area**, there is one slider being available for each data which is present within the legend. The order of the displayed sliders from top to bottom matches the order of the currently present data within the legend.

### Naming of Sliders

Each slider displays its name at its left bottom corner. The name of each slider contains the following components:

- number of the slider
- name of the x-axis data which is assigned to the slider
- name of the used time domain

### Available Times

The left border of each slider always displays and represents the oldest time which is available for its data. The right border of each slider always displays and represents the newest time which is available for its data. In case the visualization of online data is running (not paused), the left and right borders of the affected slider are constantly updated so that they represent the currently available time interval of their data.

### Displayed Times

Below the right border of each slider, the current time of the slider button is being displayed.

In case the visualization of online data is running (not paused), the displayed current time is constantly updated.

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button onto the left step button	<p>A single click of the left mouse button with releasing the button above the left step button shifts the currently displayed point in time into the past:</p> <ul style="list-style-type: none"> <li>• the next older timestamp from the data at the time domain of the slider is being chosen as new current point in time <ul style="list-style-type: none"> <li>○ in case the current point in time already is the oldest available point in time, the left step button does not change the current point in time any more</li> </ul> </li> </ul>
single click with releasing the button onto the right step button	<p>A single click of the left mouse button with releasing the button above the right step button shifts the currently displayed point in time into the future:</p> <ul style="list-style-type: none"> <li>• without additional keys being pressed, the next newer timestamp from the data at the time domain of the slider is being chosen as new current point in time <ul style="list-style-type: none"> <li>○ in case the current point in time already is the newest available point in time, the right step button does not change the current point in time any more</li> </ul> </li> </ul>
single click with keeping the button onto the left step button	<p>A single click of the left mouse button with keeping the button down onto the left step button behaves like if the left step button would be clicked with the left mouse button constantly.</p>
single click with keeping the button onto the right step button	<p>A single click of the left mouse button with keeping the button down onto the right step button behaves like if the right step button would be clicked with the left mouse button constantly.</p>
single click with keeping the button onto the slider button	<p>A single click of the left mouse button with keeping the button down onto the slider button allows to modify the current point in time:</p> <ul style="list-style-type: none"> <li>• in case the mouse is moved to the left, the current point in time is shifted into the past <ul style="list-style-type: none"> <li>○ the slider button can not be dragged out of the left border of the <b>Slider Area</b></li> </ul> </li> <li>• in case the mouse is moved to the right, the current point in time is shifted into the future <ul style="list-style-type: none"> <li>○ the slider button can not be dragged out of the right border of the <b>Slider Area</b></li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without modifying the current point in time</li> </ul>

## Operations via the Right Mouse Button

The following operation can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>Slider Area</b> opens the context menu for the <b>Slider Area</b>.</p>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>Slider Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the slider button left (into the past) <ul style="list-style-type: none"> <li>○ in case the current begin time of the displayed interval already is the oldest available point in time (or older), [mouse wheel down] does not change the currently displayed interval</li> </ul> </li> <li>• [mouse wheel up] moves the slider button right (into the future) <ul style="list-style-type: none"> <li>○ in case the current end time of the displayed interval already is the newest available point in time (or newer), [mouse wheel up] does not change the currently displayed interval</li> </ul> </li> </ul>

## Drag&Drop of Data

When a data is dropped onto an existing y-axis, it is added to the currently present data of the **MTC Orbit T001** as if the data would have been dropped directly into the **Curve Area** (see point 2.2.1.2).

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show Sliders > ...	sets the visibility of the <b>Slider Area</b> to the state which is specified via the submenu of this item
Manual scale Renderer...	opens the <b>Manual scale Renderer</b> dialog
Pause Visualization	pauses the visualization, which pauses the automatic update of all data which belongs to this slider
Continue Visualization	continues the visualization, which continues the automatic update of all data which belongs to this slider
Update Display Time after Open > ...	sets the update type of the display time after opening of the Monitoring View File to the type which is specified via the submenu of this item
Update Display Time after Action > ...	sets the update type of the display time after an action to the type which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Orbit T001</b>

### 2.2.1.6 Legend Area

The **Legend Area** displays all of the data which are present within the **MTC Orbit T001** at the moment.

The following screenshot shows an example of the **Legend Area** of a **MTC Orbit T001**:

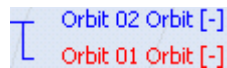


Figure 7: Example of the **Legend Area** of a **MTC Orbit T001**

### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Selecting of data within the <b>Legend Area</b> is performed identically to the selecting of items within the other trees of the <b>X-Tools Client</b>.</p> <p>In case a data within the <b>Legend Area</b> is being selected, all items of other type (e.g. x-axis and y-axis) of the clicked <b>Monitoring Chart</b> are deselected automatically.</p>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button down onto any text within the <b>Legend Area</b> starts a Drag&amp;Drop operation for the currently selected data(s) as soon as the mouse cursor is moved:</p> <ul style="list-style-type: none"> <li>• a Drag&amp;Drop operation within the same <b>MTC Orbit T001</b> moves the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Ctrl&gt; can be pressed in order to execute a copy operation instead of the move operation within the same <b>MTC Orbit T001</b></li> </ul> </li> <li>• a Drag&amp;Drop operation to another <b>MTC Orbit T001</b> copies the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Shift&gt; can be pressed in order to execute a move operation instead of the copy operation to the other <b>MTC Orbit T001</b></li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without moving or copying anything</li> </ul>
double click	A double click of the left mouse button onto any text within the <b>Legend Area</b> opens the <b>Data Style</b> dialog for the data below the current mouse position.

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Legend Area</b> opens the context menu for the <b>Legend Area</b> .
single click with keeping the button	<p>A single click of the right mouse button with keeping the button above the <b>Legend Area</b> starts a shift operation for the legend texts. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move down] moves the <b>Legend Area</b> down</li> <li>• [right mouse button down] + [mouse move up] moves the <b>Legend Area</b> up</li> <li>• &lt;Esc&gt; cancels the current operation and sets the position of the <b>Legend Area</b> back to the place which it had before the shift operation had been started</li> </ul> <p>The shifting of the legend texts is enabled only in case not all of the available legend texts fit into the currently available vertical space.</p>

## Drag&Drop of Data

During all Drag&Drop of data into the **Legend Area**, the following rules apply:

- In case the current Drag&Drop operation has been started within the **MTC Orbit T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC Orbit T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC Orbit T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC Orbit T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.
- In order to add a data as root of a certain legend tree, the desired data has to be dropped above the current root data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, the first of them becomes the new root of the target legend tree and all others are listed directly below it.
- In order to add a data in between two present data of the legend tree, the desired data has to be dropped in between the two desired data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, all of them are inserted in between the two desired data of the target legend tree.
- In order to add a data at the end of a certain legend tree, the desired data has to be dropped below the last data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, all of them are added to the end of the target legend tree.
- In order to remove a data from the legend tree with the mouse, the desired data has to be dragged to any position within the **X-Tools Client** which does not accept data.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show Legend > ...	sets the visibility of the legend to the state which is specified via the submenu of this item
Show Data Sources > ...	specifies whether the legend trees shall display the name of the source server together with the data name or not
Show Smax > ...	specifies whether the vector of Smax shall be shown within the <b>Curve Area</b> or not
Show Spp > ...	specifies whether the vector of Spp shall be shown within the <b>Curve Area</b> or not
Set Cursor Data	assigns the measurement cursor to this orbit data
Data Style...	opens the <b>Data Style</b> dialog for the selected data(s)
Copy Data Style	copies the style of the data below the current mouse position
Paste Data Style	pastes the currently copied data style onto the data below the current mouse position
Remove Data	removes the selected data(s) from the <b>MTC Orbit T001</b>
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Orbit T001</b>

### 2.2.1.7 Toolbar Area

The **Toolbar Area** displays the buttons which are provided for fast access to frequently used functionalities.

The following screenshot shows an example of the **Toolbar Area** of a **MTC Orbit T001**:

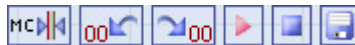


Figure 8: Example of the **Toolbar Area** of a **MTC Orbit T001**

### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click onto the <b>On/Off Measurement Cursors</b> button	A single click of the left mouse button onto the <b>On/Off Measurement Cursors</b> button toggles the measurement cursor between on and off.
single click onto the <b>Undo</b> button	A single click of the left mouse button onto the <b>Undo</b> button undoes the last operation from the undo buffer.
single click onto the <b>Redo</b> button	A single click of the left mouse button onto the <b>Redo</b> button redoes the last operation from the redo buffer.
single click onto the <b>Continue Visualization</b> button	A single click of the left mouse button onto the <b>Continue Visualization</b> button continues the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Continue Visualization</b> button sets the visualization of all data to running.
single click onto the <b>Pause Visualization</b> button	A single click of the left mouse button onto the <b>Pause Visualization</b> button pause the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Pause Visualization</b> button sets the visualization of all data to paused.
single click onto the <b>Store Data Snapshot</b> button	A single click of the left mouse button onto the <b>Store Data Snapshot</b> button starts the storing of the data which are contained within the <b>MTC Orbit T001</b> .  While the storing is in progress, the <b>Storage Progress</b> dialog shows the current progress of the storing and also can be used in order to cancel the storing.  See also tutorial, chapter "Storing of Data Snapshots out of the Monitoring System".

### Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Toolbar Area</b> opens the context menu for the <b>Toolbar Area</b> . The displayed context menu is dependent to the clicked toolbar button as described below.

## Context Menu

The following specific context menu items are provided for the **On/Off Measurement Cursors** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Show Measurement Cursors > ...	sets the visibility of measurement cursor to the state which is specified via the submenu of this item
Restore Measurement Cursors	restores the positions of the measurement cursor
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Orbit T001</b>

The following specific context menu items are provided for the **Undo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Undo	undoes the last operation from the undo buffer
Undo all	undoes all operations from the undo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC Orbit T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Orbit T001</b>

The following specific context menu items are provided for the **Redo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Redo	redoes the last operation from the redo buffer
Redo all	redoes all operations from the redo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC Orbit T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Orbit T001</b>

The following specific context menu items are provided for the **Pause Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Orbit T001</b>



The following specific context menu items are provided for the **Continue Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Orbit T001</b>

The following specific context menu items are provided for the **Store Data Snapshot** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Store Data Snapshot	starts the storing of the data which are contained within the <b>MTC Orbit T001</b>
Data Snapshot Scope > ...	sets the scope for data snapshots to the setting which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Orbit T001</b>

### 2.2.1.8 Measurement Cursor

The **Measurement Cursor** is represented through one 2-dimensional cross, where the cross is placed exactly at the point of intersection of both dimensions and moves into all four directions from there, until it reaches the borders of the **Curve Area**. In addition, the **Measurement Cursor** also draws a line from the origin of the x- and y-axes to the 2-dimensional cross. The **Measurement Cursor** can be shifted independently in horizontal and vertical direction.

The following screenshot shows an example of the **Measurement Cursor** of a **MTC Orbit T001**:

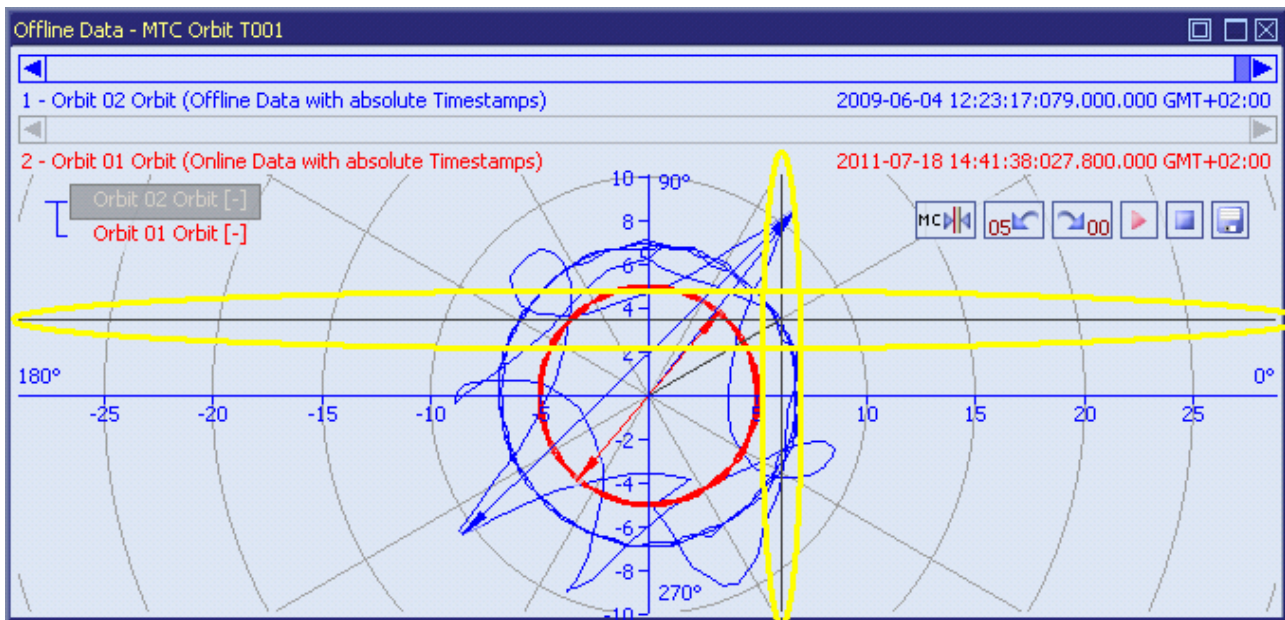


Figure 9: Example of the **Measurement Cursor** of a **MTC Orbit T001**

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a shift operation. The actual shifting of the measurement cursor is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move] shifts the targeted measurement cursor to the new mouse position <ul style="list-style-type: none"> <li>○ in case the left mouse button was pressed above the horizontal line of the cursor, the cursor is shifted only in vertical direction</li> <li>○ in case the left mouse button was pressed above the vertical line of the cursor, the cursor is shifted only in horizontal direction</li> <li>○ in case the left mouse button was pressed above the point of intersection of both lines of the cursor, the cursor is shifted in horizontal and vertical direction</li> </ul> </li> </ul> <p>The values which are displayed by the <b>Measurement Cursors</b> table are updated automatically while the measurement cursor is shifted.</p> <p>The measurement cursor automatically snaps to the exact point of a known value, it can not be moved to anywhere away from the displayed curve.</p>

### 2.2.1.9 Measurement Cursors Table

The **Measurement Cursors** table contains the measurement values of all **MTC Orbit T001s** which are present within the parent **Monitoring View Editor**. The following screenshot shows an example for the **Measurement Cursors** table for a **MTC Orbit T001**:

Measurement Cursors - MTC Orbit T001								
No.	Chart	Data	Unit	Cursor	Angle Cursor [°]	Smax	Angle Smax [°]	Spp
1	Online Data	Orbit 01 Orbit	-	0.511	149.724	0.514	229.376	1.027

Figure 10: Example of a **Measurement Cursors** Table of a **MTC Orbit T001**

It is opened within the **Cursor Area** of the parent **Monitoring View Editor** of the **MTC Orbit T001**:

Column	Description
No.	contains the row number
Chart	contains the name of the chart from which the data comes
Data	contains the name of the data
Unit	contains the unit of the data
Cursor	contains the norm between the origin of the <b>Curve Area</b> and the point of intersection of the cursor
Angle Cursor [°]	contains the angle between the origin of the <b>Curve Area</b> and the point of intersection of the cursor
Smax	contains the norm between the origin of the <b>Curve Area</b> and Smax
Angle Smax [°]	contains the angle between the origin of the <b>Curve Area</b> and Smax
Spp	contains the norm of Spp

The contents of the **Measurement Cursors** table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.

## 2.2.1.10 Chart Options Dialog

### 2.2.1.10.1 Overview

The following screenshot shows an example of a **Chart Options** dialog:

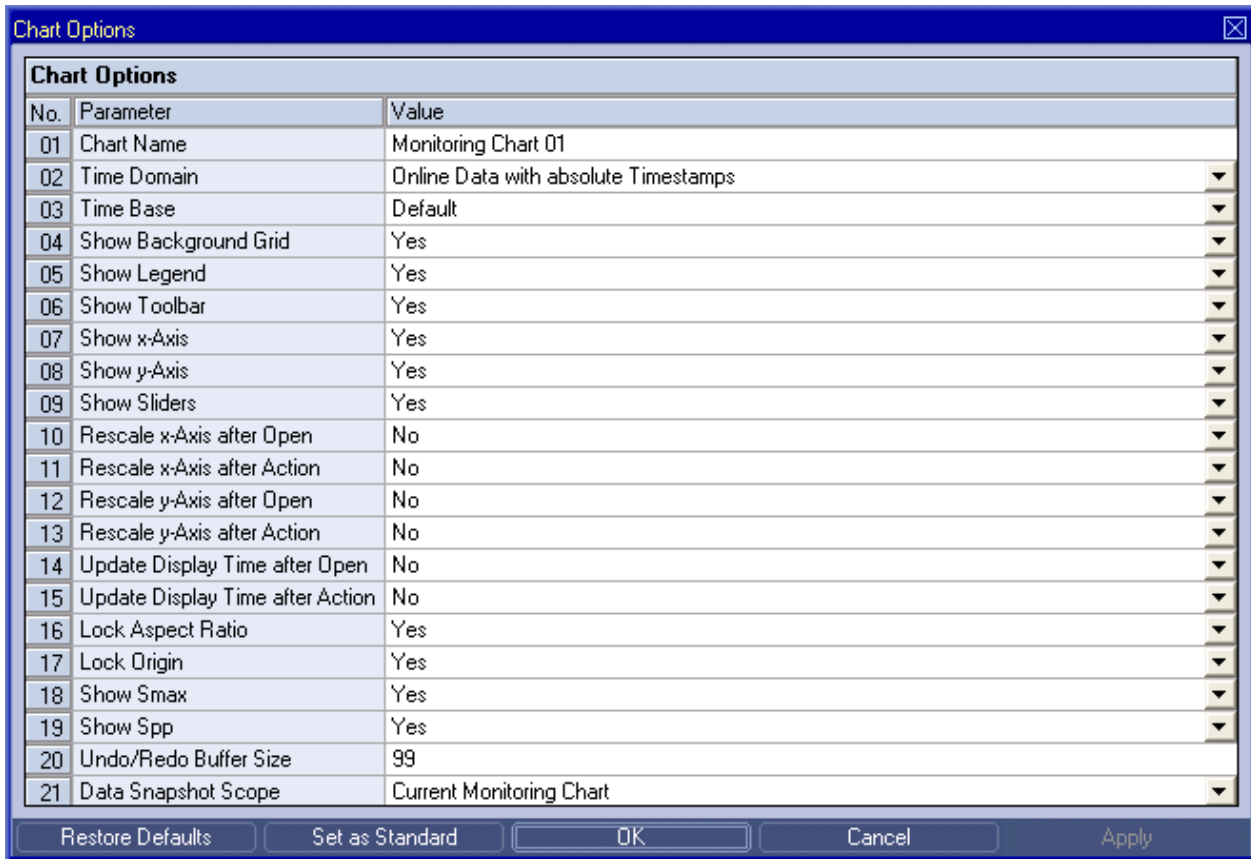


Figure 11: Example of a **Chart Options** Dialog of a **MTC Orbit T001**

## 2.2.1.10.2 Chart Options Table

The **Chart Options** table contains the chart options of the **MTC Orbit T001**:

Parameter	Description
Chart Name	allows to enter a name for the chart
Time Domain	allows to choose the time domain
Time Base	allows to choose the time base
Show Background Grid	allows to choose whether the background grid shall be shown within the <b>Curve Area</b>
Show Legend	allows to choose whether the <b>Legend Area</b> shall be shown
Show Toolbar	allows to choose whether the <b>Toolbar Area</b> shall be shown
Show x-Axis	allows to choose whether the <b>x-Axis Area</b> shall be shown
Show y-Axis	allows to choose whether the <b>y-Axis Area</b> shall be shown
Show Sliders	allows to choose whether the <b>Slider Area</b> shall be shown
Rescale x-Axis after Open	allows to choose whether the x-axis shall be scaled automatically after the Monitoring View File has been opened
Rescale x-Axis after Action	allows to choose whether the x-axis shall be scaled automatically after the displayed data have been modified outside the <b>MTC Orbit T001</b> or after a new data has been dropped into the <b>MTC Orbit T001</b>
Rescale y-Axis after Open	allows to choose whether the y-axis shall be scaled automatically after the Monitoring View File has been opened
Rescale y-Axis after Action	allows to choose whether the y-axis shall be scaled automatically after the displayed data have been modified outside the <b>MTC Orbit T001</b> or after a new data has been dropped into the <b>MTC Orbit T001</b>
Update Display Time after Open	allows to choose whether the display time shall be updated automatically after the Monitoring View File has been opened
Update Display Time after Action	allows to choose whether the display time shall be updated automatically after the displayed data have been modified outside the <b>MTC Orbit T001</b> or after a new data has been dropped into the <b>MTC Orbit T001</b>
Lock Aspect Ratio	sets the locking of the aspect ratio to the value which is specified via the submenu of this item
Lock Origin	sets the locking of the origin to the value which is specified via the submenu of this item
Show Smax	allows to choose whether the vector of Smax shall be shown within the <b>Curve Area</b>
Show Spp	allows to choose whether the vector of Spp shall be shown within the <b>Curve Area</b>
Undo/Redo Buffer Size	allows to enter the total size of undo/redo operations which shall be remembered by the <b>MTC Orbit T001</b>
Data Snapshot Scope	allows to choose whether data snapshots shall store only the data from the current <b>Monitoring Chart</b> or from the whole Monitoring View

### Chart Name

The **Chart Name** is used by other modules in order to identify a certain **MTC Orbit T001**. Within the current Monitoring View, the **Chart Name** of each **MTC Orbit T001** must be unique.

### Time Domain

The following time domains are supported by the **Chart Options** dialog of the **MTC Orbit T001**:

- Online Data with absolute Timestamps
- Offline Data with absolute Timestamps
- Offline Data with relative Timestamps

The **Time Domain** cell displays the time domain which is currently being used by all data of the **MTC Orbit T001**. In case more than one time domain is being used currently, the **Time Domain** cell stays empty.

When another time domain is being chosen via the **Time Domain** cell, the chosen time domain is applied to all of the data of the **MTC Orbit T001**. As a result, all data use the data with the known name and specified time domain for their visualization. In case there is no data with the known name and matching time domain, the affected data becomes marked as not present.

In case the time domain is being changed, the x-/y-axis and the display time can be updated automatically in case the **Rescale x-Axis after Action**, **Rescale y-Axis after Action** or **Rescale Display Time after Action** options are being set to "Yes".

### Time Base

The chosen time base specifies how the time stamps of each probe, which are being stored in GMT internally, are being represented by the **MTC Orbit T001**. In case online data is being displayed and the option "Use the local Time of the Offline Data" is being chosen, the time base for all online data is taken from the time base setting of the Monitoring View (like if "Default" would have been chosen for the time base of the **MTC Orbit T001**).

### Rescale x-Axis after Open

Rescale x-Axis after Open	Description
Yes	In case the rescale mode for the x-axis after open is set to "Yes", the <b>MTC Orbit T001</b> automatically rescales its x-axis after the Monitoring View File has been opened so that all values from all data of the x-axis become visible.
No	In case the rescale mode for the x-axis after open is set to "No", the <b>MTC Orbit T001</b> does not touch the scaling of its x-axis after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale x-Axis after Action

Rescale x-Axis after Action	Description
Yes	In case the rescale mode for the x-axis after an action is set to "Yes", the <b>MTC Orbit T001</b> automatically rescales its x-axis after an external action has modified the displayed data so that all values from the x-axis become visible.  The following actions result in an automatic rescale of the x-axis in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC Orbit T001</b></li> </ul>
No	In case the rescale mode for the x-axis after an action is set to "No", the <b>MTC Orbit T001</b> does not touch the scaling of its x-axis after an external action has modified the displayed and leaves it at the current values.

### Rescale y-Axis after Open

Rescale y-Axis after Open	Description
Yes	In case the rescale mode for the y-axis after open is set to "Yes", the <b>MTC Orbit T001</b> automatically rescales its y-axis after the Monitoring View File has been opened so that all values from all data of the y-axis become visible.
No	In case the rescale mode for the y-axis after open is set to "No", the <b>MTC Orbit T001</b> does not touch the scaling of its y-axis after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale y-Axis after Action

Rescale y-Axis after Action	Description
Yes	In case the rescale mode for the y-axis after an action is set to "Yes", the <b>MTC Orbit T001</b> automatically rescales the y-axis after an external action has modified the displayed data so that all values from the y-axis become visible.  The following actions result in an automatic rescale of the y-axis in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC Orbit T001</b></li> </ul>
No	In case the rescale mode for the y-axis after an action is set to "No", the <b>MTC Orbit T001</b> does not touch the scaling of its y-axis after an external action has modified the displayed data and leaves it at the current values.

### Update Display Time after Open

Update Display Time after Open	Description
Yes	In case the update mode for the display time after open is set to "Yes", the <b>MTC Orbit T001</b> automatically sets its display time to the newest available point in time after the Monitoring View File has been opened.
No	In case the update mode for the display time after open is set to "No", the <b>MTC Orbit T001</b> does not touch the display time after the Monitoring View File has been opened and leaves it at the stored value from the Monitoring View File.

### Update Display Time after Action

Update Display Time after Action	Description
Yes	<p>In case the update mode for the display time after an action is set to "Yes", the <b>MTC Orbit T001</b> automatically sets its display time to the newest available point in time after an external action has modified the displayed data so that all values from the y-axis become visible.</p> <p>The following actions result in an automatic update of the display time in case this mode is chosen:</p> <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC Orbit T001</b></li> </ul>
No	In case the update mode for the display time after an action is set to "No", the <b>MTC Orbit T001</b> does not touch the display time after an external action has modified the displayed data and leaves it at the current value.

#### 2.2.1.10.3

#### Menu Bar

Menu Button	Description
Restore Defaults	Sets all options back to their default settings.
Set as Standard	Sets the current options as standard options for each new <b>MTC Orbit T001</b> . The options of already existing <b>MTC Orbit T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

## 2.2.1.11 Chart Styles Dialog

### 2.2.1.11.1 Overview

The following screenshot shows an example of a **Chart Styles** dialog:

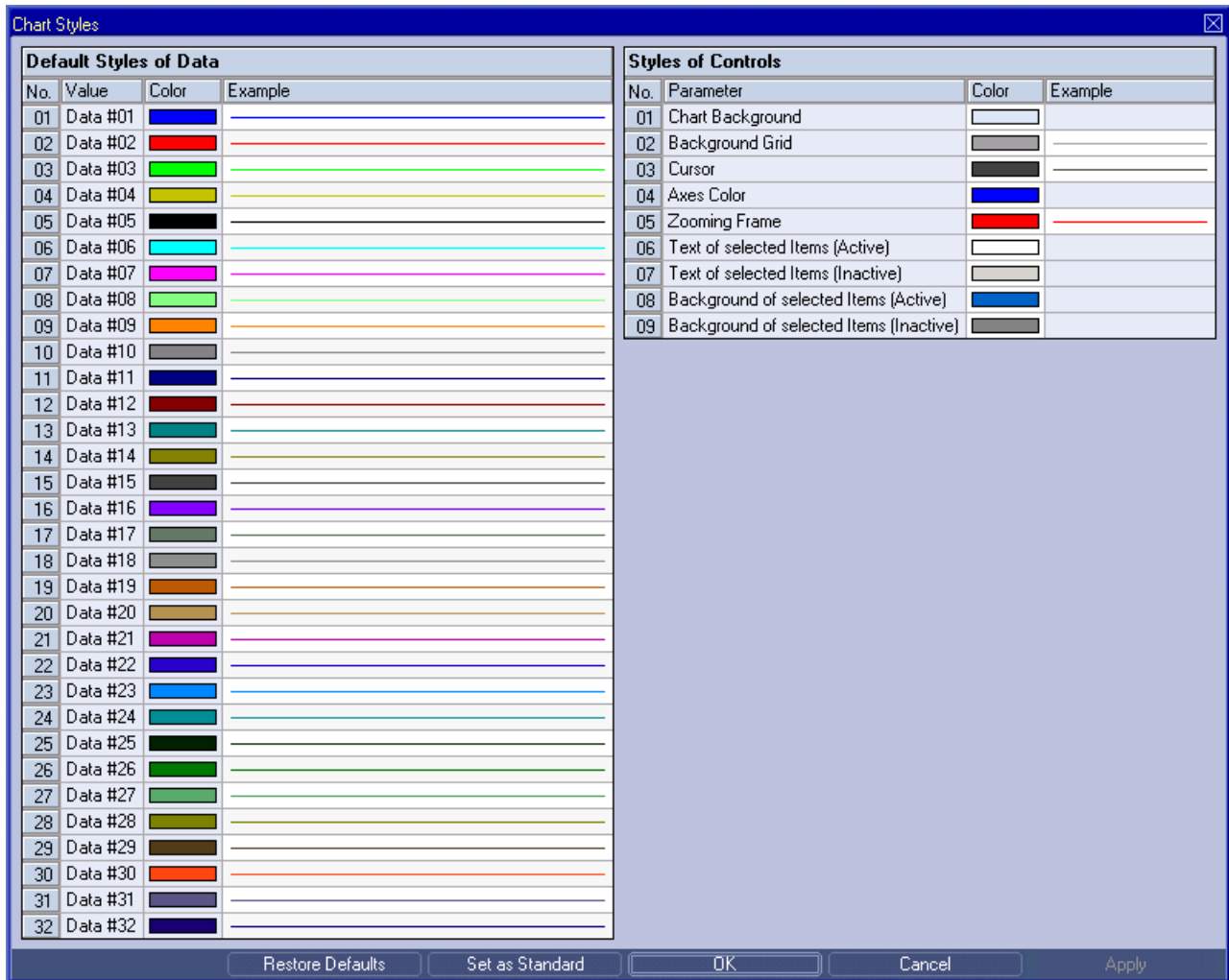


Figure 12: Example of a **Chart Styles** Dialog of a **MTC Orbit T001**

### 2.2.1.11.2 Default Styles of Data Table

The **Default Styles of Data** table contains the default styles of data within the **MTC Orbit T001**:

Parameter	Description
Data #01 ... Data #32	displays the currently chosen color and style for the according data

A double-click into the **Color** column of this control opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of this control opens the **Select Style** dialog for the according row.

### 2.2.1.11.3 Styles of Controls Table

The **Styles of Controls** table contains the styles of the controls of the **MTC Orbit T001**:

Parameter	Description
Chart Background	displays the currently chosen color for the chart background
Background Grid	displays the currently chosen style for the background grid
Cursor	displays the currently chosen color for the cursor
Axes Color	displays the currently chosen color for the axes
Zooming Frame	displays the currently chosen style for the zooming frame
Text of selected Items (Active)	displays the currently chosen color of the text of active selected items
Text of selected Items (Inactive)	displays the currently chosen color of the text of inactive selected items
Background of selected Items (Active)	displays the currently chosen color of the background of active selected items
Background of selected Items (Inactive)	displays the currently chosen color of the background of inactive selected items

A double-click into the **Color** column of any row opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of a row which supports different styles opens the **Select Style** dialog for the according row. In case different styles are not supported by a row, a double-click into the **Example** column opens the **Select Color** dialog for the according row.

### 2.2.1.11.4 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
Set as Standard	Sets the current styles as standard styles for each new <b>MTC Orbit T001</b> . The styles of already existing <b>MTC Orbit T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.

### 2.2.1.12 Data Style Dialog

#### 2.2.1.12.1 Overview

The following screenshot shows an example of a **Data Style** dialog:

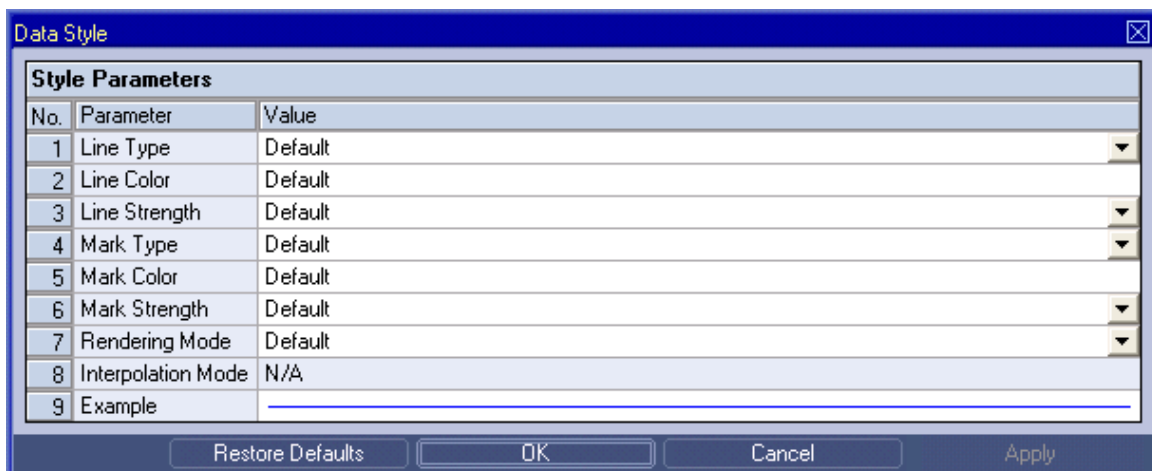


Figure 13: Example of a **Data Style** Dialog of a **MTC Orbit T001**



### 2.2.1.12.2 Style Parameters Table

The **Style Parameters** table contains the visualization style parameters of the currently selected data:

Parameter	Description
Line Type	allows to switch between the available line types
Line Color	allows to enter the desired line color
Line Strength	allows to switch between the available line strengths
Mark Type	allows to switch between the available mark types
Mark Color	allows to enter the desired mark color
Mark Strength	allows to switch between the available mark strengths
Rendering Mode	allows to switch between the available rendering modes
Interpolation Mode	not applicable
Example	displays an example curve according to the specified data style

A value of "Default" can be assigned to each style parameter. In case "Default" is being chosen, the according value from the **Chart Styles** dialog is being used for the visualization of the data.

#### Rendering Mode

The rendering mode can be used in order to configure how the to-be-displayed value shall be calculated.

Rendering Mode	Description
Default	This setting keeps the default value for the rendering mode of the data.
Average Value	When the rendering mode is set to "Average Value", the arithmetic average value is taken as value for the visualization (for both axes).
Minimal and Maximal Value (x-Axis)	<p>When the rendering mode is set to "Minimal and Maximal Value (x-Axis)", the following values are calculated for each to-be-drawn point:</p> <ul style="list-style-type: none"> <li>smallest value of the x-axis data</li> <li>biggest value of the x-axis data</li> <li>average value of the y-axis data</li> </ul> <p>In the visualization (and in case the line type is set to "Solid"), a horizontal line is drawn from the smallest to the biggest x-value at the vertical position of the y-value. In order to connect two points, a line is drawn from the previous center of the horizontal line to the next center of the horizontal line.</p>
Minimal and Maximal Value (y-Axis)	<p>When the rendering mode is set to "Minimal and Maximal Value (y-Axis)", the following values are calculated for each to-be-drawn point:</p> <ul style="list-style-type: none"> <li>average value of the x-axis data</li> <li>smallest value of the y-axis data</li> <li>biggest value of the y-axis data</li> </ul> <p>In the visualization (and in case the line type is set to "Solid"), a vertical line is drawn from the smallest to the biggest y-value at the horizontal position of the x-value. In order to connect two points, a line is drawn from the previous center of the vertical line to the next center of the vertical line.</p>

### 2.2.1.12.3 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.

## 2.2.1.13 Select Style Dialog

### 2.2.1.13.1 Overview

The following screenshot shows an example of a **Select Style** dialog:

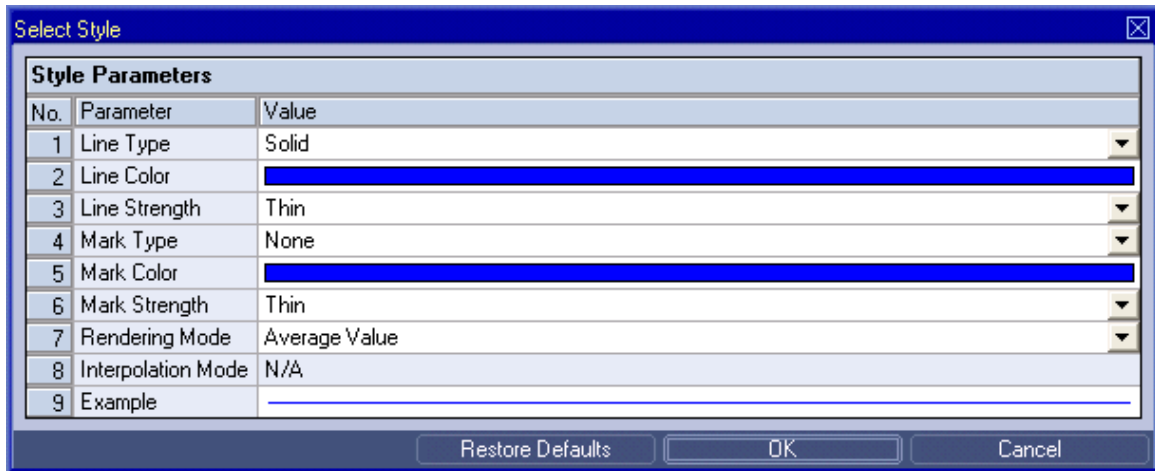


Figure 14: Example of a **Select Style** Dialog of a **MTC Orbit T001**

The functionality of the **Select Style** dialog matches the functionality of the **Data Style** dialog (see point 2.2.6.12).

## 2.2.1.14 Manual scale x-Axis Dialog

### 2.2.1.14.1 Overview

The following screenshot shows an example of a **Manual scale x-Axis** dialog:

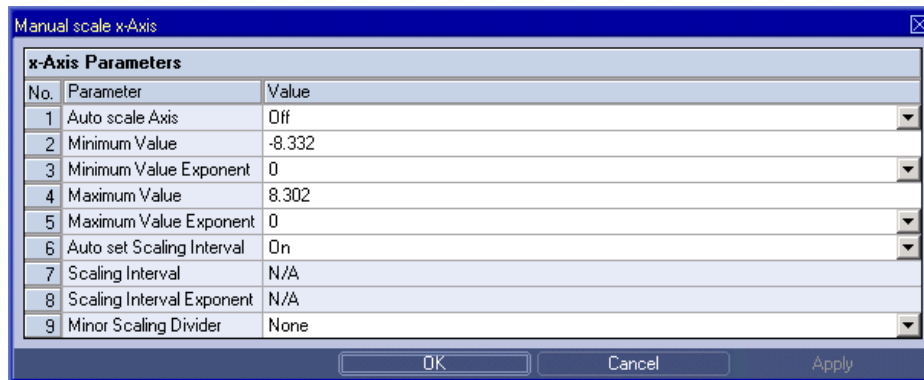


Figure 15: Example of a **Manual scale x-Axis** Dialog of a **MTC Orbit T001**

### 2.2.1.14.2 x-Axis Parameters Table

The **x-Axis Parameters** table contains the parameters of a currently selected x-axis:

Parameter	Description
Auto scale Axis	allows to switch between the available auto scale axis modes
Minimum Value	allows to enter the minimum value of the scaling
Minimum Value Exponent	allows to switch between the supported minimum value exponents
Maximum Value	allows to enter the maximum value of the scaling
Maximum Value Exponent	allows to switch between the supported maximum value exponents
Auto set Scaling Interval	allows to switch between the available modes for the automatic scaling interval
Scaling Interval	allows to enter the scaling interval
Scaling Interval Exponent	allows to switch between the supported scaling interval exponents
Minor Scaling Divider	allows to switch between the available minor scaling dividers

#### Auto scale Axis

Auto scale Axis	Description
On	In this mode, the <b>MTC Orbit T001</b> constantly sets the scaling of the x-axis so that all available values of the data at the x-axis stay visible.
Off	In this mode, the <b>MTC Orbit T001</b> uses the specified <b>Minimum Value</b> and <b>Maximum Value</b> parameters for the scaling of the x-axis.

#### Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the <b>MTC Orbit T001</b> constantly sets the scaling interval of the x-axis according to the currently displayed value interval.
Off	In this mode, the <b>MTC Orbit T001</b> uses the specified <b>Scaling Interval</b> and <b>Scaling Interval Exponent</b> parameters for the scaling interval of the x-axis. In case the specified parameters would lead to overlapping numbers, the automatic scaling interval is being used automatically until the specified parameters allow a valid scaling again.

### 2.2.1.14.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

## 2.2.1.15 Manual scale y-Axis Dialog

### 2.2.1.15.1 Overview

The following screenshot shows an example of a **Manual scale y-Axis** dialog:

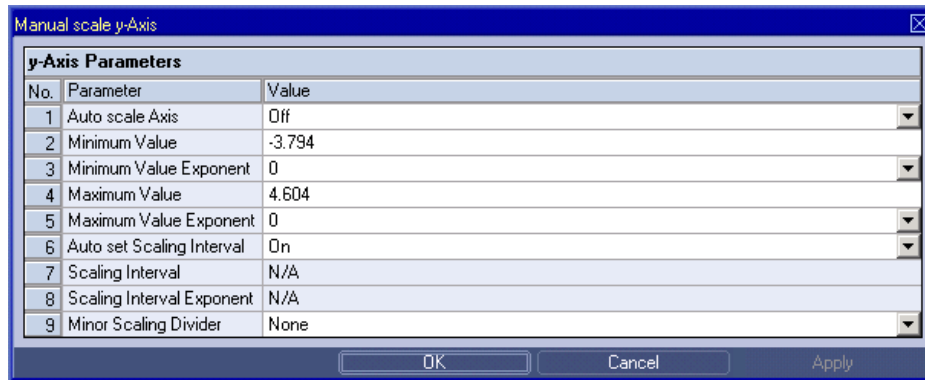


Figure 16: Example of a **Manual scale y-Axis** Dialog of a **MTC Orbit T001**

### 2.2.1.15.2 y-Axis Parameters Table

The **y-Axis Parameters** table contains the parameters of a currently selected y-axis:

Parameter	Description
Auto scale Axis	allows to switch between the available auto scale axis modes
Minimum Value	allows to enter the minimum value of the scaling
Minimum Value Exponent	allows to switch between the supported minimum value exponents
Maximum Value	allows to enter the maximum value of the scaling
Maximum Value Exponent	allows to switch between the supported maximum value exponents
Auto set Scaling Interval	allows to switch between the available modes for the automatic scaling interval
Scaling Interval	allows to enter the scaling interval
Scaling Interval Exponent	allows to switch between the supported scaling interval exponents
Minor Scaling Divider	allows to switch between the available minor scaling dividers

#### Auto scale Axis

Auto scale Axis	Description
On	In this mode, the <b>MTC Orbit T001</b> constantly sets the scaling of the y-axis so that all available values of the data at the y-axis stay visible.
Off	In this mode, the <b>MTC Orbit T001</b> uses the specified <b>Minimum Value</b> and <b>Maximum Value</b> parameters for the scaling of the y-axis.

#### Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the <b>MTC Orbit T001</b> constantly sets the scaling interval of the y-axis according to the currently displayed value interval.
Off	In this mode, the <b>MTC Orbit T001</b> uses the specified <b>Scaling Interval</b> and <b>Scaling Interval Exponent</b> parameters for the scaling interval of the y-axis. In case the specified parameters would lead to overlapping numbers, the automatic scaling interval is being used automatically until the specified parameters allow a valid scaling again.

### 2.2.1.15.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.1.16 Manual scale Renderer Dialog

#### 2.2.1.16.1 Overview

The following screenshot shows an example of a **Manual scale Renderer** dialog:

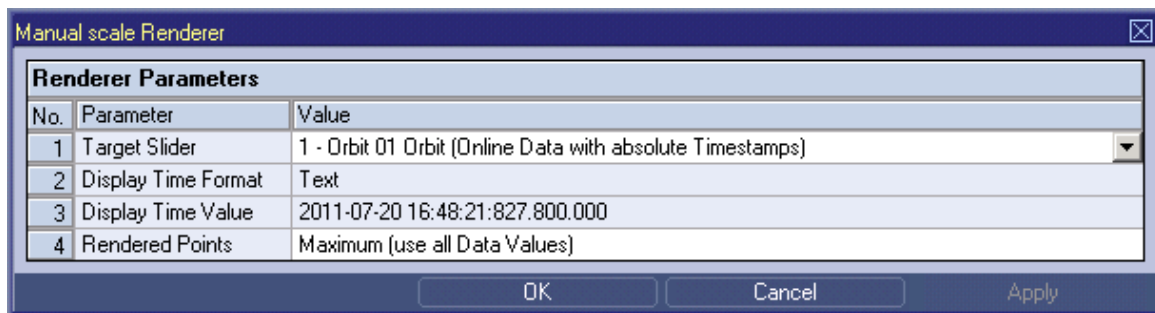


Figure 17: Example of a **Manual scale Renderer** Dialog of a **MTC Orbit T001**

#### 2.2.1.16.2 Renderer Parameters Table

The **Renderer Parameters** table contains the rendering parameters of a currently selected slider:

Parameter	Description
Target Slider	allows to switch between the available sliders
Display Time Format	allows to switch between the available input formats for the display time
Display Time Value	allows to enter the display time of the scaling
Rendered Points	allows to enter the number of points which shall be calculated by the renderer for each orbit visualization

### 2.2.1.16.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.1.17 Drag&Drop sensitive Areas

The following screenshot shows the places within a **MTC Orbit T001** onto which data can be dropped in order to open a new **Monitoring Chart**:

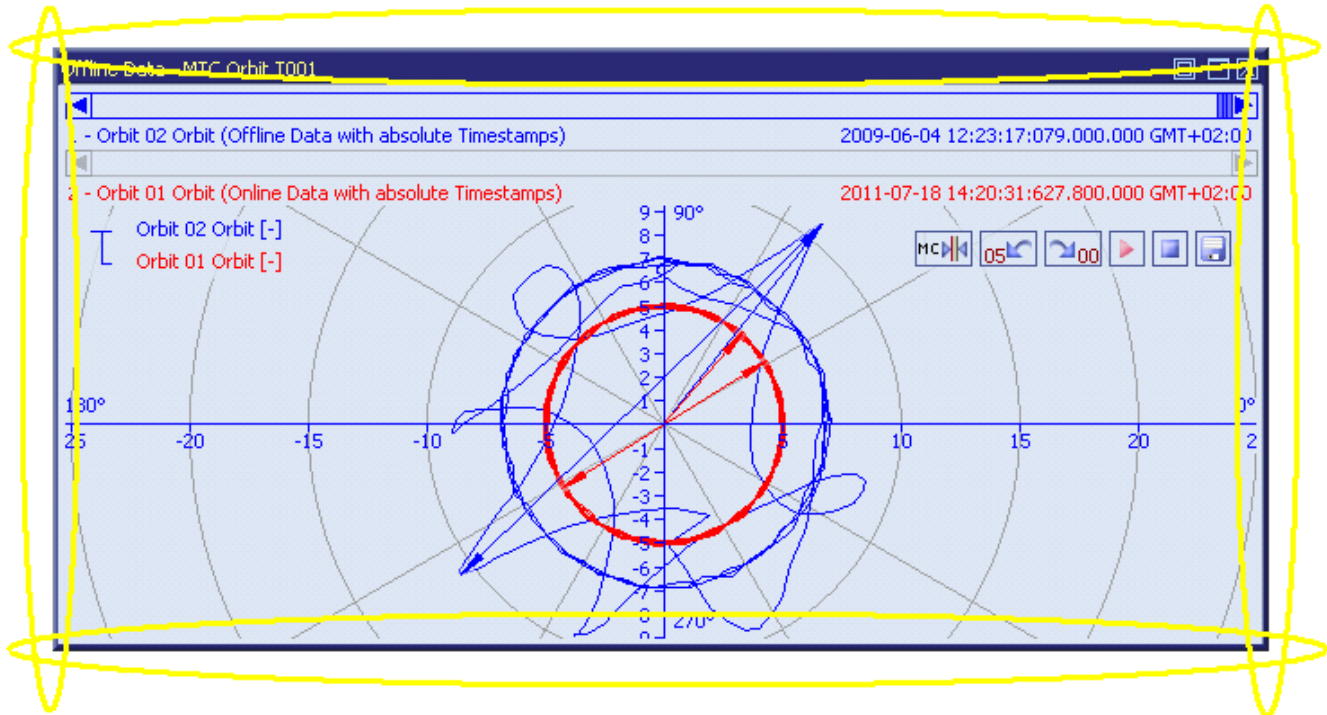


Figure 18: Dropping of Data in order to open a new **Monitoring Chart**

The following screenshot shows the places within a **MTC Orbit T001** onto which data can be dropped in order to add the data to the existing **MTC Orbit T001**:

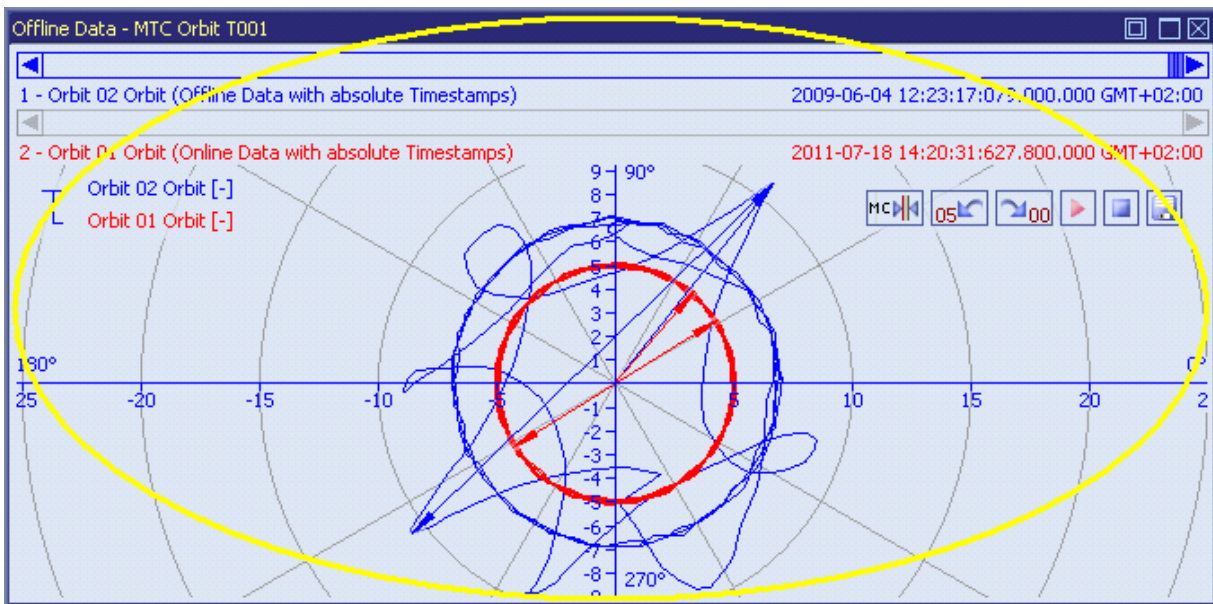


Figure 19: Dropping of Data in order to add it to the existing **MTC Orbit T001**

## 2.2.2 MTC Vector2D T001

### 2.2.2.1 Overview

The **MTC Vector2D T001** is used in order to visualize, create and edit visualizations of two-dimensional vectors within a **Monitoring View Editor**. Multiple charts of this type can be opened and used simultaneously within one **Monitoring View Editor** and/or within multiple **Monitoring View Editors**.

The following screenshot shows an example of a **MTC Vector2D T001**:

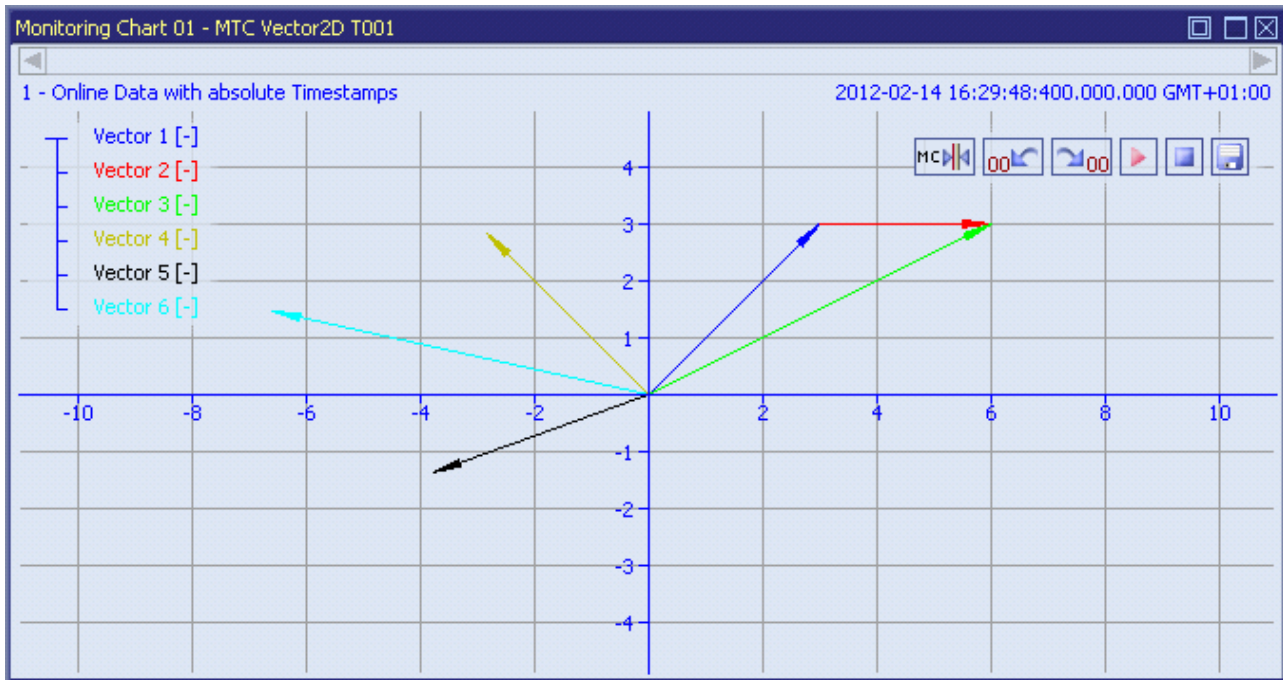


Figure 20: Example of a **MTC Vector2D T001**

Each control of the **MTC Vector2D T001** has a defined task and provides certain functionalities. The following major controls are provided by the **MTC Vector2D T001**:

- Curve Area
- x-Axis Area
- y-Axis Area
- Slider Area
- Legend Area
- Toolbar Area
- Measurement Cursors
- Measurement Cursors Table
- Chart Options Dialog
- Chart Styles Dialog
- Data Style Dialog
- Select Style Dialog
- Manual scale x-Axis Dialog
- Manual scale y-Axis Dialog
- Manual scale Renderer Dialog
- Drag&Drop sensitive Areas

### 2.2.2.2 Curve Area

The **Curve Area** of the **MTC Vector2D T001** is used in order to visualize 2-dimensional vectors. Via mouse and keyboard operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **Curve Area** of a **MTC Vector2D T001**:

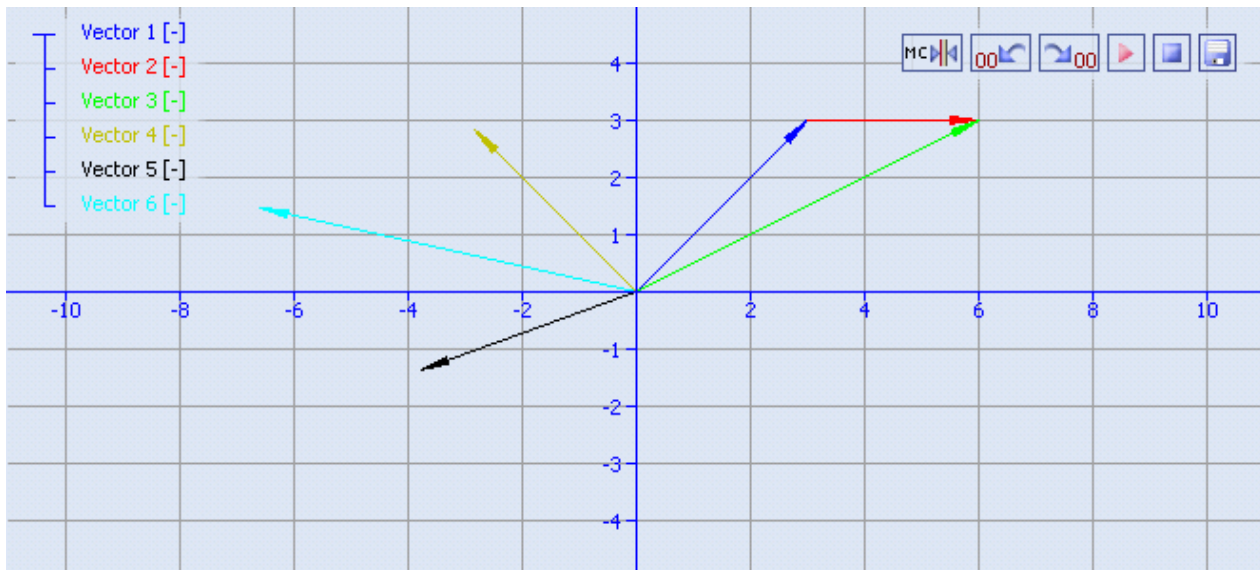


Figure 21: Example of the **Curve Area** of a **MTC Vector2D T001**

#### Background Grid

The background grid of the **MTC** extends the lines from the axis labeling into the **Curve Area**. It is represented as a grid of horizontal and vertical lines in the background of the **Curve Area**.

The appearing and scaling of the background grid is configured via the **Manual scale x-Axis** dialog and via the **Manual scale y-Axis** dialog.

In case the current background grid configuration is set to “manual” and the grid lines can not be drawn (because the grid lines would be too close to each other), the background grid automatically switches to automatic distribution of the grid lines. The manual settings are used again as soon as the scaling of the **MTC Vector2D T001** reaches a value which allows using the manual configuration.

#### Curve Visualization

The visualization always draws one vector from the X0/Y0 position of the vector to the X1/Y1 position of the vector. An arrow points directly to the X1/Y1 position in order to show the direction of the vector.

Both the X0/Y0 and the X1/Y1 position can be anywhere within the **Curve Area**, none of them must be directly within the center of the x- and y-axes.

The data style defines how a data is visualized graphically. It contains the parameters for the color/strength/style of the line as well as the parameters for the color/strength/style of the mark and the rendering method. The styles of each data can be defined at different levels by the user.

The style of each data can be set at the following levels, where the settings of a higher level overwrite the settings of a lower level (top = high, bottom = low):

- **Data Style** dialog of the **MTC Vector2D T001**
- default data style of the **MTC Vector2D T001**



## Keyboard Operations

The following operations can be performed via the keyboard:

Keyboard Operation	Description
<+>	zooms into the x- and y-axis simultaneously
<Shift> + <+>	zooms only into the x-axis
<x> + <+>	behaves like <Shift> + <+>
<Ctrl> + <+>	zooms only into the y-axis
<y> + <+>	behaves like <Ctrl> + <+>
<->	zooms out from the x- and y-axis simultaneously
<Shift> + <->	zooms only out from the x-axis
<x> + <->	behaves like <Shift> + <->
<Ctrl> + <->	zooms only out from the y-axis
<y> + <->	behaves like <Ctrl> + <->
<F>	fits the scaling of the x- and y-axis simultaneously
<L>	toggles the aspect ratio between locked and unlocked
<Shift> + <F>	fits the scaling only of the x-axis
<x> + <F>	behaves like <Shift> + <F>
<Ctrl> + <F>	fits the scaling only of the y-axis
<y> + <F>	behaves like <Ctrl> + <F>
<Ctrl> + <Z>	undoes the latest operation from the undo buffer
<Shift> + <Ctrl> + <Z>	undoes all operations from the undo buffer
<Ctrl> + <Y>	redoes the latest operation from the redo buffer
<Shift> + <Ctrl> + <Y>	redoes all operations from the redo buffer

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. While the left mouse button is kept down, a rectangle is shown in order to indicate the zooming area. The actual zooming is performed when the left mouse button is released:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move] zooms into the specified area of the x- and y-axis simultaneously</li> <li>• &lt;Shift&gt; + [left mouse button down] + [mouse move] zooms only into the specified area of the x-axis <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [left mouse button down] + [mouse move] behaves like &lt;Shift&gt; + [left mouse button down] + [mouse move]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [left mouse button down] + [mouse move] zooms only into the specified area of the y-axis <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [left mouse button down] + [mouse move] behaves like &lt;Ctrl&gt; + [left mouse button down] + [mouse move]</li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without changing of any axis scaling</li> </ul>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Curve Area</b> opens the context menu for the <b>Curve Area</b> .
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move] moves all curves within the <b>Curve Area</b> into the direction of the mouse move <ul style="list-style-type: none"> <li>○ when the &lt;Shift&gt; key is being pressed during the shift operation, the curves are shifted only in horizontal direction <ul style="list-style-type: none"> <li>▪ when &lt;x&gt; key is being pressed during the shift operation, the behavior is like if the &lt;Shift&gt; key is being pressed during the shift operation</li> </ul> </li> <li>○ when the &lt;Ctrl&gt; key is being pressed during the shift operation, the curves are shifted only in vertical direction <ul style="list-style-type: none"> <li>▪ when &lt;y&gt; key is being pressed during the shift operation, the behavior is like if the &lt;Shift&gt; key is being pressed during the shift operation</li> </ul> </li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul> <p>Shifting of the <b>Curve Area</b> is possible only in case the origin is not locked.</p>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>Curve Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] zooms out of the current mouse position of the x- and y-axis simultaneously</li> <li>• [mouse wheel up] zooms into the current mouse position of the x- and y-axis simultaneously</li> <li>• &lt;Shift&gt; + [mouse wheel down] moves all curves within the <b>Curve Area</b> to the left <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel down] behaves like &lt;Shift&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Shift&gt; + [mouse wheel up] moves all curves within the <b>Curve Area</b> to the right <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel up] behaves like &lt;Shift&gt; + [mouse wheel up]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel down] moves all curves within the <b>Curve Area</b> up <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel down] behaves like &lt;Ctrl&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel up] moves all curves within the <b>Curve Area</b> down <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel up] behaves like &lt;Ctrl&gt; + [mouse wheel up]</li> </ul> </li> </ul>

## Drag&Drop of Data

When a time series data is dropped into the **Curve Area**, it is added to the currently present data of the **MTC Vector2D T001**:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the legend.
- In case the current Drag&Drop operation has been started within the **MTC Vector2D T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC Vector2D T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC Vector2D T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC Vector2D T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Fit to Chart	sets the scaling of all t- and y-axes so that the complete values of all data within the <b>MTC Vector2D T001</b> become visible
Fit to Charts	sets the scaling of all <b>Monitoring Charts</b> within the parent <b>Monitoring View Editor</b> so that the complete values of all data within all <b>Monitoring Charts</b> become visible
Zoom in	zooms in at all t- and y-axes simultaneously; the new scaling interval is half of the old scaling interval and the center of the zooming is the current mouse position
Zoom out	zooms out at all t- and y-axes simultaneously; the new scaling interval is the double of the old scaling interval and the center of the zooming is the current mouse position
Lock Aspect Ratio > ...	sets the locking of the aspect ratio to the value which is specified via the submenu of this item
Lock Origin > ...	sets the locking of the origin to the value which is specified via the submenu of this item
Manual scale x-Axis...	opens the <b>Manual scale x-Axis</b> dialog
Manual scale y-Axis...	opens the <b>Manual scale y-Axis</b> dialog
Manual scale Renderer...	opens the <b>Manual scale Renderer</b> dialog
Chart Options...	opens the <b>Chart Options</b> dialog
Copy Chart Options	copies the options of the <b>MTC Vector2D T001</b> below the current mouse position
Paste Chart Options	pastes the currently copied <b>MTC Vector2D T001</b> options onto the <b>MTC Vector2D T001</b> below the current mouse position
Chart Styles...	opens the <b>Chart Styles</b> dialog
Copy Chart Styles	copies the styles of the <b>MTC Vector2D T001</b> below the current mouse position
Paste Chart Styles	pastes the currently copied <b>MTC Vector2D T001</b> styles onto the <b>MTC Vector2D T001</b> below the current mouse position
Show Background Grid > ...	sets the visibility of the background grid to the state which is specified via the submenu of this item
Show Legend > ...	sets the visibility of the <b>Legend Area</b> to the state which is specified via the submenu of this item
Show Toolbar > ...	sets the visibility of the <b>Toolbar Area</b> to the state which is specified via the submenu of this item
Show x-Axis > ...	sets the visibility of the <b>t-Axis Area</b> to the state which is specified via the submenu of this item
Show y-Axis > ...	sets the visibility of the <b>y-Axis Area</b> to the state which is specified via the submenu of this item
Show Sliders > ...	sets the visibility of the <b>Slider Area</b> to the state which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Vector2D T001</b>

### Lock Aspect Ratio

In case the aspect ratio is locked, the scaling of the x- and y-axes always is kept synchronized so that the same amount of pixels are being used at the x- and y-axes for the same interval of values. Changing of the scaling of one axis automatically also changes the scaling of the other axis in case the aspect ratio is locked.

### Lock Origin

In case the origin is locked, the origin of the x- and y-axes always is being kept in the middle of the **MTC Vector2D T001**. In this mode, zooming is not possible via the left mouse button except when the left mouse button is being moved directly above an axis. In addition, shifting via the right mouse button is not possible in this mode.

### 2.2.2.3 x-Axis Area

The **x-Axis Area** of the **MTC Vector2D T001** is used in order to display the scaling of the present x-axis. Via mouse operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **x-Axis Area** of a **MTC Vector2D T001**:

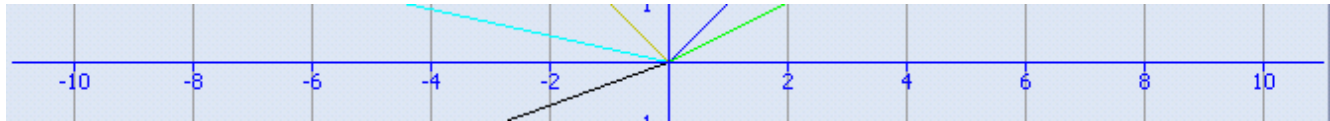


Figure 22: Example of the **x-Axis Area** of a **MTC Vector2D T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	Single and multiple x-axis can be selected/deselected through a left mouse button click: <ul style="list-style-type: none"> <li>• [left mouse button down] above any x-axis selects the below x-axis</li> <li>• in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the <b>x-Axis Area</b>, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected</li> </ul>
single click with keeping the button	A single click of the left mouse button with keeping the button starts a zoom operation. The actual zooming is performed when the mouse is moved: <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move right] zooms out of the x-axis from the x position where the left mouse button has been pressed</li> <li>• [left mouse button down] + [mouse move left] zooms into the x-axis from the x position where the left mouse button has been pressed</li> <li>• &lt;Esc&gt; cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started</li> </ul>
double click	A double click of the left mouse button onto any x-axis opens the <b>Manual scale x-Axis</b> dialog for the x-axis below the current mouse position.

#### Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>x-Axis Area</b> opens the context menu for the <b>x-Axis Area</b> .
single click with keeping the button	A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved: <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move right] moves the x-axis right</li> <li>• [right mouse button down] + [mouse move left] moves the x-axis left</li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul> Shifting of the <b>x-Axis Area</b> is possible only in case the origin is not locked.

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>x-Axes Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the x-axis left</li> <li>• [mouse wheel up] moves the x-axis right</li> <li>• &lt;Shift&gt; + [mouse wheel down] zooms out of the x-axis from the current x position of the mouse cursor</li> <li>• &lt;Shift&gt; + [mouse wheel up] zooms into the x-axis from the current x position of the mouse cursor</li> </ul> <p>Shifting of the <b>x-Axis Area</b> is possible only in case the origin is not locked.</p>

## Drag&Drop of Data

When a data is dropped onto an existing x-axis, it is added to the currently present data of the **MTC Vector2D T001** as if the data would have been dropped directly into the **Curve Area** (see point 2.2.1.2).

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show x-Axis > ...	sets the visibility of the <b>x-Axis Area</b> to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the x-axis shall automatically adopt its scaling so that always the complete values of its contained data are visible
Fit to Axis	sets the scaling of the x-axis so that the complete values of its contained data are visible
Lock Aspect Ratio > ...	sets the locking of the aspect ratio to the value which is specified via the submenu of this item
Manual scale Renderer...	opens the <b>Manual scale Renderer</b> dialog
Manual scale x-Axis...	opens the <b>Manual scale x-Axis</b> dialog
Copy x-Axis Scaling	copies the scaling of the x-axis below the current mouse position
Paste x-Axis Scaling	pastes the currently copied x-axis scaling onto the x-axis below the current mouse position
Rescale x-Axis after Open > ...	sets the rescale type of the x-axis after opening of the Monitoring View File to the type which is specified via the submenu of this item
Rescale x-Axis after Action > ...	sets the rescale type of the x-axis after an action to the type which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Vector2D T001</b>

### 2.2.2.4 y-Axis Area

The **y-Axis Area** of the **MTC Vector2D T001** is used in order to display the scaling of the present y-axis. Via mouse operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **y-Axis Area** of a **MTC Vector2D T001**:

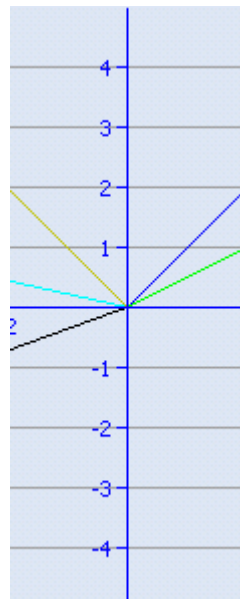


Figure 23: Example of the **y-Axis Area** of a **MTC Vector2D T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	Single and multiple y-axis can be selected/deselected through a left mouse button click: <ul style="list-style-type: none"> <li>• [left mouse button down] above any y-axis selects the below y-axis</li> <li>• in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the <b>y-Axis Area</b>, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected</li> </ul>
single click with keeping the button	A single click of the left mouse button with keeping the button starts a zoom operation. The actual zooming is performed when the mouse is moved: <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move down] zooms out of the y-axis from the y position where the left mouse button has been pressed</li> <li>• [left mouse button down] + [mouse move up] zooms into the y-axis from the y position where the left mouse button has been pressed</li> <li>• &lt;Esc&gt; cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started</li> </ul>
double click	A double click of the left mouse button onto any y-axis opens the <b>Manual scale y-Axis</b> dialog for the y-axis below the current mouse position.

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>y-Axis Area</b> opens the context menu for the <b>y-Axis Area</b> .
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move down] moves the y-axis down</li> <li>• [right mouse button down] + [mouse move up] moves the y-axis up</li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul> <p>Shifting of the <b>y-Axis Area</b> is possible only in case the origin is not locked.</p>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>y-Axis Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the y-axis up</li> <li>• [mouse wheel up] moves the y-axis down</li> <li>• &lt;Ctrl&gt; + [mouse wheel down] zooms out of the y-axis from the current y position of the mouse cursor</li> <li>• &lt;Ctrl&gt; + [mouse wheel up] zooms into the y-axis from the current y position of the mouse cursor</li> </ul> <p>Shifting of the <b>y-Axis Area</b> is possible only in case the origin is not locked.</p>

## Drag&Drop of Data

When a data is dropped onto an existing y-axis, it is added to the currently present data of the **MTC Vector2D T001** as if the data would have been dropped directly into the **Curve Area** (see point 2.2.1.2).

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show y-Axis > ...	sets the visibility of the <b>y-Axis Area</b> to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the y-axis shall automatically adopt its scaling so that always the complete values of its contained data are visible
Fit to Axis	sets the scaling of the y-axis so that the complete values of its contained data are visible
Lock Aspect Ratio > ...	sets the locking of the aspect ratio to the value which is specified via the submenu of this item
Manual scale Renderer	opens the <b>Manual scale Renderer</b> dialog
Manual scale y-Axis...	opens the <b>Manual scale y-Axis</b> dialog
Copy y-Axis Scaling	copies the scaling of the y-axis below the current mouse position
Paste y-Axis Scaling	pastes the currently copied y-axis scaling onto the y-axis below the current mouse position
Rescale y-Axis after Open > ...	sets the rescale type of the y-axis after opening of the Monitoring View File to the type which is specified via the submenu of this item
Rescale y-Axis after Action > ...	sets the rescale type of the y-axis after an action to the type which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Vector2D T001</b>

### 2.2.2.5 Slider Area

The **Slider Area** of the **MTC Vector2D T001** is used in order to configure the currently visualized point in time. The total width of each slider represents the oldest and the newest available time of the current data of its time domain and the inside slider button represents the currently visualized point in time out of the total time interval of the data. By dragging of the slider button, the currently visualized time is modified.

The following screenshot shows an example of the **Slider Area** of a **MTC Vector2D T001**:

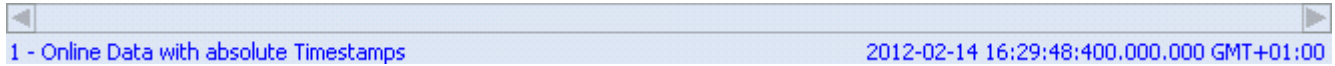


Figure 24: Example of the **Slider Area** of a **MTC Vector2D T001**

#### Time Domains

Within the **Slider Area**, there is one slider being available for each of the possible time domains. Each slider is being displayed only in case its according time domain is actually being used within the current **MTC yn T001**.

#### Naming of Sliders

Each slider displays its name at its left bottom corner. The name of each slider contains the following components:

- number of the slider
- name of the used time domain

#### Available Times

The left border of each slider always displays and represents the oldest time of all of the data of its time domain. The right border of each slider always displays and represents the newest time of all of the data of its time domain.

In case the visualization of online data is running (not paused), the left and right borders of the affected slider button are constantly updated so that they represent the currently available time interval of their time axis.

#### Displayed Times

Below the right border of each slider, the current time of the slider button is being displayed.

In case the visualization of online data is running (not paused), the displayed current time is constantly updated.



## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button onto the left step button	<p>A single click of the left mouse button with releasing the button above the left step button shifts the currently displayed point in time into the past:</p> <ul style="list-style-type: none"> <li>• the next older timestamp from the data at the time domain of the slider is being chosen as new current point in time <ul style="list-style-type: none"> <li>○ in case the current point in time already is the oldest available point in time, the left step button does not change the current point in time any more</li> </ul> </li> </ul>
single click with releasing the button onto the right step button	<p>A single click of the left mouse button with releasing the button above the right step button shifts the currently displayed point in time into the future:</p> <ul style="list-style-type: none"> <li>• without additional keys being pressed, the next newer timestamp from the data at the time domain of the slider is being chosen as new current point in time <ul style="list-style-type: none"> <li>○ in case the current point in time already is the newest available point in time, the right step button does not change the current point in time any more</li> </ul> </li> </ul>
single click with keeping the button onto the left step button	<p>A single click of the left mouse button with keeping the button down onto the left step button behaves like if the left step button would be clicked with the left mouse button constantly.</p>
single click with keeping the button onto the right step button	<p>A single click of the left mouse button with keeping the button down onto the right step button behaves like if the right step button would be clicked with the left mouse button constantly.</p>
single click with keeping the button onto the slider button	<p>A single click of the left mouse button with keeping the button down onto the slider button allows to modify the current point in time:</p> <ul style="list-style-type: none"> <li>• in case the mouse is moved to the left, the current point in time is shifted into the past <ul style="list-style-type: none"> <li>○ the slider button can not be dragged out of the left border of the <b>Slider Area</b></li> </ul> </li> <li>• in case the mouse is moved to the right, the current point in time is shifted into the future <ul style="list-style-type: none"> <li>○ the slider button can not be dragged out of the right border of the <b>Slider Area</b></li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without modifying the current point in time</li> </ul>

## Operations via the Right Mouse Button

The following operation can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>Slider Area</b> opens the context menu for the <b>Slider Area</b>.</p>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>Slider Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the slider button left (into the past) <ul style="list-style-type: none"> <li>○ in case the current begin time of the displayed interval already is the oldest available point in time (or older), [mouse wheel down] does not change the currently displayed interval</li> </ul> </li> <li>• [mouse wheel up] moves the slider button right (into the future) <ul style="list-style-type: none"> <li>○ in case the current end time of the displayed interval already is the newest available point in time (or newer), [mouse wheel up] does not change the currently displayed interval</li> </ul> </li> </ul>

## Drag&Drop of Data

When a data is dropped onto an existing y-axis, it is added to the currently present data of the **MTC Vector2D T001** as if the data would have been dropped directly into the **Curve Area** (see point 2.2.1.2).

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show Sliders > ...	sets the visibility of the <b>Slider Area</b> to the state which is specified via the submenu of this item
Manual scale Renderer...	opens the <b>Manual scale Renderer</b> dialog
Pause Visualization	pauses the visualization, which pauses the automatic update of all data which belongs to this slider
Continue Visualization	continues the visualization, which continues the automatic update of all data which belongs to this slider
Update Display Time after Open > ...	sets the update type of the display time after opening of the Monitoring View File to the type which is specified via the submenu of this item
Update Display Time after Action > ...	sets the update type of the display time after an action to the type which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Vector2D T001</b>

### 2.2.2.6 Legend Area

The **Legend Area** displays all of the data which are present within the **MTC Vector2D T001** at the moment.

The following screenshot shows an example of the **Legend Area** of a **MTC Vector2D T001**:

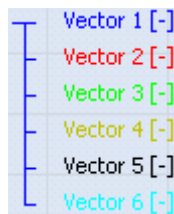


Figure 25: Example of the **Legend Area** of a **MTC Vector2D T001**

### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Selecting of data within the <b>Legend Area</b> is performed identically to the selecting of items within the other trees of the <b>X-Tools Client</b>.</p> <p>In case a data within the <b>Legend Area</b> is being selected, all items of other type (e.g. x-axis and y-axis) of the clicked <b>Monitoring Chart</b> are deselected automatically.</p>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button down onto any text within the <b>Legend Area</b> starts a Drag&amp;Drop operation for the currently selected data(s) as soon as the mouse cursor is moved:</p> <ul style="list-style-type: none"> <li>• a Drag&amp;Drop operation within the same <b>MTC Vector2D T001</b> moves the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Ctrl&gt; can be pressed in order to execute a copy operation instead of the move operation within the same <b>MTC Vector2D T001</b></li> </ul> </li> <li>• a Drag&amp;Drop operation to another <b>MTC Vector2D T001</b> copies the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Shift&gt; can be pressed in order to execute a move operation instead of the copy operation to the other <b>MTC Vector2D T001</b></li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without moving or copying anything</li> </ul>
double click	A double click of the left mouse button onto any text within the <b>Legend Area</b> opens the <b>Data Style</b> dialog for the data below the current mouse position.

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Legend Area</b> opens the context menu for the <b>Legend Area</b> .
single click with keeping the button	<p>A single click of the right mouse button with keeping the button above the <b>Legend Area</b> starts a shift operation for the legend texts. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move down] moves the <b>Legend Area</b> down</li> <li>• [right mouse button down] + [mouse move up] moves the <b>Legend Area</b> up</li> <li>• &lt;Esc&gt; cancels the current operation and sets the position of the <b>Legend Area</b> back to the place which it had before the shift operation had been started</li> </ul> <p>The shifting of the legend texts is enabled only in case not all of the available legend texts fit into the currently available vertical space.</p>

## Drag&Drop of Data

During all Drag&Drop of data into the **Legend Area**, the following rules apply:

- In case the current Drag&Drop operation has been started within the **MTC Vector2D T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC Vector2D T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC Vector2D T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC Vector2D T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.
- In order to add a data as root of a certain legend tree, the desired data has to be dropped above the current root data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, the first of them becomes the new root of the target legend tree and all others are listed directly below it.
- In order to add a data in between two present data of the legend tree, the desired data has to be dropped in between the two desired data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, all of them are inserted in between the two desired data of the target legend tree.
- In order to add a data at the end of a certain legend tree, the desired data has to be dropped below the last data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, all of them are added to the end of the target legend tree.
- In order to remove a data from the legend tree with the mouse, the desired data has to be dragged to any position within the **X-Tools Client** which does not accept data.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show Legend > ...	sets the visibility of the legend to the state which is specified via the submenu of this item
Show Data Sources > ...	specifies whether the legend trees shall display the name of the source server together with the data name or not
Set Cursor Data	assigns the measurement cursor to this 2-dimensional vector data
Data Style...	opens the <b>Data Style</b> dialog for the selected data(s)
Copy Data Style	copies the style of the data below the current mouse position
Paste Data Style	pastes the currently copied data style onto the data below the current mouse position
Remove Data	removes the selected data(s) from the <b>MTC Vector T001</b>
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Vector T001</b>

### 2.2.2.7 Toolbar Area

The **Toolbar Area** displays the buttons which are provided for fast access to frequently used functionalities.

The following screenshot shows an example of the **Toolbar Area** of a **MTC Vector2D T001**:



Figure 26: Example of the **Toolbar Area** of a **MTC Vector2D T001**

### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click onto the <b>On/Off Measurement Cursors</b> button	A single click of the left mouse button onto the <b>On/Off Measurement Cursors</b> button toggles the measurement cursor between on and off.
single click onto the <b>Undo</b> button	A single click of the left mouse button onto the <b>Undo</b> button undoes the last operation from the undo buffer.
single click onto the <b>Redo</b> button	A single click of the left mouse button onto the <b>Redo</b> button redoes the last operation from the redo buffer.
single click onto the <b>Continue Visualization</b> button	A single click of the left mouse button onto the <b>Continue Visualization</b> button continues the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Continue Visualization</b> button sets the visualization of all data to running.
single click onto the <b>Pause Visualization</b> button	A single click of the left mouse button onto the <b>Pause Visualization</b> button pause the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Pause Visualization</b> button sets the visualization of all data to paused.
single click onto the <b>Store Data Snapshot</b> button	A single click of the left mouse button onto the <b>Store Data Snapshot</b> button starts the storing of the data which are contained within the <b>MTC Vector2D T001</b> .  While the storing is in progress, the <b>Storage Progress</b> dialog shows the current progress of the storing and also can be used in order to cancel the storing.  See also tutorial, chapter "Storing of Data Snapshots out of the Monitoring System".

### Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Toolbar Area</b> opens the context menu for the <b>Toolbar Area</b> . The displayed context menu is dependent to the clicked toolbar button as described below.

## Context Menu

The following specific context menu items are provided for the **On/Off Measurement Cursors** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Show Measurement Cursors > ...	sets the visibility of measurement cursor to the state which is specified via the submenu of this item
Restore Measurement Cursors	restores the position of the measurement cursor
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Vector2D T001</b>

The following specific context menu items are provided for the **Undo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Undo	undoes the last operation from the undo buffer
Undo all	undoes all operations from the undo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC Vector2D T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Vector2D T001</b>

The following specific context menu items are provided for the **Redo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Redo	redoes the last operation from the redo buffer
Redo all	redoes all operations from the redo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC Vector2D T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Vector2D T001</b>

The following specific context menu items are provided for the **Pause Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Vector2D T001</b>

The following specific context menu items are provided for the **Continue Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Vector2D T001</b>

The following specific context menu items are provided for the **Store Data Snapshot** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Store Data Snapshot	starts the storing of the data which are contained within the <b>MTC Vector2D T001</b>
Data Snapshot Scope > ...	sets the scope for data snapshots to the setting which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC Vector2D T001</b>

### 2.2.2.8 Measurement Cursor

The **Measurement Cursors** are represented through one 2-dimensional cross, where the cross is placed exactly at the point of intersection of both dimensions and moves into all four directions from there, until it reaches the borders of the **Curve Area**. In addition, the measurement cursor also draws a line from the origin of the x- and y-axes to the 2-dimensional cross. The **Measurement Cursors** can be shifted in horizontal and vertical direction.

The following screenshot shows an example of the **Measurement Cursor** of a **MTC Vector2D T001**:

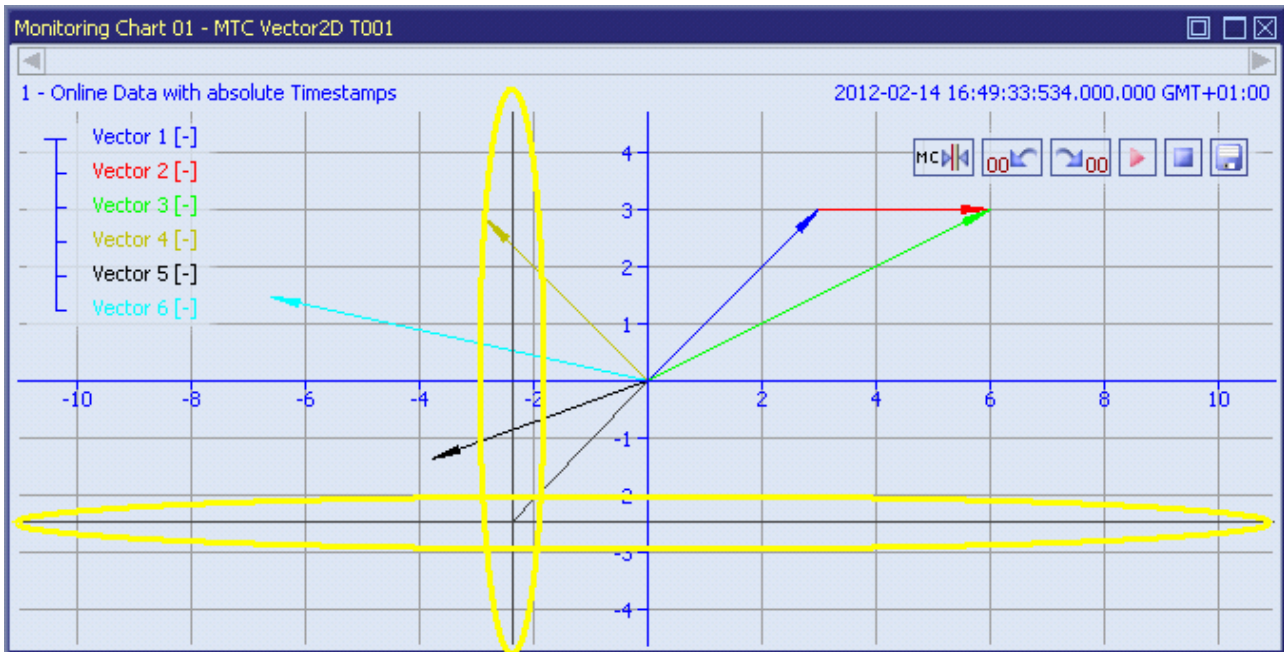


Figure 27: Example of the **Measurement Cursor** of a **MTC Vector2D T001**

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a shift operation. The actual shifting of the measurement cursor is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move] shifts the targeted measurement cursor to the new mouse position <ul style="list-style-type: none"> <li>○ in case the left mouse button was pressed above the horizontal line of the cursor, the cursor is shifted only in vertical direction</li> <li>○ in case the left mouse button was pressed above the vertical line of the cursor, the cursor is shifted only in horizontal direction</li> <li>○ in case the left mouse button was pressed above the point of intersection of both lines of the cursor, the cursor is shifted in horizontal and vertical direction</li> </ul> </li> <li>• the measurement cursor automatically snaps to the exact position of a known X0/Y0 or X1/Y1 position in case there is any close to the current mouse position <ul style="list-style-type: none"> <li>○ snapping is turned on in case the current mouse position is less than 5 pixels away from a known X0/Y0 or X1/Y1 position</li> <li>○ when there are multiple positions of known X0/Y0 and/or X1/Y1 positions close to the measurement cursor, the measurement cursor snaps to the one position which is closest to the position of the mouse cursor <ul style="list-style-type: none"> <li>▪ multiple data can share the same X0/Y0 and/or X1/Y1 positions - in this case, the measurement cursor snaps to the data which is topmost within the legend</li> <li>▪ this snapping also can assign the measurement data from one 2-dimensional vector data to another 2-dimensional vector data</li> </ul> </li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation and sets the position of the measurement cursor back to the position which it had before the shift operation had been started</li> </ul> <p>The values which are displayed by the <b>Measurement Cursors</b> table are updated automatically while the measurement cursor is shifted.</p>

### Assignment of the Measurement Cursor

The **Measurement Cursor** can be assigned to the X0/Y0 or to the X1/Y1 position of one 2-dimensional vector data.

After the **Measurement Cursor** has been assigned to one 2-dimensional vector data (either because the **Measurement Cursor** has been turned on right now or because the **Set Cursor Data** entry from the context menu of the **Legend Area** has been called), the **Measurement Cursor** is placed at the (X0/Y0 or X1/Y1) position of its assigned 2-dimensional vector data.

In case the **Measurement Cursor** is being moved by the user, it can be placed anywhere within the **Curve Area**. In order to assign it to a Vector2D data again, the **Set Cursor Data** entry from the context menu of the **Legend Area** can be used.

The **Measurement Cursor** also can be assigned to a 2-dimensional vector data by moving of the **Measurement Cursor**. Through the used snapping the **Measurement Cursor** can be placed either to the X0/Y0 or to the X1/Y1 position of any 2-dimensional vector data.

### Automatic Update of the Cursor Position

The automatic update of the cursor position is performed only in case the **Measurement Cursor** is assigned to a 2-dimensional vector data currently.

In case the **Measurement Cursor** is assigned to a data, it is assigned either to the X0/Y0 position of the data or to the X1/Y1 position of the data. After an update of the visualization, the assigned point of the **Measurement Cursor** may have been moved. In this case, the **Measurement Cursor** is being placed automatically to the new (X0/Y0 or X1/Y1) position.

In case the 2-dimensional vector data to which the **Measurement Cursor** is assigned currently is removed from the **MTC Vector2D T001** or does not provide a value any more, the **Measurement Cursor** remains at the last known position and does not update its position any more.

### 2.2.2.9 Measurement Cursors Table

The **Measurement Cursors** table contains the measurement values of all **MTC Vector2D T001s** which are present within the parent **Monitoring View Editor**. The following screenshot shows an example for the **Measurement Cursors** table for a **MTC Vector2D T001**:

Measurement Cursors - MTC Vector2D T001									
No.	Chart	Data	Unit	X0	Y0	X1	Y1	Length	Angle [°]
1	Monitoring Chart 01	Cursor		0.000	0.000	-75.425	65.659	100.000	138.960
2	Monitoring Chart 01	AddV2D 01 Vector 1	-	0.000	0.000	-75.425	65.659	100.000	138.960
3	Monitoring Chart 01	AddV2D 01 Vector 2	-	0.000	0.000	13.779	-99.046	100.000	277.920
4	Monitoring Chart 01	AddV2D 01 AddV2D	-	0.000	0.000	-61.646	-33.388	70.107	208.440

Figure 28: Example of a **Measurement Cursors** Table of a **MTC Vector2D T001**

It is opened within the **Cursor Area** of the parent **Monitoring View Editor** of the **MTC Vector2D T001**:

Column	Description
No.	contains the row number
Chart	contains the name of the chart from which the data comes
Data	contains the name of the data
Unit	contains the unit of the data
X0	contains the X0 position of the data
Y0	contains the Y0 position of the data
X1	contains the X1 position of the data
Y1	contains the Y1 position of the data
Length	contains the length of the data
Angle	contains the angle of the data

The contents of the **Measurement Cursors** table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.



## 2.2.2.10 Chart Options Dialog

### 2.2.2.10.1 Overview

The following screenshot shows an example of a **Chart Options** dialog:

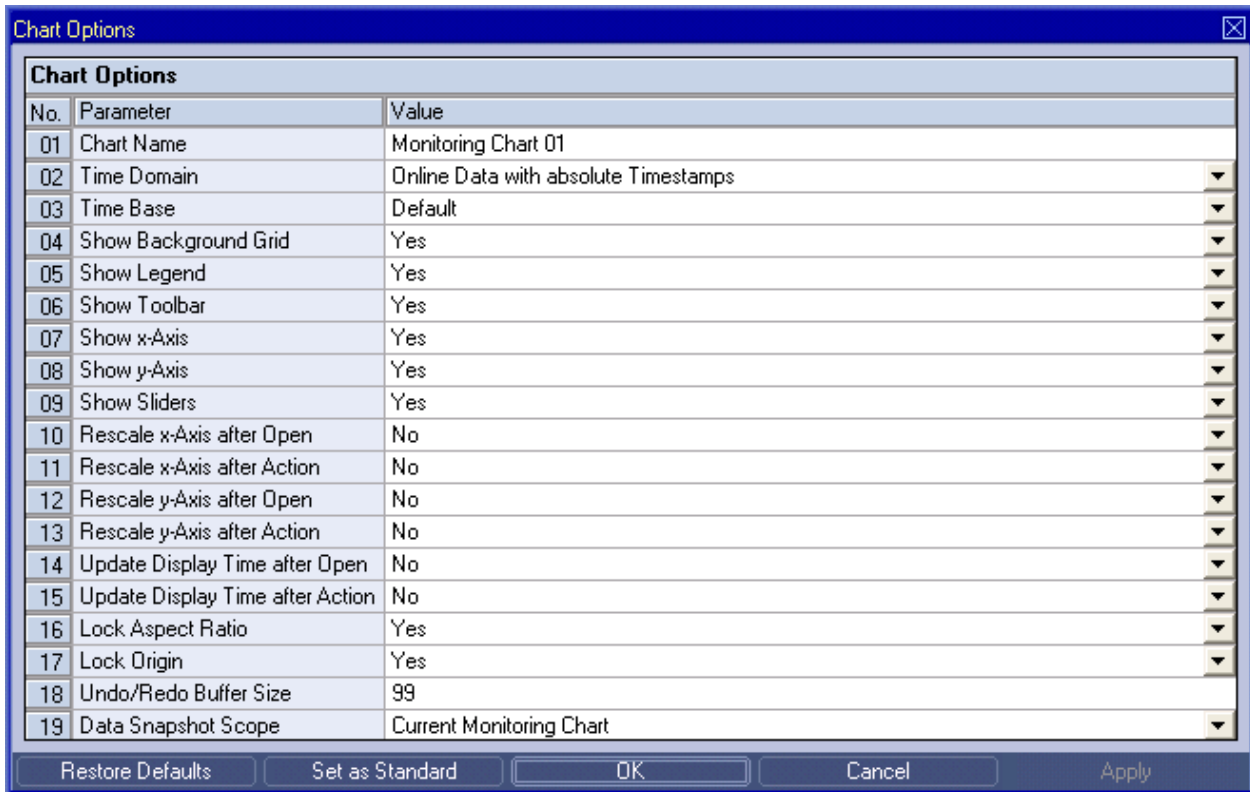


Figure 29: Example of a **Chart Options** Dialog of a **MTC Vector2D T001**

## 2.2.2.10.2 Chart Options Table

The **Chart Options** table contains the chart options of the **MTC Vector2D T001**:

Parameter	Description
Chart Name	allows to enter a name for the chart
Time Domain	allows to choose the time domain
Time Base	allows to choose the time base
Show Background Grid	allows to choose whether the background grid shall be shown within the <b>Curve Area</b>
Show Legend	allows to choose whether the <b>Legend Area</b> shall be shown
Show Toolbar	allows to choose whether the <b>Toolbar Area</b> shall be shown
Show x-Axis	allows to choose whether the <b>x-Axis Area</b> shall be shown
Show y-Axis	allows to choose whether the <b>y-Axis Area</b> shall be shown
Show Sliders	allows to choose whether the <b>Slider Area</b> shall be shown
Rescale x-Axis after Open	allows to choose whether the x-axis shall be scaled automatically after the Monitoring View File has been opened
Rescale x-Axis after Action	allows to choose whether the x-axis shall be scaled automatically after the displayed data have been modified outside the <b>MTC Vector2D T001</b> or after a new data has been dropped into the <b>MTC Vector2D T001</b>
Rescale y-Axis after Open	allows to choose whether the y-axis shall be scaled automatically after the Monitoring View File has been opened
Rescale y-Axis after Action	allows to choose whether the y-axis shall be scaled automatically after the displayed data have been modified outside the <b>MTC Vector2D T001</b> or after a new data has been dropped into the <b>MTC Vector2D T001</b>
Update Display Time after Open	allows to choose whether the display time shall be updated automatically after the Monitoring View File has been opened
Update Display Time after Action	allows to choose whether the display time shall be updated automatically after the displayed data have been modified outside the <b>MTC Vector2D T001</b> or after a new data has been dropped into the <b>MTC Vector2D T001</b>
Lock Aspect Ratio	sets the locking of the aspect ratio to the value which is specified via the submenu of this item
Lock Origin	sets the locking of the origin to the value which is specified via the submenu of this item
Undo/Redo Buffer Size	allows to enter the total size of undo/redo operations which shall be remembered by the <b>MTC Vector2D T001</b>
Data Snapshot Scope	allows to choose whether data snapshots shall store only the data from the current <b>Monitoring Chart</b> or from the whole Monitoring View

### Chart Name

The **Chart Name** is used by other modules in order to identify a certain **MTC Vector2D T001**. Within the current Monitoring View, the **Chart Name** of each **MTC Vector2D T001** must be unique.

### Time Domain

The following time domains are supported by the **Chart Options** dialog of the **MTC Vector2D T001**:

- Online Data with absolute Timestamps
- Offline Data with absolute Timestamps
- Offline Data with relative Timestamps

The **Time Domain** cell displays the time domain which is currently being used by all data of the **MTC Vector2D T001**. In case more than one time domain is being used currently, the **Time Domain** cell stays empty.

When another time domain is being chosen via the **Time Domain** cell, the chosen time domain is applied to all of the data of the **MTC Vector2D T001**. As a result, all data use the data with the known name and specified time domain for their visualization. In case there is no data with the known name and matching time domain, the affected data becomes marked as not present.

In case the time domain is being changed, the x-/y-axis and the display time can be updated automatically in case the **Rescale x-Axis after Action**, **Rescale y-Axis after Action** or **Rescale Display Time after Action** options are being set to "Yes".

## Time Base

The chosen time base specifies how the time stamps of each probe, which are being stored in GMT internally, are being represented by the **MTC Vector2D T001**. In case online data is being displayed and the option "Use the local Time of the Offline Data" is being chosen, the time base for all online data is taken from the time base setting of the Monitoring View (like if "Default" would have been chosen for the time base of the **MTC Vector2D T001**).

### Rescale x-Axis after Open

Rescale x-Axis after Open	Description
Yes	In case the rescale mode for the x-axis after open is set to "Yes", the <b>MTC Vector2D T001</b> automatically rescales its x-axis after the Monitoring View File has been opened so that all values from all data of the x-axis become visible.
No	In case the rescale mode for the x-axis after open is set to "No", the <b>MTC Vector2D T001</b> does not touch the scaling of its x-axis after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale x-Axis after Action

Rescale x-Axis after Action	Description
Yes	In case the rescale mode for the x-axis after an action is set to "Yes", the <b>MTC Vector2D T001</b> automatically rescales its x-axis after an external action has modified the displayed data so that all values from the x-axis become visible.  The following actions result in an automatic rescale of the x-axis in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC Vector2D T001</b></li> </ul>
No	In case the rescale mode for the x-axis after an action is set to "No", the <b>MTC Vector2D T001</b> does not touch the scaling of its x-axis after an external action has modified the displayed and leaves it at the current values.

### Rescale y-Axis after Open

Rescale y-Axis after Open	Description
Yes	In case the rescale mode for the y-axis after open is set to "Yes", the <b>MTC Vector2D T001</b> automatically rescales its y-axis after the Monitoring View File has been opened so that all values from all data of the y-axis become visible.
No	In case the rescale mode for the y-axis after open is set to "No", the <b>MTC Vector2D T001</b> does not touch the scaling of its y-axis after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale y-Axis after Action

Rescale y-Axis after Action	Description
Yes	In case the rescale mode for the y-axis after an action is set to "Yes", the <b>MTC Vector2D T001</b> automatically rescales the y-axis after an external action has modified the displayed data so that all values from the y-axis become visible.  The following actions result in an automatic rescale of the y-axis in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC Vector2D T001</b></li> </ul>
No	In case the rescale mode for the y-axis after an action is set to "No", the <b>MTC Vector2D T001</b> does not touch the scaling of its y-axis after an external action has modified the displayed data and leaves it at the current values.

### Update Display Time after Open

Update Display Time after Open	Description
Yes	In case the update mode for the display time after open is set to "Yes", the <b>MTC Vector2D T001</b> automatically sets its display time to the newest available point in time after the Monitoring View File has been opened.
No	In case the update mode for the display time after open is set to "No", the <b>MTC Vector2D T001</b> does not touch the display time after the Monitoring View File has been opened and leaves it at the stored value from the Monitoring View File.

### Update Display Time after Action

Update Display Time after Action	Description
Yes	<p>In case the update mode for the display time after an action is set to "Yes", the <b>MTC Vector2D T001</b> automatically sets its display time to the newest available point in time after an external action has modified the displayed data so that all values from the y-axis become visible.</p> <p>The following actions result in an automatic update of the display time in case this mode is chosen:</p> <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC Vector2D T001</b></li> </ul>
No	In case the update mode for the display time after an action is set to "No", the <b>MTC Vector2D T001</b> does not touch the display time after an external action has modified the displayed data and leaves it at the current value.

#### 2.2.2.10.3

#### Menu Bar

Menu Button	Description
Restore Defaults	Sets all options back to their default settings.
Set as Standard	Sets the current options as standard options for each new <b>MTC Vector2D T001</b> . The options of already existing <b>MTC Vector2D T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

## 2.2.2.11 Chart Styles Dialog

### 2.2.2.11.1 Overview

The following screenshot shows an example of a **Chart Styles** dialog:

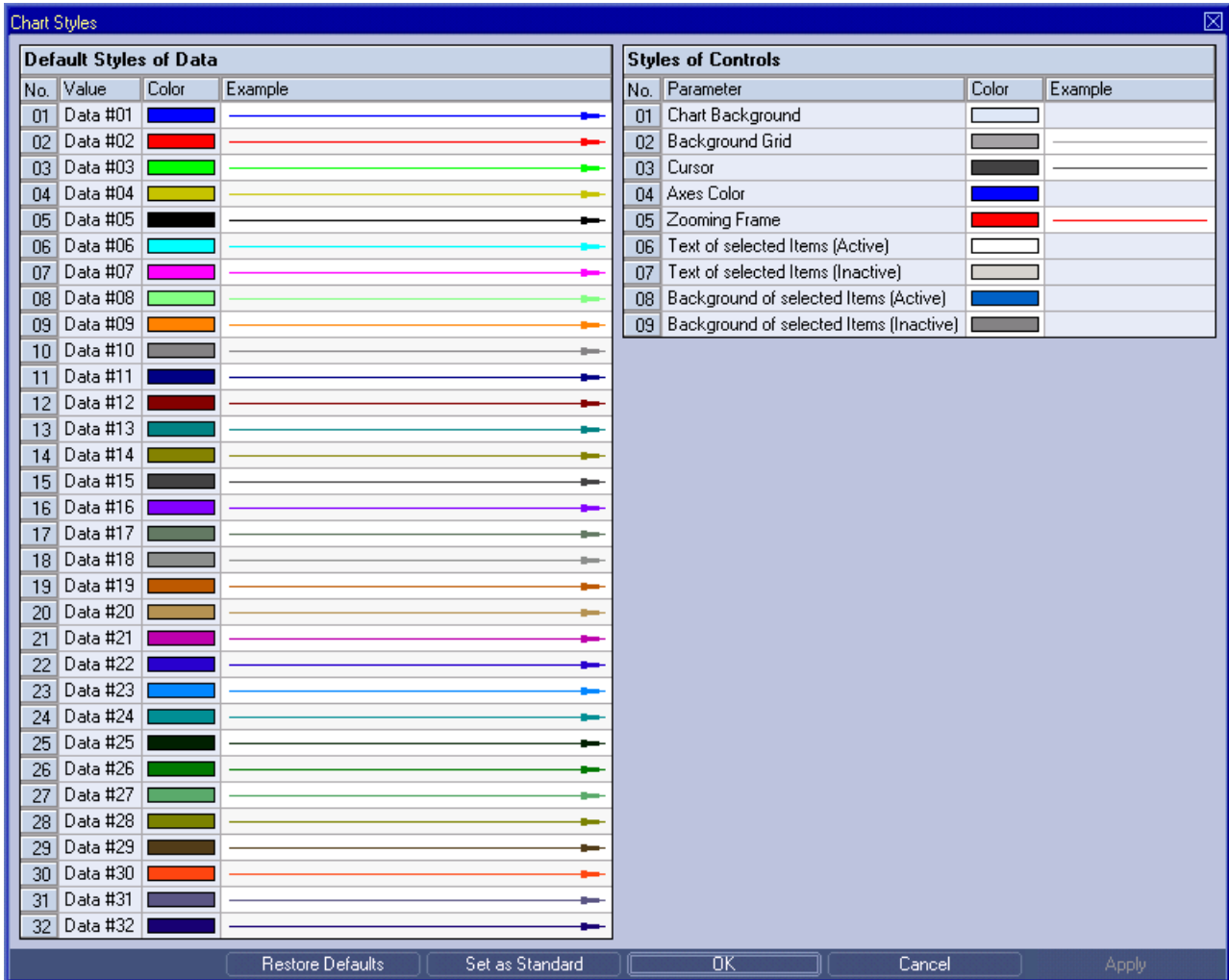


Figure 30: Example of a **Chart Styles** Dialog of a **MTC Vector2D T001**

### 2.2.2.11.2 Default Styles of Data Table

The **Default Styles of Data** table contains the default styles of data within the **MTC Vector2D T001**:

Parameter	Description
Data #01 ... Data #32	displays the currently chosen color and style for the according data

A double-click into the **Color** column of this control opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of this control opens the **Select Style** dialog for the according row.

### 2.2.2.11.3 Styles of Controls Table

The **Styles of Controls** table contains the styles of the controls of the **MTC Vector2D T001**:

Parameter	Description
Chart Background	displays the currently chosen color for the chart background
Background Grid	displays the currently chosen style for the background grid
Cursor	displays the currently chosen color for the cursor
Axes Color	displays the currently chosen color for the axes
Zooming Frame	displays the currently chosen style for the zooming frame
Text of selected Items (Active)	displays the currently chosen color of the text of active selected items
Text of selected Items (Inactive)	displays the currently chosen color of the text of inactive selected items
Background of selected Items (Active)	displays the currently chosen color of the background of active selected items
Background of selected Items (Inactive)	displays the currently chosen color of the background of inactive selected items

A double-click into the **Color** column of any row opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of a row which supports different styles opens the **Select Style** dialog for the according row. In case different styles are not supported by a row, a double-click into the **Example** column opens the **Select Color** dialog for the according row.

### 2.2.2.11.4 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
Set as Standard	Sets the current styles as standard styles for each new <b>MTC Vector2D T001</b> . The styles of already existing <b>MTC Vector2D T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.

### 2.2.2.12 Data Style Dialog

#### 2.2.2.12.1 Overview

The following screenshot shows an example of a **Data Style** dialog:

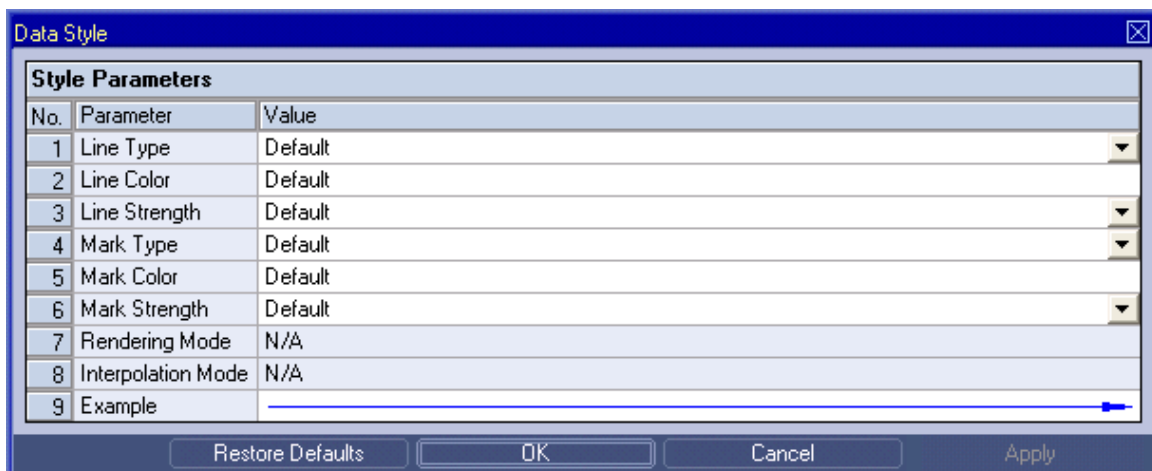


Figure 31: Example of a **Data Style** Dialog of a **MTC Vector2D T001**

### 2.2.2.12.2 Style Parameters Table

The **Style Parameters** table contains the visualization style parameters of the currently selected data:

Parameter	Description
Line Type	allows to switch between the available line types
Line Color	allows to enter the desired line color
Line Strength	allows to switch between the available line strengths
Mark Type	allows to switch between the available mark types
Mark Color	allows to enter the desired mark color
Mark Strength	allows to switch between the available mark strengths
Rendering Mode	allows to switch between the available rendering modes
Interpolation Mode	not applicable
Example	displays an example curve according to the specified data style

A value of "Default" can be assigned to each style parameter. In case "Default" is being chosen, the according value from the **Chart Styles** dialog is being used for the visualization of the data.

### 2.2.2.12.3 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.

### 2.2.2.13 Select Style Dialog

#### 2.2.2.13.1 Overview

The following screenshot shows an example of a **Select Style** dialog:

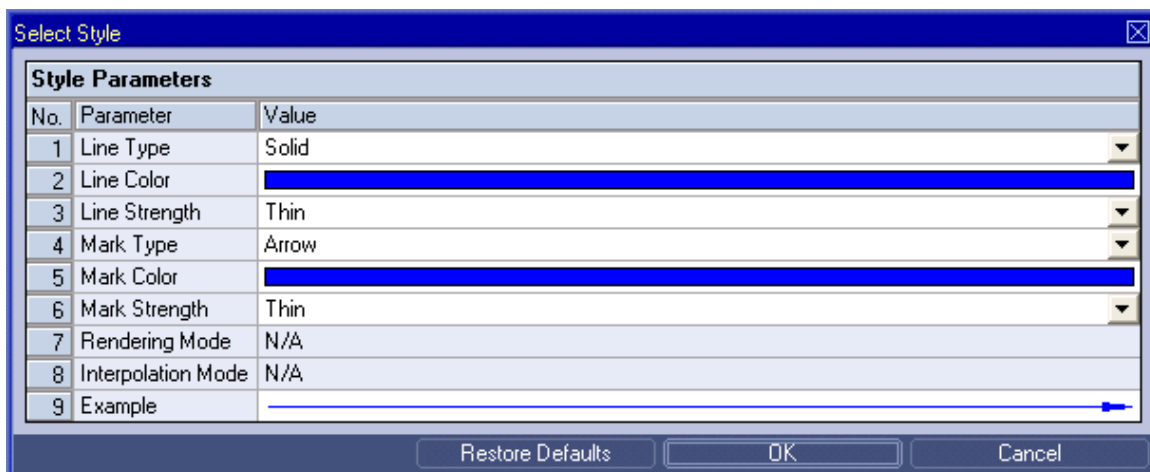


Figure 32: Example of a **Select Style** Dialog of a **MTC Vector2D T001**

The functionality of the **Select Style** dialog matches the functionality of the **Data Style** dialog (see point 2.2.2.12).

## 2.2.2.14 Manual scale x-Axis Dialog

### 2.2.2.14.1 Overview

The following screenshot shows an example of a **Manual scale x-Axis** dialog:

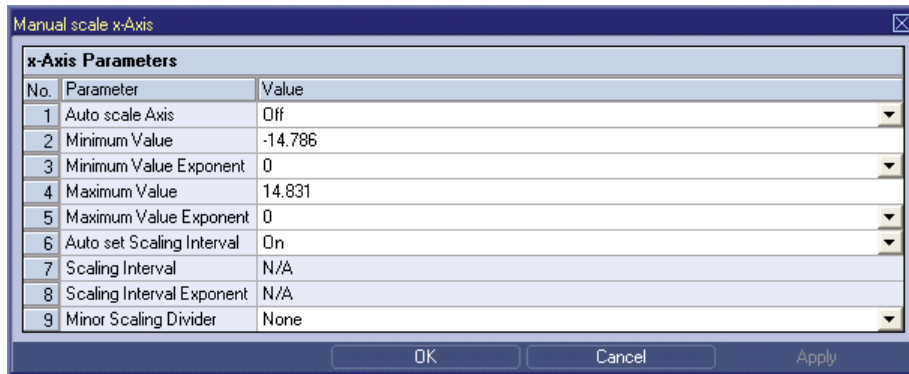


Figure 33: Example of a **Manual scale x-Axis** Dialog of a **MTC Vector2D T001**

### 2.2.2.14.2 x-Axis Parameters Table

The **x-Axis Parameters** table contains the parameters of a currently selected x-axis:

Parameter	Description
Auto scale Axis	allows to switch between the available auto scale axis modes
Minimum Value	allows to enter the minimum value of the scaling
Minimum Value Exponent	allows to switch between the supported minimum value exponents
Maximum Value	allows to enter the maximum value of the scaling
Maximum Value Exponent	allows to switch between the supported maximum value exponents
Auto set Scaling Interval	allows to switch between the available modes for the automatic scaling interval
Scaling Interval	allows to enter the scaling interval
Scaling Interval Exponent	allows to switch between the supported scaling interval exponents
Minor Scaling Divider	allows to switch between the available minor scaling dividers

#### Auto scale Axis

Auto scale Axis	Description
On	In this mode, the <b>MTC Vector2D T001</b> constantly sets the scaling of the x-axis so that all available values of the data at the x-axis stay visible.
Off	In this mode, the <b>MTC Vector2D T001</b> uses the specified <b>Minimum Value</b> and <b>Maximum Value</b> parameters for the scaling of the x-axis.

#### Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the <b>MTC Vector2D T001</b> constantly sets the scaling interval of the x-axis according to the currently displayed value interval.
Off	In this mode, the <b>MTC Vector2D T001</b> uses the specified <b>Scaling Interval</b> and <b>Scaling Interval Exponent</b> parameters for the scaling interval of the x-axis. In case the specified parameters would lead to overlapping numbers, the automatic scaling interval is being used automatically until the specified parameters allow a valid scaling again.



### 2.2.2.14.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.2.15 Manual scale y-Axis Dialog

#### 2.2.2.15.1 Overview

The following screenshot shows an example of a **Manual scale y-Axis** dialog:

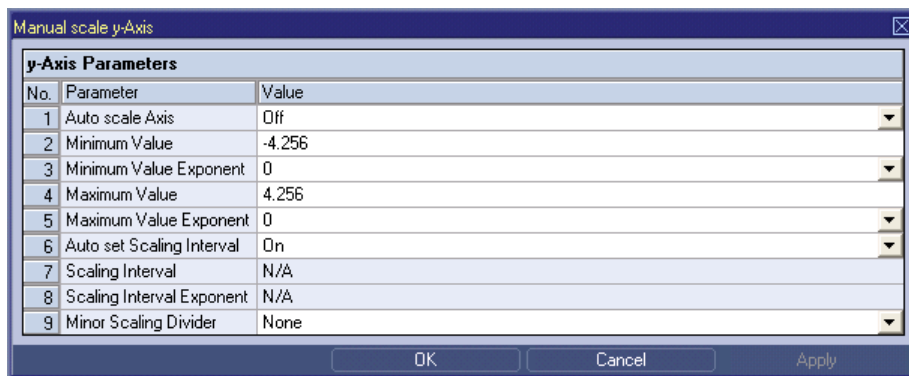


Figure 34: Example of a **Manual scale y-Axis** Dialog of a **MTC Vector2D T001**

#### 2.2.2.15.2 y-Axis Parameters Table

The **y-Axis Parameters** table contains the parameters of a currently selected y-axis:

Parameter	Description
Auto scale Axis	allows to switch between the available auto scale axis modes
Minimum Value	allows to enter the minimum value of the scaling
Minimum Value Exponent	allows to switch between the supported minimum value exponents
Maximum Value	allows to enter the maximum value of the scaling
Maximum Value Exponent	allows to switch between the supported maximum value exponents
Auto set Scaling Interval	allows to switch between the available modes for the automatic scaling interval
Scaling Interval	allows to enter the scaling interval
Scaling Interval Exponent	allows to switch between the supported scaling interval exponents
Minor Scaling Divider	allows to switch between the available minor scaling dividers

#### Auto scale Axis

Auto scale Axis	Description
On	In this mode, the <b>MTC Vector2D T001</b> constantly sets the scaling of the y-axis so that all available values of the data at the y-axis stay visible.
Off	In this mode, the <b>MTC Vector2D T001</b> uses the specified <b>Minimum Value</b> and <b>Maximum Value</b> parameters for the scaling of the y-axis.

### Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the <b>MTC Vector2D T001</b> constantly sets the scaling interval of the y-axis according to the currently displayed value interval.
Off	In this mode, the <b>MTC Vector2D T001</b> uses the specified <b>Scaling Interval</b> and <b>Scaling Interval Exponent</b> parameters for the scaling interval of the y-axis. In case the specified parameters would lead to overlapping numbers, the automatic scaling interval is being used automatically until the specified parameters allow a valid scaling again.

#### 2.2.2.15.2.1 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.2.16 Manual scale Renderer Dialog

#### 2.2.2.16.1 Overview

The following screenshot shows an example of a **Manual scale Renderer** dialog:

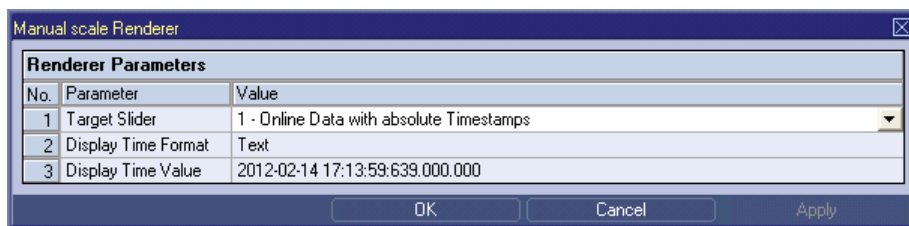


Figure 35: Example of a **Manual scale Renderer** Dialog of a **MTC Vector2D T001**

#### 2.2.2.16.2 Renderer Parameters Table

The **Renderer Parameters** table contains the rendering parameters of a currently selected slider:

Parameter	Description
Target Slider	allows to switch between the available sliders
Display Time Format	allows to switch between the available input formats for the display time
Display Time Value	allows to enter the display time of the scaling

#### 2.2.2.16.2.1 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.2.17 Drag&Drop sensitive Areas

The following screenshot shows the places within a **MTC Vector2D T001** onto which data can be dropped in order to open a new **Monitoring Chart**:

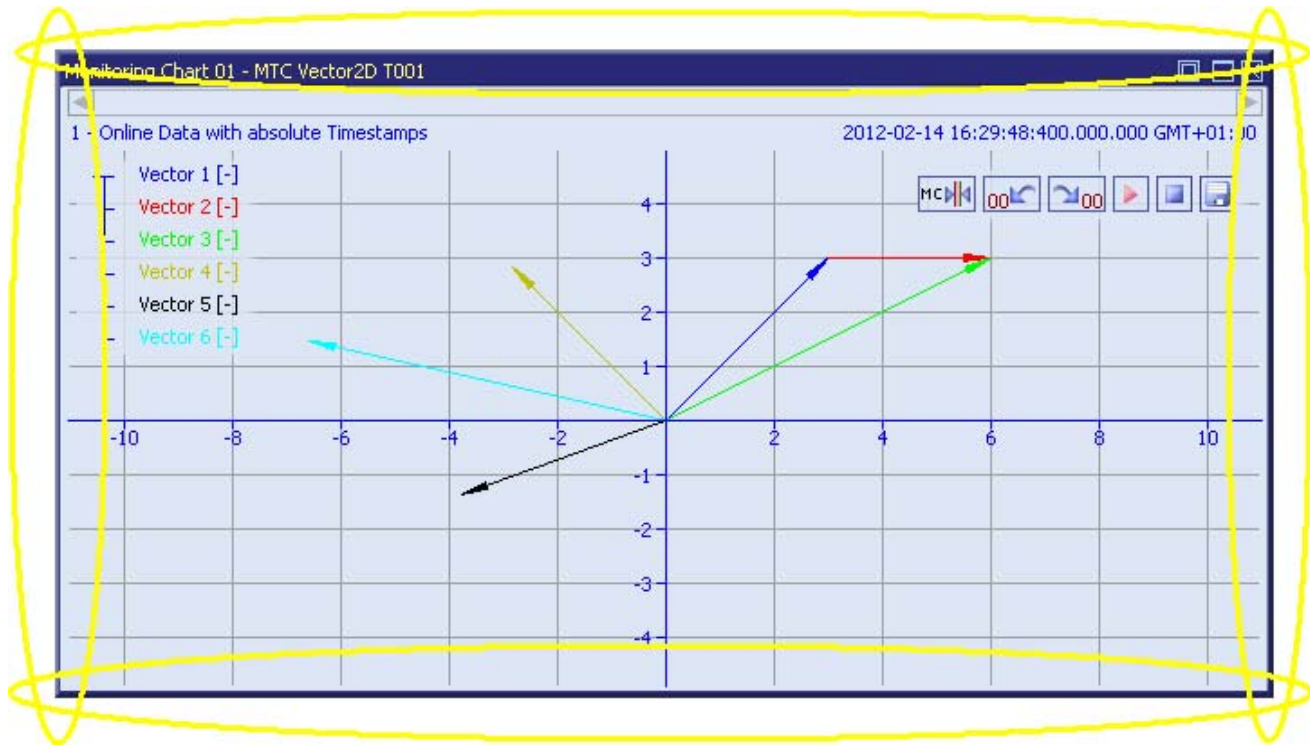


Figure 36: Dropping of Data in order to open a new **Monitoring Chart**

The following screenshot shows the places within a **MTC Vector2D T001** onto which data can be dropped in order to add the data to the existing **MTC Vector2D T001**:

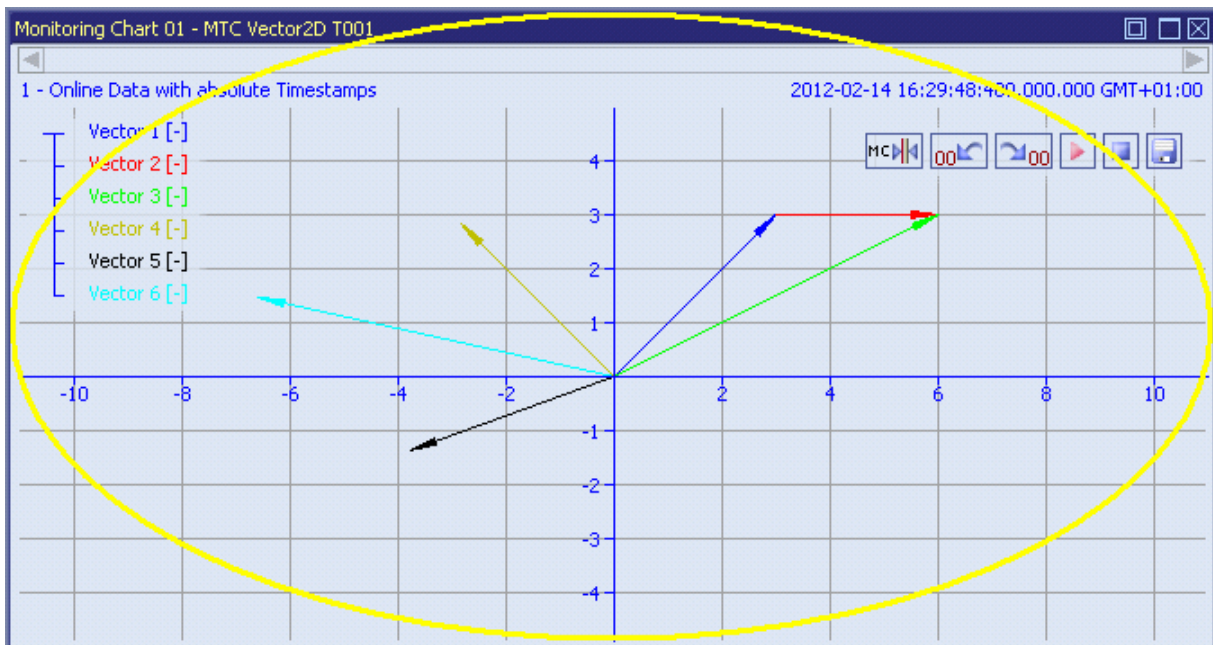


Figure 37: Dropping of Data in order to add it to the existing **MTC Vector2D T001**

## 2.2.3 MTC yn T001

### 2.2.3.1 Overview

The **MTC yn T001** is used in order to visualize, create and edit  $y = f(n)$  charts (for example the outputs of the FFT(), Histogram1D(), ApplyBlackman(), ... functions) within a **Monitoring View Editor**. Multiple editors of this type can be opened and used simultaneously within one **Monitoring View Editor** and/or within multiple **Monitoring View Editors**.

The following screenshot shows an example of a **MTC yn T001**:

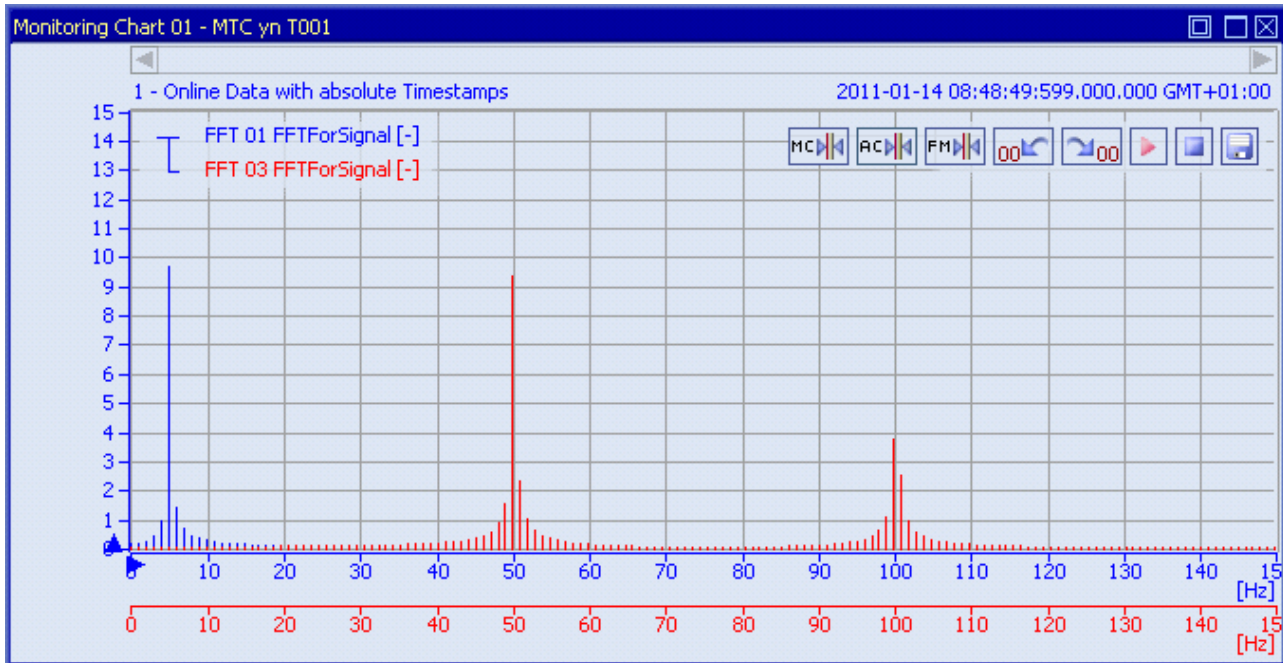


Figure 38: Example of a **MTC yn T001**

Each control of the **MTC yn T001** has a defined task and provides certain functionalities. The following major controls are provided by the **MTC yn T001**:

- Curve Area
- x-Axes Area
- y-Axes Area
- Slider Area
- Legend Area
- Toolbar Area
- Measurement Cursors
- Advanced Cursors
- Frequency Markers
- Measurement Cursors Table
- Advanced Cursors Table
- Frequency Markers Table
- Chart Options Dialog
- Chart Styles Dialog
- Data Style Dialog
- Select Style Dialog
- Manual scale x-Axis Dialog

- Manual scale y-Axis Dialog
- Configure Frequency Markers Dialog
- Drag&Drop sensitive Areas

### 2.2.3.2 Curve Area

The **Curve Area** of the **MTC yn T001** is used in order to visualize data of the function  $y = f(n)$ . Via mouse and keyboard operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **Curve Area** of a **MTC yn T001**:

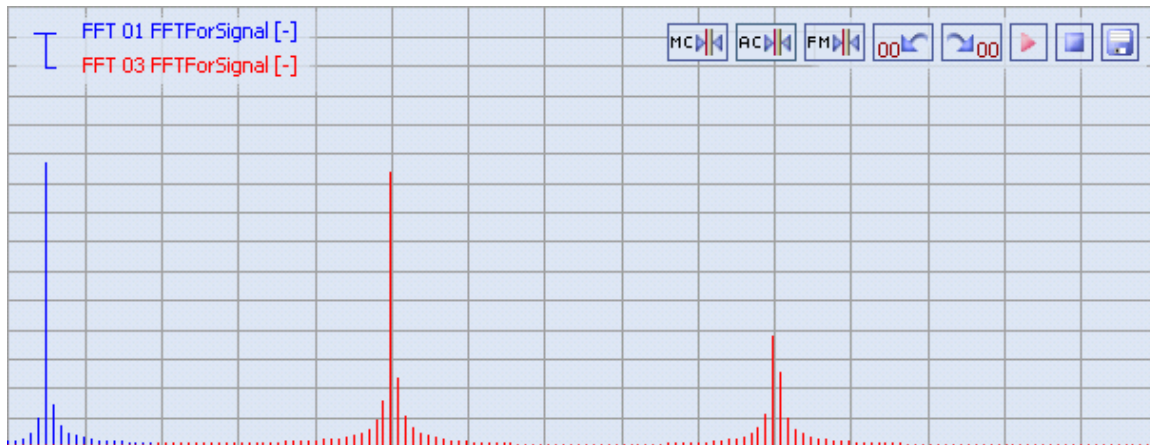


Figure 39: Example of the **Curve Area** of a **MTC yn T001**

#### Background Grid

The background grid of the **MTC yn T001** extends the lines from the axis labeling into the **Curve Area**. It is represented as a grid of horizontal and vertical lines in the background of the **Curve Area**.

Always exactly one x-axis and exactly one y-axis are bound to the background grid and extend their axis labeling via it. The context menus of the **Axis Areas** are used in order to specify the x- and y-axis which shall use the background grid to extend their axis labeling.

The appearing and scaling of the background grid is configured via the **Manual scale x-Axis** dialog (for the vertical grid lines) and via the **Manual scale y-Axis** dialog (for the horizontal grid lines).

In case the current background grid configuration is set to “manual” and the vertical and/or horizontal grid lines can not be drawn (because the grid lines would be too close to each other), the background grid automatically switches to automatic distribution of the grid lines for the affected orientation(s). The manual settings are used again as soon as the scaling of the **MTC yn T001** reaches a value which allows using the manual configuration.

#### Curve Visualization

The data interpolation defines how two successive points of an already rendered data are connected when they are displayed. All supported data interpolation modes are defined by the description of the **Data Style** dialog.

The data style defines how a data is visualized graphically. It contains the parameters for the color/strength/style of the line as well as the parameters for the color/strength/style of the mark and the rendering/interpolation methods. The styles of each data can be defined at different levels by the user.

The style of each data can be set at the following levels, where the settings of a higher level overwrite the settings of a lower level (top = high, bottom = low):

- **Data Style** dialog of the **MTC yn T001**
- default data style of the **MTC yn T001**

## Keyboard Operations

The following operations can be performed via the keyboard:

Keyboard Operation	Description
<+>	zooms into the x- and y-axes simultaneously
<Shift> + <+>	zooms only into the x-axes
<x> + <+>	behaves like <Shift> + <+>
<Ctrl> + <+>	zooms only into the y-axes
<y> + <+>	behaves like <Ctrl> + <+>
<->	zooms out from the x- and y-axes simultaneously
<Shift> + <->	zooms only out from the x-axes
<x> + <->	behaves like <Shift> + <->
<Ctrl> + <->	zooms only out from the y-axes
<y> + <->	behaves like <Ctrl> + <->
<F>	fits the scaling of the x- and y-axes simultaneously
<Shift> + <F>	fits the scaling only of the x-axes
<x> + <F>	behaves like <Shift> + <F>
<Ctrl> + <F>	fits the scaling only of the y-axes
<y> + <F>	behaves like <Ctrl> + <F>
<Ctrl> + <Z>	undoes the latest operation from the undo buffer
<Shift> + <Ctrl> + <Z>	undoes all operations from the undo buffer
<Ctrl> + <Y>	redoes the latest operation from the redo buffer
<Shift> + <Ctrl> + <Y>	redoes all operations from the redo buffer
<1>	sets measurement cursor 1 as currently selected cursor
<2>	sets measurement cursor 2 as currently selected cursor
<H>	sets the 1. Harmonic as currently selected cursor
<C>	sets the Center Frequency as currently selected cursor
<S>	sets the first upper sideband as currently selected cursor
<M>	sets the Main Frequency Marker as currently selected cursor
<R>	restores the default position of the currently selected cursor
<Cursor left>	moves the currently selected cursor to the left
<Cursor right>	moves the currently selected cursor to the right

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. While the left mouse button is kept down, a rectangle from the position where the left mouse button has been pressed to the current position of the mouse cursor is shown in order to indicate the zooming area. The actual zooming is performed when the left mouse button is released:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move] zooms into the specified area of the x and y-axes simultaneously</li> <li>• &lt;Shift&gt; + [left mouse button down] + [mouse move] zooms only into the specified area of the x-axes <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [left mouse button down] + [mouse move] behaves like &lt;Shift&gt; + [left mouse button down] + [mouse move]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [left mouse button down] + [mouse move] zooms only into the specified area of the y-axes <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [left mouse button down] + [mouse move] behaves like &lt;Ctrl&gt; + [left mouse button down] + [mouse move]</li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without changing of any axis scaling</li> </ul>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Curve Area</b> opens the context menu for the <b>Curve Area</b> .
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move] moves all curves within the <b>Curve Area</b> into the direction of the mouse move <ul style="list-style-type: none"> <li>○ when the &lt;Shift&gt; key is being pressed during the shift operation, the curves are shifted only in horizontal direction <ul style="list-style-type: none"> <li>▪ when &lt;x&gt; key is being pressed during the shift operation, the behavior is like if the &lt;Shift&gt; key is being pressed during the shift operation</li> </ul> </li> <li>○ when the &lt;Ctrl&gt; key is being pressed during the shift operation, the curves are shifted only in vertical direction <ul style="list-style-type: none"> <li>▪ when &lt;y&gt; key is being pressed during the shift operation, the behavior is like if the &lt;Shift&gt; key is being pressed during the shift operation</li> </ul> </li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>Curve Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] zooms out of the current mouse position of the x- and y-axes simultaneously</li> <li>• [mouse wheel up] zooms into the current mouse position of the x- and y-axes simultaneously</li> <li>• &lt;Shift&gt; + [mouse wheel down] moves all curves within the <b>Curve Area</b> to the left <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel down] behaves like &lt;Shift&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Shift&gt; + [mouse wheel up] moves all curves within the <b>Curve Area</b> to the right <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel up] behaves like &lt;Shift&gt; + [mouse wheel up]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel down] moves all curves within the <b>Curve Area</b> up <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel down] behaves like &lt;Ctrl&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel up] moves all curves within the <b>Curve Area</b> down <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel up] behaves like &lt;Ctrl&gt; + [mouse wheel up]</li> </ul> </li> </ul>

## Drag&Drop of Data

When an yn-compatible data is dropped into the **Curve Area**, it is added to the currently present data of the **MTC yn T001**:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the default x- and y-axes.
- <Alt> + [left mouse button up] ends the Drag&Drop operation, creates a new x- and a new y-axis and adds the dragged data(s) to these new axes.
- In case the current Drag&Drop operation has been started within the **MTC yn T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yn T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yn T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yn T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Fit to Chart	sets the scaling of all x- and y-axes so that the complete values of all data within the <b>MTC yn T001</b> become visible
Fit to Charts	sets the scaling of all <b>Monitoring Charts</b> within the parent <b>Monitoring View Editor</b> so that the complete values of all data within all <b>Monitoring Charts</b> become visible
Zoom in	zooms in at all x- and y-axes simultaneously; the new scaling interval is half of the old scaling interval and the center of the zooming is the current mouse position
Zoom out	zooms out at all x- and y-axes simultaneously; the new scaling interval is the double of the old scaling interval and the center of the zooming is the current mouse position
Chart Options...	opens the <b>Chart Options</b> dialog
Copy Chart Options	copies the options of the <b>MTC yn T001</b> below the current mouse position
Paste Chart Options	pastes the currently copied <b>MTC yn T001</b> options onto the <b>MTC yn T001</b> below the current mouse position
Chart Styles...	opens the <b>Chart Styles</b> dialog
Copy Chart Styles	copies the styles of the <b>MTC yn T001</b> below the current mouse position
Paste Chart Styles	pastes the currently copied <b>MTC yn T001</b> styles onto the <b>MTC yn T001</b> below the current mouse position
Show Background Grid > ...	sets the visibility of the background grid to the state which is specified via the submenu of this item
Show Legend > ...	sets the visibility of the <b>Legend Area</b> to the state which is specified via the submenu of this item
Show Toolbar > ...	sets the visibility of the <b>Toolbar Area</b> to the state which is specified via the submenu of this item
Show x-Axes > ...	sets the visibility of the <b>x-Axes Area</b> to the state which is specified via the submenu of this item
Show y-Axes > ...	sets the visibility of the <b>y-Axes Area</b> to the state which is specified via the submenu of this item
Show Sliders > ...	sets the visibility of the <b>Slider Area</b> to the state which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>



### 2.2.3.3 x-Axes Area

The **x-Axes Area** of the **MTC yn T001** is used in order to display the scaling of the present x-axes. Via mouse operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **x-Axes Area** of a **MTC yn T001**:

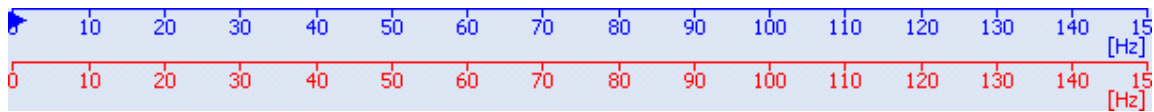


Figure 40: Example of the **x-Axes Area** of a **MTC yn T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Single and multiple x-axes can be selected/deselected through a left mouse button click:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] above any x-axis selects the below x-axis</li> <li>• &lt;Ctrl&gt; + [left mouse button down] is used in order to select/deselect x-axis after x-axis</li> <li>• &lt;Shift&gt; + [left mouse button down] is used in order to select/deselect all x-axis from the last selected x-axis to the x-axis below the current mouse position                             <ul style="list-style-type: none"> <li>○ in case there is no x-axis selected at the moment, only the below x-axis is selected</li> </ul> </li> <li>• multiple x-axes can be selected/deselected after each other through combinations of the above methods</li> <li>• in case there is a selection of items already and the user clicks onto any x-axis which is not selected currently without pressing the &lt;Shift&gt; or &lt;Ctrl&gt; keys, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected and the clicked x-axis becomes selected instead</li> <li>• in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the <b>x-Axes Area</b>, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected</li> </ul>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. The actual zooming is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move right] zooms out of the x-axis from the x position where the left mouse button has been pressed</li> <li>• [left mouse button down] + [mouse move left] zooms into the x-axis from the x position where the left mouse button has been pressed</li> <li>• &lt;Esc&gt; cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started</li> </ul>
double click	<p>A double click of the left mouse button onto any x-axis opens the <b>Manual scale x-Axis</b> dialog for the x-axis below the current mouse position.</p>

#### Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>x-Axes Area</b> opens the context menu for the <b>x-Axes Area</b>.</p>
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move right] moves the x-axis right</li> <li>• [right mouse button down] + [mouse move left] moves the x-axis left</li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>x-Axes Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the x-axis left</li> <li>• [mouse wheel up] moves the x-axis right</li> <li>• &lt;Shift&gt; + [mouse wheel down] zooms out of the x-axis from the current x position of the mouse cursor</li> <li>• &lt;Shift&gt; + [mouse wheel up] zooms into the x-axis from the current x position of the mouse cursor</li> </ul>

## Drag&Drop of Data

When a data is dropped onto an existing x-axis, it is added to the currently present data of this x-axis:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the x-axis below the current mouse position and to the default y-axis.
- <Alt> + [left mouse button up] ends the Drag&Drop operation, creates a new x-axis and adds the dragged data(s) to this new x-axis and to the default y-axis.
- In case the current Drag&Drop operation has been started within the **MTC yn T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yn T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yn T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yn T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show x-Axes > ...	sets the visibility of the <b>x-Axes Area</b> to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether all selected x-axes shall automatically adopt their scaling so that always the complete values of their contained data are visible
Fit to Axis	sets the scaling of all selected x-axes so that the complete values of their contained data are visible
Set Background Grid Axis	sets the x-axis from which the context menu has been called as the x-axis which is providing the vertical background grid lines; the x-axis which provides the vertical background grid lines also is the x-axis to which the <b>Measurement Cursors</b> are bound
Set Default Axis	sets the x-axis from which the context menu has been called as the x-axis which is the default x-axis for newly dragged data
Manual scale x-Axis...	opens the <b>Manual scale x-Axis</b> dialog for the selected x-axes
Copy x-Axis Scaling	copies the scaling of the x-axis below the current mouse position
Paste x-Axis Scaling	pastes the currently copied x-axis scaling onto the x-axis below the current mouse position
Rescale x-Axis after Open > ...	sets the rescale type of the x-axis after opening of the Monitoring View File to the type which is specified via the submenu of this item
Rescale x-Axis after Action > ...	sets the rescale type of the x-axis after an action to the type which is specified via the submenu of this item
Remove Axis	removes all selected x-axes with all of their data from the <b>MTC yn T001</b>
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

### 2.2.3.4 y-Axes Area

The **y-Axes Area** of the **MTC yn T001** is used in order to display the scaling of the present y-axes. Via mouse operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **y-Axes Area** of a **MTC yn T001**:

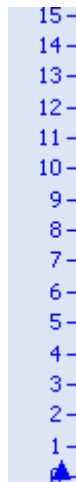


Figure 41: Example of the **y-Axes Area** of a **MTC yn T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Single and multiple y-axes can be selected/deselected through a left mouse button click:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] above any y-axis selects the below y-axis</li> <li>• &lt;Ctrl&gt; + [left mouse button down] is used in order to select/deselect y-axis after y-axis</li> <li>• &lt;Shift&gt; + [left mouse button down] is used in order to select/deselect all y-axis from the last selected to the y-axis below the current mouse position                             <ul style="list-style-type: none"> <li>○ in case there is no y-axis selected at the moment, only the below y-axis is selected</li> </ul> </li> <li>• multiple y-axes can be selected/deselected after each other through combinations of the above methods</li> <li>• in case there is a selection of items already and the user clicks onto any y-axis which is not selected currently without pressing the &lt;Shift&gt; or &lt;Ctrl&gt; keys, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected and the clicked y-axis becomes selected instead</li> <li>• in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the <b>y-Axes Area</b>, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected</li> </ul>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. The actual zooming is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move down] zooms out of the y-axis from the y position where the left mouse button has been pressed</li> <li>• [left mouse button down] + [mouse move up] zooms into the y-axis from the y position where the left mouse button has been pressed</li> <li>• &lt;Esc&gt; cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started</li> </ul>
double click	<p>A double click of the left mouse button onto any y-axis opens the <b>Manual scale y-Axis</b> dialog for the y-axis below the current mouse position.</p>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>y-Axes Area</b> opens the context menu for the <b>y-Axes Area</b> .
single click with keeping the button	A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved: <ul style="list-style-type: none"> <li>[right mouse button down] + [mouse move down] moves the y-axis down</li> <li>[right mouse button down] + [mouse move up] moves the y-axis up</li> <li>&lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	Scrolling with the mouse wheel can be used to shift or zoom the <b>y-Axes Area</b> . The actual operation is performed when the mouse wheel is scrolled: <ul style="list-style-type: none"> <li>[mouse wheel down] moves the y-axis up</li> <li>[mouse wheel up] moves the y-axis down</li> <li>&lt;Ctrl&gt; + [mouse wheel down] zooms out of the y-axis from the current y position of the mouse cursor</li> <li>&lt;Ctrl&gt; + [mouse wheel up] zooms into the y-axis from the current y position of the mouse cursor</li> </ul>

## Drag&Drop of Data

When a data is dropped onto an existing y-axis, it is added to the currently present data of this y-axis:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the y-axis below the current mouse position and to the default x-axis.
- <Alt> + [left mouse button up] ends the Drag&Drop operation, creates a new y-axis and adds the dragged data(s) to this new y-axis and to the default x-axis.
- In case the current Drag&Drop operation has been started within the **MTC yn T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yn T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yn T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yn T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show y-Axes > ...	sets the visibility of the <b>y-Axes Area</b> to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether all selected y-axes shall automatically adopt their scaling so that always the complete values of their contained data are visible
Fit to Axis	sets the scaling of all selected y-axes so that the complete values of their contained data are visible
Set Background Grid Axis	sets the y-axis from which the context menu has been called as the y-axis which is providing the horizontal background grid lines
Set Default Axis	sets the y-axis from which the context menu has been called as the y-axis which is the default y-axis for newly dragged data
Manual scale y-Axis...	opens the <b>Manual scale y-Axis</b> dialog for the selected y-axes
Copy y-Axis Scaling	copies the scaling of the y-axis below the current mouse position
Paste y-Axis Scaling	pastes the currently copied y-axis scaling onto the y-axis below the current mouse position
Rescale y-Axis after Open > ...	sets the rescale type of the y-axis after opening of the Monitoring View File to the type which is specified via the submenu of this item
Rescale y-Axis after Action > ...	sets the rescale type of the y-axis after an action to the type which is specified via the submenu of this item
Remove Axis	removes all selected y-axes with all of their data from the <b>MTC yn T001</b>
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

### 2.2.3.5 Slider Area

The **Slider Area** of the **MTC yn T001** is used in order to configure the currently visualized point in time. The total width of each slider represents the oldest and the newest available time of the current data of its time domain and the inside slider button represents the currently visualized point in time out of the total time interval of the data. By dragging of the slider button, the currently visualized time is modified.

The following screenshot shows an example of the **Slider Area** of a **MTC yn T001**:

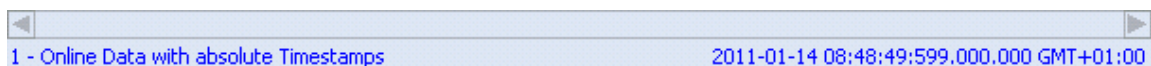


Figure 42: Example of the **Slider Area** of a **MTC yn T001**

#### Time Domains

Within the **Slider Area**, there is one slider being available for each of the possible time domains. Each slider is being displayed only in case its according time domain is actually being used within the current **MTC yn T001**.

#### Naming of Sliders

Each slider displays its name at its left bottom corner. The name of each slider contains the following components:

- number of the slider
- name of the used time domain

#### Available Times

The left border of each slider always displays and represents the oldest time of all of the data of its time domain. The right border of each slider always displays and represents the newest time of all of the data of its time domain.

In case the visualization of online data is running (not paused), the left and right borders of the affected slider button are constantly updated so that they represent the currently available time interval of their time axis.

#### Displayed Times

Below the right border of each slider, the current time of the slider button is being displayed.

In case the visualization of online data is running (not paused), the displayed current time is constantly updated.

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button onto the left step button	<p>A single click of the left mouse button with releasing the button above the left step button shifts the currently displayed point in time into the past:</p> <ul style="list-style-type: none"> <li>• the next older timestamp from all of the data at the time domain of the slider is being chosen as new current point in time <ul style="list-style-type: none"> <li>○ in case the current point in time already is the oldest available point in time, the left step button does not change the current point in time any more</li> </ul> </li> </ul>
single click with releasing the button onto the right step button	<p>A single click of the left mouse button with releasing the button above the right step button shifts the currently displayed point in time into the future:</p> <ul style="list-style-type: none"> <li>• without additional keys being pressed, the next newer timestamp from all of the data at the time domain of the slider is being chosen as new current point in time <ul style="list-style-type: none"> <li>○ in case the current point in time already is the newest available point in time, the right step button does not change the current point in time any more</li> </ul> </li> </ul>
single click with keeping the button onto the left step button	<p>A single click of the left mouse button with keeping the button down onto the left step button behaves like if the left step button would be clicked with the left mouse button constantly.</p>
single click with keeping the button onto the right step button	<p>A single click of the left mouse button with keeping the button down onto the right step button behaves like if the right step button would be clicked with the left mouse button constantly.</p>
single click with keeping the button onto the slider button	<p>A single click of the left mouse button with keeping the button down onto the slider button allows to modify the current point in time:</p> <ul style="list-style-type: none"> <li>• in case the mouse is moved to the left, the current point in time is shifted into the past <ul style="list-style-type: none"> <li>○ the slider button can not be dragged out of the left border of the <b>Slider Area</b></li> </ul> </li> <li>• in case the mouse is moved to the right, the current point in time is shifted into the future <ul style="list-style-type: none"> <li>○ the slider button can not be dragged out of the right border of the <b>Slider Area</b></li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without modifying the current point in time</li> </ul>

## Operations via the Right Mouse Button

The following operation can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>Slider Area</b> opens the context menu for the <b>Slider Area</b>.</p>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>Slider Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the slider button left (into the past) <ul style="list-style-type: none"> <li>○ in case the current begin time of the displayed interval already is the oldest available point in time (or older), [mouse wheel down] does not change the currently displayed interval</li> </ul> </li> <li>• [mouse wheel up] moves the slider button right (into the future) <ul style="list-style-type: none"> <li>○ in case the current end time of the displayed interval already is the newest available point in time (or newer), [mouse wheel up] does not change the currently displayed interval</li> </ul> </li> </ul>

## Drag&Drop of Data

When an yn-compatible data is dropped into the **Slider Area**, it is added to the currently present data of the **MTC yn T001**:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the default x- and y-axes.
- <Alt> + [left mouse button up] ends the Drag&Drop operation, creates a new x- and a new y-axis and adds the dragged data(s) to these new axes.
- In case the current Drag&Drop operation has been started within the **MTC yn T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yn T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yn T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yn T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

Data of other types are handled according to the definitions which are found later in this document.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show Sliders > ...	sets the visibility of the <b>Slider Area</b> to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which pauses the automatic time shift of the according time domain
Continue Visualization	continues the visualization, which continues the automatic update of all data of the according time domain
Update Display Time after Open > ...	sets the update type of the display time after opening of the Monitoring View File to the type which is specified via the submenu of this item
Update Display Time after Action > ...	sets the update type of the display time after an action to the type which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

### 2.2.3.6 Legend Area

The **Legend Area** displays all of the data which are present within the **MTC yn T001** at the moment.

All of the present data are arranged via legend trees. All data which is assigned to a common axis (either x or y) is shown together within a common legend tree. The **Legend Area** can be switched between the legend trees of the x-axes and the legend trees of the y-axes so that the user is able to make independent grouping for the x- and y-axes.

- The x-axis view of the **Legend Area** shows the currently defined legend trees of data at the present x-axes. One legend tree is displayed for each defined x-axis and all of the data which are present at this x-axis at the moment.
- The y-axis view of the **Legend Area** shows the currently defined legend trees of data at the present y-axes. One legend tree is displayed for each defined y-axis and all of the data which are present at this y-axis at the moment.

The following screenshot shows an example of the **Legend Area** of a **MTC yn T001**:



Figure 43: Example of the **Legend Area** of a **MTC yn T001**

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Selecting of data within the <b>Legend Area</b> is performed identically to the selecting of items within the other trees of the <b>X-Tools Client</b>.</p> <p>In case a data within the <b>Legend Area</b> is being selected, all items of other type (e.g. x-axes and y-axes) of the clicked <b>Monitoring Chart</b> are deselected automatically.</p>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button down onto any text within the <b>Legend Area</b> starts a Drag&amp;Drop operation for the currently selected data(s) as soon as the mouse cursor is moved:</p> <ul style="list-style-type: none"> <li>• a Drag&amp;Drop operation within the same <b>MTC yn T001</b> moves the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Ctrl&gt; can be pressed in order to execute a copy operation instead of the move operation within the same <b>MTC yn T001</b></li> </ul> </li> <li>• a Drag&amp;Drop operation to another <b>MTC yn T001</b> copies the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Shift&gt; can be pressed in order to execute a move operation instead of the copy operation to the other <b>MTC yn T001</b></li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without moving or copying anything</li> </ul>
double click	<p>A double click of the left mouse button onto any text within the <b>Legend Area</b> opens the <b>Data Style</b> dialog for the data below the current mouse position.</p>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>Legend Area</b> opens the context menu for the <b>Legend Area</b>.</p>
single click with keeping the button	<p>A single click of the right mouse button with keeping the button above the <b>Legend Area</b> starts a shift operation for the legend texts. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move down] moves the <b>Legend Area</b> down</li> <li>• [right mouse button down] + [mouse move up] moves the <b>Legend Area</b> up</li> <li>• &lt;Esc&gt; cancels the current operation and sets the position of the <b>Legend Area</b> back to the place which it had before the shift operation had been started</li> </ul> <p>The shifting of the legend texts is enabled only in case not all of the available legend texts fit into the currently available vertical space.</p>



## Drag&Drop of Data

During all Drag&Drop of data into the **Legend Area**, the following rules apply:

- In case the current Drag&Drop operation has been started within the **MTC yn T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yn T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yn T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yn T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.
- In order to add a data as root of a certain legend tree, the desired data has to be dropped above the current root data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, the first of them becomes the new root of the target legend tree and all others are listed directly below it.
- In order to add a data in between two present data of the legend tree, the desired data has to be dropped in between the two desired data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, all of them are inserted in between the two desired data of the target legend tree.
- In order to add a data at the end of a certain legend tree, the desired data has to be dropped below the last data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, all of them are added to the end of the target legend tree.
- In order to remove a data from the legend tree with the mouse, the desired data has to be dragged to any position within the **X-Tools Client** which does not accept data.

In order to drag a data from the legend tree to another area of the **MTC yn T001**, the desired data has to be dragged from its legend tree to the target area. This functionality can be used in order to copy/move the data onto another (x or y) axis or to create a new (x or y) axis for it. The actual operation which is performed depends to the area of the **MTC yn T001** where the dragged data is dropped.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show Legend > ...	sets the visibility of the legend to the state which is specified via the submenu of this item
Legend Tree Mode > ...	specifies whether the legend trees shall assort the data with common x-axes or with common y-axes
Show Data Sources > ...	specifies whether the legend trees shall display the name of the source server together with the data name or not
Create new x-Axis	creates a new x-axis and moves the selected data(s) onto this new x-axis
Create new y-Axis	creates a new y-axis and moves the selected data(s) onto this new y-axis
Create new x- and y-Axes	creates a new x- and a new y-axis and moves the selected data(s) onto these new x- and y-axes
Data Style...	opens the <b>Data Style</b> dialog for the selected data(s)
Copy Data Style	copies the style of the data below the current mouse position
Paste Data Style	pastes the currently copied data style onto the data below the current mouse position
Remove Data	removes the selected data(s) from the <b>MTC yn T001</b>
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

### 2.2.3.7 Toolbar Area

The **Toolbar Area** displays the buttons which are provided for fast access to frequently used functionalities.

The following screenshot shows an example of the **Toolbar Area** of a **MTC yn T001**:



Figure 44: Example of the **Toolbar Area** of a **MTC yn T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click onto the <b>On/Off Measurement Cursors</b> button	A single click of the left mouse button onto the <b>On/Off Measurement Cursors</b> button toggles the measurement cursors between on and off.
single click onto the <b>On/Off Advanced Cursors</b> button	A single click of the left mouse button onto the <b>On/Off Advanced Cursors</b> button toggles the advanced cursors between on and off.
single click onto the <b>On/Off Frequency Markers</b> button	A single click of the left mouse button onto the <b>On/Off Frequency Markers</b> button toggles the frequency markers between on and off.
single click onto the <b>Undo</b> button	A single click of the left mouse button onto the <b>Undo</b> button undoes the last operation from the undo buffer.
single click onto the <b>Redo</b> button	A single click of the left mouse button onto the <b>Redo</b> button redoes the last operation from the redo buffer.
single click onto the <b>Continue Visualization</b> button	A single click of the left mouse button onto the <b>Continue Visualization</b> button continues the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Continue Visualization</b> button sets the visualization of all data of all (x and y) axes to running.
single click onto the <b>Pause Visualization</b> button	A single click of the left mouse button onto the <b>Pause Visualization</b> button pause the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Pause Visualization</b> button sets the visualization of all data of all (x and y) axes to paused.
single click onto the <b>Store Data Snapshot</b> button	A single click of the left mouse button onto the <b>Store Data Snapshot</b> button starts the storing of the data which are contained within the <b>MTC yn T001</b> .  While the storing is in progress, the <b>Storage Progress</b> dialog shows the current progress of the storing and also can be used in order to cancel the storing.  See also tutorial, chapter "Storing of Data Snapshots out of the Monitoring System".

#### Operations via the Right Mouse Button

The following operation can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Toolbar Area</b> opens the context menu for the <b>Toolbar Area</b> . The displayed context menu is dependent to the clicked toolbar button as described below.

#### Context Menu

The following specific context menu items are provided for the **On/Off Measurement Cursors** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Show Measurement Cursors > ...	sets the visibility of the measurement cursors to the state which is specified via the submenu of this item
Restore Measurement Cursors	restores the positions of the measurement cursors so that both of them are visible at the screen again
Select Cursor > ...	specifies which measurement cursor shall have the input focus at the moment
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

The following specific context menu items are provided for the **On/Off Advanced Cursors** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Show Harmonics > ...	sets the visibility of the harmonic cursors to the state which is specified via the submenu of this item
Show Subharmonics > ...	sets the visibility of the subharmonic cursors to the state which is specified via the submenu of this item
Show Sidebands > ...	sets the visibility of the sideband cursors to the state which is specified via the submenu of this item
Restore Advanced Cursor > ...	restores the position of the chosen advanced cursors so that it is visible at the screen again
Select Cursor > ...	specifies which advanced cursor shall have the input focus at the moment
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

The following specific context menu items are provided for the **On/Off Frequency Markers** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Show Frequency Markers > ...	sets the visibility of the frequency markers to the state which is specified via the submenu of this item
Restore Main Frequency Marker	restores the position of the chosen advanced cursors so that it is visible at the screen again
Select Main Frequency Marker	switches the input focus to the Main Frequency Marker
Configure Frequency Markers ...	opens the <b>Configure Frequency Markers</b> dialog
Copy Frequency Markers	copies the frequency marker definitions of the <b>MTC yn T001</b>
Paste Frequency Markers	overwrites the current frequency marker definitions of the <b>MTC yn T001</b> with the previously copied frequency marker definitions
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

The following specific context menu items are provided for the **Undo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Undo	undoes the last operation from the undo buffer
Undo all	undoes all operations from the undo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC yn T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

The following specific context menu items are provided for the **Redo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Redo	redoes the last operation from the redo buffer
Redo all	redoes all operations from the redo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC yn T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

The following specific context menu items are provided for the **Pause Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

The following specific context menu items are provided for the **Continue Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

The following specific context menu items are provided for the **Store Data Snapshot** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Store Data Snapshot	starts the storing of the data which are contained within the <b>MTC yn T001</b>
Data Snapshot Scope > ...	sets the scope for data snapshots to the setting which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yn T001</b>

### 2.2.3.8 Measurement Cursors

The **Measurement Cursors** are represented through two vertical lines. The **Measurement Cursors** can be shifted independently in horizontal direction.

The following screenshot shows an example of the **Measurement Cursors** of a **MTC yn T001**:

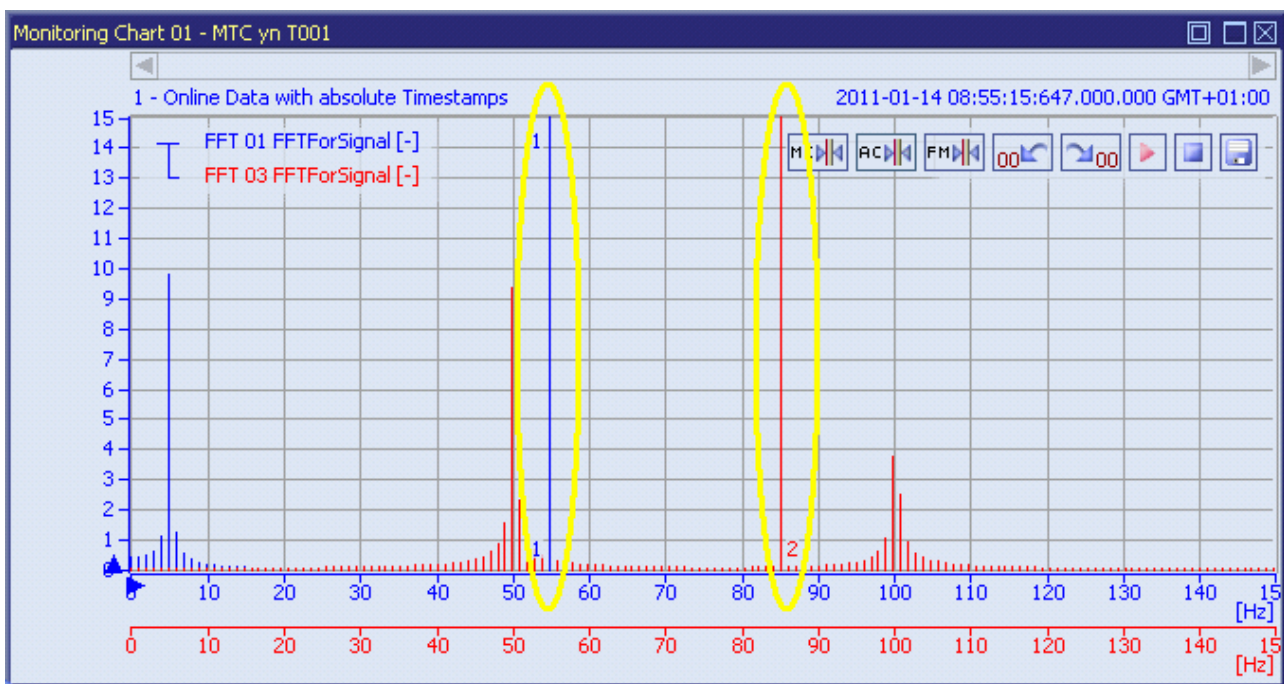


Figure 45: Example of the **Measurement Cursors** of a **MTC yn T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a shift operation. The actual shifting of the measurement cursor is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>[left mouse button down] + [mouse move] shifts the targeted measurement cursor horizontally to the new mouse position</li> </ul> <p>The values which are displayed by the <b>Measurement Cursors</b> table are updated automatically while the shifting is performed.</p>

### Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting of the measurement cursors is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>[right mouse button down] + [mouse move] shifts both measurement cursors horizontally simultaneously with keeping the value distance between them</li> </ul> <p>The values which are displayed by the <b>Measurement Cursors</b> table are updated automatically while the shifting is performed.</p>

### 2.2.3.9 Advanced Cursors

The **Advanced Cursors** can be used in order to show harmonics, subharmonics and sidebands. Each **Advanced Cursor** is represented through a vertical line and can be shifted independently in horizontal direction.

The following screenshot shows an example of the harmonics of a **MTC yn T001**:

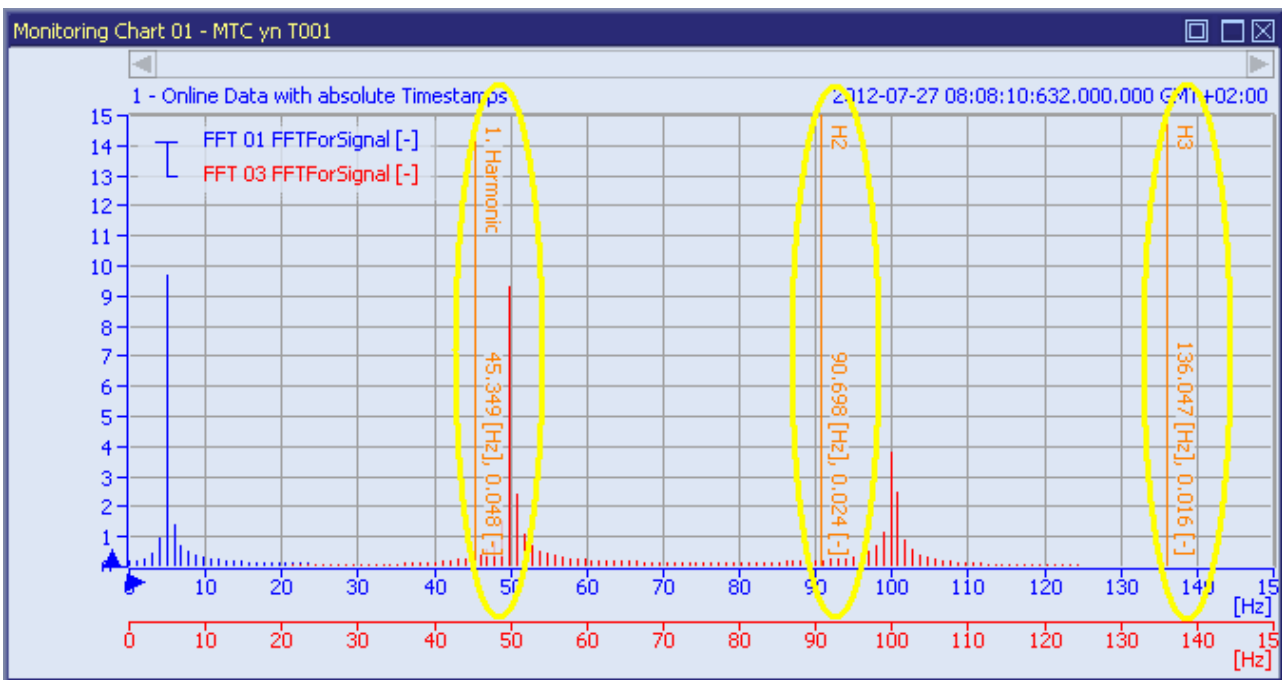


Figure 46: Example of the Harmonics of a **MTC yn T001**

The following screenshot shows an example of the subharmonics of a **MTC yn T001**:

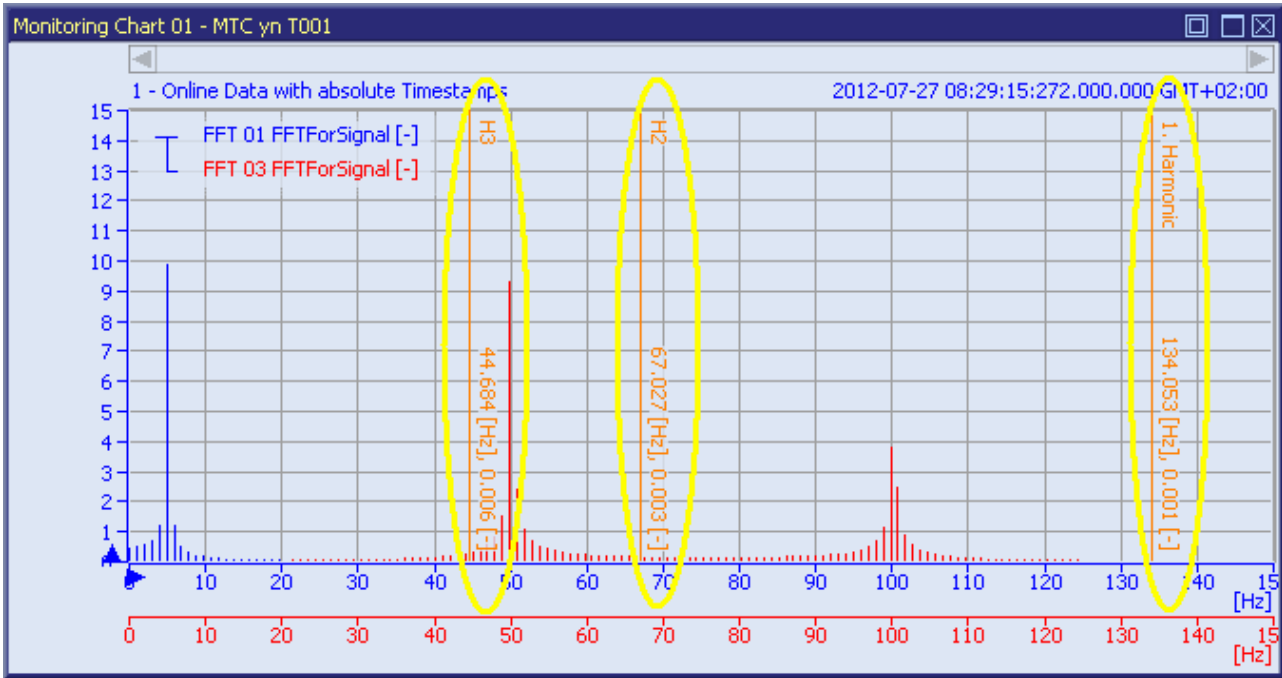


Figure 47: Example of the Subharmonics of a **MTC yn T001**

The following screenshot shows an example of the sidebands of a **MTC yn T001**:

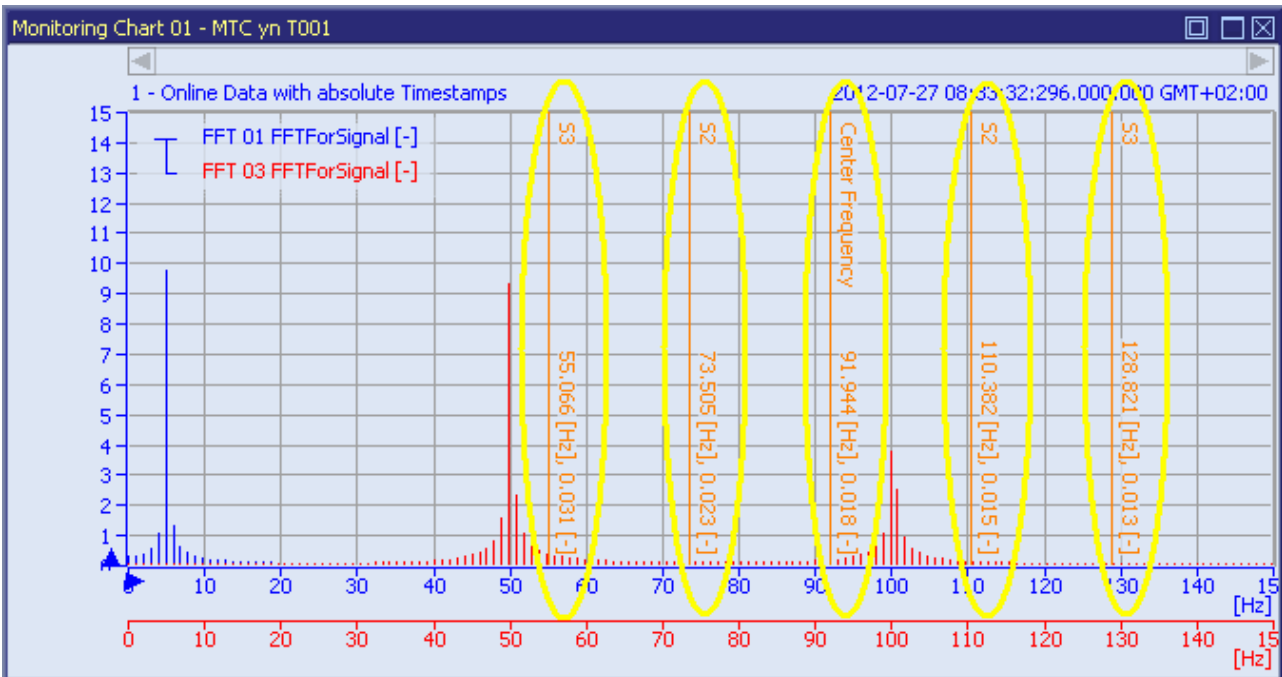


Figure 48: Example of the Sidebands of a **MTC yn T001**

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button above the 1. Harmonic, Center Frequency or a sideband with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move] shifts the 1. Harmonic, Center Frequency or sideband horizontally to the new mouse position <ul style="list-style-type: none"> <li>○ whenever the position of the 1. Harmonic is changed, the position of all harmonics and subharmonics is updated automatically</li> <li>○ whenever the Center Frequency is changed, the position of all sidebands is updated automatically</li> <li>○ whenever a sideband is changed, the position of all other sidebands is updated automatically</li> </ul> </li> <li>• in case &lt;Alt&gt; is pressed while the shifting is performed, the shifted cursor snaps to the exact x-position of close values</li> </ul> <p>The values which are displayed by the <b>Advanced Cursors</b> table are updated automatically while the shifting is performed.</p>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the right mouse button above the 1. Harmonic, Center Frequency or a sideband with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• in case the mouse cursor is above the 1. Harmonic or above the Center Frequency, [right mouse button down] + [mouse move] shifts both advanced cursors horizontally simultaneously with keeping the value distance between them <ul style="list-style-type: none"> <li>○ whenever the position of the 1. Harmonic is changed, the position of all harmonics is updated automatically</li> <li>○ whenever the Center Frequency is changed, the position of all sidebands is updated automatically</li> </ul> </li> </ul> <p>The values which are displayed by the <b>Advanced Cursors</b> table are updated automatically while the shifting is performed.</p>



### 2.2.3.10 Frequency Markers

Each **Frequency Marker** is represented through a vertical line. The Main Frequency Marker can be shifted in horizontal direction (either manually or automatically, see point 0), all other **Frequency Markers** are either at a static position or derived from the position of the Main Frequency Marker. The **Configure Frequency Markers** dialog is used in order to configure which **Frequency Markers** shall be available (see point 2.2.3.21).

The following screenshot shows an example of the **Frequency Markers** of a **MTC yn T001**:

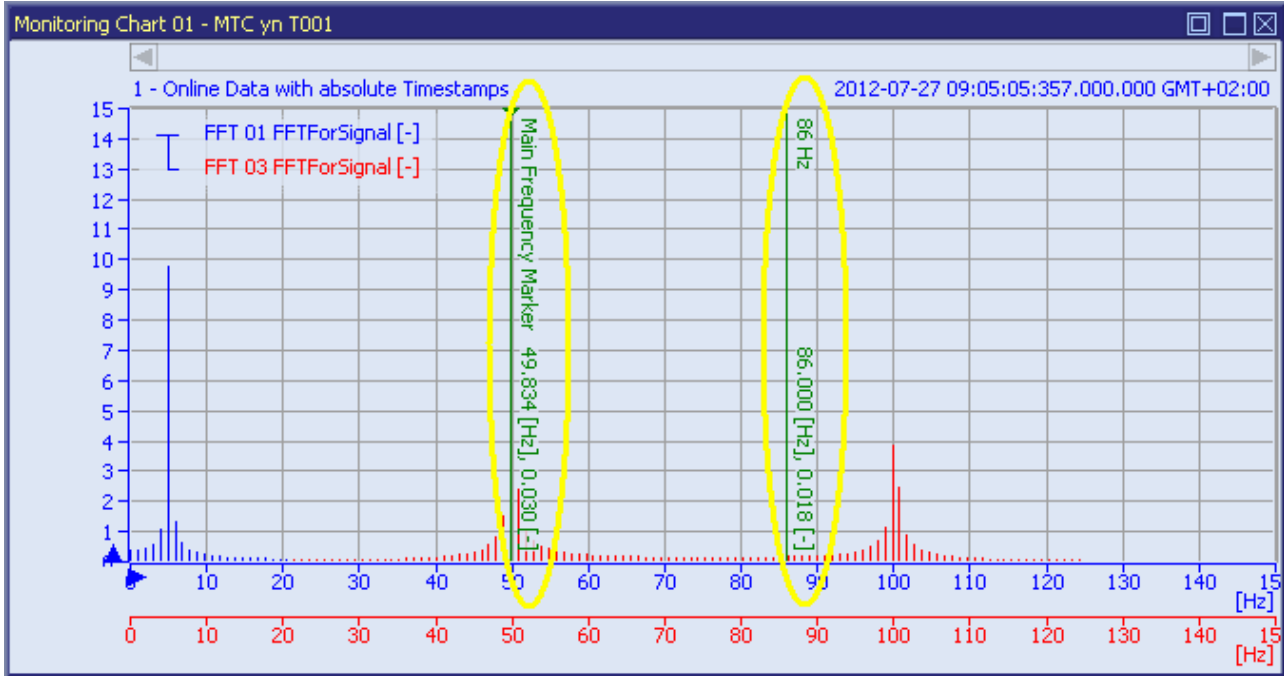


Figure 49: Example of the **Frequency Markers** of a **MTC yn T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button above the small rectangle at the top of the Main Frequency Marker starts a shift operation. The actual shifting of the Main Frequency Marker is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>[left mouse button down] + [mouse move] shifts the Main Frequency Marker horizontally to the new mouse position                             <ul style="list-style-type: none"> <li>whenever the position of the Main Frequency Marker is changed, the position of all derived <b>Frequency Markers</b> is updated automatically</li> </ul> </li> <li>in case &lt;Alt&gt; is pressed while the shifting is performed, the Main Frequency Marker snaps to the exact x-position of close values</li> </ul> <p>The values which are displayed by the <b>Frequency Markers</b> table are updated automatically while the shifting is performed.</p>
dropping of data	In case a data is dropped onto the vertical line of the Main Frequency Marker, the dropped data is linked to the Main Frequency Marker (see point 2.2.3.11.5).

#### Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting of the measurement cursors is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>[right mouse button down] + [mouse move] shifts both measurement cursors horizontally simultaneously with keeping the value distance between them</li> </ul> <p>The values which are displayed by the <b>Frequency Markers</b> table are updated automatically while the shifting is performed.</p>

## Context Menu

The following context menu items are provided for each **Frequency Marker**:

Context Menu Item	Description
Hide Frequency Marker	hides the frequency marker from which the context menu has been called
Show Harmonics > ...	sets the visibility of the harmonics of the frequency marker to the state which is specified via the submenu of this item
Change Number of Harmonics ...	opens the <b>Configure Frequency Markers</b> dialog and puts the <b>Number of Harmonics</b> cell of the frequency marker into editing mode
Change Position ...	opens the <b>Configure Frequency Markers</b> dialog and puts the <b>Value</b> cell of the frequency marker into editing mode

### 2.2.3.11 Using of Cursors and Markers

#### 2.2.3.11.1 The currently selected Cursor

Whenever a cursor or marker is moved via the mouse it becomes the currently selected cursor. The currently selected cursor also can be chosen via the context menus of the **Toolbar** (see point 2.2.3.7) and via the keyboard (see point 2.2.3.2).

The position of the currently selected cursor can be changed and restored via <Cursor left>, <Cursor right> and <R>.

#### 2.2.3.11.2 The current Cursor Data

The cursors and markers of each **MTC yn T001** always are assigned to one of the data from the legend. The x and y information at the bottom of each cursor/marker line always shows the values of the current cursor data. Within the **Advanced Cursors** and **Frequency Markers** tables, only the values of the data which is present at the x-axis of the current cursor data are displayed.

In addition, all cursors and markers preferential snap to values of the current cursor data – however, in case there are no values of the current cursor data nearby and there are values nearby of another data, a cursor/marker also can snap to this other data. In this case, this other data becomes the new cursor data.

The current cursor data can be changed also via the context menu of the **Legend** (see point 2.2.3.6).

#### 2.2.3.11.3 Labeling of Cursor and Marker Lines

At the top of the line of each cursor/marker, its name is displayed. The same name also is being used within the **Measurement Cursors**, **Advanced Cursors** and **Frequency Markers** tables.

A small icon at the top of the vertical line is shown in case the cursor/marker is currently linked to another cursor/marker (see point 2.2.3.11.4).

At the bottom of the line of each cursor/marker, the current x and y values of the cursor/marker and of the current cursor data (see point 2.2.3.11.2) are displayed.

### 2.2.3.11.4 Linking of Cursors/Markers

Cursors can be linked to cursors/markers in order to receive advanced measurement capabilities. While a cursor is linked to a cursor/marker, moving of one of them automatically moves the other one also. In addition, turning on/off of a linked cursor/marker automatically also turns on/off its currently linked cursor/marker.

The following items can be linked:

- Measurement Cursor 1 and Measurement Cursor 2 can be linked to
  - the 1. Harmonic cursor
  - the Center Frequency cursor
  - any of the harmonics and subharmonics of the 1. Harmonic cursor
  - any of the sidebands of the Center Frequency cursor
  - any of the frequency markers
  - any of the harmonics of the frequency markers
- the 1. Harmonic cursor and the Center Frequency cursor can be linked to
  - any of the frequency markers
  - any of the harmonics of the frequency markers

In order to link a cursor to another cursor/marker, the cursor must be snapped to this other cursor/marker (with <Alt> being hold down while the cursor is shifted). While a cursor is linked to another cursor/marker, an according icon is displayed at the top of the vertical line. In order to break the link between a cursor and its currently linked cursor/marker, the icon must be clicked.

### 2.2.3.11.5 Linking of Data to the Main Frequency Marker

In order to link a data to the Main Frequency Marker, the data must be dropped onto the vertical line of the Main Frequency Marker. In case the Main Frequency Marker is linked to a data currently, the name of the linked data is displayed at the top of the vertical line of the Main Frequency Marker. In order to break the link between the Main Frequency Marker and its currently linked data, the Main Frequency Marker can be moved away (either with the mouse or via the keyboard).

While it is linked to a data, the position of the Main Frequency Marker is updated automatically to the value of its linked data which matches the currently visualized point in time. Whenever the currently visualized point in time is changed (either because the online visualization is running or because the slide button is moved), the position of the Main Frequency Marker is updated automatically.

### 2.2.3.12 Measurement Cursors Table

The **Measurement Cursors** table contains the values of all **Measurement Cursors** of all **MTC yn T001s** which are present within the parent **Monitoring View Editor**. The following screenshot shows an example for the **Measurement Cursors** table for a **MTC yn T001**:

Measurement Cursors - MTC yn T001									
No.	Chart	Data	Unit	X1	Y1	X2	Y2	X2-X1	Y2-Y1
1	Monitoring Chart 01	FFT 01 FFTForSignal	-	47.945	0.015	97.847	0.007	49.902	-0.008
2	Monitoring Chart 01	FFT 03 FFTForSignal	-	47.841	0.879	97.924	0.622	50.083	-0.258

Figure 50: Example of a **Measurement Cursors** table of a **MTC yn T001**

It is opened within the **Cursor Area** of the parent **Monitoring View Editor** of the **MTC yn T001**:

Column	Description
No.	contains the row number
Chart	contains the name of the chart from which the data comes
Data	contains the name of the data
Unit	contains the unit of the data
X1	contains the x-value of the data at the x-position of cursor 1
Y1	contains the y-value of the data at the y-position of cursor 1
X2	contains the x-value of the data at the x-position of cursor 2
Y2	contains the y-value of the data at the y-position of cursor 2
X2-X1	contains the difference in between X2 and X1
Y2-Y1	contains the difference in between Y2 and Y1

The contents of the **Measurement Cursors** table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.

### 2.2.3.13 Advanced Cursors Table

The **Advanced Cursors** table contains the values of all **Advanced Cursors** of all **MTC yn T001s** which are present within the parent **Monitoring View Editor**. The following screenshot shows an example for the **Advanced Cursors** table for a **MTC yn T001**:

Advanced Cursors - MTC yn T001								
No.	Chart	Data	Unit	Advanced Cursor	X	Y	X-X(Ref)	Y-Y(Ref)
[-] Harmonics								
01	Monitoring Chart 01	1. Harmonics	-	1. Harmonics	134.053	0.016	0.000	0.000
02	Monitoring Chart 01	FFT 01 FFTForSignal	-	2. Harmonic (H2)	268.106	0.009	134.053	-0.007
03	Monitoring Chart 01	FFT 01 FFTForSignal	-	3. Harmonic (H3)	402.159	0.007	268.106	-0.009
04	Monitoring Chart 01	FFT 01 FFTForSignal	-	4. Harmonic (H4)	536.213	N/A	402.159	N/A
[-] Subharmonics								
01	Monitoring Chart 01	1. Harmonics	-	1. Harmonics	134.053	0.016	0.000	0.000
02	Monitoring Chart 01	FFT 01 FFTForSignal	-	2. Subharmonic (H2)	67.027	0.032	-67.027	0.015
03	Monitoring Chart 01	FFT 01 FFTForSignal	-	3. Subharmonic (H3)	44.684	0.048	-89.369	0.032
[-] Upper Sidebands								
01	Monitoring Chart 01	Center Frequency	-	Center Frequency	91.944	0.023	0.000	0.000
02	Monitoring Chart 01	FFT 01 FFTForSignal	-	1. Upper Sideband (S1)	110.382	0.020	18.439	-0.004
03	Monitoring Chart 01	FFT 01 FFTForSignal	-	2. Upper Sideband (S2)	128.821	0.017	36.877	-0.007
[-] Lower Sidebands								
01	Monitoring Chart 01	Center Frequency	-	Center Frequency	91.944	0.023	0.000	0.000
02	Monitoring Chart 01	FFT 01 FFTForSignal	-	1. Lower Sideband (S1)	73.505	0.029	-18.439	0.006
03	Monitoring Chart 01	FFT 01 FFTForSignal	-	2. Lower Sideband (S2)	55.066	0.039	-36.877	0.016

Figure 51: Example of an **Advanced Cursors** table of a **MTC yn T001**

It is opened within the **Cursor Area** of the parent **Monitoring View Editor** of the **MTC yn T001**:

Column	Description
No.	contains the row number
Chart	contains the name of the chart from which the data comes
Data	contains the name of the data
Unit	contains the unit of the data
Advanced Cursor	contains the name of the <b>Advanced Cursor</b>
X	contains the x-value of the data at the x-position of the cursor
Y	contains the y-value of the data at the y-position of the cursor
X-X(Ref)	contains the difference in between the x-value of the cursor and the x-value of the reference
Y-Y(Ref)	contains the difference in between the y-value of the cursor and the y-value of the reference

The contents of the **Advanced Cursors** table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.

### 2.2.3.14 Frequency Markers Table

The **Frequency Markers** table contains the values of all **Frequency Markers** of all **MTC yn T001s** which are present within the parent **Monitoring View Editor**. The following screenshot shows an example for the **Frequency Markers** table for a **MTC yn T001**:

Frequency Markers - MTC yn T001						
No.	Chart	Data	Unit	Frequency Marker	Frequency [Hz]	Amplitude
1	Monitoring Chart 01	FFT 01 FFTForSignal	-	Main Frequency Marker	49.834	0.043
2	Monitoring Chart 01	FFT 01 FFTForSignal	-	86 Hz	86.000	0.025
3	Monitoring Chart 01	FFT 01 FFTForSignal	-	Defect Frequency 1	439.528	0.007
4	Monitoring Chart 01	FFT 01 FFTForSignal	-	H2 - Defect Frequency 1	879.056	N/A
5	Monitoring Chart 01	FFT 01 FFTForSignal	-	H3 - Defect Frequency 1	1318.584	N/A

Figure 52: Example of a **Frequency Markers** table of a **MTC yn T001**

It is opened within the **Cursor Area** of the parent **Monitoring View Editor** of the **MTC yn T001**:

Column	Description
No.	contains the row number
Chart	contains the name of the chart from which the data comes
Data	contains the name of the data
Unit	contains the unit of the data
Frequency Marker	contains the name of the <b>Frequency Marker</b>
Frequency [Hz]	contains the frequency of the <b>Frequency Marker</b>
Amplitude	contains the amplitude of the data at the frequency of the <b>Frequency Marker</b>

The contents of the **Frequency Markers** table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.

## 2.2.3.15 Chart Options Dialog

### 2.2.3.15.1 Overview

The following screenshot shows an example of a **Chart Options** dialog:

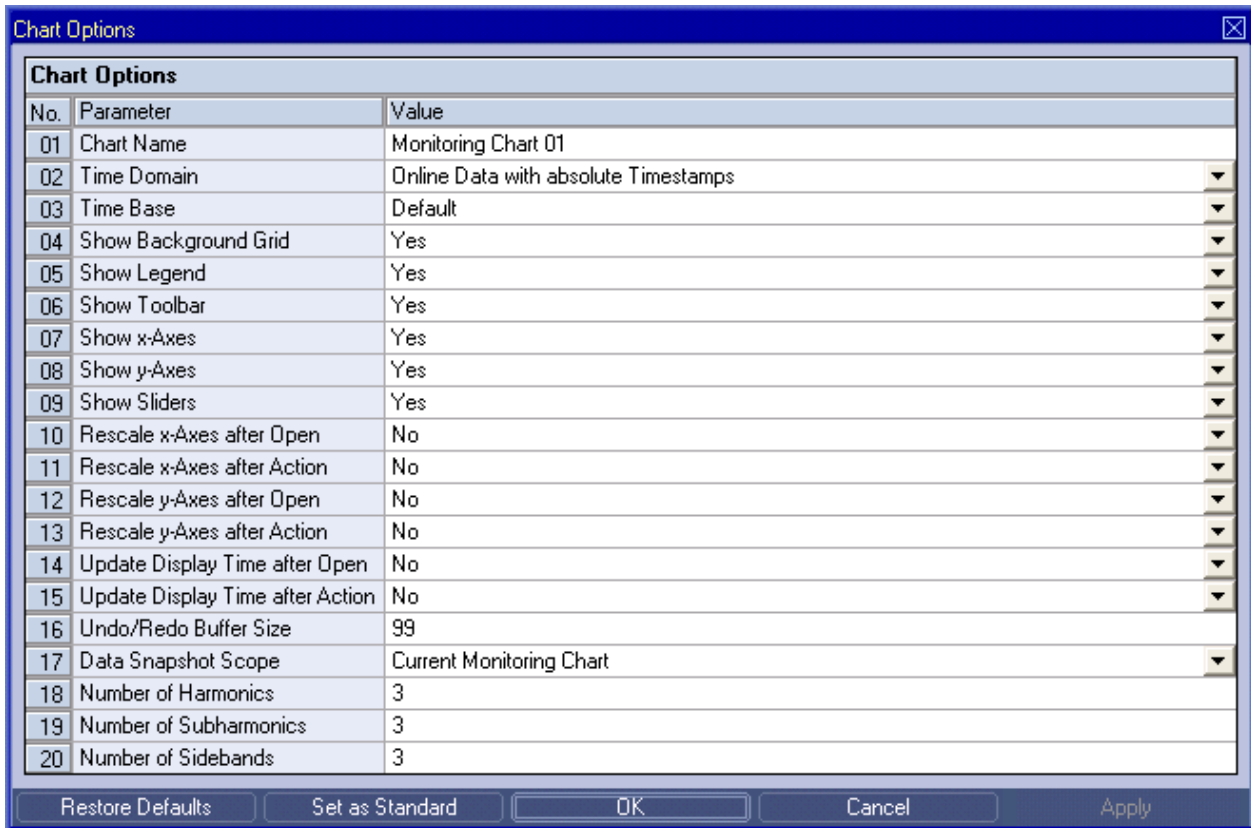


Figure 53: Example of a **Chart Options** Dialog of a **MTC yn T001**

### 2.2.3.15.2 Chart Options Table

The **Chart Options** table contains the chart options of the **MTC yn T001**:

Parameter	Description
Chart Name	allows to enter a name for the chart
Time Domain	allows to choose the time domain
Time Base	allows to choose the time base
Show Background Grid	allows to choose whether the background grid shall be shown within the <b>Curve Area</b>
Show Legend	allows to choose whether the <b>Legend Area</b> shall be shown
Show Toolbar	allows to choose whether the <b>Toolbar Area</b> shall be shown
Show x-Axes	allows to choose whether the <b>x-Axes Area</b> shall be shown
Show y-Axes	allows to choose whether the <b>y-Axes Area</b> shall be shown
Show Sliders	allows to choose whether the <b>Slider Area</b> shall be shown
Rescale x-Axes after Open	allows to choose whether the x-axes shall be scaled automatically after the Monitoring View File has been opened
Rescale x-Axes after Action	allows to choose whether the x-axes shall be scaled automatically after the displayed data have been modified outside the <b>MTC yn T001</b> or after a new data has been dropped into the <b>MTC yn T001</b>
Rescale y-Axes after Open	allows to choose whether the y-axes shall be scaled automatically after the Monitoring View File has been opened
Rescale y-Axes after Action	allows to choose whether the y-axes shall be scaled automatically after the displayed data have been modified outside the <b>MTC yn T001</b> or after a new data has been dropped into the <b>MTC yn T001</b>
Update Display Time after Open	allows to choose whether the display time shall be updated automatically after the Monitoring View File has been opened
Update Display Time after Action	allows to choose whether the display time shall be updated automatically after the displayed data have been modified outside the <b>MTC yn T001</b> or after a new data has been dropped into the <b>MTC yn T001</b>
Undo/Redo Buffer Size	allows to enter the total size of undo/redo operations which shall be remembered by the <b>MTC yn T001</b>
Data Snapshot Scope	allows to choose whether data snapshots shall store only the data from the current <b>Monitoring Chart</b> or from the whole Monitoring View
Number of Harmonics	allows to enter the total number of harmonics which shall be shown by the <b>Monitoring Chart</b>
Number of Subharmonics	allows to enter the total number of subharmonics which shall be shown by the <b>Monitoring Chart</b>
Number of Sidebands	allows to enter the total number of sidebands which shall be shown by the <b>Monitoring Chart</b>

#### Chart Name

The **Chart Name** is used by other modules in order to identify a certain **MTC yn T001**. Within the current Monitoring View, the **Chart Name** of each **MTC yn T001** must be unique.

#### Time Domain

The following time domains are supported by the **Chart Options** dialog of the **MTC yn T001**:

- Online Data with absolute Timestamps
- Offline Data with absolute Timestamps
- Offline Data with relative Timestamps

The **Time Domain** cell displays the time domain which is currently being used by all data of the **MTC yn T001**. In case more than one time domain is being used currently, the **Time Domain** cell stays empty.

When another time domain is being chosen via the **Time Domain** cell, the chosen time domain is applied to all of the data of the **MTC yn T001**. As a result, all data internally are being put onto the t-axis with chosen time domain. In case there is no data with the known name and matching time domain, the affected data becomes marked as not present.

In case the time domain is being changed, the x-/y-axes can be updated automatically in case the **Rescale x-Axis after Action** or **Rescale y-Axis after Action** options are being set to "Yes".

## Time Base

The chosen time base specifies how the time stamps of each probe, which are being stored in GMT internally, are being represented by the **MTC yn T001**. In case online data is being displayed and the option "Use the local Time of the Offline Data" is being chosen, the time base for all online data is taken from the time base setting of the Monitoring View (like if "Default" would have been chosen for the time base of the **MTC yn T001**).

### Rescale x-Axes after Open

The rescale type for the x-axes after open can be modified for each x-axis independently via the context menu of the **x-Axes Area** in order to overwrite the global setting of the **MTC yn T001**.

Rescale x-Axes after Open	Description
Yes	In case the rescale mode for the x-axes after open is set to "Yes", the <b>MTC yn T001</b> automatically rescales its x-axes after the Monitoring View File has been opened so that all values from all data of all x-axes become visible.
No	In case the rescale mode for the x-axes after open is set to "No", the <b>MTC yn T001</b> does not touch the scaling of its x-axes after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale x-Axes after Action

The rescale type for the x-axes after an action can be modified for each x-axis independently via the context menu of the **x-Axes Area** in order to overwrite the global setting of the **MTC yn T001**.

Rescale x-Axes after Action	Description
Yes	In case the rescale mode for the x-axes after an action is set to "Yes", the <b>MTC yn T001</b> automatically rescales its x-axes after an external action has modified the displayed data so that all values from all data of the affected x-axes become visible.  The following actions result in an automatic rescale of the x-axes in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/append/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC yn T001</b></li> </ul>
No	In case the rescale mode for the x-axes after an action is set to "No", the <b>MTC yn T001</b> does not touch the scaling of its x-axes after an external action has modified the displayed data and leaves it at the current values.

### Rescale y-Axes after Open

The rescale type for the y-axes after open can be modified for each y-axis independently via the context menu of the **y-Axes Area** in order to overwrite the global setting of the **MTC yn T001**.

Rescale y-Axes after Open	Description
Yes	In case the rescale mode for the y-axes after open is set to "Yes", the <b>MTC yn T001</b> automatically rescales its y-axes after the Monitoring View File has been opened so that all values from all data of all y-axes become visible.
No	In case the rescale mode for the y-axes after open is set to "No", the <b>MTC yn T001</b> does not touch the scaling of its y-axes after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.



## Rescale y-Axes after Action

The rescale type for the y-axis after an action can be modified for each y-axis independently via the context menu of the **y-Axes Area** in order to overwrite the global setting of the **MTC yn T001**.

Rescale y-Axes after Action	Description
Yes	In case the rescale mode for the y-axis after an action is set to "Yes", the <b>MTC yn T001</b> automatically rescales the y-axis after an external action has modified the displayed data (e.g. when another part of the offline data has been loaded, ...) so that all values from all data of the affected y-axis become visible.  The following actions result in an automatic rescale of the y-axis in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC yn T001</b></li> </ul>
No	In case the rescale mode for the y-axis after an action is set to "No", the <b>MTC yn T001</b> does not touch the scaling of its y-axis after an external action has modified the displayed data and leaves it at the current values.

## Update Display Time after Open

The update type for the display time after open can be modified for each time domain independently via the context menu of the **Slider Area** in order to overwrite the global setting of the **MTC yn T001**.

Update Display Time after Open	Description
Yes	In case the update mode for the display time after open is set to "Yes", the <b>MTC yn T001</b> automatically updates its display time after the Monitoring View File has been opened so that the latest available values from all data of each time domain become visible.
No	In case the update mode for the display time after open is set to "No", the <b>MTC yn T001</b> does not touch the values of its display times after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

## Update Display Time after Action

The update type for the display time after an action can be modified for each time domain independently via the context menu of the **Slider Area** in order to overwrite the global setting of the **MTC yn T001**.

Update Display Time after Action	Description
Yes	In case the update mode for the display time after an action is set to "Yes", the <b>MTC yn T001</b> automatically updates the display time after an external action has modified the displayed data so that the latest available values from all data of each time domain become visible.  The following actions result in an automatic update of the display time in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC yn T001</b></li> </ul>
No	In case the update mode for the display time after an action is set to "No", the <b>MTC yn T001</b> does not touch the values of its display times after an external action has modified the displayed data and leaves it at the current values.

### 2.2.3.15.3 Menu Bar

Menu Button	Description
Restore Defaults	Sets all options back to their default settings.
Set as Standard	Sets the current options as standard options for each new <b>MTC yn T001</b> . The options of already existing <b>MTC yn T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

## 2.2.3.16 Chart Styles Dialog

### 2.2.3.16.1 Overview

The following screenshot shows an example of a **Chart Styles** dialog:

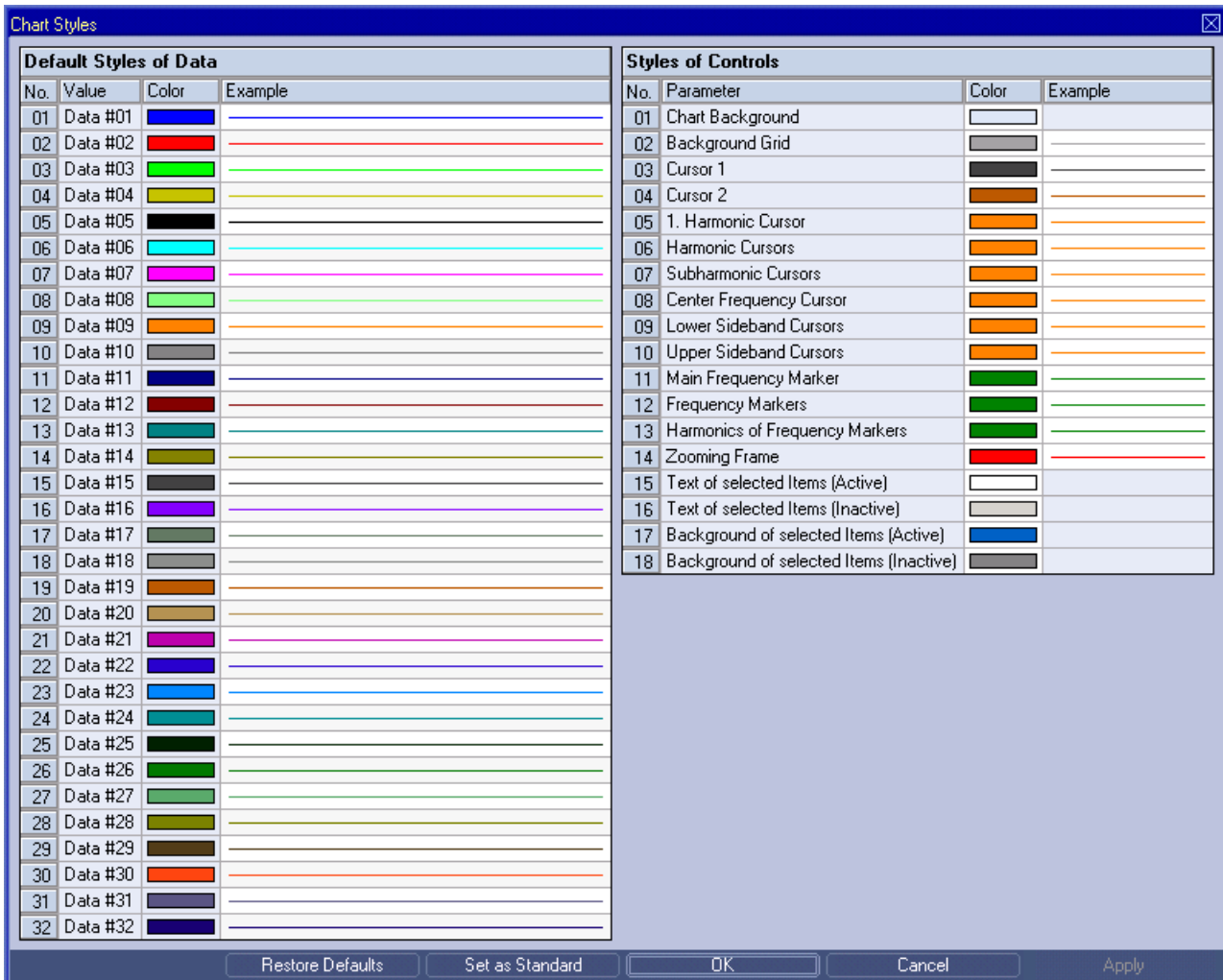


Figure 54: Example of a **Chart Styles** Dialog of a **MTC yn T001**

### 2.2.3.16.2 Default Styles of Data Table

The **Default Styles of Data** table contains the default styles of data within the **MTC yn T001**:

Parameter	Description
Data #01 ... Data #32	displays the currently chosen color and style for the according data

A double-click into the **Color** column of this control opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of this control opens the **Select Style** dialog for the according row.

### 2.2.3.16.3 Styles of Controls Table

The **Styles of Controls** table contains the styles of the controls of the **MTC yn T001**:

Parameter	Description
Chart Background	displays the currently chosen color for the chart background
Background Grid	displays the currently chosen style for the background grid
Cursor 1	displays the currently chosen color for the first cursor
Cursor 2	displays the currently chosen color for the second cursor
Zooming Frame	displays the currently chosen style for the zooming frame
Text of selected Items (Active)	displays the currently chosen color of the text of active selected items
Text of selected Items (Inactive)	displays the currently chosen color of the text of inactive selected items
Background of selected Items (Active)	displays the currently chosen color of the background of active selected items
Background of selected Items (Inactive)	displays the currently chosen color of the background of inactive selected items

A double-click into the **Color** column of any row opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of a row which supports different styles opens the **Select Style** dialog for the according row. In case different styles are not supported by a row, a double-click into the **Example** column opens the **Select Color** dialog for the according row.

### 2.2.3.16.4 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
Set as Standard	Sets the current styles as standard styles for each new <b>MTC yn T001</b> . The styles of already existing <b>MTC yn T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.

### 2.2.3.17 Data Style Dialog

#### 2.2.3.17.1 Overview

The following screenshot shows an example of a **Data Style** dialog:

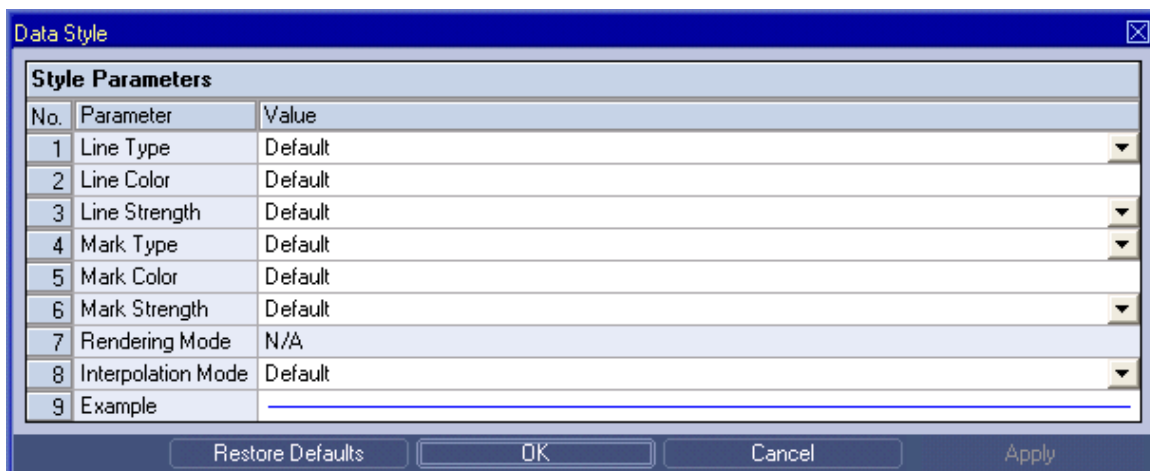


Figure 55: Example of a **Data Style** Dialog of a **MTC yn T001**

### 2.2.3.17.2 Style Parameters Table

The **Style Parameters** table contains the visualization style parameters of the currently selected data:

Parameter	Description
Line Type	allows to switch between the available line types
Line Color	allows to enter the desired line color
Line Strength	allows to switch between the available line strengths
Mark Type	allows to switch between the available mark types
Mark Color	allows to enter the desired mark color
Mark Strength	allows to switch between the available mark strengths
Rendering Mode	N/A
Interpolation Mode	allows to switch between the available interpolation modes
Example	displays an example curve according to the specified data style

A value of "Default" can be assigned to each style parameter. In case "Default" is being chosen, the according value from the **Chart Styles** dialog is being used for the visualization of the data.

#### Interpolation Mode

Interpolation Mode	Description
Bars	When the interpolation mode "Bars" is chosen for a data, the visualization displays one bar in y direction for each present value at the x-axis. The width of the displayed bars is dependent to the currently chosen <b>Line Strength</b> .
Lines	When the interpolation mode "Lines" is chosen for a data, the visualization connects two rendered pixels at the screen via a line interpolation. The data curve always is visualized from the last rendered value to the next rendered value via a straight connection.  In case a next rendered value is not available, the data curve stops at the last rendered value.
Stairs	When the interpolation mode "Stairs" is chosen for a data, the visualization connects two rendered pixels at the screen via a stairs interpolation. The data curve always is visualized from the left rendered value to the next right rendered value horizontally.  In case a next rendered value is not available, the last rendered value is extended horizontally to the newer time.

### 2.2.3.17.3 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.

## 2.2.3.18 Select Style Dialog

### 2.2.3.18.1 Overview

The following screenshot shows an example of a **Select Style** dialog:

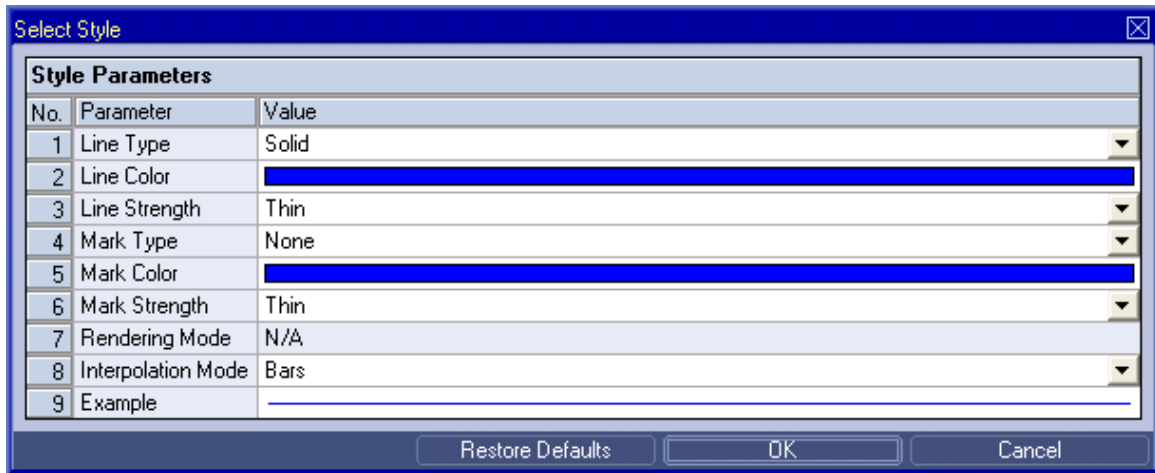


Figure 56: Example of a **Select Style** Dialog of a **MTC yn T001**

The functionality of the **Select Style** dialog matches the functionality of the **Data Style** dialog (see point 2.2.3.17).

## 2.2.3.19 Manual scale x-Axis Dialog

### 2.2.3.19.1 Overview

The following screenshot shows an example of a **Manual scale x-Axis** dialog:

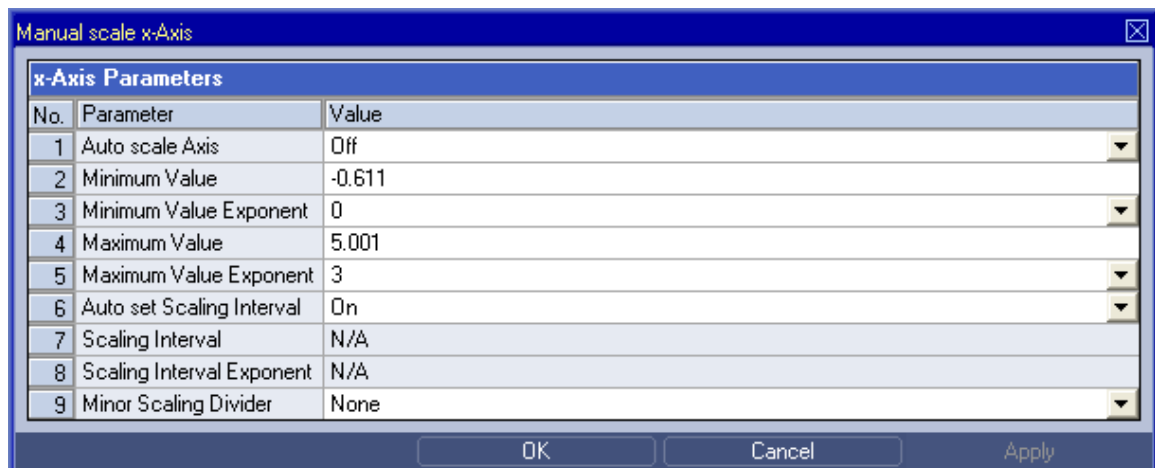


Figure 57: Example of a **Manual scale x-Axis** Dialog of a **MTC yn T001**

### 2.2.3.19.2 x-Axis Parameters Table

The **x-Axis Parameters** table contains the parameters of a currently selected x-axis:

Parameter	Description
Auto scale Axis	allows to switch between the available auto scale axis modes
Minimum Value	allows to enter the minimum value of the scaling
Minimum Value Exponent	allows to switch between the supported minimum value exponents
Maximum Value	allows to enter the maximum value of the scaling
Maximum Value Exponent	allows to switch between the supported maximum value exponents
Auto set Scaling Interval	allows to switch between the available modes for the automatic scaling interval
Scaling Interval	allows to enter the scaling interval
Scaling Interval Exponent	allows to switch between the supported scaling interval exponents
Minor Scaling Divider	allows to switch between the available minor scaling dividers

#### Auto scale Axis

Auto scale Axis	Description
On	In this mode, the <b>MTC yn T001</b> constantly sets the scaling of the x-axis so that all available values of the data at the x-axis stay visible.
Off	In this mode, the <b>MTC yn T001</b> uses the specified <b>Minimum Value</b> and <b>Maximum Value</b> parameters for the scaling of the x-axis.

#### Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the <b>MTC yn T001</b> constantly sets the scaling interval of the x-axis according to the currently displayed time interval.
Off	In this mode, the <b>MTC yn T001</b> uses the specified <b>Scaling Interval</b> and <b>Scaling Interval Exponent</b> parameters for the scaling interval of the x-axis. In case the specified parameters would lead to overlapping numbers, the automatic scaling interval is being used automatically until the specified parameters allow a valid scaling again.

### 2.2.3.19.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.3.20 Manual scale y-Axis Dialog

#### 2.2.3.20.1 Overview

The following screenshot shows an example of a **Manual scale y-Axis** dialog:

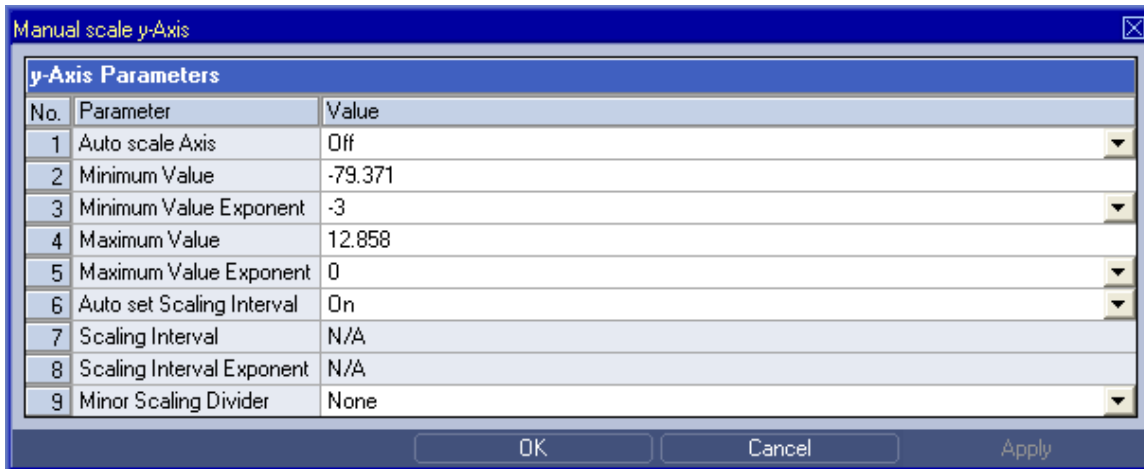


Figure 58: Example of a **Manual scale y-Axis** Dialog of a **MTC yn T001**

The functionality of the **Manual scale y-Axis** dialog matches the functionality of the **Manual scale x-Axis** dialog (see point 2.2.3.19).

### 2.2.3.21 Configure Frequency Markers Dialog

#### 2.2.3.21.1 Overview

The following screenshot shows an example of a **Configure Frequency Markers** dialog:

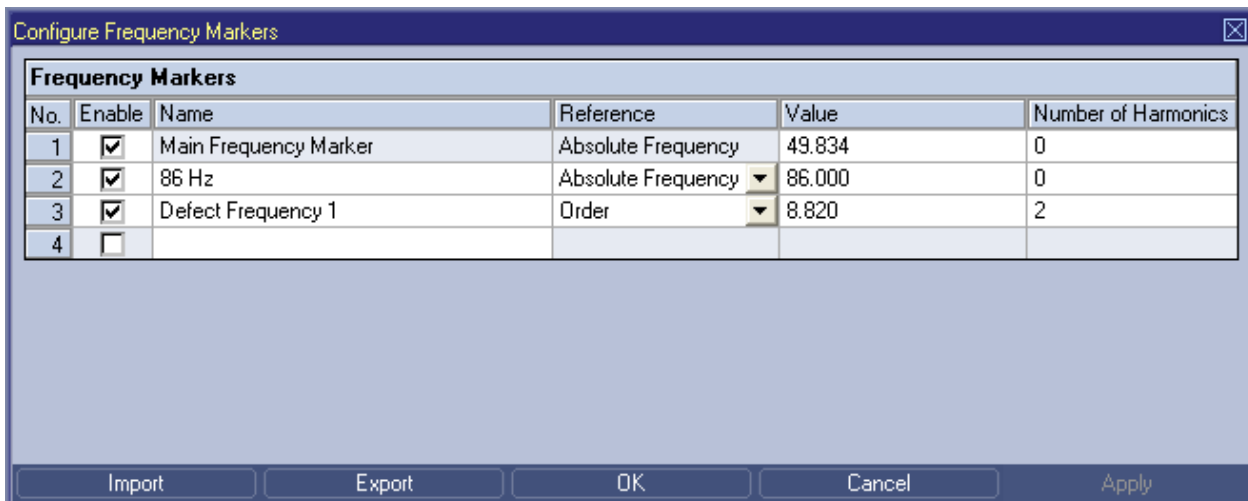


Figure 59: Example of a **Configure Frequency Markers** Dialog of a **MTC yn T001**

### 2.2.3.21.2 Frequency Markers Table

The **Frequency Markers** table contains the currently defined frequency markers:

Column	Description
No.	contains the row number
Enable	specifies whether the frequency marker from this row shall be visible within the <a href="#">Curve Area</a>
Name	contains the name of the frequency marker
Reference	specifies whether the value within the <a href="#">Value</a> cell is an absolute or a relative value
Value	contains the frequency or the multiplier of the frequency marker
Number of Harmonics	contains the number of harmonics which shall be displayed for this frequency marker

The user is able to highlight a complete row (or multiple rows) and to delete them via the context menu (**Remove** context menu item) and/or via the keyboard (<Del> key).

The last row of the **Frequency Markers** table always is an empty row and therefore it allows the user to add a new frequency marker by entering of another name into the **Name** field of this last row. All other cells of the last row are empty and disabled as long as the **Name** field is empty. Whenever a new name has been entered to the **Name** field, another new, empty row is added to the **Frequency Markers** table automatically.

The names must be unique among all present frequency markers.

### 2.2.3.21.3 Menu Bar

Menu Button	Description
Import	Imports the frequency marker definitions from a .csv file. After this button has been pressed, a browse dialog opens which allows to choose the input file from the local file system of the <b>X-Tools Client</b> .
Export	Exports the current frequency marker definitions to a file. After this button has been pressed, a browse dialog opens which allows to choose the output file from the local file system of the <b>X-Tools Client</b> .
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.



### 2.2.3.22 Drag&Drop sensitive Areas

The following screenshot shows the places within a **MTC yn T001** onto which data can be dropped in order to open a new **Monitoring Chart**:

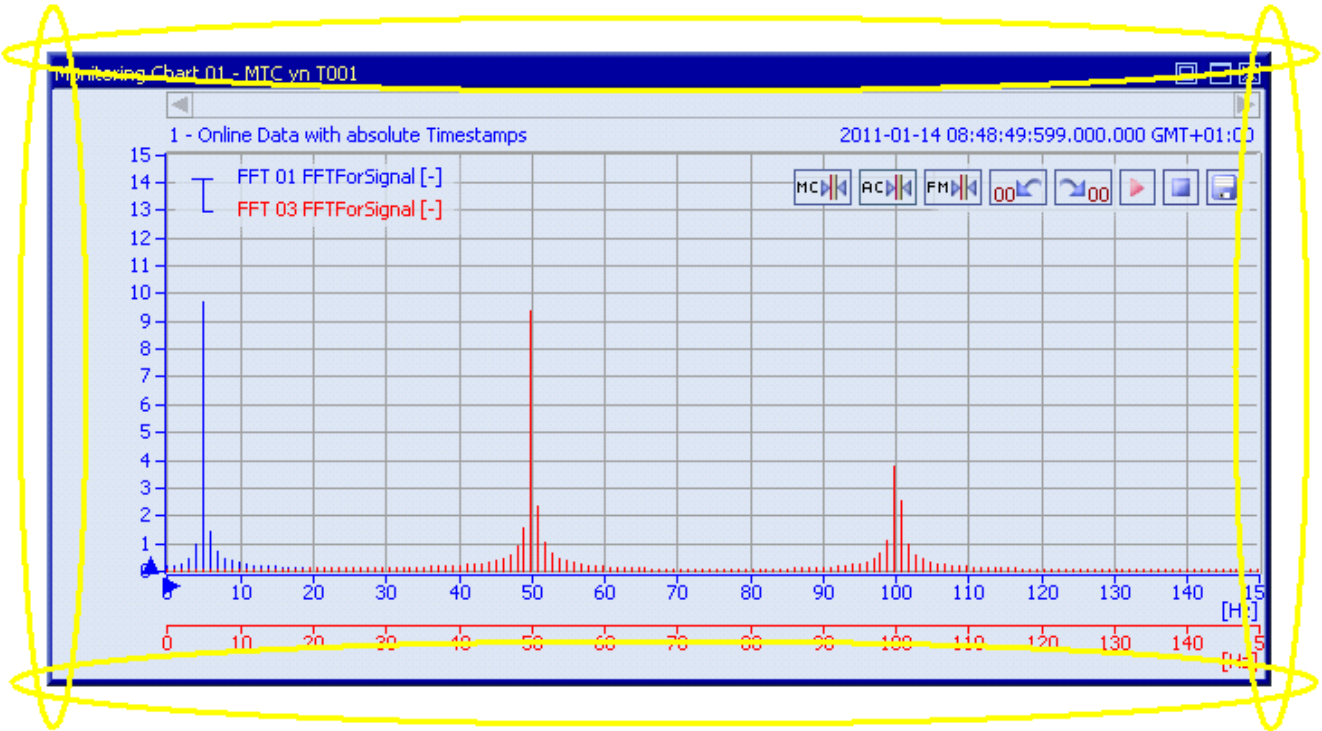


Figure 60: Dropping of Data in order to open a new **Monitoring Chart**

The following screenshot shows the places within a **MTC yn T001** onto which data can be dropped in order to add the data to the existing **MTC yn T001**:

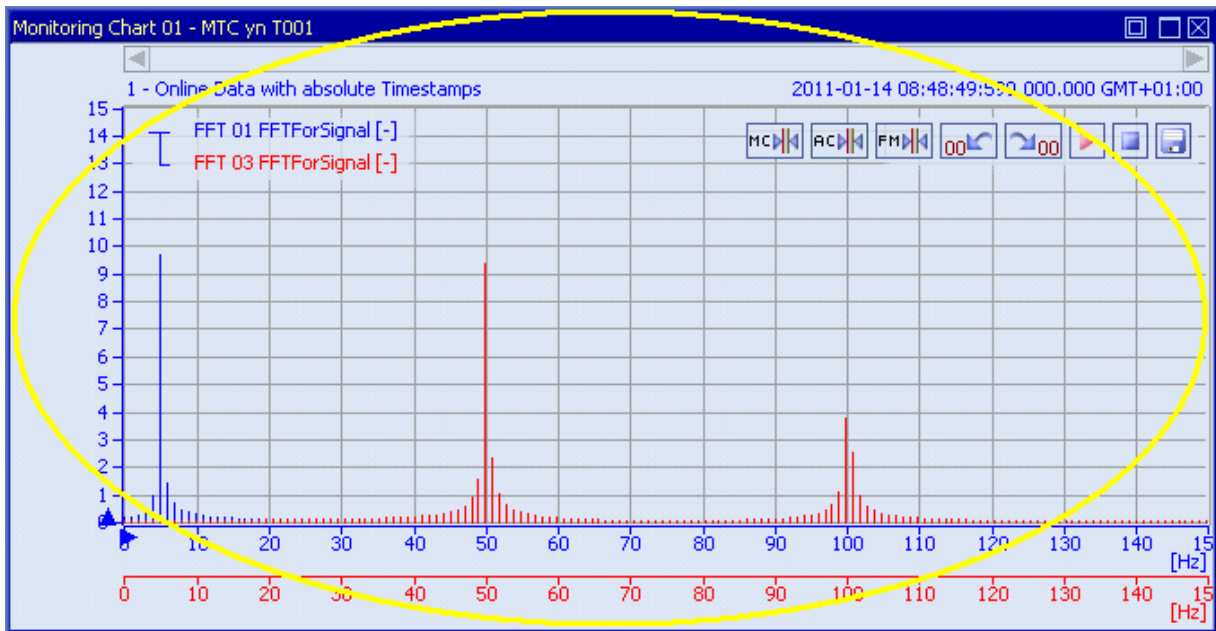


Figure 61: Dropping of Data in order to add it to the existing **MTC yn T001**

## 2.2.4 MTC ynm T001

### 2.2.4.1 Overview

The **MTC ynm T001** is used in order to visualize, create and edit  $y = f(n,m)$  charts (for example the outputs of the Histogram2D(), ... functions) in the 3D space within a **Monitoring View Editor**. Multiple editors of this type can be opened and used simultaneously within one **Monitoring View Editor** and/or within multiple **Monitoring View Editors**.

The following screenshot shows an example of a **MTC ynm T001**:

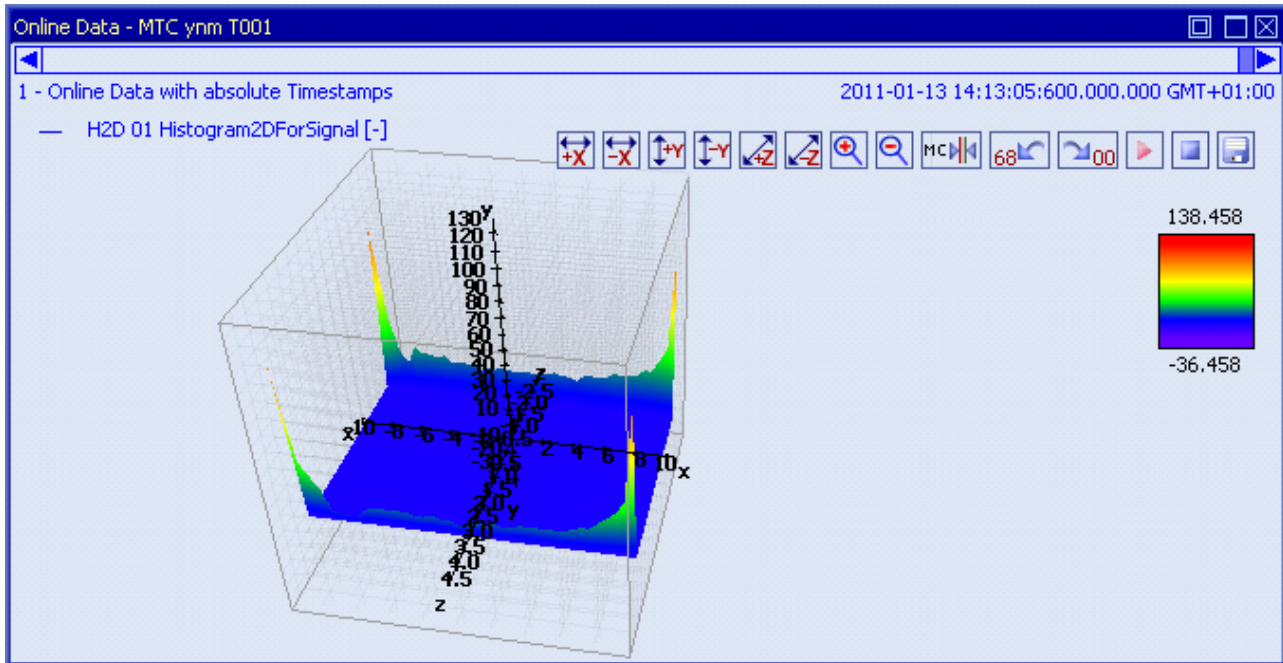


Figure 62: Example of a **MTC ynm T001**

Each control of the **MTC ynm T001** has a defined task and provides certain functionalities. The following major controls are provided by the **MTC ynm T001**:

- Curve Area
- x-Axis Area
- y-Axis Area
- z-Axis Area
- Slider Area
- Legend Area
- Toolbar Area
- Measurement Cursors
- Measurement Cursors Table
- Chart Options Dialog
- Chart Styles Dialog
- Data Style Dialog
- Select Style Dialog
- Manual scale x-Axis Dialog
- Manual scale y-Axis Dialog
- Manual scale z-Axis Dialog
- Manual scale Color Gradient Dialog

- Drag&Drop sensitive Areas

### 2.2.4.2 Curve Area

The **Curve Area** of the **MTC ynm T001** displays a 3-dimensional cuboid which contains the current data and is used in order to visualize data of the function  $y = f(n,m)$ . Via mouse and keyboard operations the user is able to rotate, zoom, scroll and maintain the available data.

The following screenshot shows an example of the **Curve Area** of a **MTC ynm T001**:

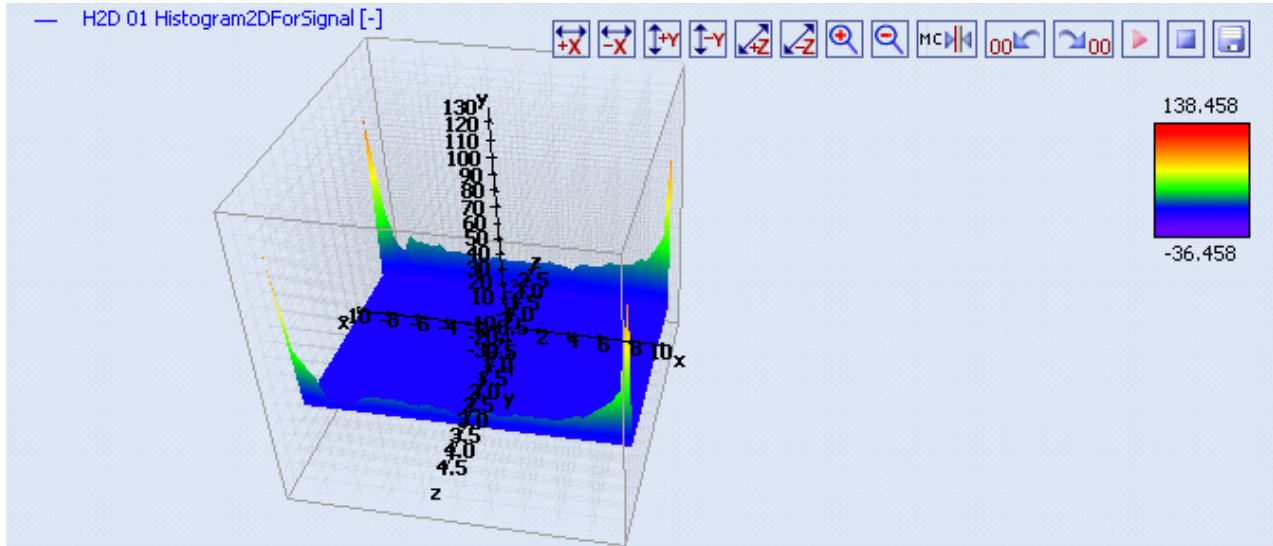


Figure 63: Example of the **Curve Area** of a **MTC ynm T001**

#### Background Grid

The background grid of the **MTC ynm T001** extends the lines from the axis labeling into the cuboid. It is represented as a grid of horizontal, vertical and in-depth lines within the cuboid.

The appearing and scaling of the background grid is configured via the **Manual scale x-Axis** dialog (for the grid lines of the x-axis), via the **Manual scale y-Axis** dialog (for the grid lines of the y-axis) and via the **Manual scale z-Axis** dialog (for the grid lines of the z-axis).

In case the current background grid configuration is set to “manual” and the vertical, horizontal and/or in-depth grid lines can not be drawn (because the grid lines would be too close to each other), the background grid automatically switches to automatic distribution of the grid lines for the affected orientation(s). The manual settings are used again as soon as the scaling of the **MTC ynm T001** reaches a value which allows using the manual configuration.

#### Curve Visualization

The data interpolation defines how two successive points of an already rendered data are connected when they are displayed. All supported data interpolation modes are defined by the description of the **Data Style** dialog.

The data style defines how a data is visualized graphically. It contains the parameters for the color/strength/style of the line as well as the parameters for the color/strength/style of the mark and the rendering/interpolation methods. The styles of each data can be defined at different levels by the user.

The style of each data can be set at the following levels, where the settings of a higher level overwrite the settings of a lower level (top = high, bottom = low):

- **Data Style** dialog of the **MTC ynm T001**
- default data style of the **MTC ynm T001**

## Keyboard Operations

The following operations can be performed via the keyboard:

Keyboard Operation	Description
<+>	zooms into all three directions simultaneously
<Shift> + <+>	zooms only into the x-axis
<x> + <+>	behaves like <Shift> + <+>
<Ctrl> + <+>	zooms only into the y-axis
<y> + <+>	behaves like <Ctrl> + <+>
<Alt> + <+>	zooms only into the z-axis
<z> + <+>	behaves like <Alt> + <+>
<->	zooms out from all three directions simultaneously
<Shift> + <->	zooms only out from the x-axis
<x> + <->	behaves like <Shift> + <->
<Ctrl> + <->	zooms only out from the y-axis
<y> + <->	behaves like <Ctrl> + <->
<Alt> + <->	zooms only out from the z-axis
<z> + <->	zoom only out from the z-axis
<F>	fits the scaling of all three directions simultaneously
<Ctrl> + <Z>	undoes the latest operation from the undo buffer
<Shift> + <Ctrl> + <Z>	undoes all operations from the undo buffer
<Ctrl> + <Y>	redoes the latest operation from the redo buffer
<Shift> + <Ctrl> + <Y>	redoes all operations from the redo buffer
<Esc>	when <Esc> is being pressed while a mouse operation (e.g. rotating or scrolling) is going on, the ongoing operation is cancelled
<Cursor left>	moves the currently selected cursor to the next lower element in x-direction
<Cursor right>	moves the currently selected cursor to the next higher element in x-direction
<Cursor down>	moves the currently selected cursor to the next lower element in z-direction
<Cursor up>	moves the currently selected cursor to the next higher element in z-direction
<1>	sets the cursor 1 as currently selected cursor
<2>	sets the cursor 2 as currently selected cursor

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>In case the current mouse position is above the point of intersection of a measurement cursor, a single click of the left mouse button with keeping the button starts to move the below measurement cursor.</p> <p>In case the current mouse position is not above the point of intersection of a measurement cursor, a single click of the left mouse button with keeping the button starts a rotate operation. The actual rotation is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>[left mouse button down] + [mouse move] rotates the cuboid into the direction of the mouse move</li> <li>&lt;Esc&gt; cancels the current operation and sets the orientation of the cuboid back to the orientation which it had before the rotation had been started</li> </ul>

### Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Curve Area</b> opens the context menu for the <b>Curve Area</b> .
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move] moves all curves within the cuboid into the direction of the mouse move                             <ul style="list-style-type: none"> <li>○ &lt;Shift&gt; + [right mouse button down] + [mouse move left/up] moves all curves within the cuboid to the left in direction of the horizontal axis                                     <ul style="list-style-type: none"> <li>▪ &lt;x&gt; + [right mouse button down] + [mouse move left/up] behaves like &lt;Shift&gt; + [right mouse button down] + [mouse move left]</li> </ul> </li> <li>○ &lt;Shift&gt; + [right mouse button down] + [mouse move right/down] moves all curves within the cuboid to the right in direction of the horizontal axis                                     <ul style="list-style-type: none"> <li>▪ &lt;x&gt; + [right mouse button down] + [mouse move right/down] behaves like &lt;Shift&gt; + [right mouse button down] + [mouse move right]</li> </ul> </li> <li>○ &lt;Ctrl&gt; + [right mouse button down] + [mouse move left/up] moves all curves within the cuboid up in the direction of the vertical axis                                     <ul style="list-style-type: none"> <li>▪ &lt;y&gt; + [right mouse button down] + [mouse move left/up] behaves like &lt;Ctrl&gt; + [right mouse button down] + [mouse move left]</li> </ul> </li> <li>○ &lt;Ctrl&gt; + [right mouse button down] + [mouse move right/down] moves all curves within the cuboid down in the direction of the vertical axis                                     <ul style="list-style-type: none"> <li>▪ &lt;y&gt; + [right mouse button down] + [mouse move right/down] behaves like &lt;Ctrl&gt; + [right mouse button down] + [mouse move right]</li> </ul> </li> <li>○ &lt;Alt&gt; + [right mouse button down] + [mouse move left/up] moves all curves within the cuboid to the front in the direction of the depth axis                                     <ul style="list-style-type: none"> <li>▪ &lt;z&gt; + [right mouse button down] + [mouse move left/up] behaves like &lt;Ctrl&gt; + [right mouse button down] + [mouse move left]</li> </ul> </li> <li>○ &lt;Alt&gt; + [right mouse button down] + [mouse move right/down] moves all curves within the cuboid to the back in the direction of the depth axis                                     <ul style="list-style-type: none"> <li>▪ &lt;z&gt; + [right mouse button down] + [mouse move right/down] behaves like &lt;Ctrl&gt; + [right mouse button down] + [mouse move right]</li> </ul> </li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation and sets the position of the cuboid back to the position which it had before the shift operation had been started</li> </ul>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the cuboid. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] zooms out of the current mouse position in all three directions</li> <li>• [mouse wheel up] zooms into the current mouse position in all three directions</li> <li>• &lt;Shift&gt; + [mouse wheel down] zooms only out from the horizontal axis from the middle of the horizontal axis <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel down] behaves like &lt;Shift&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Shift&gt; + [mouse wheel up] zooms only into the horizontal axis from the middle of the horizontal axis <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel up] behaves like &lt;Shift&gt; + [mouse wheel up]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel down] zooms only out from the vertical axis from the middle of the vertical axis <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel down] behaves like &lt;Ctrl&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel up] zooms only into the vertical axis from the middle of the vertical axis <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel up] behaves like &lt;Ctrl&gt; + [mouse wheel up]</li> </ul> </li> <li>• &lt;Alt&gt; + [mouse wheel down] zooms only out from the depth axis from the middle of the depth axis <ul style="list-style-type: none"> <li>○ &lt;z&gt; + [mouse wheel down] behaves like &lt;Alt&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Alt&gt; + [mouse wheel up] zooms only into the depth axis from the middle of the depth axis <ul style="list-style-type: none"> <li>○ &lt;z&gt; + [mouse wheel up] behaves like &lt;Alt&gt; + [mouse wheel up]</li> </ul> </li> </ul>

## Drag&Drop of Data

When an ynm-compatible data is dropped into the **Curve Area**, it is added to the currently present data of the **MTC ynm T001**:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the default x-, y- and z-axes.
- In case the current Drag&Drop operation has been started within the **MTC ynm T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC ynm T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC ynm T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC ynm T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Fit to Chart	sets the scaling of the horizontal-, vertical- and depth-axes so that the complete values of all data within the <b>MTC ynm T001</b> become visible
Fit to Charts	sets the scaling of all <b>Monitoring Charts</b> within the parent <b>Monitoring View Editor</b> so that the complete values of all data within all <b>Monitoring Charts</b> become visible
Zoom in	zooms into the cuboid
Zoom out	zooms out from the cuboid
Manual scale x-Axis	opens the <b>Manual scale x-Axis</b> dialog
Manual scale y-Axis	opens the <b>Manual scale y-Axis</b> dialog
Manual scale z-Axis	opens the <b>Manual scale z-Axis</b> dialog
Manual scale Color Gradient	opens the <b>Manual scale Color Gradient</b> dialog
Chart Options...	opens the <b>Chart Options</b> dialog
Copy Chart Options	copies the options of the <b>MTC ynm T001</b> below the current mouse position
Paste Chart Options	pastes the currently copied <b>MTC ynm T001</b> options onto the <b>MTC ynm T001</b> below the current mouse position
Chart Styles...	opens the <b>Chart Styles</b> dialog
Copy Chart Styles	copies the styles of the <b>MTC ynm T001</b> below the current mouse position
Paste Chart Styles	pastes the currently copied <b>MTC ynm T001</b> styles onto the <b>MTC ynm T001</b> below the current mouse position
Show Background Grid > ...	sets the visibility of the background grid to the state which is specified via the submenu of this item
Show Legend > ...	sets the visibility of the <b>Legend Area</b> to the state which is specified via the submenu of this item
Show Color Gradient > ...	sets the visibility of the <b>Color Gradient Area</b> to the state which is specified via the submenu of this item
Show Toolbar > ...	sets the visibility of the <b>Toolbar Area</b> to the state which is specified via the submenu of this item
Show x-Axis > ...	sets the visibility of the <b>x-Axes Area</b> to the state which is specified via the submenu of this item
Show y-Axis > ...	sets the visibility of the <b>y-Axes Area</b> to the state which is specified via the submenu of this item
Show z-Axis > ...	sets the visibility of the <b>z-Axis Area</b> to the state which is specified via the submenu of this item
Show Slider > ...	sets the visibility of the <b>Slider Area</b> to the state which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

### 2.2.4.3 x-Axis Area

The **x-Axis Area** of the **MTC ynm T001** is used in order to display the scaling of the present x-axis. As the **x-Axis Area** can not be selected in case of 3-dimensional visualization, it is not possible to zoom, scroll or maintain **x-Axis Area** directly via mouse or keyboard operations.

The following screenshot shows an example of the **x-Axis Area** of a **MTC ynm T001**:

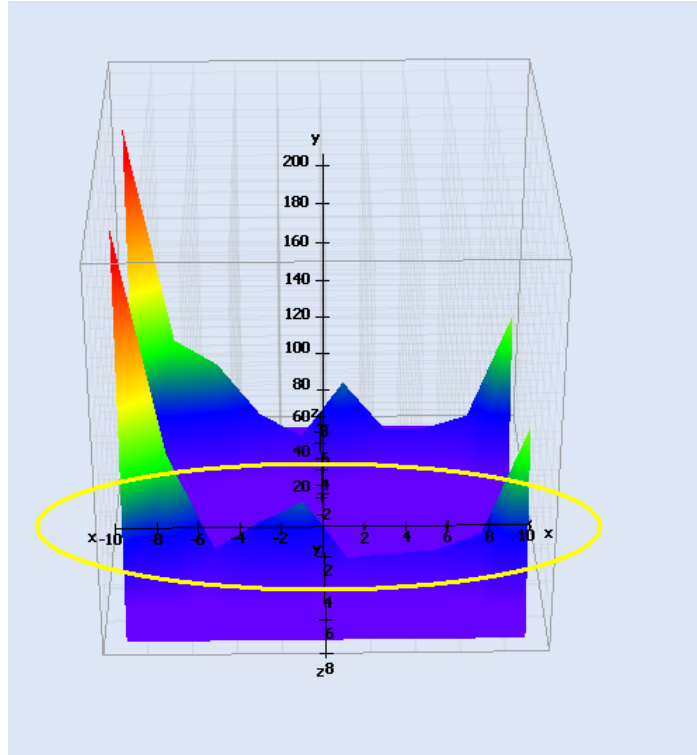


Figure 64: Example of the **x-Axis Area** of a **MTC ynm T001**



#### 2.2.4.4 y-Axis Area

The **y-Axis Area** of the **MTC ynm T001** is used in order to display the scaling of the present y-axis. As the **y-Axis Area** can not be selected in case of 3-dimensional visualization, it is not possible to zoom, scroll or maintain **y-Axis Area** directly via mouse or keyboard operations.

The following screenshot shows an example of the **y-Axis Area** of a **MTC ynm T001**:

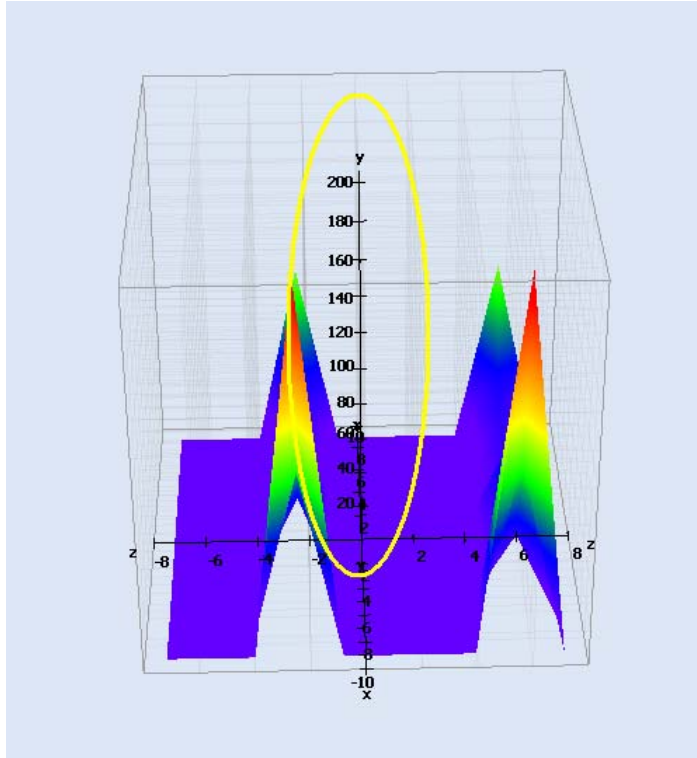


Figure 65: Example of the **y-Axis Area** of a **MTC ynm T001**

### 2.2.4.5 z-Axis Area

The **z-Axis Area** of the **MTC ynm T001** is used in order to display the scaling of the present z-axis. As the **z-Axis Area** can not be selected in case of 3-dimensional visualization, it is not possible to zoom, scroll or maintain **z-Axis Area** directly via mouse or keyboard operations.

The following screenshot shows an example of the **z-Axis Area** of a **MTC ynm T001**:

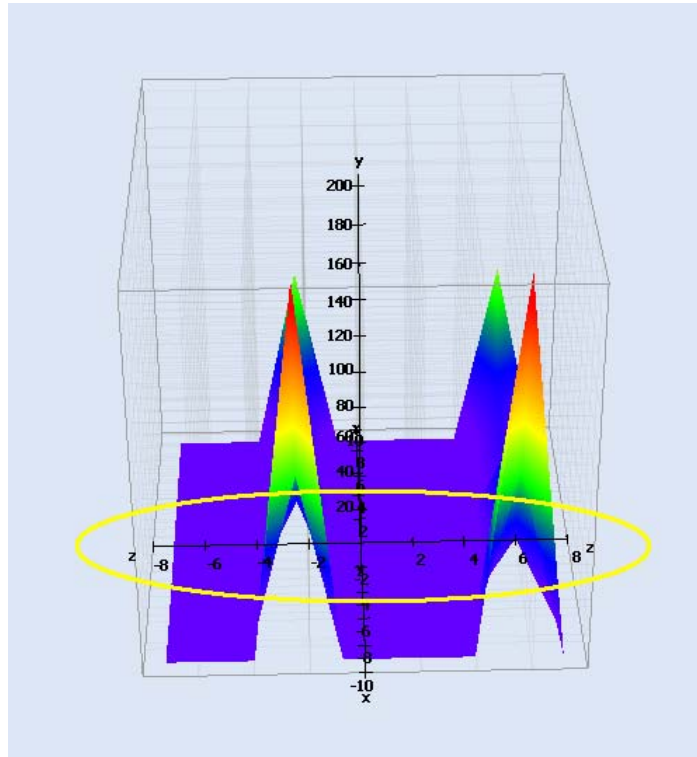


Figure 66: Example of the **z-Axis Area** of a **MTC ynm T001**

### 2.2.4.6 Slider Area

The **Slider Area** of the **MTC ynm T001** is used in order to configure the currently visualized point in time. The total width of each slider represents the oldest and the newest available time of the current data of its time domain and the inside slider button represents the currently visualized point in time out of the total time interval of the data. By dragging of the slider button, the currently visualized time is modified.

The following screenshot shows an example of the **Slider Area** of a **MTC ynm T001**:



Figure 67: Example of the **Slider Area** of a **MTC ynm T001**

#### Time Domains

Within the **Slider Area**, there is one slider being available for each of the possible time domains. Each slider is being displayed only in case its according time domain is actually being used within the current **MTC ynm T001**.

#### Naming of Sliders

Each slider displays its name at its left bottom corner. The name of each slider contains the following components:

- number of the slider
- name of the used time domain

## Available Times

The left border of each slider always displays and represents the oldest time of all of the data of its time domain. The right border of each slider always displays and represents the newest time of all of the data of its time domain.

In case the visualization of online data is running (not paused), the left and right borders of the affected slider are constantly updated so that they represent the currently available time interval of their time axis.

## Displayed Times

Below the right border of each slider, the current time of the slider button is being displayed.

In case the visualization of online data is running (not paused), the displayed current time is constantly updated.

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button onto the left step button	<p>A single click of the left mouse button with releasing the button above the left step button shifts the currently displayed time interval into the past:</p> <ul style="list-style-type: none"> <li>• without additional keys being pressed, the next older timestamp from the x-axis data of the slider is being chosen as new begin of the displayed time interval <ul style="list-style-type: none"> <li>○ in case the current begin time of the displayed interval already is the oldest available point in time (or older), the left step button does not change the currently displayed interval</li> <li>○ the new end time of the displayed time interval is being set to (new begin time + old time interval)</li> </ul> </li> <li>• &lt;Alt&gt; + [left mouse button down] shifts the current time interval to the past 10% of the full available time interval of the slider and determines the next older timestamp from the x-axis data of the slider as new begin time of the displayed interval <ul style="list-style-type: none"> <li>○ in case the current begin time of the displayed interval already is the oldest available point in time (or older), the left step button does not change the currently displayed interval</li> <li>○ in case the newly determined begin time would be before the oldest available point in time, the oldest available point in time is being chosen as new begin time</li> <li>○ the new end time of the displayed time interval is being set to (new begin time + old time interval)</li> </ul> </li> </ul>
single click with releasing the button onto the right step button	<p>A single click of the left mouse button with releasing the button above the right step button shifts the currently displayed time interval into the future:</p> <ul style="list-style-type: none"> <li>• without additional keys being pressed, the next newer timestamp from the x-axis data of the slider is being chosen as new end time of the displayed time interval <ul style="list-style-type: none"> <li>○ in case the current end time of the displayed interval already is the newest available point in time (or newer), the right step button does not change the currently displayed interval</li> <li>○ the new begin time of the displayed time interval is being set to (new end time - old time interval)</li> </ul> </li> <li>• &lt;Alt&gt; + [left mouse button down] shifts the current time interval to the future 10% of the full available time interval of the slider and determines the next newer timestamp from the x-axis data of the slider as new end time of the displayed interval <ul style="list-style-type: none"> <li>○ in case the current end time of the displayed interval already is the newest available point in time (or newer), the right step button does not change the currently displayed interval</li> <li>○ in case the newly determined end time would be after the newest available point in time, the newest available point in time is being chosen as new end time</li> <li>○ the new begin time of the displayed time interval is being set to (new end time - old time interval)</li> </ul> </li> </ul>
single click with keeping the button onto the left step button	<p>A single click of the left mouse button with keeping the button down onto the left step button behaves like if the left step button would be clicked with the left mouse button constantly.</p>
single click with keeping the button onto the right step button	<p>A single click of the left mouse button with keeping the button down onto the right step button behaves like if the right step button would be clicked with the left mouse button constantly.</p>
single click with keeping the button onto the left border of the slider button	<p>A single click of the left mouse button with keeping the button down onto the left border of the slider button allows to modify the oldest displayed time:</p> <ul style="list-style-type: none"> <li>• in case the mouse is moved to the left, the oldest displayed time is shifted into the past</li> </ul>

	<ul style="list-style-type: none"> <li>○ the left border of the slider button can not be dragged out of the left border of the <b>Slider Area</b></li> <li>• in case the mouse is moved to the right, the oldest displayed time is shifted into the future</li> <li>○ the left border of the slider button can not be dragged out of the right border of the <b>Slider Area</b></li> <li>○ in case the left border of the slider button is dragged right to the right border of the slider button, the right border of the slider button also is shifted to the same position as the left border of the slider button</li> <li>• &lt;Esc&gt; cancels the current operation without modifying the oldest displayed time</li> </ul>
<p>single click with keeping the button onto the right border of the slider button</p>	<p>A single click of the left mouse button with keeping the button down onto the right border of the slider button allows to modify the newest displayed time:</p> <ul style="list-style-type: none"> <li>• in case the mouse is moved to the left, the newest displayed time is shifted into the past</li> <li>○ the right border of the slider button can not be dragged out of the left border of the <b>Slider Area</b></li> <li>○ in case the right border of the slider button is dragged left to the left border of the slider button, the left border of the slider button also is shifted to the same position as the right border of the slider button (in this case, only the minimal possible time interval is in between the left and the right border of the slider button)</li> <li>• in case the mouse is moved to the right, the newest displayed time is shifted into the future</li> <li>○ the right border of the slider button can not be dragged out of the right border of the <b>Slider Area</b></li> <li>• &lt;Esc&gt; cancels the current operation without modifying the newest displayed time</li> </ul>
<p>single click with keeping the button onto the left and right borders of the slider button simultaneously</p>	<p>In case the left mouse button is being pressed with keeping the button at a position which covers both the left and the right borders of the slider button simultaneously (e.g. because the distance in between them is so small), only the oldest displayed time is being modified by a following move operation:</p> <ul style="list-style-type: none"> <li>• in this case the behavior is the same as if the left mouse button would have been pressed only onto the left border of the slider button</li> </ul>
<p>single click with keeping the button in between the left and right borders of the slider button</p>	<p>A single click of the left mouse button with keeping the button down in between the left and right borders of the slider button starts to shift the currently configured time interval in time:</p> <ul style="list-style-type: none"> <li>• in case the mouse is moved to the left, the currently displayed time interval (= the begin and the end times together) is shifted into the past</li> <li>○ the left border of the slider button can not be dragged out of the left border of the slider</li> <li>• in case the mouse is moved to the right, the currently displayed time interval (= the begin and the end times together) is shifted into the future</li> <li>○ the right border of the slider button can not be dragged out of the right border of the slider</li> <li>• &lt;Esc&gt; cancels the current operation without modifying the displayed oldest and newest times</li> </ul>
<p>double click onto the slider button</p>	<p>A double click of the left mouse button onto the slider button sets the left border of the slider button to the oldest possible time and the right border of the slider button to the newest possible time.</p>

## Operations via the Right Mouse Button

The following operation can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Slider Area</b> opens the context menu for the <b>Slider Area</b> .
single click with keeping the button onto the left border of the slider button	A single click of the right mouse button with keeping the button down onto the left border of the slider button allows to modify the oldest displayed time: <ul style="list-style-type: none"> <li>in this case the behavior is the same as if the left mouse button would have been pressed onto the left border of the slider button</li> </ul>
single click with keeping the button onto the right border of the slider button	A single click of the right mouse button with keeping the button down onto the right border of the slider button allows to modify the newest displayed time: <ul style="list-style-type: none"> <li>in this case the behavior is the same as if the left mouse button would have been pressed onto the right border of the slider button</li> </ul>
single click with keeping the button onto the left and right borders of the slider button simultaneously	A single click of the right mouse button with keeping the button down onto the left and right border of the slider button simultaneously (e.g. because the distance in between them is so small), only the oldest displayed time is being modified by a following move operation: <ul style="list-style-type: none"> <li>in this case the behavior is the same as if the left mouse button would have been pressed onto the left and right borders of the slider button simultaneously</li> </ul>
single click with keeping the button in between the left and right borders of the slider button	A single click of the left mouse button with keeping the button down in between the left and right borders of the slider button starts to shift the currently configured time interval in time: <ul style="list-style-type: none"> <li>in this case the behavior is the same as if the left mouse button would have been pressed between the left and right borders of the slider button</li> </ul>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
shifting and scrolling	Scrolling with the mouse wheel can be used to shift or zoom the slider button of the <b>Slider Area</b> . The actual operation is performed when the mouse wheel is scrolled: <ul style="list-style-type: none"> <li>[mouse wheel down] moves the slider button left (into the past) <ul style="list-style-type: none"> <li>in case the current begin time of the displayed interval already is the oldest available point in time (or older), [mouse wheel down] does not change the currently displayed interval</li> </ul> </li> <li>[mouse wheel up] moves the slider button right (into the future) <ul style="list-style-type: none"> <li>in case the current end time of the displayed interval already is the newest available point in time (or newer), [mouse wheel up] does not change the currently displayed interval</li> </ul> </li> <li>&lt;Shift&gt; + [mouse wheel down] zooms out of the slider button from the current x position of the mouse cursor</li> <li>&lt;Shift&gt; + [mouse wheel up] zooms into the slider button from the current x position of the mouse cursor</li> </ul>

## Drag&Drop of Data

When an ynm-compatible data is dropped into the **Slider Area**, it is added to the currently present data of the **MTC ynm T001**:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the default x-, y- and z-axes.
- In case the current Drag&Drop operation has been started within the **MTC ynm T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC ynm T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC ynm T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC ynm T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show Slider > ...	sets the visibility of the <b>Slider Area</b> to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which pauses the automatic time shift of the according time domain
Continue Visualization	continues the visualization, which continues the automatic update of all data of the according time domain
Update Display Time after Open > ...	sets the update type of the display time after opening of the Monitoring View File to the type which is specified via the submenu of this item
Update Display Time after Action > ...	sets the update type of the display time after an action to the type which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

### 2.2.4.7 Legend Area

The **Legend Area** displays all of the data which are present within the **MTC ynm T001** at the moment.

The following screenshot shows an example of the **Legend Area** of a **MTC ynm T001**:

— H2D 01 Histogram2DForSignal [-]

Figure 68: Example of the **Legend Area** of a **MTC ynm T001**

### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Selecting of data within the <b>Legend Area</b> is performed identically to the selecting of items within the other trees of the <b>X-Tools Client</b>.</p> <p>In case a data within the <b>Legend Area</b> is being selected, all items of other type (e.g. x-axes, y-axes and z-axes) of the clicked <b>Monitoring Chart</b> are deselected automatically.</p>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button down onto any text within the <b>Legend Area</b> starts a Drag&amp;Drop operation for the currently selected data(s) as soon as the mouse cursor is moved:</p> <ul style="list-style-type: none"> <li>• a Drag&amp;Drop operation within the same <b>MTC ynm T001</b> moves the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Ctrl&gt; can be pressed in order to execute a copy operation instead of the move operation within the same <b>MTC ynm T001</b></li> </ul> </li> <li>• a Drag&amp;Drop operation to another <b>MTC ynm T001</b> copies the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Shift&gt; can be pressed in order to execute a move operation instead of the copy operation to the other <b>MTC ynm T001</b></li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without moving or copying anything</li> </ul>
double click	<p>A double click of the left mouse button onto any text within the <b>Legend Area</b> opens the <b>Data Style</b> dialog for the data below the current mouse position.</p>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Legend Area</b> opens the context menu for the <b>Legend Area</b> .
single click with keeping the button	<p>A single click of the right mouse button with keeping the button above the <b>Legend Area</b> starts a shift operation for the legend texts. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move down] moves the <b>Legend Area</b> down</li> <li>• [right mouse button down] + [mouse move up] moves the <b>Legend Area</b> up</li> <li>• &lt;Esc&gt; cancels the current operation and sets the position of the <b>Legend Area</b> back to the place which it had before the shift operation had been started</li> </ul> <p>The shifting of the legend texts is enabled only in case not all of the available legend texts fit into the currently available vertical space.</p>

## Drag&Drop of Data

During all Drag&Drop of data into the **Legend Area**, the following rules apply:

- In case the current Drag&Drop operation has been started within the **MTC ynm T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC ynm T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC ynm T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC ynm T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.
- In order to add a data as root of a certain legend tree, the desired data has to be dropped above the current root data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, the first of them becomes the new root of the target legend tree and all others are listed directly below it.
- In order to add a data in between two present data of the legend tree, the desired data has to be dropped in between the two desired data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, all of them are inserted in between the two desired data of the target legend tree.
- In order to add a data at the end of a certain legend tree, the desired data has to be dropped below the last data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, all of them are added to the end of the target legend tree.
- In order to remove a data from the legend tree with the mouse, the desired data has to be dragged to any position within the **X-Tools Client** which does not accept data.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show Legend > ...	sets the visibility of the legend to the state which is specified via the submenu of this item
Show Data Sources > ...	specifies whether the legend trees shall display the name of the source server together with the data name or not
Data Style...	opens the <b>Data Style</b> dialog for the selected data(s)
Copy Data Style	copies the style of the data below the current mouse position
Paste Data Style	pastes the currently copied data style onto the data below the current mouse position
Remove Data	removes the selected data(s) from the <b>MTC ynm T001</b>
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

### 2.2.4.8 Toolbar Area

The **Toolbar Area** displays the buttons which are provided for fast access to frequently used functionalities.

The following screenshot shows an example of the **Toolbar Area** of a **MTC ynm T001**:



Figure 69: Example of the **Toolbar Area** of a **MTC ynm T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click onto the <b>Zoom into x-Axis</b> button with releasing the button	A single click of the left mouse button with releasing the button onto the <b>Zoom into x-Axis</b> button zooms into the x-axis once.
single click onto the <b>Zoom into x-Axis</b> button with keeping the button	A single click of the left mouse button with keeping the button onto the <b>Zoom into x-Axis</b> button zooms into the x-axis continuously.
single click onto the <b>Zoom out from x-Axis</b> button with releasing the button	A single click of the left mouse button with releasing the button onto the <b>Zoom out from x-Axis</b> button zooms out from the x-axis once.
single click onto the <b>Zoom out from x-Axis</b> button with keeping the button	A single click of the left mouse button with keeping the button onto the <b>Zoom out from x-Axis</b> button zooms out from the x-axis continuously.
single click onto the <b>Zoom into y-Axis</b> button with releasing the button	A single click of the left mouse button with releasing the button onto the <b>Zoom into y-Axis</b> button zooms into the y-axis once.
single click onto the <b>Zoom into y-Axis</b> button with keeping the button	A single click of the left mouse button with keeping the button onto the <b>Zoom into y-Axis</b> button zooms into the y-axis continuously.
single click onto the <b>Zoom out from y-Axis</b> button with releasing the button	A single click of the left mouse button with releasing the button onto the <b>Zoom out from y-Axis</b> button zooms out from the y-axis once.
single click onto the <b>Zoom out from y-Axis</b> button with keeping the button	A single click of the left mouse button with keeping the button onto the <b>Zoom out from y-Axis</b> button zooms out from the y-axis continuously.
single click onto the <b>Zoom into z-Axis</b> button with releasing the button	A single click of the left mouse button with releasing the button onto the <b>Zoom into z-Axis</b> button zooms into the z-axis once.
single click onto the <b>Zoom into z-Axis</b> button with keeping the button	A single click of the left mouse button with keeping the button onto the <b>Zoom into z-Axis</b> button zooms into the z-axis continuously.
single click onto the <b>Zoom out from z-Axis</b> button with releasing the button	A single click of the left mouse button with releasing the button onto the <b>Zoom out from z-Axis</b> button zooms out from the z-axis once.
single click onto the <b>Zoom out from z-Axis</b> button with keeping the button	A single click of the left mouse button with keeping the button onto the <b>Zoom out from z-Axis</b> button zooms out from the z-axis continuously.
single click onto the <b>Zoom into all</b> button with releasing the button	A single click of the left mouse button with releasing the button onto the <b>Zoom into all</b> button zooms into all axes simultaneously once.
single click onto the <b>Zoom into all</b> button with keeping the button	A single click of the left mouse button with keeping the button onto the <b>Zoom into all</b> button zooms into all axes simultaneously continuously.
single click onto the <b>Zoom out from all</b> button with releasing the button	A single click of the left mouse button with releasing the button onto the <b>Zoom out from all</b> button zooms out from all axes simultaneously once.
single click onto the <b>Zoom out from all</b> button with keeping the button	A single click of the left mouse button with keeping the button onto the <b>Zoom out from all</b> button zooms out from all axes simultaneously continuously.
single click onto the <b>On/Off Measurement Cursors</b> button	A single click of the left mouse button onto the <b>On/Off Measurement Cursors</b> button toggles the measurement cursors between on and off.
single click onto the <b>Undo</b> button	A single click of the left mouse button onto the <b>Undo</b> button undoes the last operation from the undo buffer.
single click onto the <b>Redo</b> button	A single click of the left mouse button onto the <b>Redo</b> button redoes the last operation from the redo buffer.
single click onto the <b>Continue Visualization</b> button	A single click of the left mouse button onto the <b>Continue Visualization</b> button continues the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Continue Visualization</b> button sets the visualization of all data to running.
single click onto the <b>Pause Visualization</b> button	A single click of the left mouse button onto the <b>Pause Visualization</b> button pause the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Pause Visualization</b> button sets the visualization of all data to paused.
single click onto the <b>Store Data Snapshot</b> button	A single click of the left mouse button onto the <b>Store Data Snapshot</b> button starts the storing of the data which are contained within the <b>MTC ynm T001</b> .



	<p>While the storing is in progress, the <b>Storage Progress</b> dialog shows the current progress of the storing and also can be used in order to cancel the storing.</p> <p>See also tutorial, chapter "Storing of Data Snapshots out of the Monitoring System".</p>
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## Operations via the Right Mouse Button

The following operation can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Toolbar Area</b> opens the context menu for the <b>Toolbar Area</b> . The displayed context menu is dependent to the clicked toolbar button as described below.

## Context Menu

The following specific context menu items are provided for the **Zoom into x-Axis** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the x-axis shall automatically adopt its scaling so that always the complete values of the contained data are visible
Fit to Axis	sets the scaling of the x-axis so that the complete values of the contained data are visible
Manual scale x-Axis ...	opens the <b>Manual scale x-Axis</b> dialog
Copy x-Axis Scaling	copies the scaling of the x-axis
Paste x-Axis Scaling	pastes the currently copied x-axis scaling onto the x-axis
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Zoom out from x-Axis** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the x-axis shall automatically adopt its scaling so that always the complete values of the contained data are visible
Fit to Axis	sets the scaling of the x-axis so that the complete values of the contained data are visible
Manual scale x-Axis ...	opens the <b>Manual scale x-Axis</b> dialog
Copy x-Axis Scaling	copies the scaling of the x-axis
Paste x-Axis Scaling	pastes the currently copied x-axis scaling onto the x-axis
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Zoom into y-Axis** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the y-axis shall automatically adopt its scaling so that always the complete values of the contained data are visible
Fit to Axis	sets the scaling of the y-axis so that the complete values of the contained data are visible
Manual scale y-Axis ...	opens the <b>Manual scale y-Axis</b> dialog
Copy y-Axis Scaling	copies the scaling of the y-axis
Paste y-Axis Scaling	pastes the currently copied y-axis scaling onto the y-axis
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Zoom out from y-Axis** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the y-axis shall automatically adopt its scaling so that always the complete values of the contained data are visible
Fit to Axis	sets the scaling of the y-axis so that the complete values of the contained data are visible
Manual scale y-Axis ...	opens the <b>Manual scale y-Axis</b> dialog
Copy y-Axis Scaling	copies the scaling of the y-axis
Paste y-Axis Scaling	pastes the currently copied y-axis scaling onto the y-axis
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Zoom into z-Axis** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the z-axis shall automatically adopt its scaling so that always the complete values of the contained data are visible
Fit to Axis	sets the scaling of the z-axis so that the complete values of the contained data are visible
Manual scale z-Axis ...	opens the <b>Manual scale z-Axis</b> dialog
Copy z-Axis Scaling	copies the scaling of the z-axis
Paste z-Axis Scaling	pastes the currently copied z-axis scaling onto the z-axis
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Zoom out from z-Axis** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the z-axis shall automatically adopt its scaling so that always the complete values of the contained data are visible
Fit to Axis	sets the scaling of the z-axis so that the complete values of the contained data are visible
Manual scale z-Axis ...	opens the <b>Manual scale z-Axis</b> dialog
Copy z-Axis Scaling	copies the scaling of the z-axis
Paste z-Axis Scaling	pastes the currently copied z-axis scaling onto the z-axis
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Zoom into all** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Fit to x-Axis	sets the scaling of the x-axis so that the complete values of the contained data are visible
Fit to y-Axis	sets the scaling of the y-axis so that the complete values of the contained data are visible
Fit to z-Axis	sets the scaling of the z-axis so that the complete values of the contained data are visible
Manual scale x-Axis ...	opens the <b>Manual scale x-Axis</b> dialog
Manual scale y-Axis ...	opens the <b>Manual scale y-Axis</b> dialog
Manual scale z-Axis ...	opens the <b>Manual scale z-Axis</b> dialog
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Zoom out from all** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Fit to x-Axis	sets the scaling of the x-axis so that the complete values of the contained data are visible
Fit to y-Axis	sets the scaling of the y-axis so that the complete values of the contained data are visible
Fit to z-Axis	sets the scaling of the z-axis so that the complete values of the contained data are visible
Manual scale x-Axis ...	opens the <b>Manual scale x-Axis</b> dialog
Manual scale y-Axis ...	opens the <b>Manual scale y-Axis</b> dialog
Manual scale z-Axis ...	opens the <b>Manual scale z-Axis</b> dialog
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **On/Off Measurement Cursors** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Show Measurement Cursors > ...	sets the visibility of measurement cursors to the state which is specified via the submenu of this item
Select Measurement Cursor > ...	specifies which measurement cursor shall have the input focus at the moment
Restore Measurement Cursors	restores the positions of the measurement cursors so that both of them are visible at the screen again
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Undo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Undo	undoes the last operation from the undo buffer
Undo all	undoes all operations from the undo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC ynm T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Redo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Redo	redoes the last operation from the redo buffer
Redo all	redoes all operations from the redo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC ynm T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Pause Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Continue Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

The following specific context menu items are provided for the **Store Data Snapshot** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Store Data Snapshot	starts the storing of the data which are contained within the <b>MTC ynm T001</b>
Data Snapshot Scope > ...	sets the scope for data snapshots to the setting which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC ynm T001</b>

### 2.2.4.9 Measurement Cursors

The **Measurement Cursors** are represented through two 3-dimensional crosses, where the cross is placed exactly at the point of intersection of all three dimensions and moves into all six directions from there, until it reaches the borders of the cuboid. At all six ends of each cursor, the name of the cursor ("1" or "2") is being displayed.

The **Measurement Cursors** can be shifted independently in all three dimensions of the cuboid.

The following screenshot shows an example of the **Measurement Cursors** of a **MTC ynm T001**:

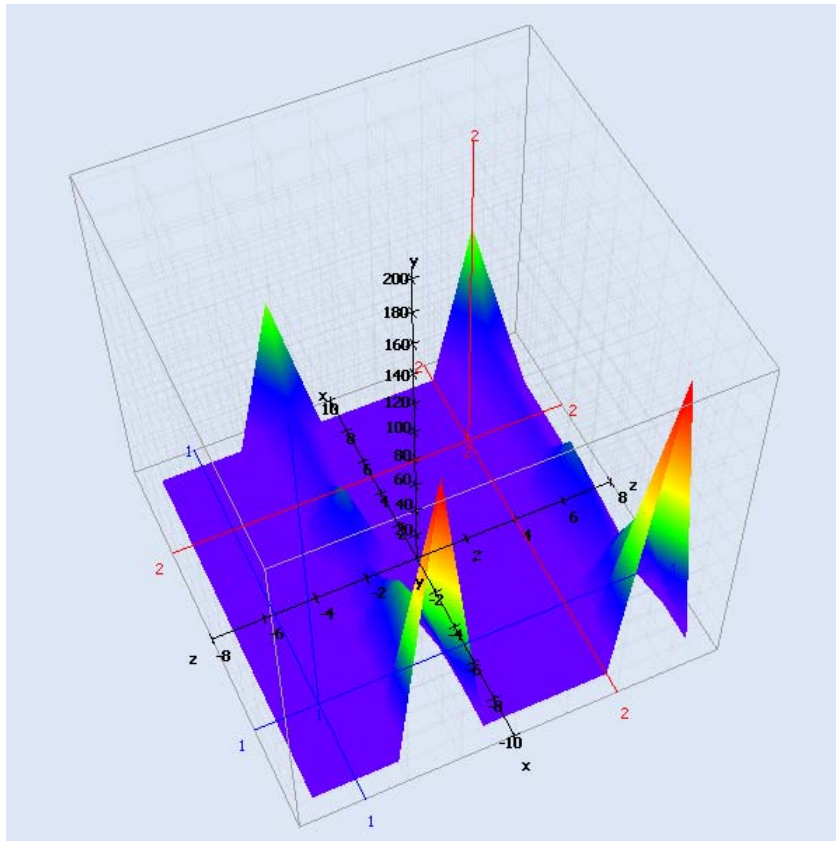


Figure 70: Example of the **Measurement Cursors** of a **MTC ynm T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>In case the current mouse position is above the point of intersection of a measurement cursor, a single click of the left mouse button with keeping the button starts to move the below measurement cursor. The actual moving is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move left/right/down/up] moves the currently selected cursor below the current mouse position</li> <li>• &lt;Esc&gt; cancels the current operation and sets the position of the currently selected cursor back to the position which it had before the rotation operation had been started</li> </ul>

### 2.2.4.10 Measurement Cursors Table

The **Measurement Cursors** table contains the measurement values of all **MTC ynm T001s** which are present within the parent **Monitoring View Editor**. The following screenshot shows an example for the **Measurement Cursors** table for a **MTC ynm T001**:

Measurement Cursors - MTC ynm T001												
No.	Chart	Data	Unit	X1	Z1	Y1	X2	Z2	Y2	X2-X1	Z2-Z1	Y2-Y1
1	Offline Data	H2D 01 H2DForSignals	-	-3.000	-0.800	0.000	3.000	2.400	0.000	6.000	3.200	0.000

Figure 71: Example of a **Measurement Cursors** table of a **MTC ynm T001**

It is opened within the **Cursor Area** of the parent **Monitoring View Editor** of the **MTC ynm T001**:

Column	Description
No.	contains the row number
Chart	contains the name of the chart from which the data comes
Data	contains the name of the data
Unit	contains the unit of the data
X1	contains the x-value of the data at the x-position of cursor 1
Z1	contains the z-value of the data at the z-position of cursor 1
Y1	contains the y-value of the data at the y-position of cursor 1
X2	contains the x-value of the data at the x-position of cursor 2
Z2	contains the z-value of the data at the z-position of cursor 2
Y2	contains the y-value of the data at the y-position of cursor 2
X2-X1	contains the difference in between X2 and X1
Z2-Z1	contains the difference in between Z2 and Z1
Y2-Y1	contains the difference in between Y2 and Y1

The contents of the **Measurement Cursors** table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.

### 2.2.4.11 Chart Options Dialog

#### 2.2.4.11.1 Overview

The following screenshot shows an example of a **Chart Options** dialog:

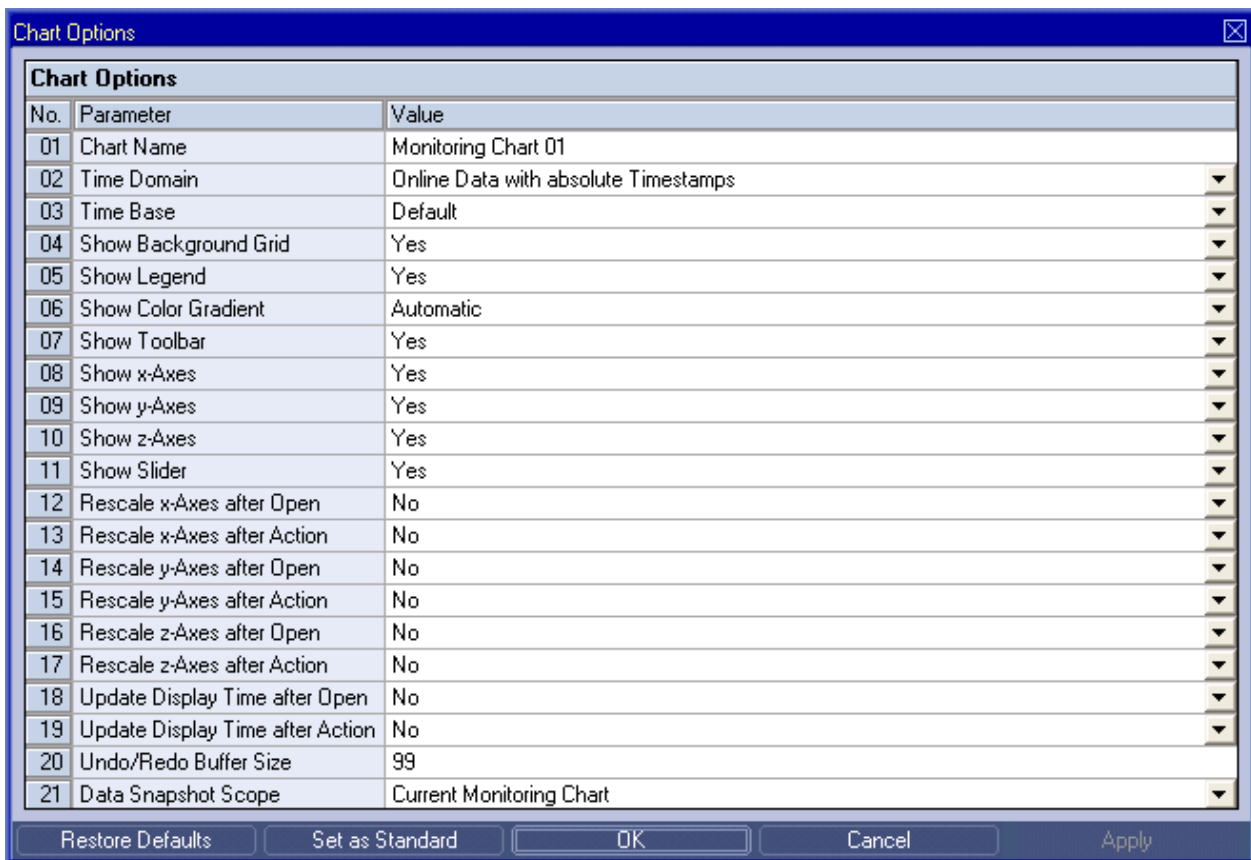


Figure 72: Example of a **Chart Options** Dialog of a **MTC ynm T001**

## 2.2.4.11.2 Chart Options Table

The **Chart Options** table contains the chart options of the **MTC ynm T001**:

Parameter	Description
Chart Name	allows to enter a name for the chart
Time Domain	allows to choose the time domain
Time Base	allows to choose the time base
Show Background Grid	allows to choose whether the background grid shall be shown within the <b>Curve Area</b>
Show Legend	allows to choose whether the <b>Legend Area</b> shall be shown
Show Color Gradient	allows to choose whether the <b>Color Gradient Area</b> shall be shown
Show Toolbar	allows to choose whether the <b>Toolbar Area</b> shall be shown
Show x-Axes	allows to choose whether the <b>x-Axes Area</b> shall be shown
Show y-Axes	allows to choose whether the <b>y-Axes Area</b> shall be shown
Show z-Axes	allows to choose whether the <b>z-Axes Area</b> shall be shown
Show Slider	allows to choose whether the <b>Slider Area</b> shall be shown
Rescale x-Axes after Open	allows to choose whether the x-axes shall be scaled automatically after the Monitoring View File has been opened
Rescale x-Axes after Action	allows to choose whether the x-axes shall be scaled automatically after the displayed data have been modified outside the <b>MTC ynm T001</b> or after a new data has been dropped into the <b>MTC ynm T001</b>
Rescale y-Axes after Open	allows to choose whether the y-axes shall be scaled automatically after the Monitoring View File has been opened
Rescale y-Axes after Action	allows to choose whether the y-axes shall be scaled automatically after the displayed data have been modified outside the <b>MTC ynm T001</b> or after a new data has been dropped into the <b>MTC ynm T001</b>
Rescale z-Axes after Open	allows to choose whether the z-axes shall be scaled automatically after the Monitoring View File has been opened
Rescale z-Axes after Action	allows to choose whether the z-axes shall be scaled automatically after the displayed data have been modified outside the <b>MTC ynm T001</b> or after a new data has been dropped into the <b>MTC ynm T001</b>
Update Display Time after Open	allows to choose whether the display time shall be updated automatically after the Monitoring View File has been opened
Update Display Time after Action	allows to choose whether the display time shall be updated automatically after the displayed data have been modified outside the <b>MTC ynm T001</b> or after a new data has been dropped into the <b>MTC ynm T001</b>
Undo/Redo Buffer Size	allows to enter the total size of undo/redo operations which shall be remembered by the <b>MTC ynm T001</b>
Data Snapshot Scope	allows to choose whether data snapshots shall store only the data from the current <b>Monitoring Chart</b> or from the whole Monitoring View

### Chart Name

The **Chart Name** is used by other modules in order to identify a certain **MTC ynm T001**. Within the current Monitoring View, the **Chart Name** of each **MTC ynm T001** must be unique.

### Time Domain

The following time domains are supported by the **Chart Options** dialog of the **MTC ynm T001**:

- Online Data with absolute Timestamps
- Offline Data with absolute Timestamps
- Offline Data with relative Timestamps

The **Time Domain** cell displays the time domain which is currently being used by all data of the **MTC ynm T001**. In case more than one time domain is being used currently, the **Time Domain** cell stays empty.

When another time domain is being chosen via the **Time Domain** cell, the chosen time domain is applied to all of the data of the **MTC ynm T001**. As a result, all data internally are being put onto the t-axis with chosen time

domain. In case there is no data with the known name and matching time domain, the affected data becomes marked as not present.

In case the time domain is being changed, the x-/y-/z-axes can be updated automatically in case the **Rescale x-Axis after Action**, **Rescale y-Axis after Action** or **Rescale z-Axis after Action** options are being set to "Yes".

### Time Base

The chosen time base specifies how the time stamps of each probe, which are being stored in GMT internally, are being represented by the **MTC ynm T001**. In case online data is being displayed and the option "Use the local Time of the Offline Data" is being chosen, the time base for all online data is taken from the time base setting of the Monitoring View (like if "Default" would have been chosen for the time base of the **MTC ynm T001**).

### Rescale x-Axes after Open

Rescale x-Axes after Open	Description
Yes	In case the rescale mode for the x-axes after open is set to "Yes", the <b>MTC ynm T001</b> automatically rescales its x-axes after the Monitoring View File has been opened so that all values from all data of all x-axes become visible.
No	In case the rescale mode for the x-axes after open is set to "No", the <b>MTC ynm T001</b> does not touch the scaling of its x-axes after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale x-Axes after Action

Rescale x-Axes after Action	Description
Yes	In case the rescale mode for the x-axes after an action is set to "Yes", the <b>MTC ynm T001</b> automatically rescales its x-axes after an external action has modified the displayed data so that all values from all data of the affected x-axes become visible.  The following actions result in an automatic rescale of the x-axes in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/append/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC ynm T001</b></li> </ul>
No	In case the rescale mode for the x-axes after an action is set to "No", the <b>MTC ynm T001</b> does not touch the scaling of its x-axes after an external action has modified the displayed data and leaves it at the current values.

### Rescale y-Axes after Open

Rescale y-Axes after Open	Description
Yes	In case the rescale mode for the y-axes after open is set to "Yes", the <b>MTC ynm T001</b> automatically rescales its y-axes after the Monitoring View File has been opened so that all values from all data of all y-axes become visible.
No	In case the rescale mode for the y-axes after open is set to "No", the <b>MTC ynm T001</b> does not touch the scaling of its y-axes after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale y-Axes after Action

Rescale y-Axes after Action	Description
Yes	In case the rescale mode for the y-axes after an action is set to "Yes", the <b>MTC ynm T001</b> automatically rescales the y-axes after an external action has modified the displayed data so that all values from all data of the affected y-axes become visible.  The following actions result in an automatic rescale of the y-axes in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/append/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC ynm T001</b></li> </ul>
No	In case the rescale mode for the y-axes after an action is set to "No", the <b>MTC ynm T001</b> does not touch the scaling of its y-axes after an external action has modified the displayed data and leaves it at the current values.



### Rescale z-Axes after Open

Rescale z-Axes after Open	Description
Yes	In case the rescale mode for the z-axes after open is set to "Yes", the <b>MTC ynm T001</b> automatically rescales its z-axes after the Monitoring View File has been opened so that all values from all data of all z-axes become visible.
No	In case the rescale mode for the z-axes after open is set to "No", the <b>MTC ynm T001</b> does not touch the scaling of its z-axes after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale z-Axes after Action

Rescale z-Axes after Action	Description
Yes	In case the rescale mode for the z-axes after an action is set to "Yes", the <b>MTC ynm T001</b> automatically rescales its z-axes after an external action has modified the displayed data so that all values from all data of the affected z-axes become visible.  The following actions result in an automatic rescale of the z-axes in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC ynm T001</b></li> </ul>
No	In case the rescale mode for the z-axes after an action is set to "No", the <b>MTC ynm T001</b> does not touch the scaling of its z-axes after an external action has modified the displayed data and leaves it at the current values.

### Update Display Time after Open

The update type for the display time after open can be modified for each time domain independently via the context menu of the **Slider Area** in order to overwrite the global setting of the **MTC ynm T001**.

Update Display Time after Open	Description
Yes	In case the update mode for the display time after open is set to "Yes", the <b>MTC ynm T001</b> automatically updates its display time after the Monitoring View File has been opened so that the latest available values from all data of each time domain become visible.
No	In case the update mode for the display time after open is set to "No", the <b>MTC ynm T001</b> does not touch the values of its display times after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Update Display Time after Action

The update type for the display time after an action can be modified for each time domain independently via the context menu of the **Slider Area** in order to overwrite the global setting of the **MTC ynm T001**.

Update Display Time after Action	Description
Yes	In case the update mode for the display time after an action is set to "Yes", the <b>MTC ynm T001</b> automatically updates the display time after an external action has modified the displayed data so that the latest available values from all data of each time domain become visible.  The following actions result in an automatic update of the display time in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC ynm T001</b></li> </ul>
No	In case the update mode for the display time after an action is set to "No", the <b>MTC ynm T001</b> does not touch the values of its display times after an external action has modified the displayed data and leaves it at the current values.

### 2.2.4.11.3 Menu Bar

Menu Button	Description
Restore Defaults	Sets all options back to their default settings.
Set as Standard	Sets the current options as standard options for each new <b>MTC ynm T001</b> . The options of already existing <b>MTC ynm T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.4.12 Chart Styles Dialog

#### 2.2.4.12.1 Overview

The following screenshot shows an example of a **Chart Styles** dialog:

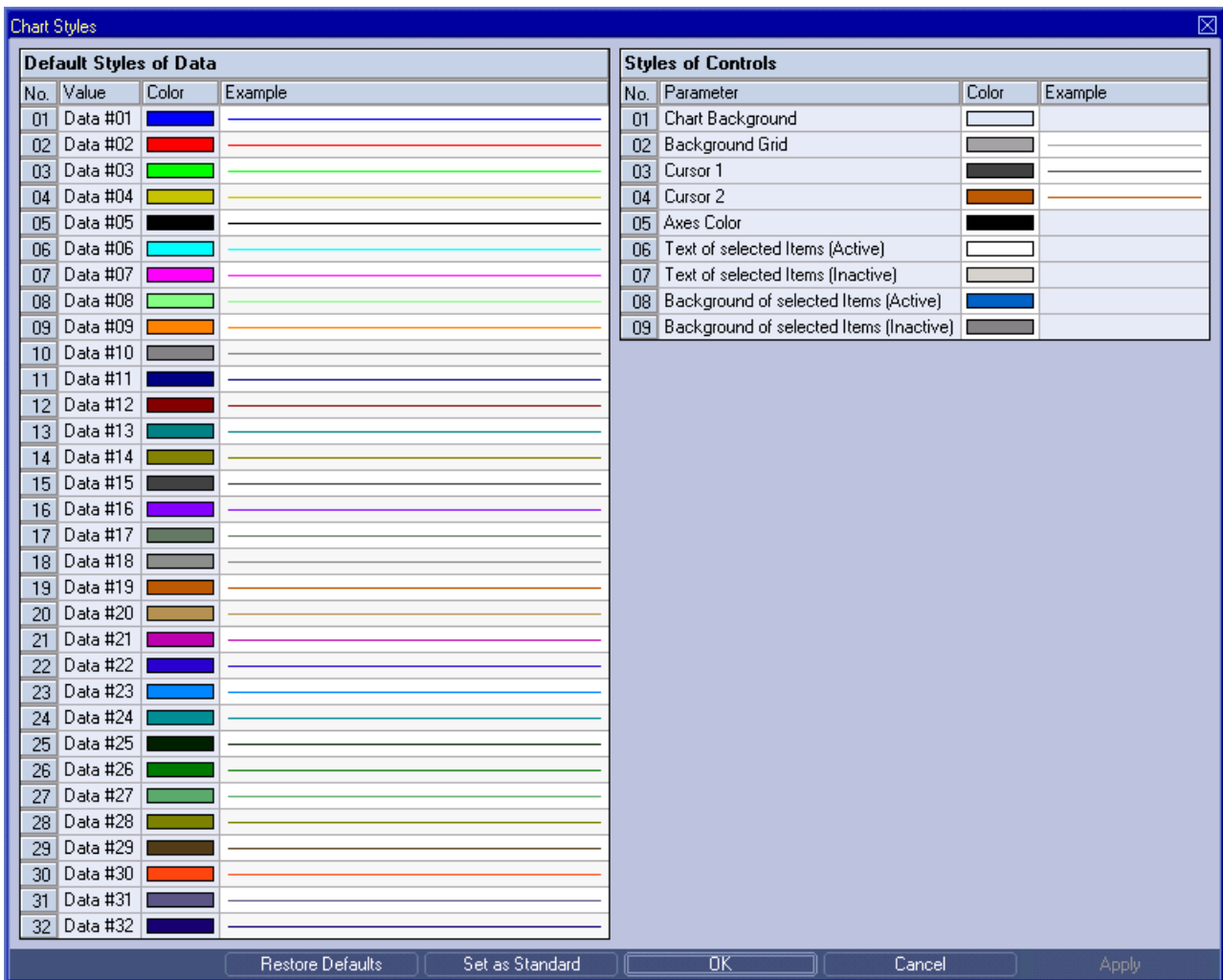


Figure 73: Example of a **Chart Styles** Dialog of a **MTC ynm T001**

### 2.2.4.12.2 Default Styles of Data Table

The **Default Styles of Data** table contains the default styles of data within the **MTC ynm T001**:

Parameter	Description
Data #01 ... Data #32	displays the currently chosen color and style for the according data

A double-click into the **Color** column of this control opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of this control opens the **Select Style** dialog for the according row.

### 2.2.4.12.3 Styles of Controls Table

The **Styles of Controls** table contains the styles of the controls of the **MTC ynm T001**:

Parameter	Description
Chart Background	displays the currently chosen color for the chart background
Background Grid	displays the currently chosen style for the background grid
Cursor 1	displays the currently chosen color for the first cursor
Cursor 2	displays the currently chosen color for the second cursor
Axes Color	displays the currently chosen color for the axes
Text of selected Items (Active)	displays the currently chosen color of the text of active selected items
Text of selected Items (Inactive)	displays the currently chosen color of the text of inactive selected items
Background of selected Items (Active)	displays the currently chosen color of the background of active selected items
Background of selected Items (Inactive)	displays the currently chosen color of the background of inactive selected items

A double-click into the **Color** column of any row opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of a row which supports different styles opens the **Select Style** dialog for the according row. In case different styles are not supported by a row, a double-click into the **Example** column opens the **Select Color** dialog for the according row.

### 2.2.4.12.4 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
Set as Standard	Sets the current styles as standard styles for each new <b>MTC ynm T001</b> . The styles of already existing <b>MTC ynm T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.

## 2.2.4.13 Data Style Dialog

### 2.2.4.13.1 Overview

The following screenshot shows an example of a **Data Style** dialog:

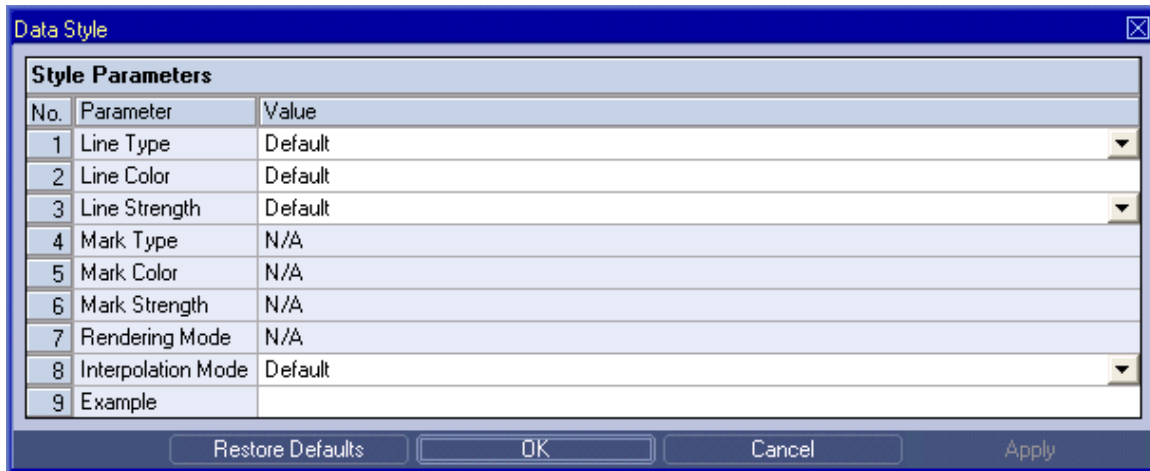


Figure 74: Example of a **Data Style** Dialog of a **MTC ynm T001**

### 2.2.4.13.2 Style Parameters Table

The **Style Parameters** table contains the visualization style parameters of the currently selected data:

Parameter	Description
Line Type	allows to switch between the available line types
Line Color	allows to enter the desired line color
Line Strength	allows to switch between the available line strengths
Mark Type	allows to switch between the available mark types
Mark Color	allows to enter the desired mark color
Mark Strength	allows to switch between the available mark strengths
Rendering Mode	N/A
Interpolation Mode	allows to switch between the available interpolation modes
Example	displays an example curve according to the specified data style

A value of “Default” can be assigned to each style parameter. In case “Default” is being chosen, the according value from the **Chart Styles** dialog is being used for the visualization of the data.

## Interpolation Mode

Interpolation Mode	Description
Default	When the interpolation mode is set to "Default", the interpolation mode setting is being taken from the parent definition within the <b>Chart Styles</b> dialog.
Bars with User-defined Color	When the interpolation mode "Bars with User-defined Color" is chosen for a data, the visualization displays one bar in y direction for each present value. The color of the displayed bars of each data can be configured by the user.
Bars with Height-dependent Color	When the interpolation mode "Bars with Height-dependent Color" is chosen for a data, the visualization displays one bar in y direction for each present value. The color of each displayed bar is dependent to its height – depending to the height, the according color from the color gradient is being used for the visualization of the whole bar.
Bars with Color Gradient	When the interpolation mode "Bars with Color Gradient" is chosen for a data, the visualization displays one bar in y direction for each present value. The color gradient is applied to each displayed bar so that its color is changing from the bottom to the top
Grid	When the interpolation mode "Grid" is chosen for a data, the visualization connects all known points of each present data within the 3-dimensional space to a grid. One grid is being visualized for each of the data which is present within the <b>MTC ynm T001</b> .
Surface	When the interpolation mode "Surface" is chosen for a data, the visualization connects all known points of the each present data within the 3-dimensional space to a surface. One surface is being visualized for each of the data which is present within the <b>MTC ynm T001</b> .

### 2.2.4.13.3 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.

### 2.2.4.14 Select Style Dialog

#### 2.2.4.14.1 Overview

The following screenshot shows an example of a **Select Style** dialog:

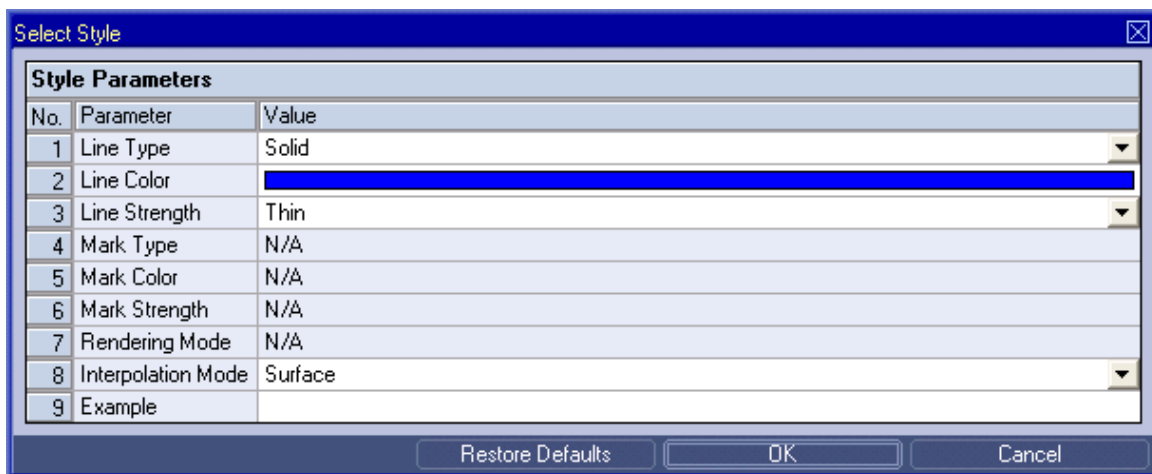


Figure 75: Example of a **Select Style** Dialog of a **MTC ynm T001**

The functionality of the **Select Style** dialog matches the functionality of the **Data Style** dialog (see point 2.2.4.13).

## 2.2.4.15 Manual scale x-Axis Dialog

### 2.2.4.15.1 Overview

The following screenshot shows an example of a **Manual scale x-Axis** dialog:

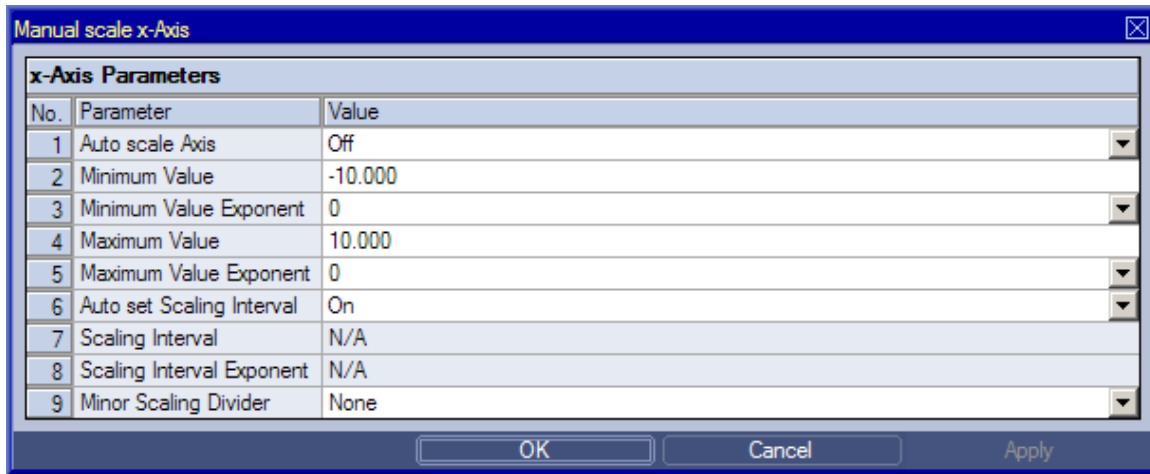


Figure 76: Example of a **Manual scale x-Axis** Dialog of a **MTC ynm T001**

### 2.2.4.15.2 x-Axis Parameters Table

The **x-Axis Parameters** table contains the parameters of a currently selected x-axis:

Parameter	Description
Auto scale Axis	allows to switch between the available auto scale axis modes
Minimum Value	allows to enter the minimum value of the scaling
Minimum Value Exponent	allows to switch between the supported minimum value exponents
Maximum Value	allows to enter the maximum value of the scaling
Maximum Value Exponent	allows to switch between the supported maximum value exponents
Auto set Scaling Interval	allows to switch between the available modes for the automatic scaling interval
Scaling Interval	allows to enter the scaling interval
Scaling Interval Exponent	allows to switch between the supported scaling interval exponents
Minor Scaling Divider	allows to switch between the available minor scaling dividers

#### Auto scale Axis

Auto scale Axis	Description
On	In this mode, the <b>MTC ynm T001</b> constantly sets the scaling of the x-axis so that all available values of the data at the x-axis stay visible.
Off	In this mode, the <b>MTC ynm T001</b> uses the specified <b>Minimum Value</b> and <b>Maximum Value</b> parameters for the scaling of the x-axis.

#### Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the <b>MTC ynm T001</b> constantly sets the scaling interval of the x-axis according to the currently displayed time interval.
Off	In this mode, the <b>MTC ynm T001</b> uses the specified <b>Scaling Interval</b> and <b>Scaling Interval Exponent</b> parameters for the scaling interval of the x-axis. In case the specified parameters would lead to overlapping numbers, the automatic scaling interval is being used automatically until the specified parameters allow a valid scaling again.

### 2.2.4.15.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.4.16 Manual scale y-Axis Dialog

#### 2.2.4.16.1 Overview

The following screenshot shows an example of a **Manual scale y-Axis** dialog:

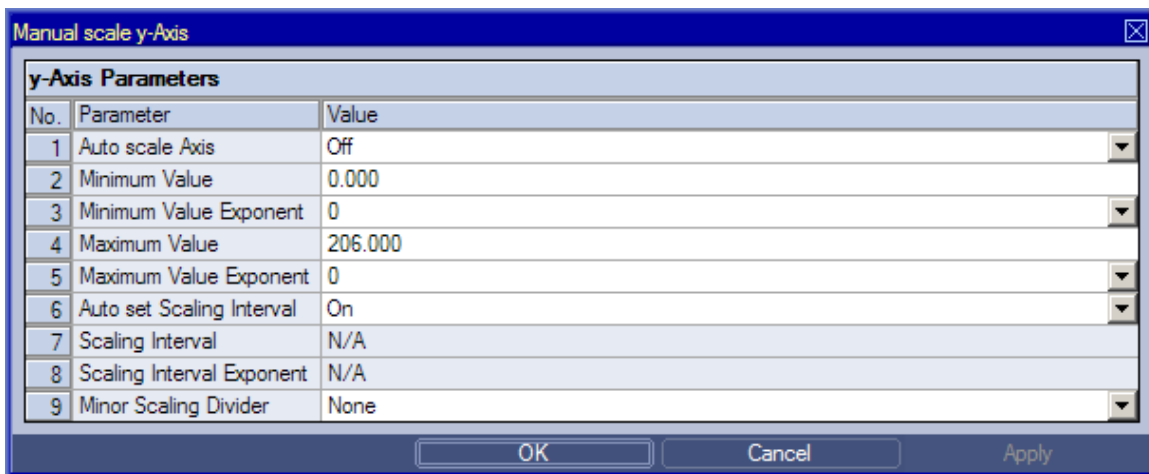


Figure 77: Example of a **Manual scale y-Axis** Dialog of a **MTC ynm T001**

The functionality of the **Manual scale y-Axis** dialog matches the functionality of the **Manual scale x-Axis** dialog (see point 2.2.4.15).

### 2.2.4.17 Manual scale z-Axis Dialog

#### 2.2.4.17.1 Overview

The following screenshot shows an example of a **Manual scale z-Axis** dialog:

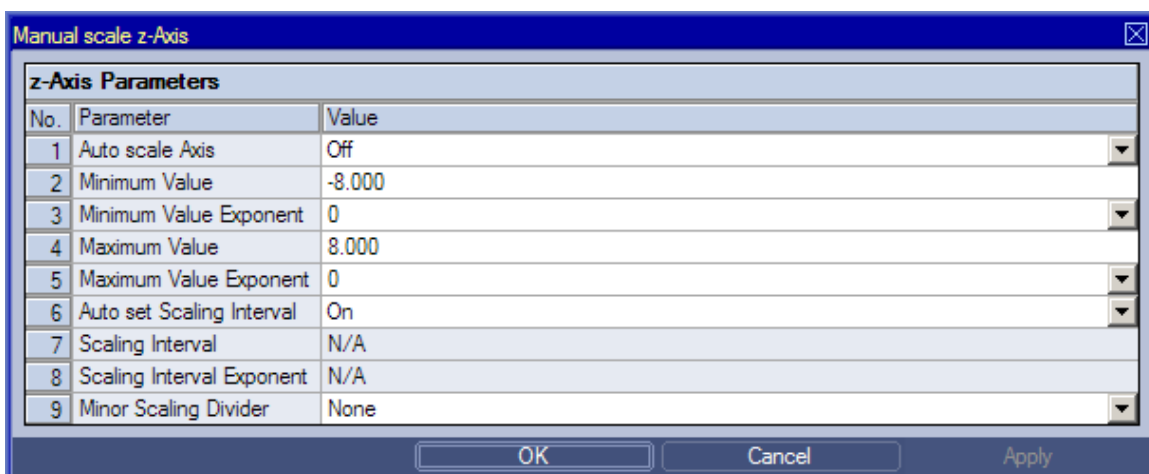


Figure 78: Example of a **Manual scale z-Axis** Dialog of a **MTC ynm T001**

The functionality of the **Manual scale z-Axis** dialog matches the functionality of the **Manual scale x-Axis** dialog (see point 2.2.4.15).

## 2.2.4.18 Manual scale Color Gradient Dialog

### 2.2.4.18.1 Overview

The following screenshot shows an example of a **Manual scale Color Gradient** dialog:

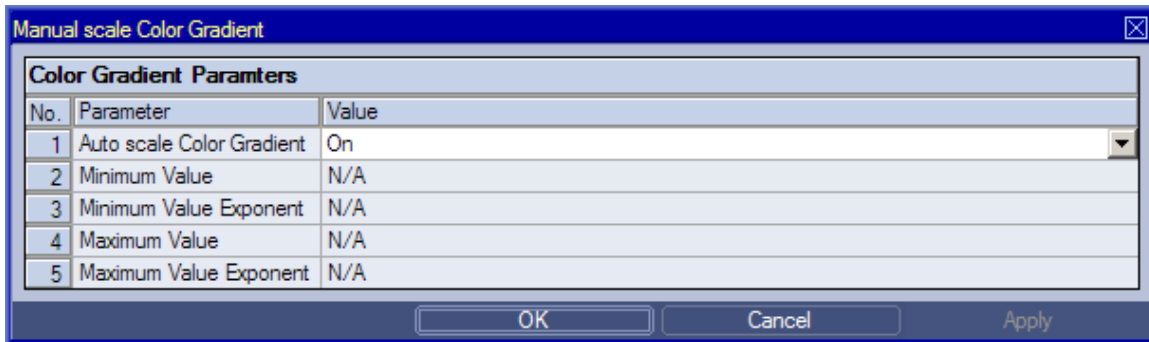


Figure 79: Example of a **Manual scale Color Gradient** Dialog of a **MTC ynm T001**

### 2.2.4.18.2 Color Gradient Parameters Table

The **Color Gradient Parameters** table contains the parameters of the color gradient:

Parameter	Description
Auto scale Color Gradient	allows to switch between the available auto scale modes
Minimum Value	allows to enter the minimum value for “violet”
Minimum Value Exponent	allows to switch between the supported minimum value exponents
Maximum Value	allows to enter the maximum value for “red”
Maximum Value Exponent	allows to switch between the supported maximum value exponents

#### Auto scale Color Gradient

Auto scale Axis	Description
On	In this mode, the <b>MTC</b> constantly sets the minimum and maximum values of the color gradient to the currently present minimum and maximum values of the displayed data.
Off	In this mode, the <b>MTC</b> uses the specified <b>Minimum Value</b> and <b>Maximum Value</b> parameters for the color gradient.

### 2.2.4.18.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.



### 2.2.4.19 Drag&Drop sensitive Areas

The following screenshot shows the places within a **MTC ynm T001** onto which data can be dropped in order to open a new **Monitoring Chart**:

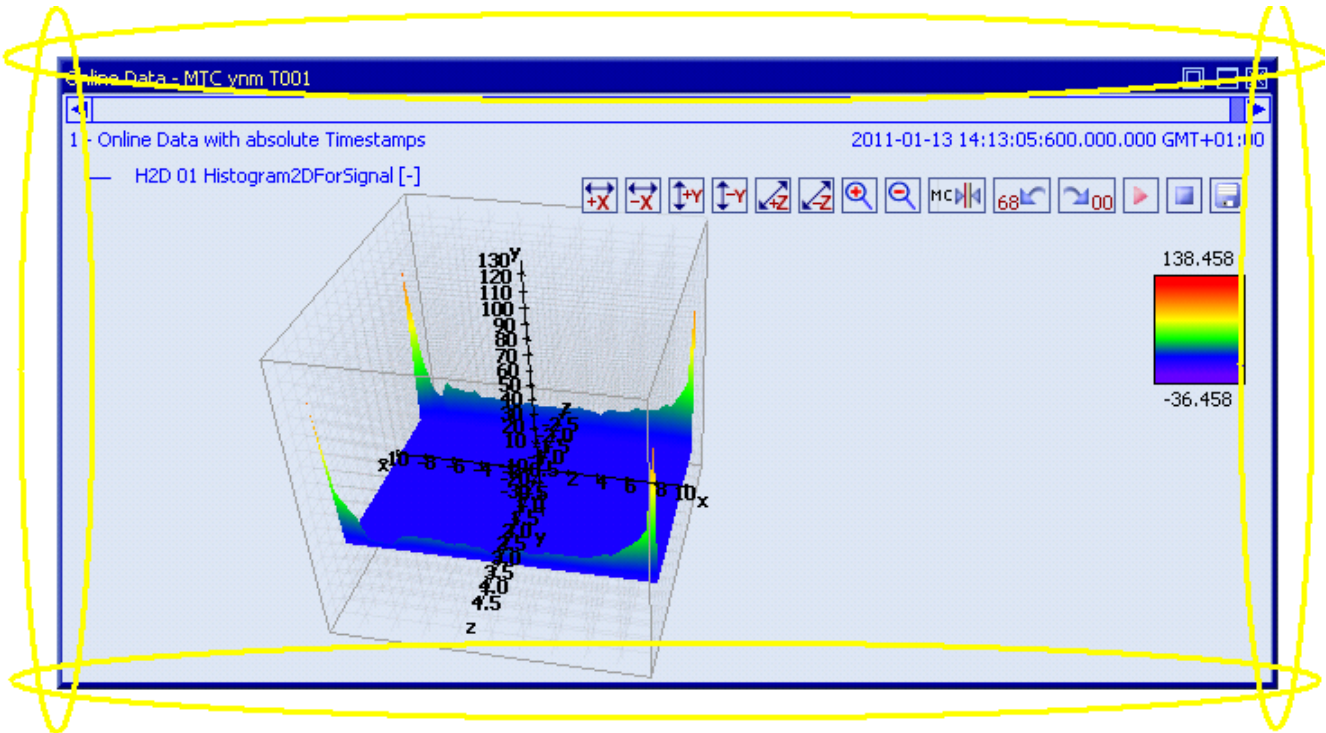


Figure 80: Dropping of Data in order to open a new **Monitoring Chart**

The following screenshot shows the places within a **MTC ynm T001** onto which data can be dropped in order to add the data to the existing **MTC ynm T001**:

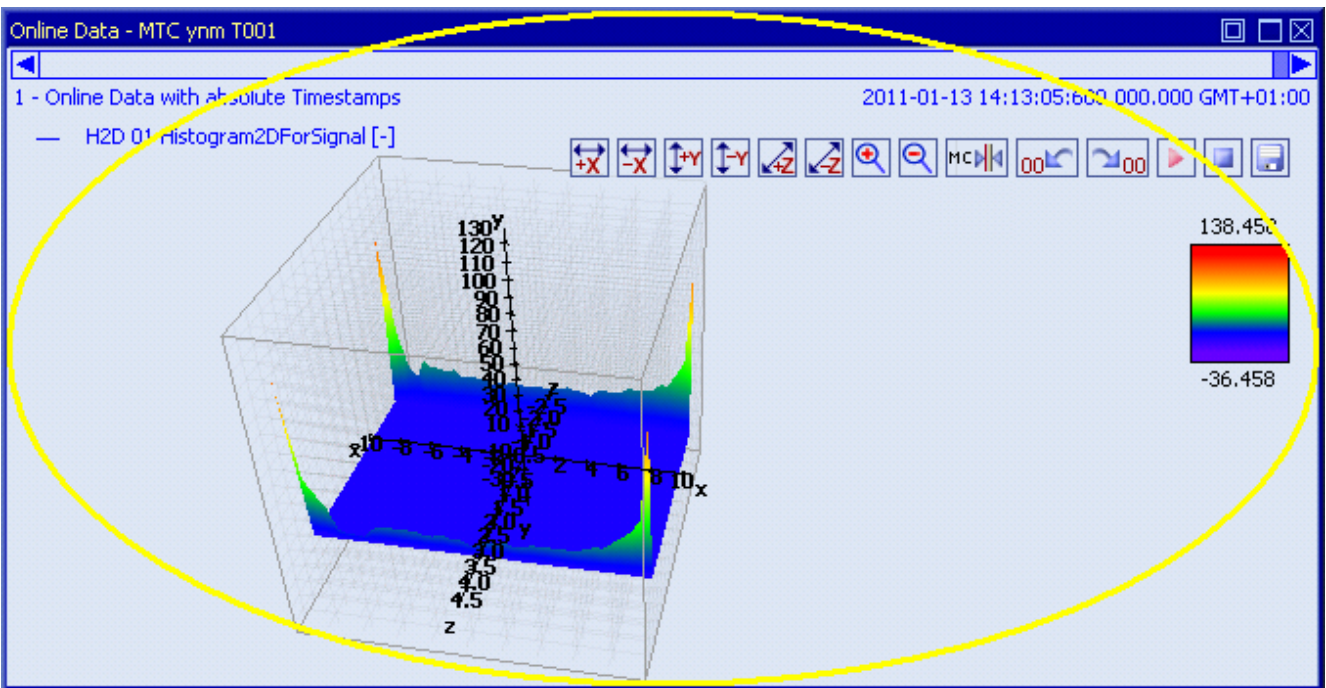


Figure 81: Dropping of Data in order to add it to the existing **MTC ynm T001**

## 2.2.5 MTC yt T001

### 2.2.5.1 Overview

The **MTC yt T001** is used in order to visualize, create and edit  $y = f(t)$  charts of numerical and/or binary data within a **Monitoring View Editor**. Multiple charts of this type can be opened and used simultaneously within one **Monitoring View Editor** and/or within multiple **Monitoring View Editors**.

The following screenshot shows an example of a **MTC yt T001**:

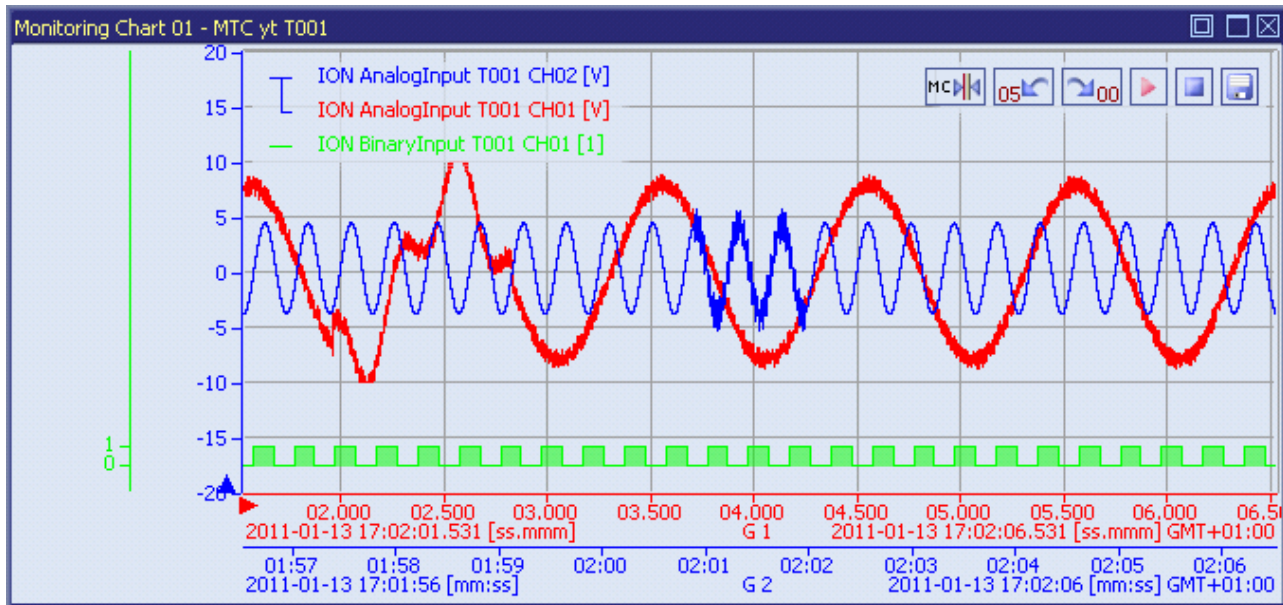


Figure 82: Example of a **MTC yt T001**

Each control of the **MTC yt T001** has a defined task and provides certain functionalities. The following major controls are provided by the **MTC yt T001**:

- Curve Area
- t-Axes Area
- y-Axes Area
- Legend Area
- Toolbar Area
- Measurement Cursors
- Measurement Cursors Table
- Chart Options Dialog
- Chart Styles Dialog
- Data Style Dialog
- Select Style Dialog
- Manual scale t-Axis Dialog
- Manual scale y-Axis Dialog for numerical y-Axes
- Manual scale y-Axis Dialog for binary y-Axes
- Drag&Drop sensitive Areas

### 2.2.5.2 Curve Area

The **Curve Area** of the **MTC yt T001** is used in order to visualize data of the function  $y = f(t)$ . Via mouse and keyboard operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **Curve Area** of a **MTC yt T001**:

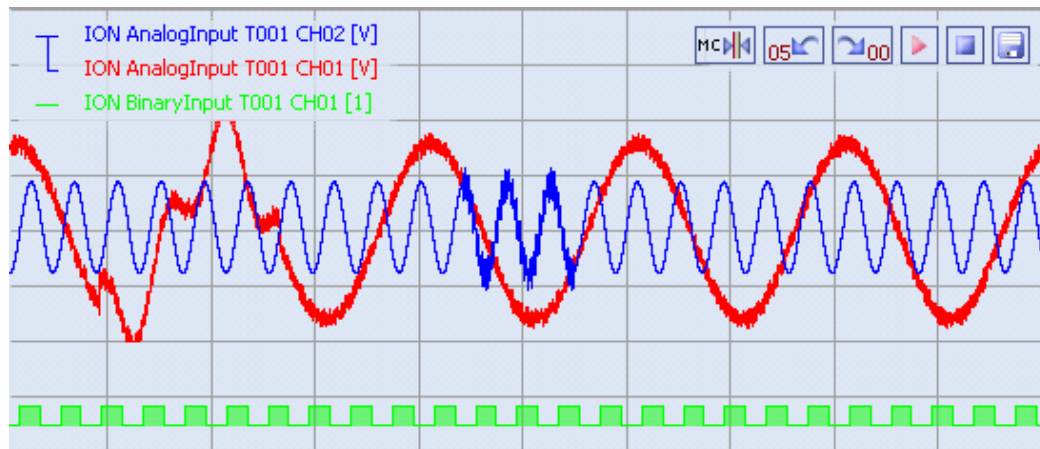


Figure 83: Example of the **Curve Area** of a **MTC yt T001**

#### Background Grid

The background grid of the **MTC yt T001** extends the lines from the axis labeling into the **Curve Area**. It is represented as a grid of horizontal and vertical lines in the background of the **Curve Area**.

Always exactly one t-axis and exactly one y-axis are bound to the background grid and extend their axis labeling via it. The context menus of the **Axis Areas** are used in order to specify the t- and y-axis which shall use the background grid to extend their axis labeling.

The appearing and scaling of the background grid is configured via the **Manual scale t-Axis** dialog (for the vertical grid lines) and via the **Manual scale y-Axis** dialog (for the horizontal grid lines).

In case the current background grid configuration is set to “manual” and the vertical and/or horizontal grid lines can not be drawn (because the grid lines would be too close to each other), the background grid automatically switches to automatic distribution of the grid lines for the affected orientation(s). The manual settings are used again as soon as the scaling of the **MTC yt T001** reaches a value which allows using the manual configuration.

#### Curve Visualization

The data interpolation defines how two successive points of an already rendered data are connected when they are displayed. All supported data interpolation modes are defined by the description of the **Data Style** dialog.

The data style defines how a data is visualized graphically. It contains the parameters for the color/strength/style of the line as well as the parameters for the color/strength/style of the mark and the rendering/interpolation methods. The styles of each data can be defined at different levels by the user.

The style of each data can be set at the following levels, where the settings of a higher level overwrite the settings of a lower level (top = high, bottom = low):

- **Data Style** dialog of the **MTC yt T001**
- default data style of the **MTC yt T001**

## Keyboard Operations

The following operations can be performed via the keyboard:

Keyboard Operation	Description
<+>	zooms into the t- and y-axes simultaneously
<Shift> + <+>	zooms only into the t-axes
<x> + <+>	behaves like <Shift> + <+>
<Ctrl> + <+>	zooms only into the y-axes
<y> + <+>	behaves like <Ctrl> + <+>
<->	zooms out from the t- and y-axes simultaneously
<Shift> + <->	zooms only out from the t-axes
<x> + <->	behaves like <Shift> + <->
<Ctrl> + <->	zooms only out from the y-axes
<y> + <->	behaves like <Ctrl> + <->
<F>	fits the scaling of the t- and y-axes simultaneously
<Shift> + <F>	fits the scaling only of the t-axes
<x> + <F>	behaves like <Shift> + <F>
<Ctrl> + <F>	fits the scaling only of the y-axes
<y> + <F>	behaves like <Ctrl> + <F>
<Ctrl> + <Z>	undoes the latest operation from the undo buffer
<Shift> + <Ctrl> + <Z>	undoes all operations from the undo buffer
<Ctrl> + <Y>	redoes the latest operation from the redo buffer
<Shift> + <Ctrl> + <Y>	redoes all operations from the redo buffer

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. While the left mouse button is kept down, a rectangle from the position where the left mouse button has been pressed to the current position of the mouse cursor is shown in order to indicate the zooming area. The actual zooming is performed when the left mouse button is released:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move] zooms into the specified area of the t- and y-axes simultaneously</li> <li>• &lt;Shift&gt; + [left mouse button down] + [mouse move] zooms only into the specified area of the t-axes <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [left mouse button down] + [mouse move] behaves like &lt;Shift&gt; + [left mouse button down] + [mouse move]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [left mouse button down] + [mouse move] zooms only into the specified area of the y-axes <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [left mouse button down] + [mouse move] behaves like &lt;Ctrl&gt; + [left mouse button down] + [mouse move]</li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without changing of any axis scaling</li> </ul>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Curve Area</b> opens the context menu for the <b>Curve Area</b> .
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move] moves all curves within the <b>Curve Area</b> into the direction of the mouse move <ul style="list-style-type: none"> <li>○ when the &lt;Shift&gt; key is being pressed during the shift operation, the curves are shifted only in horizontal direction <ul style="list-style-type: none"> <li>▪ when &lt;x&gt; key is being pressed during the shift operation, the behavior is like if the &lt;Shift&gt; key is being pressed during the shift operation</li> </ul> </li> <li>○ when the &lt;Ctrl&gt; key is being pressed during the shift operation, the curves are shifted only in vertical direction <ul style="list-style-type: none"> <li>▪ when &lt;y&gt; key is being pressed during the shift operation, the behavior is like if the &lt;Shift&gt; key is being pressed during the shift operation</li> </ul> </li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul> <p>In case of running data, shifting can be performed into the y direction, only. The shifting into t direction is done automatically by the chosen speed of the running data.</p>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>Curve Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] zooms out of the current mouse position of the t- and y-axes simultaneously</li> <li>• [mouse wheel up] zooms into the current mouse position of the t- and y-axes simultaneously</li> <li>• &lt;Shift&gt; + [mouse wheel down] moves all curves within the <b>Curve Area</b> to the left <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel down] behaves like &lt;Shift&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Shift&gt; + [mouse wheel up] moves all curves within the <b>Curve Area</b> to the right <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel up] behaves like &lt;Shift&gt; + [mouse wheel up]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel down] moves all curves within the <b>Curve Area</b> up <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel down] behaves like &lt;Ctrl&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel up] moves all curves within the <b>Curve Area</b> down <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel up] behaves like &lt;Ctrl&gt; + [mouse wheel up]</li> </ul> </li> </ul> <p>In case of running data, shifting can be performed into the y direction, only. The shifting into t direction is done automatically by the chosen speed of the running data.</p>

## Drag&Drop of Data

When a time series data is dropped into the **Curve Area**, it is added to the currently present data of the **MTC yt T001**:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the default t- and y-axes.
- <Alt> + [left mouse button up] ends the Drag&Drop operation, creates a new t- and a new y-axis and adds the dragged data to these new axes.
- In case the current Drag&Drop operation has been started within the **MTC yt T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yt T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yt T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yt T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Fit to Chart	sets the scaling of all t- and y-axes so that the complete values of all data within the <b>MTC yt T001</b> become visible
Fit to Charts	sets the scaling of all <b>Monitoring Charts</b> within the parent <b>Monitoring View Editor</b> so that the complete values of all data within all <b>Monitoring Charts</b> become visible
Zoom in	zooms in at all t- and y-axes simultaneously; the new scaling interval is half of the old scaling interval and the center of the zooming is the current mouse position
Zoom out	zooms out at all t- and y-axes simultaneously; the new scaling interval is the double of the old scaling interval and the center of the zooming is the current mouse position
Chart Options...	opens the <b>Chart Options</b> dialog
Copy Chart Options	copies the options of the <b>MTC yt T001</b> below the current mouse position
Paste Chart Options	pastes the currently copied <b>MTC yt T001</b> options onto the <b>MTC yt T001</b> below the current mouse position
Chart Styles...	opens the <b>Chart Styles</b> dialog
Copy Chart Styles	copies the styles of the <b>MTC yt T001</b> below the current mouse position
Paste Chart Styles	pastes the currently copied <b>MTC yt T001</b> styles onto the <b>MTC yt T001</b> below the current mouse position
Show Background Grid > ...	sets the visibility of the background grid to the state which is specified via the submenu of this item
Show Legend > ...	sets the visibility of the <b>Legend Area</b> to the state which is specified via the submenu of this item
Show Toolbar > ...	sets the visibility of the <b>Toolbar Area</b> to the state which is specified via the submenu of this item
Show t-Axes > ...	sets the visibility of the <b>t-Axes Area</b> to the state which is specified via the submenu of this item
Show y-Axes > ...	sets the visibility of the <b>y-Axes Area</b> to the state which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yt T001</b>

### 2.2.5.3 t-Axes Area

The **t-Axes Area** of the **MTC yt T001** is used in order to display the scaling of the present t-axes. Via mouse operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **t-Axes Area** of a **MTC yt T001**:

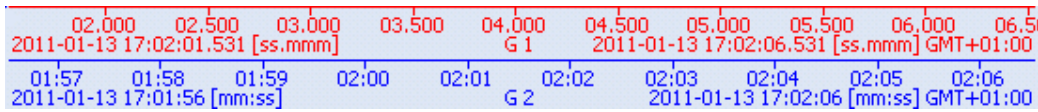


Figure 84: Example of the **t-Axes Area** of a **MTC yt T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Single and multiple t-axes can be selected/deselected through a left mouse button click:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] above any t-axis selects the below t-axis</li> <li>• &lt;Ctrl&gt; + [left mouse button down] is used in order to select/deselect t-axis after t-axis</li> <li>• &lt;Shift&gt; + [left mouse button down] is used in order to select/deselect all t-axis from the last selected t-axis to the t-axis below the current mouse position                             <ul style="list-style-type: none"> <li>○ in case there is no t-axis selected at the moment, only the below t-axis is selected</li> </ul> </li> <li>• multiple t-axes can be selected/deselected after each other through combinations of the above methods</li> <li>• in case there is a selection of items already and the user clicks onto any t-axis which is not selected currently without pressing the &lt;Shift&gt; or &lt;Ctrl&gt; keys, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected and the clicked t-axis becomes selected instead</li> <li>• in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the <b>t-Axes Area</b>, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected</li> </ul>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. The actual zooming is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move right] zooms out of the t-axis from the t position where the left mouse button has been pressed</li> <li>• [left mouse button down] + [mouse move left] zooms into the t-axis from the t position where the left mouse button has been pressed</li> <li>• &lt;Esc&gt; cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started</li> </ul>
double click	<p>A double click of the left mouse button onto any t-axis opens the <b>Manual scale t-Axis</b> dialog for the t-axis below the current mouse position.</p>

#### Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>t-Axes Area</b> opens the context menu for the <b>t-Axes Area</b>.</p>
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move right] moves the t-axis right</li> <li>• [right mouse button down] + [mouse move left] moves the t-axis left</li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul> <p>In case of running data, shifting into t direction can not be performed manually because it is done automatically by the chosen speed of the running data.</p>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>t-Axes Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the t-axis left</li> <li>• [mouse wheel up] moves the t-axis right</li> <li>• &lt;Shift&gt; + [mouse wheel down] zooms out of the t-axis from the current t position of the mouse cursor</li> <li>• &lt;Shift&gt; + [mouse wheel up] zooms into the t-axis from the current t position of the mouse cursor</li> </ul>

## Drag&Drop of Data

When a data is dropped onto an existing t-axis, it is added to the currently present data of this t-axis:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the t-axis below the current mouse position and to the default y-axis
- <Alt> + [left mouse button up] ends the Drag&Drop operation, creates a new t-axis and adds the dragged data(s) to this new t-axis and to the default y-axis
- In case the current Drag&Drop operation has been started within the **MTC yt T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yt T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yt T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yt T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.



## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show t-Axes > ...	sets the visibility of the <b>t-Axes Area</b> to the state which is specified via the submenu of this item
Fit to Axis	sets the scaling of all selected t-axes so that the complete values of their contained data are visible
Set Background Grid Axis	sets the t-axis from which the context menu has been called as the t-axis which is providing the vertical background grid lines; the t-axis which provides the vertical background grid lines also is the t-axis to which the <b>Measurement Cursors</b> are bound
Set Default Axis	sets the t-axis from which the context menu has been called as the t-axis which is the default t-axis for newly dragged data
Manual scale t-Axis...	opens the <b>Manual scale t-Axis</b> dialog for the selected t-axes
Copy t-Axis Scaling	copies the scaling of the t-axis below the current mouse position
Paste t-Axis Scaling	pastes the currently copied t-axis scaling onto the t-axis below the current mouse position
Rescale t-Axis after Open > ...	sets the rescale type of the t-axis after opening of the Monitoring View File to the type which is specified via the submenu of this item
Rescale t-Axis after Action > ...	sets the rescale type of the t-axis after an action to the type which is specified via the submenu of this item
Remove Axis	removes all selected t-axes with all of their data from the <b>MTC yt T001</b>
... > Fit to grouped t-Axes	fits all axes in group
... > Group	groups the selected t-axes
... > Ungroup	dissolves the group of the selected t-axes
... > Remove from Group	removes the selected t-axes from the group
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yt T001</b>

### 2.2.5.4 y-Axes Area

The **y-Axes Area** of the **MTC yt T001** is used in order to display the scaling of the present y-axes. Via mouse operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **y-Axes Area** of a **MTC yt T001**:

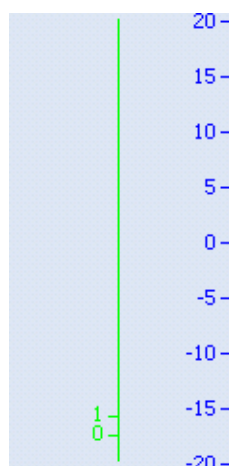


Figure 85: Example of the **y-Axes Area** of a **MTC yt T001**

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Single and multiple y-axes can be selected/deselected through a left mouse button click:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] above y-axis selects the below y-axis</li> <li>• &lt;Ctrl&gt; + [left mouse button down] is used in order to select/deselect y-axis after y-axis</li> <li>• &lt;Shift&gt; + [left mouse button down] is used in order to select/deselect all y-axis from the last selected to the y-axis below the current mouse position <ul style="list-style-type: none"> <li>○ in case there is no y-axis selected at the moment, only the below y-axis is selected</li> </ul> </li> <li>• multiple y-axes can be selected/deselected after each other through combinations of the above methods</li> <li>• in case there is a selection of items already and the user clicks onto any y-axis which is not selected currently without pressing the &lt;Shift&gt; or &lt;Ctrl&gt; keys, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected and the clicked y-axis becomes selected instead</li> <li>• in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the <b>y-Axes Area</b>, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected</li> </ul>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. In case of binary y-axis, a zoom operation at the y-axis changes the height of the displayed binary bars. The actual zooming is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move down] zooms out of the y-axis from the y position where the left mouse button has been pressed</li> <li>• [left mouse button down] + [mouse move up] zooms into the y-axis from the y position where the left mouse button has been pressed</li> <li>• &lt;Esc&gt; cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started</li> </ul>
double click	<p>A double click of the left mouse button onto any y-axis opens the <b>Manual scale y-Axis</b> dialog for the y-axis below the current mouse position.</p>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>y-Axes Area</b> opens the context menu for the <b>y-Axes Area</b>.</p>
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move down] moves the y-axis down</li> <li>• [right mouse button down] + [mouse move up] moves the y-axis up</li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>y-Axes Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the y-axis up</li> <li>• [mouse wheel up] moves the y-axis down</li> <li>• &lt;Ctrl&gt; + [mouse wheel down] zooms out of the y-axis from the current y position of the mouse cursor</li> <li>• &lt;Ctrl&gt; + [mouse wheel up] zooms into the y-axis from the current y position of the mouse cursor</li> </ul>

## Drag&Drop of Data

When a data is dropped onto an existing y-axis, it is added to the currently present data of this y-axis:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the y-axis below the current mouse position and to the default t-axis
- <Alt> + [left mouse button up] ends the Drag&Drop operation, creates a new y-axis and adds the dragged data(s) to this new y-axis and to the default t-axis
- In case the current Drag&Drop operation has been started within the **MTC yt T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yt T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yt T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yt T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show y-Axes > ...	sets the visibility of the <b>y-Axes Area</b> to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether all selected y-axes shall automatically adopt their scaling so that always the complete values of their contained data are visible
Fit to Axis	for numerical y-axes: sets the scaling of all selected y-axes so that the complete values of their contained data are visible for binary y-axes: sets the scaling of all selected y-axes so that the lowest bar is displayed (minimal height of each bar) above the bottom border of the <b>MTC yt T001</b> and sets the height of each displayed bar to (minimal height of each bar)
Set Background Grid Axis	sets the y-axis from which the context menu has been called as the y-axis which is providing the horizontal background grid lines; this context menu is enabled for numerical y-axes, only
Set Default Axis	sets the y-axis from which the context menu has been called as the y-axis which is the default y-axis for newly dragged data
Set Axis Type > ...	sets the type of the y-axis from which the context menu has been called to the type which is specified via the submenu of this item  the default value is dependent to the type of the data which has been dragged onto the y-axes as first data and matches the type of this first dragged data
Manual scale y-Axis...	opens the <b>Manual scale y-Axis</b> dialog for the selected y-axes
Copy y-Axis Scaling	copies the scaling of the y-axis below the current mouse position
Paste y-Axis Scaling	pastes the currently copied y-axis scaling onto the y-axis below the current mouse position
Rescale y-Axis after Open > ...	sets the rescale type of the y-axis after opening of the Monitoring View File to the type which is specified via the submenu of this item
Rescale y-Axis after Action > ...	sets the rescale type of the y-axis after an action to the type which is specified via the submenu of this item
Remove Axis	removes all selected y-axes with all of their data from the <b>MTC yt T001</b>
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yt T001</b>

### 2.2.5.5 Legend Area

The **Legend Area** displays all of the data which are present within the **MTC yt T001** at the moment.

All of the present data are arranged via legend trees. All data which is assigned to a common axis (either t or y) is shown together within a common legend tree. The **Legend Area** can be switched between the legend trees of the t-axes and the legend trees of the y-axes so that the user is able to make independent grouping for the t- and y-axes.

- The t-axis view of the **Legend Area** shows the currently defined legend trees of data at the present t-axes. One legend tree is displayed for each defined t-axis and all of the data which are present at this t-axis at the moment.
- The y-axis view of the **Legend Area** shows the currently defined legend trees of data at the present y-axes. One legend tree is displayed for each defined y-axis and all of the data which are present at this y-axis at the moment.

The following screenshot shows an example of the **Legend Area** of a **MTC yt T001**:

```

└─ ION AnalogInput T001 CH02 [V]
└─ ION AnalogInput T001 CH01 [V]
└─ ION BinaryInput T001 CH01 [1]

```

Figure 86: Example of the **Legend Area** of a **MTC yt T001**

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Selecting of data within the <b>Legend Area</b> is performed identically to the selecting of items within the other trees of the <b>X-Tools Client</b>.</p> <p>In case a data within the <b>Legend Area</b> is being selected, all items of other type (e.g. t-axes and y-axes) of the clicked <b>Monitoring Chart</b> are deselected automatically.</p>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button down onto any text within the <b>Legend Area</b> starts a Drag&amp;Drop operation for the currently selected data(s) as soon as the mouse cursor is moved:</p> <ul style="list-style-type: none"> <li>• a Drag&amp;Drop operation within the same <b>MTC yt T001</b> moves the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Ctrl&gt; can be pressed in order to execute a copy operation instead of the move operation within the same <b>MTC yt T001</b></li> </ul> </li> <li>• a Drag&amp;Drop operation to another <b>MTC yt T001</b> copies the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Shift&gt; can be pressed in order to execute a move operation instead of the copy operation to the other <b>MTC yt T001</b></li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without moving or copying anything</li> </ul>
double click	<p>A double click of the left mouse button onto any text within the <b>Legend Area</b> opens the <b>Data Style</b> dialog for the data below the current mouse position.</p>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>Legend Area</b> opens the context menu for the <b>Legend Area</b>.</p>
single click with keeping the button	<p>A single click of the right mouse button with keeping the button above the <b>Legend Area</b> starts a shift operation for the legend texts. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move down] moves the <b>Legend Area</b> down</li> <li>• [right mouse button down] + [mouse move up] moves the <b>Legend Area</b> up</li> <li>• &lt;Esc&gt; cancels the current operation and sets the position of the <b>Legend Area</b> back to the place which it had before the shift operation had been started</li> </ul> <p>The shifting of the legend texts is enabled only in case not all of the available legend texts fit into the currently available vertical space.</p>

## Drag&Drop of Data

During all Drag&Drop of data into the **Legend Area**, the following rules apply:

- In case the current Drag&Drop operation has been started within the **MTC yt T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yt T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yt T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yt T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.
- In order to add a data as root of a certain legend tree, the desired data has to be dropped above the current root data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, the first of them becomes the new root of the target legend tree and all others are listed directly below it.
- In order to add a data in between two present data of the legend tree, the desired data has to be dropped in between the two desired data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, all of them are inserted in between the two desired data of the target legend tree.
- In order to add a data at the end of a certain legend tree, the desired data has to be dropped below the last data of the target legend tree. In case multiple data take part in the current Drag&Drop operation, all of them are added to the end of the target legend tree.
- In order to remove a data from the legend tree with the mouse, the desired data has to be dragged to any position within the **X-Tools Client** which does not accept data.

In order to drag a data from the legend tree to another area of the **MTC yt T001**, the desired data has to be dragged from its legend tree to the target area. This functionality can be used in order to copy/move the data onto another (t or y) axis or to create a new (t or y) axis for it. The actual operation which is performed depends to the area of the **MTC yt T001** where the dragged data is dropped.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show Legend > ...	sets the visibility of the legend to the state which is specified via the submenu of this item
Legend Tree Mode > ...	specifies whether the legend trees shall assort the data with common t-axes or with common y-axes
Show Data Sources > ...	specifies whether the legend trees shall display the name of the source server together with the data name or not
Create new t-Axis	creates a new t-axis and moves the selected data(s) onto this new t-axis
Create new y-Axis	creates a new y-axis and moves the selected data(s) onto this new y-axis
Create new t- and y-Axes	creates a new t- and a new y-axis and moves the selected data(s) onto these new t- and y-axes
Data Style...	opens the <b>Data Style</b> dialog for the selected data(s)
Copy Data Style	copies the style of the data below the current mouse position
Paste Data Style	pastes the currently copied data style onto the data below the current mouse position
Remove Data	removes the selected data(s) from the <b>MTC yt T001</b>
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yt T001</b>

## 2.2.5.6 Toolbar Area

The **Toolbar Area** displays the buttons which are provided for fast access to frequently used functionalities.

The following screenshot shows an example of the **Toolbar Area** of a **MTC yt T001**:



Figure 87: Example of the **Toolbar Area** of a **MTC yt T001**

### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click onto the <b>On/Off Measurement Cursors</b> button	A single click of the left mouse button onto the <b>On/Off Measurement Cursors</b> button toggles the measurement cursors between on and off.
single click onto the <b>Undo</b> button	A single click of the left mouse button onto the <b>Undo</b> button undoes the last operation from the undo buffer.
single click onto the <b>Redo</b> button	A single click of the left mouse button onto the <b>Redo</b> button redoes the last operation from the redo buffer.
single click onto the <b>Continue Visualization</b> button	A single click of the left mouse button onto the <b>Continue Visualization</b> button continues the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Continue Visualization</b> button sets the visualization of all data of all (t and y) axes to running.
single click onto the <b>Pause Visualization</b> button	A single click of the left mouse button onto the <b>Pause Visualization</b> button pause the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Pause Visualization</b> button sets the visualization of all data of all (t and y) axes to paused.
single click onto the <b>Store Data Snapshot</b> button	A single click of the left mouse button onto the <b>Store Data Snapshot</b> button starts the storing of the data which are contained within the <b>MTC yt T001</b> .  While the storing is in progress, the <b>Storage Progress</b> dialog shows the current progress of the storing and also can be used in order to cancel the storing.  See also tutorial, chapter "Storing of Data Snapshots out of the Monitoring System".

### Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Toolbar Area</b> opens the context menu for the <b>Toolbar Area</b> . The displayed context menu is dependent to the clicked toolbar button as described below.

### Context Menu

The following specific context menu items are provided for the **On/Off Measurement Cursors** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Show Measurement Cursors > ...	sets the visibility of measurement cursors to the state which is specified via the submenu of this item
Restore Measurement Cursors	restores the positions of the measurement cursors so that both of them are visible at the screen again
Auto-scroll Measurement Cursors (Running) > ...	sets whether the measurement cursors of running visualizations shall scroll with the t-axis to the state which is specified via the submenu of this item
Auto-scroll Measurement Cursors (Paused) > ...	sets whether the measurement cursors of paused visualizations shall scroll with the t-axis to the state which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yt T001</b>

The following specific context menu items are provided for the **Undo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Undo	undoes the last operation from the undo buffer
Undo all	undoes all operations from the undo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC yt T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yt T001</b>

The following specific context menu items are provided for the **Redo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Redo	redoes the last operation from the redo buffer
Redo all	redoes all operations from the redo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC yt T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yt T001</b>

The following specific context menu items are provided for the **Pause Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yt T001</b>

The following specific context menu items are provided for the **Continue Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yt T001</b>



The following specific context menu items are provided for the **Store Data Snapshot** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Store Data Snapshot	starts the storing of the data which are contained within the <b>MTC yt T001</b>
Data Snapshot Scope > ...	sets the scope for data snapshots to the setting which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yt T001</b>

### 2.2.5.7 Measurement Cursors

The **Measurement Cursors** are represented through two vertical lines. The **Measurement Cursors** can be shifted independently in horizontal direction.

The following screenshot shows an example of the **Measurement Cursors** of a **MTC yt T001**:

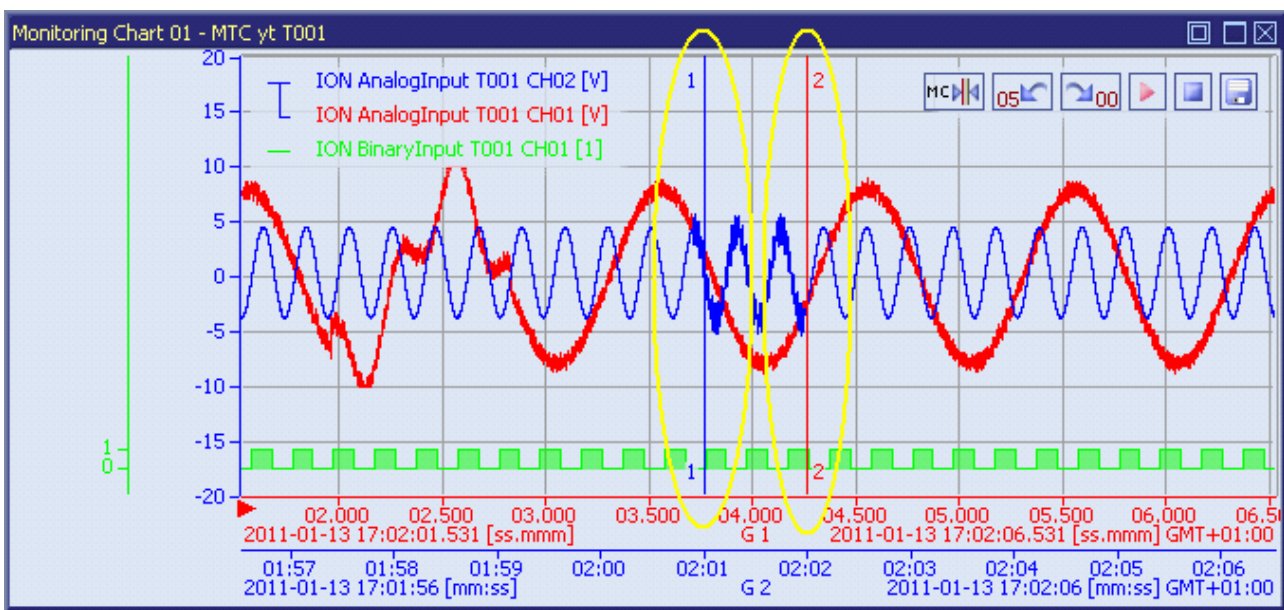


Figure 88: Example of the **Measurement Cursors** of a **MTC yt T001**

### Automatic Scrolling

The scrolling of the **Measurement Cursors** can be set to the following values via the context menu of the **On/Off Measurement Cursors** button of the **Toolbar Area** and via the **Chart Options** dialog. The configuration can be done independently for running and paused visualizations:

Auto-scroll Cursors	Description
Yes	When the <b>Measurement Cursors</b> are configured to scroll automatically with a t-axis, their position in time stays constant together with the time of the t-axis and the positions of the <b>Measurement Cursors</b> are changed in relation to the framework of the <b>MTC yt T001</b> when the t-axis is shifted or zoomed.  In case multiple t-axes are present, the position in time of the <b>Measurement Cursors</b> stay constant in relation to the default t-axis.
No	When the <b>Measurement Cursors</b> are configured to keep their static position within the framework of the <b>MTC yt T001</b> , their position stays constant in relation to the framework of the <b>MTC yt T001</b> and the position in time is moving when the time of their t-axis is shifted or zoomed.

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a shift operation. The actual shifting of the measurement cursor is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>[left mouse button down] + [mouse move] shifts the targeted measurement cursor horizontally to the new mouse position</li> </ul> <p>The values which are displayed by the <b>Measurement Cursors</b> table are updated automatically while the measurement cursor is shifted.</p>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting of the measurement cursors is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>[right mouse button down] + [mouse move] shifts both measurement cursors horizontally simultaneously with keeping the time interval between them</li> </ul> <p>The values which are displayed by the <b>Measurement Cursors</b> table are updated automatically while the measurement cursors are shifted.</p>

### 2.2.5.8 Measurement Cursors Table

The **Measurement Cursors** table contains the measurement values of all **MTC yt T001s** which are present within the parent **Monitoring View Editor**. The following screenshot shows an example for the **Measurement Cursors** table for a **MTC yt T001**:

Measurement Cursors - MTC yt T001										
No.	Chart	Data	Unit	T1 [Text]	Y1	Y2	Y2-Y1	Min	Max	
1	Online Data	ION AnalogInput T001 CH01	V	2012-07-30 18:00:22:255.396.182	-0.502	6.973	7.475	-8.845	8.812	
2	Online Data	ION AnalogInput T001 CH01	V	2012-07-30 17:59:48:891.425.594	-4.143	-1.861	2.282	-10.000	10.000	

Figure 89: Example of a **Measurement Cursors** table of a **MTC yt T001**

It is opened within the **Cursor Area** of the parent **Monitoring View Editor** of the **MTC yt T001**:

Column	Description
No.	contains the row number
Chart	contains the name of the chart from which the data comes
Data	contains the name of the data
Unit	contains the unit of the data
T1	contains the time of the data at the position of cursor 1 in case data with relative timestamps is present within the <b>Cursor Table</b> , the unit of this column can be changed via its context menu
Y1	contains the value of the data at the position of cursor 1
T2	contains the time of the data at the position of cursor 2 in case data with relative timestamps is present within the <b>Cursor Table</b> , the unit of this column can be changed via its context menu
Y2	contains the value of the data at the position of cursor 2
T2-T1	contains the difference between T2 and T1 the unit of this column can be changed via its context menu
1 / (T2-T1)	contains 1 divided by the difference between T2 and T1 (frequency) the unit of this column can be changed via its context menu
Y2-Y1	contains the difference in between Y2 and Y1
Min	contains the minimal value of the data for the time period in between the two cursors
Max	contains the maximal value of the data for the time period in between the two cursors

The contents of the **Measurement Cursors** table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.

## 2.2.5.9 Chart Options Dialog

### 2.2.5.9.1 Overview

The following screenshot shows an example of a **Chart Options** dialog:

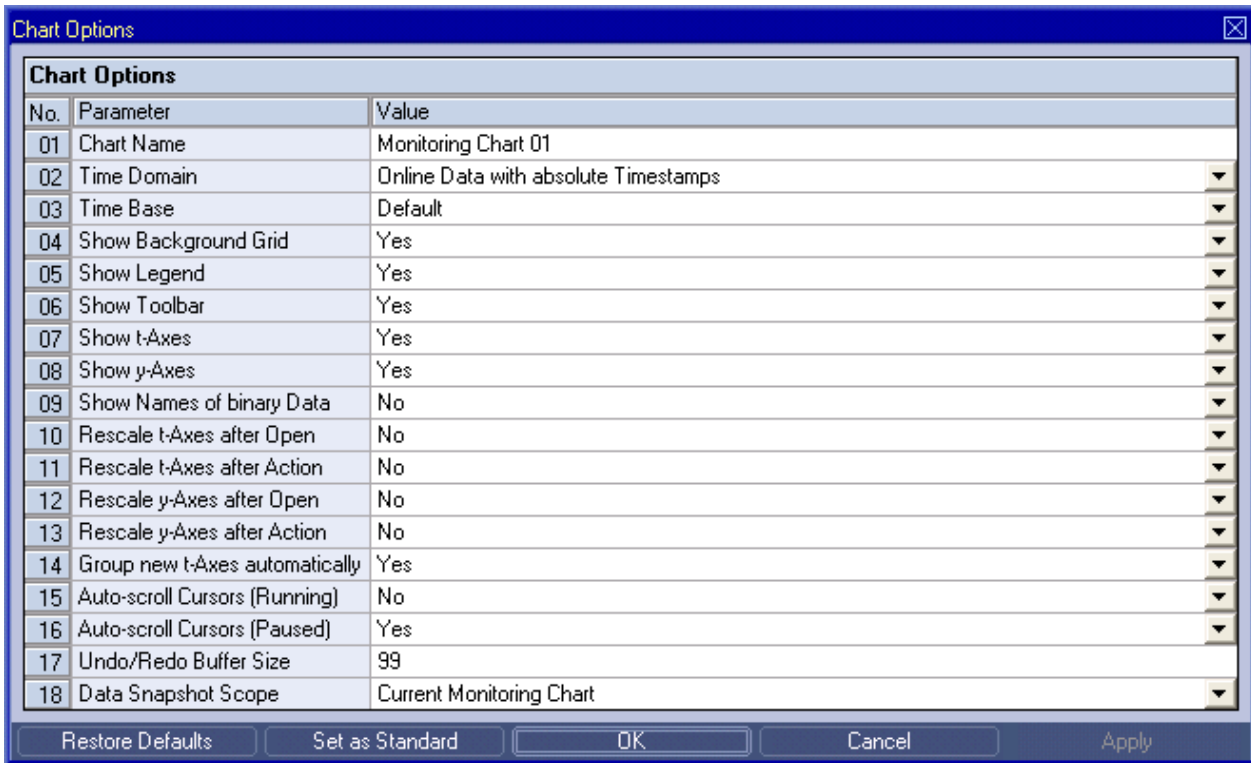


Figure 90: Example of a **Chart Options** Dialog of a **MTC yt T001**

## 2.2.5.9.2 Chart Options Table

The **Chart Options** table contains the chart options of the **MTC yt T001**:

Parameter	Description
Chart Name	allows to enter a name for the chart
Time Domain	allows to choose the time domain
Time Base	allows to choose the time base
Show Background Grid	allows to choose whether the background grid shall be shown within the <b>Curve Area</b>
Show Legend	allows to choose whether the <b>Legend Area</b> shall be shown
Show Toolbar	allows to choose whether the <b>Toolbar Area</b> shall be shown
Show t-Axes	allows to choose whether the <b>t-Axes Area</b> shall be shown
Show y-Axes	allows to choose whether the <b>y-Axes Area</b> shall be shown
Show Names of binary Data	allows to choose whether the names of binary data shall be displayed directly within the <b>Curve Area</b>
Rescale t-Axes after Open	allows to choose whether the t-axes shall be scaled automatically after the Monitoring View File has been opened
Rescale t-Axes after Action	allows to choose whether the t-axes shall be scaled automatically after the displayed data have been modified outside the <b>MTC yt T001</b> or after a new data has been dropped into the <b>MTC yt T001</b>
Rescale y-Axes after Open	allows to choose whether the y-axes shall be scaled automatically after the Monitoring View File has been opened
Rescale y-Axes after Action	allows to choose whether the y-axes shall be scaled automatically after the displayed data have been modified outside the <b>MTC yt T001</b> or after a new data has been dropped into the <b>MTC yt T001</b>
Group new t-Axes automatically	allows to choose whether the t-axes of matching time domain shall be added to a group automatically when they are created
Auto-scroll Cursors (Running)	allows to choose whether the cursors of running visualizations shall scroll automatically with the t-axis
Auto-scroll Cursors (Paused)	allows to choose whether the cursors of paused visualizations shall scroll automatically with the t-axis
Undo/Redo Buffer Size	allows to enter the total size of undo/redo operations which shall be remembered by the <b>MTC yt T001</b>
Data Snapshot Scope	allows to choose whether data snapshots shall store only the data from the current <b>Monitoring Chart</b> or from the whole Monitoring View

### Chart Name

The **Chart Name** is used by other modules in order to identify a certain **MTC yt T001**. Within the current Monitoring View, the **Chart Name** of each **MTC yt T001** must be unique.

### Time Domain

The following time domains are supported by the **Chart Options** dialog of the **MTC yt T001**:

- Online Data with absolute Timestamps
- Offline Data with absolute Timestamps
- Offline Data with relative Timestamps

The **Time Domain** cell displays the time domain which is currently being used by all t-axes of the **MTC yt T001**. In case more than one time domain is being used currently, the **Time Domain** cell stays empty.

When another time domain is being chosen via the **Time Domain** cell, the chosen time domain is applied to all of the t-axes of the **MTC yt T001**. As a result, all t-axes use the data with the known name and specified time domain for their visualization. In case there is no data with the known name and matching time domain, the affected data becomes marked as not present.

In case the time domain of a t-axis is being changed, the t-axis can be updated automatically in case the **Rescale t-Axis after Action** option is being set to "Yes".

## Time Base

The chosen time base specifies how the time stamps of each probe, which are being stored in GMT internally, are being represented by the **MTC yt T001**. In case online data is being displayed and the option "Use the local Time of the Offline Data" is being chosen, the time base for all online data is taken from the time base setting of the Monitoring View (like if "Default" would have been chosen for the time base of the **MTC yt T001**).

### Rescale t-Axes after Open

The rescale type for the t-axes after open can be modified for each t-axis independently via the context menu of the **t-Axes Area** in order to overwrite the global setting of the **MTC yt T001**.

Rescale t-Axes after Open	Description
Yes	In case the rescale mode for the t-axes after open is set to "Yes", the <b>MTC yt T001</b> automatically rescales its t-axes after the Monitoring View File has been opened so that all values from all data of all t-axes become visible.
No	In case the rescale mode for the t-axes after open is set to "No", the <b>MTC yt T001</b> does not touch the scaling of its t-axes after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale t-Axes after Action

The rescale type for the t-axes after an action can be modified for each t-axis independently via the context menu of the **t-Axes Area** in order to overwrite the global setting of the **MTC yt T001**.

Rescale t-Axes after Action	Description
Yes	In case the rescale mode for the t-axes after an action is set to "Yes", the <b>MTC yt T001</b> automatically rescales its t-axes after an external action has modified the displayed data so that all values from all data of the affected t-axes become visible.  The following actions result in an automatic rescale of the t-axes in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC yt T001</b></li> </ul>
No	In case the rescale mode for the t-axes after an action is set to "No", the <b>MTC yt T001</b> does not touch the scaling of its t-axes after an external action has modified the displayed data and leaves it at the current values.

### Rescale y-Axes after Open

The rescale type for the y-axes after open can be modified for each y-axis independently via the context menu of the **y-Axes Area** in order to overwrite the global setting of the **MTC yt T001**.

Rescale y-Axes after Open	Description
Yes	In case the rescale mode for the y-axes after open is set to "Yes", the <b>MTC yt T001</b> automatically rescales its y-axes after the Monitoring View File has been opened so that all values from all data of all y-axes become visible.
No	In case the rescale mode for the y-axes after open is set to "No", the <b>MTC yt T001</b> does not touch the scaling of its y-axes after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale y-Axes after Action

The rescale type for the y-axes after an action can be modified for each y-axis independently via the context menu of the **y-Axes Area** in order to overwrite the global setting of the **MTC yt T001**.

Rescale y-Axes after Action	Description
Yes	In case the rescale mode for the y-axes after an action is set to "Yes", the <b>MTC yt T001</b> automatically rescales the y-axes after an external action has modified the displayed data so that all values from all data of the affected y-axes become visible.  The following actions result in an automatic rescale of the y-axes in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC yt T001</b></li> </ul>
No	In case the rescale mode for the y-axes after an action is set to "No", the <b>MTC yt T001</b> does not touch the scaling of its y-axes after an external action has modified the displayed data and leaves it at the current values.

**Group new t-Axes automatically**

Group new t-Axes automatically	Description
Yes	<p>In case the automatically grouping of t-axes is set to "Yes", the <b>MTC yt T001</b> automatically adds each newly created t-axis to the group of t-axes which match its time domain and takes over the time interval settings of the group for its initial scaling.</p> <p>In case there are multiple groups of t-axes of matching time domain present at the moment, a newly created t-axis is not being added to any group automatically.</p>
No	<p>In case the automatically grouping of t-axes is set to "No", the <b>MTC yt T001</b> does not add a newly created t-axis to any of the possible present groups of t-axes.</p>

**2.2.5.9.3****Menu Bar**

Menu Button	Description
Restore Defaults	Sets all options back to their default settings.
Set as Standard	Sets the current options as standard options for each new <b>MTC yt T001</b> . The options of already existing <b>MTC yt T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

## 2.2.5.10 Chart Styles Dialog

### 2.2.5.10.1 Overview

The following screenshot shows an example of a **Chart Styles** dialog:

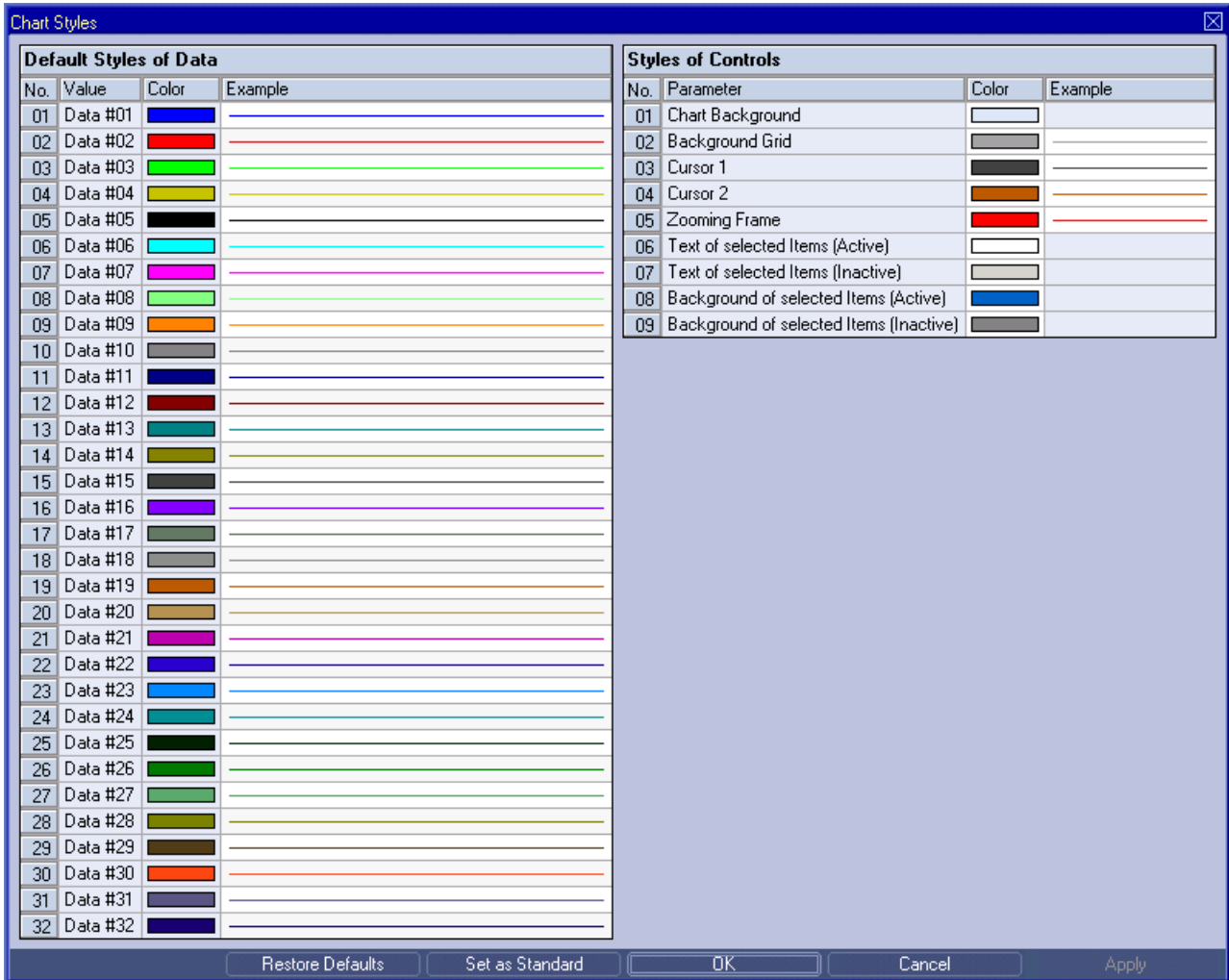


Figure 91: Example of a **Chart Styles** Dialog of a **MTC yt T001**

### 2.2.5.10.2 Default Styles of Data Table

The **Default Styles of Data** table contains the default styles of data within the **MTC yt T001**:

Parameter	Description
Data #01 ... Data #32	displays the currently chosen color and style for the according data

A double-click into the **Color** column of this control opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of this control opens the **Select Style** dialog for the according row.

### 2.2.5.10.3 Styles of Controls Table

The **Styles of Controls** table contains the styles of the controls of the **MTC yt T001**:

Parameter	Description
Chart Background	displays the currently chosen color for the chart background
Background Grid	displays the currently chosen style for the background grid
Cursor 1	displays the currently chosen color for the first cursor
Cursor 2	displays the currently chosen color for the second cursor
Zooming Frame	displays the currently chosen style for the zooming frame
Text of selected Items (Active)	displays the currently chosen color of the text of active selected items
Text of selected Items (Inactive)	displays the currently chosen color of the text of inactive selected items
Background of selected Items (Active)	displays the currently chosen color of the background of active selected items
Background of selected Items (Inactive)	displays the currently chosen color of the background of inactive selected items

A double-click into the **Color** column of any row opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of a row which supports different styles opens the **Select Style** dialog for the according row. In case different styles are not supported by a row, a double-click into the **Example** column opens the **Select Color** dialog for the according row.

### 2.2.5.10.4 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
Set as Standard	Sets the current styles as standard styles for each new <b>MTC yt T001</b> . The styles of already existing <b>MTC yt T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.

### 2.2.5.11 Data Style Dialog

#### 2.2.5.11.1 Overview

The following screenshot shows an example of a **Data Style** dialog:

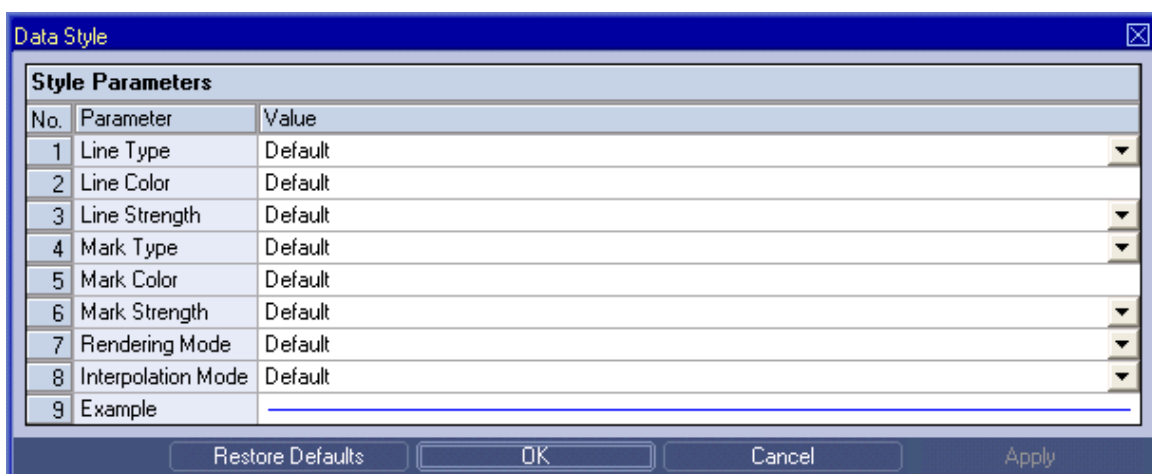


Figure 92: Example of a **Data Style** Dialog of a **MTC yt T001**



### 2.2.5.11.2 Style Parameters Table

The **Style Parameters** table contains the visualization style parameters of the currently selected data:

Parameter	Description
Line Type	allows to switch between the available line types
Line Color	allows to enter the desired line color
Line Strength	allows to switch between the available line strengths
Mark Type	allows to switch between the available mark types
Mark Color	allows to enter the desired mark color
Mark Strength	allows to switch between the available mark strengths
Rendering Mode	allows to switch between the available rendering modes
Interpolation Mode	allows to switch between the available interpolation modes
Example	displays an example curve according to the specified data style

A value of "Default" can be assigned to each style parameter. In case "Default" is being chosen, the according value from the **Chart Styles** dialog is being used for the visualization of the data.

#### Rendering Mode

From the point of view of the **MTC yt T001**, each column of pixels at the screen represents a time interval. The start time and stop time of the represented time interval depend to the total amount of available columns of pixels and to the time interval which has to be visualized within these columns.

As for each time interval of a column of pixels there may be more than one measurement value available, the rendering must be used in order to calculate the value which shall be visualized for each column of pixels.

In case there is no measurement value available within the time interval of a column of pixels, the rendering does not deliver any value for the visualization. The interpolation mode is used then in order to define how two succeeding, rendered values have to be connected together.

Rendering Mode	Description
Default	This setting keeps the default value for the rendering mode of the data.
Fast	When the rendering mode is set to "Fast", the value of the last known measurement within the time interval of each column of pixels is taken as value for the visualization.
Minimal Value	When the rendering mode is set to "Minimal Value", the smallest value of the values within the time interval of each column of pixels is taken as value for the visualization.
Maximal Value	When the rendering mode is set to "Maximal Value", the biggest value of the values within the time interval of each column of pixels is taken as value for the visualization.
Minimal and Maximal Value	When the rendering mode is set to "Minimal and Maximal Value", the smallest and biggest values of the values within the time interval of each column of pixels are taken as values for the visualization. In this mode, two rendered values are calculated for each column of pixels for each data.

#### Interpolation Mode

Interpolation Mode	Description
Default	This setting keeps the default value for the interpolation mode of the data.
Lines	When the interpolation mode "Lines" is chosen for a data, the visualization connects two rendered pixels at the screen via a line interpolation. The data curve always is visualized from the last rendered value to the next rendered value via a straight connection.  In case a next rendered value is not available, the data curve stops at the last rendered value.
Stairs	When the interpolation mode "Stairs" is chosen for a data, the visualization connects two rendered pixels at the screen via a stairs interpolation. The data curve always is visualized from the last rendered value to the newer time horizontally until the next rendered value.  In case a next rendered value is not available, the last rendered value is extended horizontally to the newer time.

### 2.2.5.11.3 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.

### 2.2.5.12 Select Style Dialog

#### 2.2.5.12.1 Overview

The following screenshot shows an example of a **Select Style** dialog:

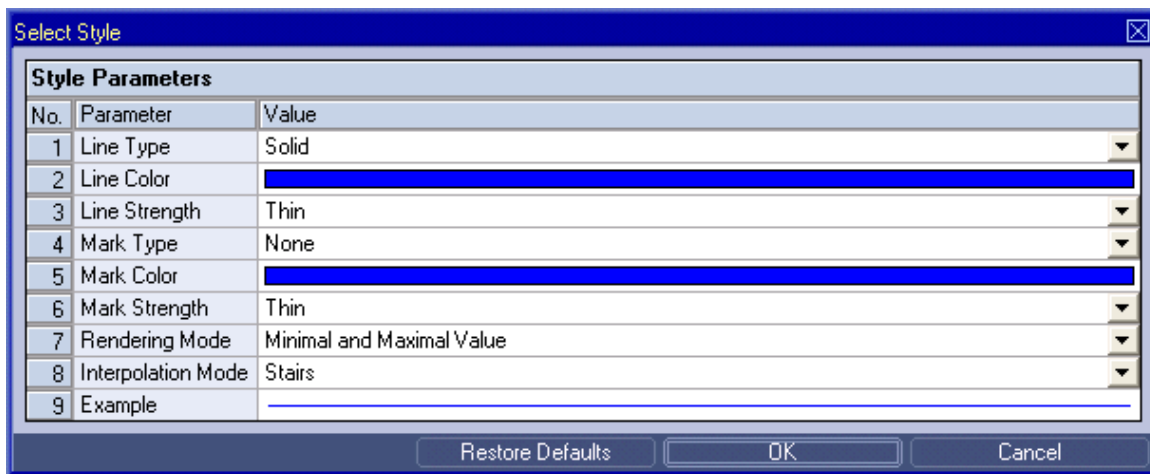


Figure 93: Example of a **Select Style** Dialog of a **MTC yt T001**

The functionality of the **Select Style** dialog matches the functionality of the **Data Style** dialog (see point 2.2.5.11).

## 2.2.5.13 Manual scale t-Axis Dialog

### 2.2.5.13.1 Overview

The following screenshot shows an example of a **Manual scale t-Axis** dialog:

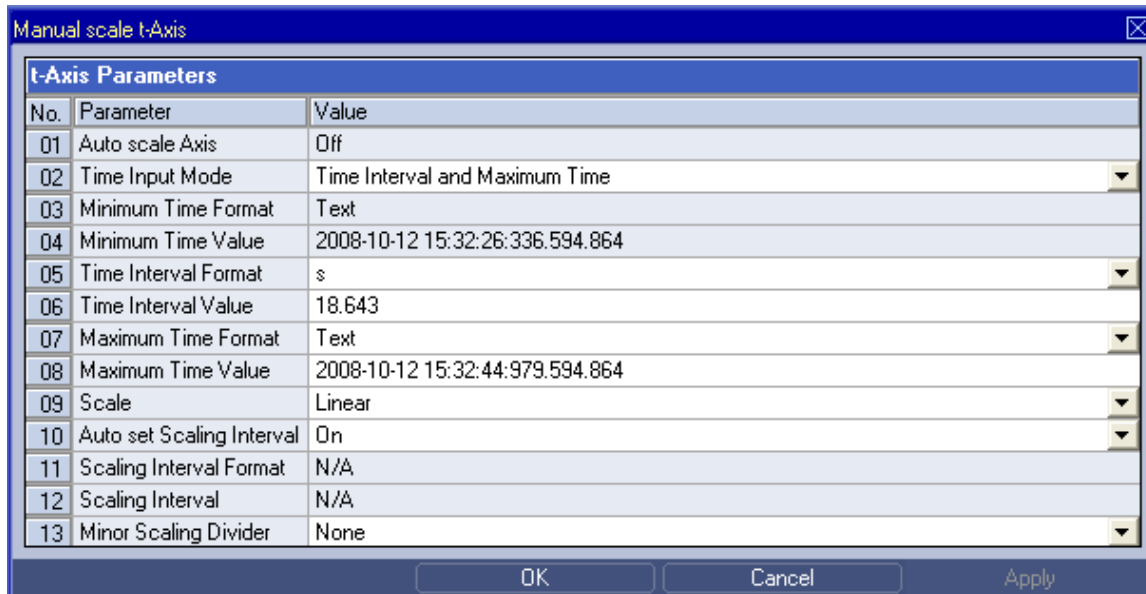


Figure 94: Example of a **Manual scale t-Axis** Dialog of a **MTC yt T001**

### 2.2.5.13.2 t-Axis Parameters Table

The **t-Axis Parameters** table contains the parameters of a currently selected t-axis:

Parameter	Description
Auto scale Axis	allows to switch between the available auto scale axis modes (currently, only "Off" is available)
Time Input Mode	allows to switch between the available time input modes
Minimum Time Format	allows to switch between the available input formats for the minimum time
Minimum Time Value	allows to enter the minimum time of the scaling
Time Interval Format	allows to switch between the available input formats of the time interval
Time Interval Value	allows to enter the time interval of the scaling
Maximum Time Format	allows to switch between the available input formats for the maximum time
Maximum Time Value	allows to enter the maximum time of the scaling
Scale	allows to switch between the available scale methods
Auto set Scaling Interval	allows to switch between the available modes for the automatic scaling interval
Scaling Interval Format	allows to switch between the available input formats for the scaling interval
Scaling Interval	allows to enter the scaling interval
Minor Scaling Divider	allows to switch between the available minor scaling dividers

#### Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the <b>MTC yt T001</b> constantly sets the scaling interval of the t-axis according to the currently displayed time interval.
Off	In this mode, the <b>MTC yt T001</b> uses the specified <b>Scaling Interval Format</b> and <b>Scaling Interval</b> parameters for the scaling interval of the t-axis. In case the specified parameters would lead to overlapping numbers, the automatic scaling interval is being used automatically until the specified parameters allow a valid scaling again.

### 2.2.5.13.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.5.14 Manual scale y-Axis Dialog for numerical y-Axes

#### 2.2.5.14.1 Overview

The following screenshot shows an example of a **Manual scale y-Axis** dialog for numerical y-axes:

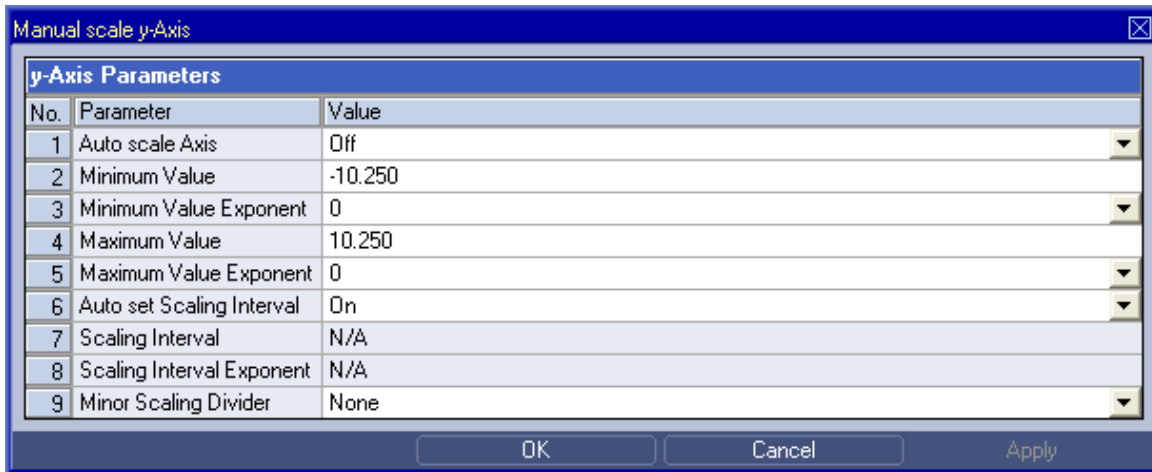


Figure 95: Example of a **Manual scale y-Axis** Dialog for numerical y-Axes of a **MTC yn T001**

#### 2.2.5.14.2 y-Axis Parameters Table

The **y-Axis Parameters** table contains the parameters of a currently selected y-axis:

Parameter	Description
Auto scale Axis	allows to switch between the available auto scale axis modes
Minimum Value	allows to enter the minimum value of the scaling
Minimum Value Exponent	allows to switch between the supported minimum value exponents
Maximum Value	allows to enter the maximum value of the scaling
Maximum Value Exponent	allows to switch between the supported maximum value exponents
Auto set Scaling Interval	allows to switch between the available modes for the automatic scaling interval
Scaling Interval	allows to enter the scaling interval
Scaling Interval Exponent	allows to switch between the supported scaling interval exponents
Minor Scaling Divider	allows to switch between the available minor scaling dividers

#### Auto scale Axis

Auto scale Axis	Description
On	In this mode, the <b>MTC yt T001</b> constantly sets the scaling of the y-axis so that all available values of the data at the y-axis stay visible.
Off	In this mode, the <b>MTC yt T001</b> uses the specified <b>Minimum Value</b> and <b>Maximum Value</b> parameters for the scaling of the y-axis.

### Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the <b>MTC yt T001</b> constantly sets the scaling interval of the y-axis according to the currently displayed value interval.
Off	In this mode, the <b>MTC yt T001</b> uses the specified <b>Scaling Interval</b> and <b>Scaling Interval Exponent</b> parameters for the scaling interval of the y-axis. In case the specified parameters would lead to overlapping numbers, the automatic scaling interval is being used automatically until the specified parameters allow a valid scaling again.

#### 2.2.5.14.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.5.15 Manual scale y-Axis Dialog for binary y-Axes

#### 2.2.5.15.1 Overview

The following screenshot shows an example of a **Manual scale y-Axis** dialog for binary y-axes:

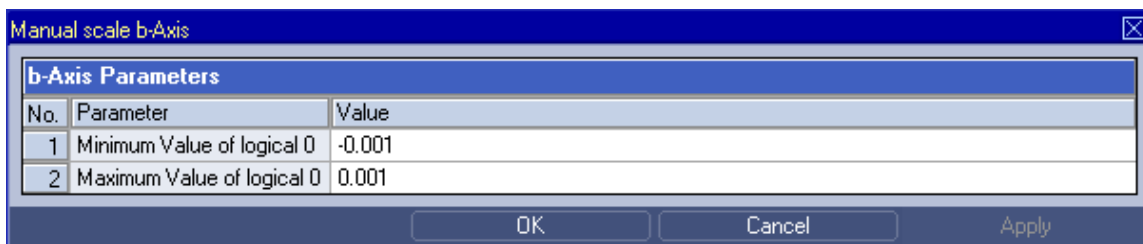


Figure 96: Example of a **Manual scale y-Axis** Dialog for binary y-Axes of a **MTC yt T001**

#### 2.2.5.15.2 y-Axis Parameters Table

The **y-Axis Parameters** table contains the parameters of a currently selected y-axis:

Parameter	Description
Minimum Value of logical 0	allows to enter the minimum value of a data which has to be interpreted as logical 0
Maximum Value of logical 0	allows to enter the maximum value of a data which has to be interpreted as logical 0

#### 2.2.5.15.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.5.16 Drag&Drop sensitive Areas

The following screenshot shows the places within a **MTC yt T001** onto which data can be dropped in order to open a new **Monitoring Chart**:

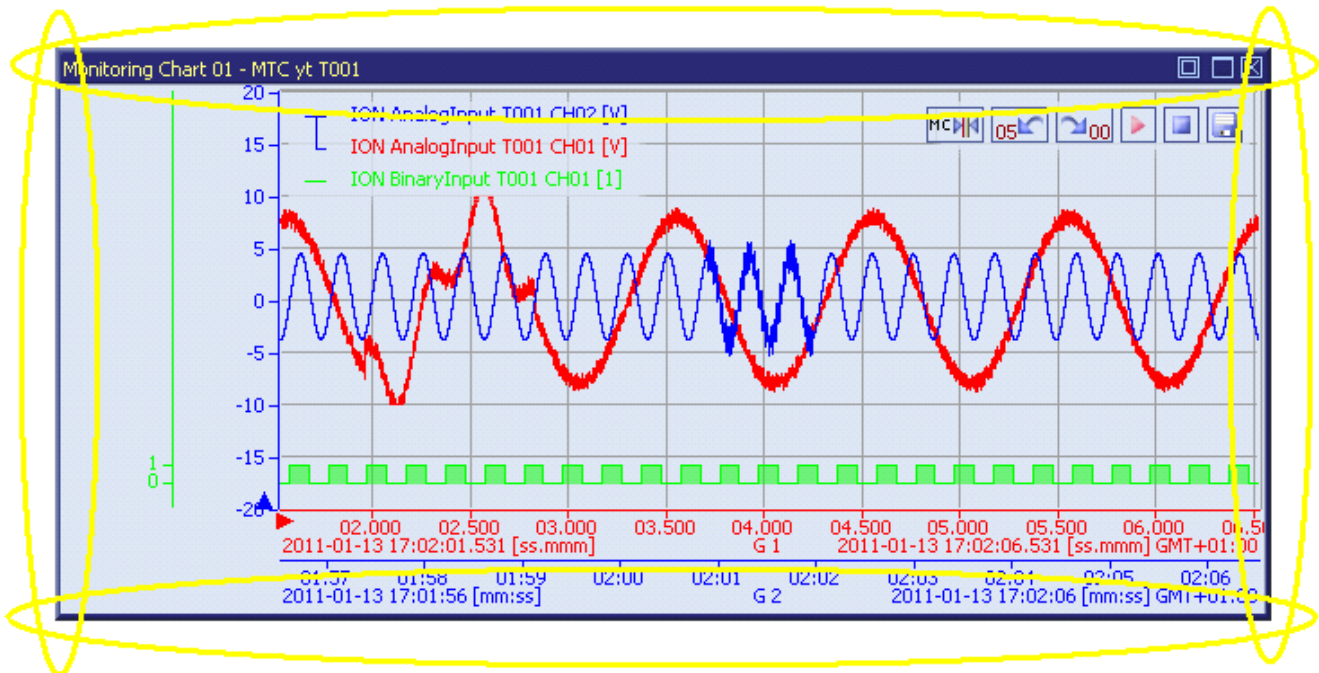


Figure 97: Dropping of Data in order to open a new **Monitoring Chart**

The following screenshot shows the places within a **MTC yt T001** onto which data can be dropped in order to add the data to the existing **MTC yt T001**:

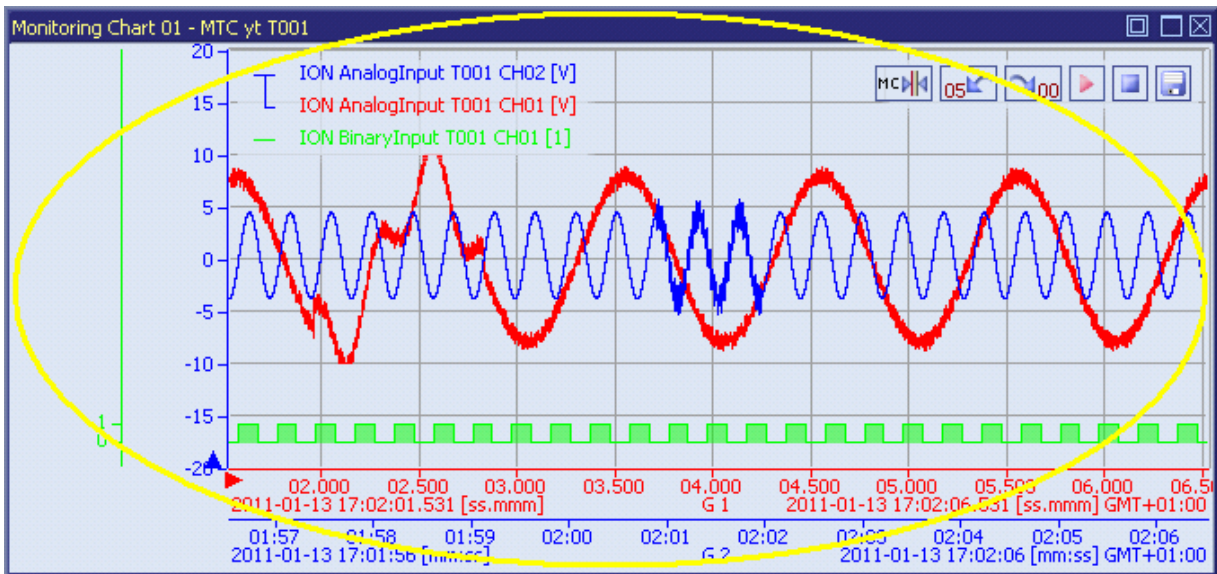


Figure 98: Dropping of Data in order to add it to the existing **MTC yt T001**

## 2.2.6 MTC yx T001

### 2.2.6.1 Overview

The **MTC yx T001** is used in order to visualize, create and edit  $y = f(x)$  charts of numerical data within a **Monitoring View Editor**. Multiple charts of this type can be opened and used simultaneously within one **Monitoring View Editor** and/or within multiple **Monitoring View Editors**.

The following screenshot shows an example of a **MTC yx T001**:

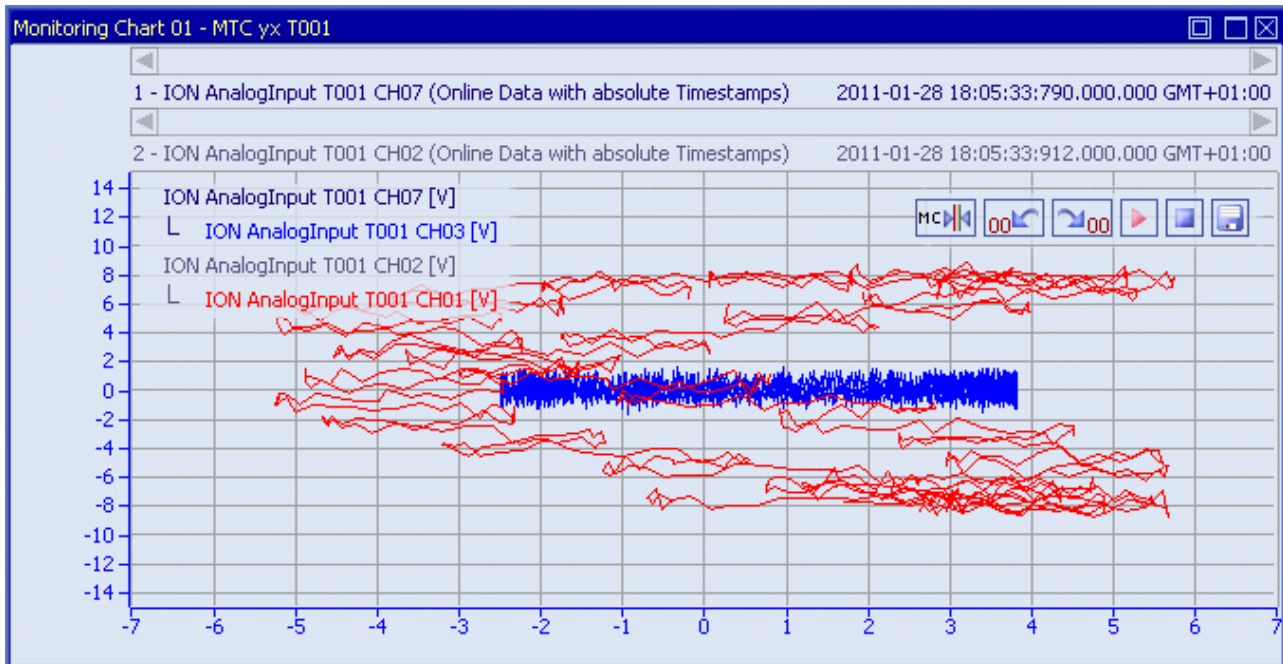


Figure 99: Example of a **MTC yx T001**

Each control of the **MTC yx T001** has a defined task and provides certain functionalities. The following major controls are provided by the **MTC yx T001**:

- Curve Area
- x-Axis Area
- y-Axis Area
- Slider Area
- Legend Area
- Toolbar Area
- Measurement Cursors
- Measurement Cursors Table
- Chart Options Dialog
- Chart Styles Dialog
- Data Style Dialog
- Select Style Dialog
- Manual scale x-Axis Dialog
- Manual scale y-Axis Dialog
- Manual scale Renderer Dialog
- Drag&Drop sensitive Areas

### 2.2.6.2 Curve Area

The **Curve Area** of the **MTC yx T001** is used in order to visualize data of the function  $y = f(x)$ . Via mouse and keyboard operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **Curve Area** of a **MTC yx T001**:

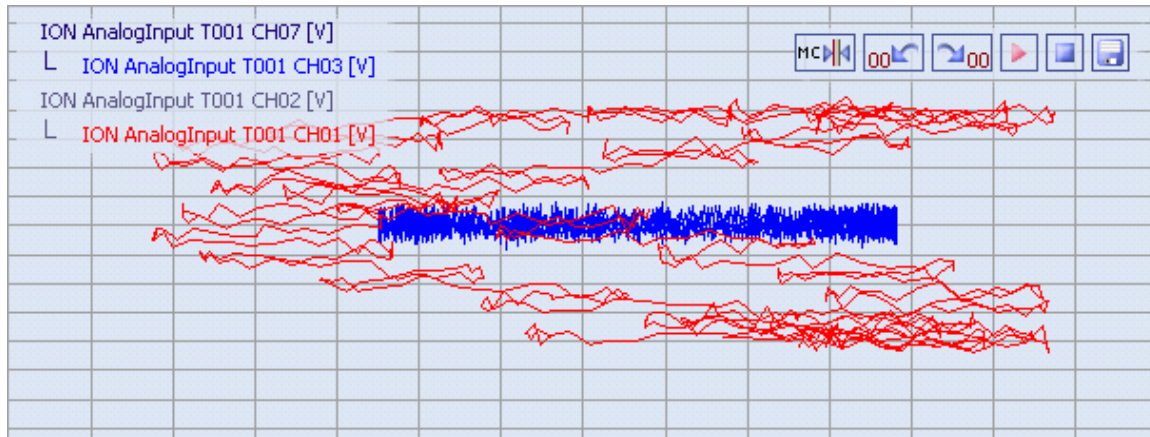


Figure 100: Example of the **Curve Area** of a **MTC yx T001**

#### Background Grid

The background grid of the **MTC yx T001** extends the lines from the axis labeling into the **Curve Area**. It is represented as a grid of horizontal and vertical lines in the background of the **Curve Area**.

The appearing and scaling of the background grid is configured via the **Manual scale x-Axis** dialog (for the vertical grid lines) and via the **Manual scale y-Axis** dialog (for the horizontal grid lines).

In case the current background grid configuration is set to “manual” and the vertical and/or horizontal grid lines can not be drawn (because the grid lines would be too close to each other), the background grid automatically switches to automatic distribution of the grid lines for the affected orientation(s). The manual settings are used again as soon as the scaling of the **MTC yx T001** reaches a value which allows using the manual configuration.

#### Curve Visualization

The data interpolation defines how two successive points of an already rendered data are connected when they are displayed. All supported data interpolation modes are defined by the description of the **Data Style** dialog.

The data style defines how a data is visualized graphically. It contains the parameters for the color/strength/style of the line as well as the parameters for the color/strength/style of the mark and the rendering method. The styles of each data can be defined at different levels by the user.

The style of each data can be set at the following levels, where the settings of a higher level overwrite the settings of a lower level (top = high, bottom = low):

- **Data Style** dialog of the **MTC yx T001**
- default data style of the **MTC yx T001**



## Keyboard Operations

The following operations can be performed via the keyboard:

Keyboard Operation	Description
<+>	zooms into the x- and y-axis simultaneously
<Shift> + <+>	zooms only into the x-axis
<x> + <+>	behaves like <Shift> + <+>
<Ctrl> + <+>	zooms only into the y-axis
<y> + <+>	behaves like <Ctrl> + <+>
<->	zooms out from the x- and y-axis simultaneously
<Shift> + <->	zooms only out from the x-axis
<x> + <->	behaves like <Shift> + <->
<Ctrl> + <->	zooms only out from the y-axis
<y> + <->	behaves like <Ctrl> + <->
<F>	fits the scaling of the x- and y-axis simultaneously
<Shift> + <F>	fits the scaling only of the x-axis
<x> + <F>	behaves like <Shift> + <F>
<Ctrl> + <F>	fits the scaling only of the y-axis
<y> + <F>	behaves like <Ctrl> + <F>
<Ctrl> + <Z>	undoes the latest operation from the undo buffer
<Shift> + <Ctrl> + <Z>	undoes all operations from the undo buffer
<Ctrl> + <Y>	redoes the latest operation from the redo buffer
<Shift> + <Ctrl> + <Y>	redoes all operations from the redo buffer

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. While the left mouse button is kept down, a rectangle from the position where the left mouse button has been pressed to the current position of the mouse cursor is shown in order to indicate the zooming area. The actual zooming is performed when the left mouse button is released:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move] zooms into the specified area of the x- and y-axis simultaneously</li> <li>• &lt;Shift&gt; + [left mouse button down] + [mouse move] zooms only into the specified area of the x-axis <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [left mouse button down] + [mouse move] behaves like &lt;Shift&gt; + [left mouse button down] + [mouse move]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [left mouse button down] + [mouse move] zooms only into the specified area of the y-axis <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [left mouse button down] + [mouse move] behaves like &lt;Ctrl&gt; + [left mouse button down] + [mouse move]</li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without changing of any axis scaling</li> </ul>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Curve Area</b> opens the context menu for the <b>Curve Area</b> .
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move] moves all curves within the <b>Curve Area</b> into the direction of the mouse move <ul style="list-style-type: none"> <li>○ when the &lt;Shift&gt; key is being pressed during the shift operation, the curves are shifted only in horizontal direction <ul style="list-style-type: none"> <li>▪ when &lt;x&gt; key is being pressed during the shift operation, the behavior is like if the &lt;Shift&gt; key is being pressed during the shift operation</li> </ul> </li> <li>○ when the &lt;Ctrl&gt; key is being pressed during the shift operation, the curves are shifted only in vertical direction <ul style="list-style-type: none"> <li>▪ when &lt;y&gt; key is being pressed during the shift operation, the behavior is like if the &lt;Shift&gt; key is being pressed during the shift operation</li> </ul> </li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>Curve Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] zooms out of the current mouse position of the x- and y-axis simultaneously</li> <li>• [mouse wheel up] zooms into the current mouse position of the x- and y-axis simultaneously</li> <li>• &lt;Shift&gt; + [mouse wheel down] moves all curves within the <b>Curve Area</b> to the left <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel down] behaves like &lt;Shift&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Shift&gt; + [mouse wheel up] moves all curves within the <b>Curve Area</b> to the right <ul style="list-style-type: none"> <li>○ &lt;x&gt; + [mouse wheel up] behaves like &lt;Shift&gt; + [mouse wheel up]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel down] moves all curves within the <b>Curve Area</b> up <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel down] behaves like &lt;Ctrl&gt; + [mouse wheel down]</li> </ul> </li> <li>• &lt;Ctrl&gt; + [mouse wheel up] moves all curves within the <b>Curve Area</b> down <ul style="list-style-type: none"> <li>○ &lt;y&gt; + [mouse wheel up] behaves like &lt;Ctrl&gt; + [mouse wheel up]</li> </ul> </li> </ul>

## Drag&Drop of Data

When a time series data is dropped into the **Curve Area**, it is added to the currently present data of the **MTC yx T001**:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the topmost x-axis data.
- In case any of the dropped data has a time domain which does not exist within the **MTC yx T001** yet, this data is used as a new x-axis data automatically and all of the following data of equal time domain are added to the new x-axis data.
- In case the current Drag&Drop operation has been started within the **MTC yx T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yx T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yx T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yx T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Fit to Chart	sets the scaling of all t- and y-axes so that the complete values of all data within the <b>MTC yx T001</b> become visible
Fit to Charts	sets the scaling of all <b>Monitoring Charts</b> within the parent <b>Monitoring View Editor</b> so that the complete values of all data within all <b>Monitoring Charts</b> become visible
Zoom in	zooms in at all t- and y-axes simultaneously; the new scaling interval is half of the old scaling interval and the center of the zooming is the current mouse position
Zoom out	zooms out at all t- and y-axes simultaneously; the new scaling interval is the double of the old scaling interval and the center of the zooming is the current mouse position
Manual scale Renderer...	opens the <b>Manual scale Renderer</b> dialog
Chart Options...	opens the <b>Chart Options</b> dialog
Copy Chart Options	copies the options of the <b>MTC yx T001</b> below the current mouse position
Paste Chart Options	pastes the currently copied <b>MTC yx T001</b> options onto the <b>MTC yx T001</b> below the current mouse position
Chart Styles...	opens the <b>Chart Styles</b> dialog
Copy Chart Styles	copies the styles of the <b>MTC yx T001</b> below the current mouse position
Paste Chart Styles	pastes the currently copied <b>MTC yx T001</b> styles onto the <b>MTC yx T001</b> below the current mouse position
Show Background Grid > ...	sets the visibility of the background grid to the state which is specified via the submenu of this item
Show Legend > ...	sets the visibility of the <b>Legend Area</b> to the state which is specified via the submenu of this item
Show Toolbar > ...	sets the visibility of the <b>Toolbar Area</b> to the state which is specified via the submenu of this item
Show x-Axis > ...	sets the visibility of the <b>t-Axis Area</b> to the state which is specified via the submenu of this item
Show y-Axis > ...	sets the visibility of the <b>y-Axis Area</b> to the state which is specified via the submenu of this item
Show Sliders > ...	sets the visibility of the <b>Slider Area</b> to the state which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

### 2.2.6.3 x-Axis Area

The **x-Axis Area** of the **MTC yx T001** is used in order to display the scaling of the present x-axis. Via mouse operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **x-Axis Area** of a **MTC yx T001**:



Figure 101: Example of the **x-Axis Area** of a **MTC yx T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Single and multiple x-axis can be selected/deselected through a left mouse button click:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] above any x-axis selects the below x-axis</li> <li>• &lt;Ctrl&gt; + [left mouse button down] is used in order to select/deselect x-axis after x-axis</li> <li>• &lt;Shift&gt; + [left mouse button down] is used in order to select/deselect all x-axis from the last selected x-axis to the x-axis below the current mouse position <ul style="list-style-type: none"> <li>○ in case there is no x-axis selected at the moment, only the below x-axis is selected</li> </ul> </li> <li>• multiple x-axis can be selected/deselected after each other through combinations of the above methods</li> <li>• in case there is a selection of items already and the user clicks onto any x-axis which is not selected currently without pressing the &lt;Shift&gt; or &lt;Ctrl&gt; keys, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected and the clicked x-axis becomes selected instead</li> <li>• in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the <b>x-Axis Area</b>, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected</li> </ul>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. The actual zooming is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move right] zooms out of the x-axis from the x position where the left mouse button has been pressed</li> <li>• [left mouse button down] + [mouse move left] zooms into the x-axis from the x position where the left mouse button has been pressed</li> <li>• &lt;Esc&gt; cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started</li> </ul>
double click	<p>A double click of the left mouse button onto any x-axis opens the <b>Manual scale x-Axis</b> dialog for the x-axis below the current mouse position.</p>

#### Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>x-Axis Area</b> opens the context menu for the <b>x-Axis Area</b>.</p>
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move right] moves the x-axis right</li> <li>• [right mouse button down] + [mouse move left] moves the x-axis left</li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>x-Axes Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the x-axis left</li> <li>• [mouse wheel up] moves the x-axis right</li> <li>• &lt;Shift&gt; + [mouse wheel down] zooms out of the x-axis from the current x position of the mouse cursor</li> <li>• &lt;Shift&gt; + [mouse wheel up] zooms into the x-axis from the current x position of the mouse cursor</li> </ul>

## Drag&Drop of Data

When a data is dropped onto the x-axis, it is added as new x-axis data:

- [left mouse button up] ends the Drag&Drop operation and creates a new x-axis data for each of the dropped data
- <Alt> + [left mouse button up] ends the Drag&Drop operation, creates a new x-axis and adds the dragged data(s) to this new x-axis and to the default y-axis
- In case the current Drag&Drop operation has been started within the **MTC yx T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yx T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yx T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yx T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show x-Axis > ...	sets the visibility of the <b>x-Axis Area</b> to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the x-axis shall automatically adopt its scaling so that always the complete values of its contained data are visible
Fit to Axis	sets the scaling of the x-axis so that the complete values of its contained data are visible
Manual scale Renderer...	opens the <b>Manual scale Renderer</b> dialog
Manual scale x-Axis...	opens the <b>Manual scale x-Axis</b> dialog
Copy x-Axis Scaling	copies the scaling of the x-axis below the current mouse position
Paste x-Axis Scaling	pastes the currently copied x-axis scaling onto the x-axis below the current mouse position
Rescale x-Axis after Open > ...	sets the rescale type of the x-axis after opening of the Monitoring View File to the type which is specified via the submenu of this item
Rescale x-Axis after Action > ...	sets the rescale type of the x-axis after an action to the type which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

### 2.2.6.4 y-Axis Area

The **y-Axis Area** of the **MTC yx T001** is used in order to display the scaling of the present y-axis. Via mouse operations the user is able to zoom, scroll and maintain the available data.

The following screenshot shows an example of the **y-Axis Area** of a **MTC yx T001**:

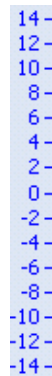


Figure 102: Example of the **y-Axis Area** of a **MTC yx T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Single and multiple y-axis can be selected/deselected through a left mouse button click:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] above any y-axis selects the below y-axis</li> <li>• &lt;Ctrl&gt; + [left mouse button down] is used in order to select/deselect y-axis after y-axis</li> <li>• &lt;Shift&gt; + [left mouse button down] is used in order to select/deselect all y-axis from the last selected to the y-axis below the current mouse position                             <ul style="list-style-type: none"> <li>○ in case there is no y-axis selected at the moment, only the below y-axis is selected</li> </ul> </li> <li>• multiple y-axis can be selected/deselected after each other through combinations of the above methods</li> <li>• in case there is a selection of items already and the user clicks onto any y-axis which is not selected currently without pressing the &lt;Shift&gt; or &lt;Ctrl&gt; keys, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected and the clicked y-axis becomes selected instead</li> <li>• in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the <b>y-Axis Area</b>, the currently selected items of the clicked <b>Monitoring Chart</b> are deselected</li> </ul>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a zoom operation. The actual zooming is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move down] zooms out of the y-axis from the y position where the left mouse button has been pressed</li> <li>• [left mouse button down] + [mouse move up] zooms into the y-axis from the y position where the left mouse button has been pressed</li> <li>• &lt;Esc&gt; cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started</li> </ul>
double click	<p>A double click of the left mouse button onto any y-axis opens the <b>Manual scale y-Axis</b> dialog for the y-axis below the current mouse position.</p>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>y-Axis Area</b> opens the context menu for the <b>y-Axis Area</b> .
single click with keeping the button	A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting is performed when the mouse is moved: <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move down] moves the y-axis down</li> <li>• [right mouse button down] + [mouse move up] moves the y-axis up</li> <li>• &lt;Esc&gt; cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started</li> </ul>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	Scrolling with the mouse wheel can be used to shift or zoom the <b>y-Axis Area</b> . The actual operation is performed when the mouse wheel is scrolled: <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the y-axis up</li> <li>• [mouse wheel up] moves the y-axis down</li> <li>• &lt;Ctrl&gt; + [mouse wheel down] zooms out of the y-axis from the current y position of the mouse cursor</li> <li>• &lt;Ctrl&gt; + [mouse wheel up] zooms into the y-axis from the current y position of the mouse cursor</li> </ul>

## Drag&Drop of Data

When a data is dropped onto an existing y-axis, it is added to the currently present x-axis data as if the data would have been dropped directly into the **Curve Area** (see point 2.2.6.2).

## Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show y-Axis > ...	sets the visibility of the <b>y-Axis Area</b> to the state which is specified via the submenu of this item
Auto scale Axis > ...	sets whether the y-axis shall automatically adopt its scaling so that always the complete values of its contained data are visible
Fit to Axis	sets the scaling of the y-axis so that the complete values of its contained data are visible
Manual scale Renderer	opens the <b>Manual scale Renderer</b> dialog
Manual scale y-Axis...	opens the <b>Manual scale y-Axis</b> dialog
Copy y-Axis Scaling	copies the scaling of the y-axis below the current mouse position
Paste y-Axis Scaling	pastes the currently copied y-axis scaling onto the y-axis below the current mouse position
Rescale y-Axis after Open > ...	sets the rescale type of the y-axis after opening of the Monitoring View File to the type which is specified via the submenu of this item
Rescale y-Axis after Action > ...	sets the rescale type of the y-axis after an action to the type which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

### 2.2.6.5 Slider Area

The **Slider Area** of the **MTC yx T001** is used in order to configure the currently visualized time interval. The total width of each slider represents the oldest and the newest available time of its x-axis data and the inside slider button represents the currently visualized time interval out of the total time interval of the data. By dragging of the slider button, the currently visualized time is modified.

The following screenshot shows an example of the **Slider Area** of a **MTC yx T001**:



Figure 103: Example of the **Slider Area** of a **MTC yx T001**

#### Time Domains

Within the **Slider Area**, there is one slider being available for each data which is assigned to the x-axis. The order of the displayed sliders from top to bottom matches the order of the currently present data at the x-axis.

#### Naming of Sliders

Each slider displays its name at its left bottom corner. The name of each slider contains the following components:

- number of the slider
- name of the x-axis data which is assigned to the slider
- name of the used time domain

#### Available Times

The left border of each slider always displays and represents the oldest time which is available for its x-axis data.

The right border of each slider always displays and represents the newest time which is available for its x-axis data.

In case the visualization of online data is running (not paused), the left and right borders of the affected slider are constantly updated so that they represent the currently available time interval of their x-axis data.

#### Displayed Times

Below the right border of each slider, the current time of the slider button is being displayed.

In case the visualization of online data is running (not paused), the displayed current time is constantly updated.



## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button onto the left step button	<p>A single click of the left mouse button with releasing the button above the left step button shifts the currently displayed point in time into the past:</p> <ul style="list-style-type: none"> <li>• the next older timestamp from all of the data at the time domain of the slider is being chosen as new current point in time <ul style="list-style-type: none"> <li>○ in case the current point in time already is the oldest available point in time, the left step button does not change the current point in time any more</li> </ul> </li> </ul>
single click with releasing the button onto the right step button	<p>A single click of the left mouse button with releasing the button above the right step button shifts the currently displayed point in time into the future:</p> <ul style="list-style-type: none"> <li>• without additional keys being pressed, the next newer timestamp from all of the data at the time domain of the slider is being chosen as new current point in time <ul style="list-style-type: none"> <li>○ in case the current point in time already is the newest available point in time, the right step button does not change the current point in time any more</li> </ul> </li> </ul>
single click with keeping the button onto the left step button	<p>A single click of the left mouse button with keeping the button down onto the left step button behaves like if the left step button would be clicked with the left mouse button constantly.</p>
single click with keeping the button onto the right step button	<p>A single click of the left mouse button with keeping the button down onto the right step button behaves like if the right step button would be clicked with the left mouse button constantly.</p>
single click with keeping the button onto the slider button	<p>A single click of the left mouse button with keeping the button down onto the slider button allows to modify the current point in time:</p> <ul style="list-style-type: none"> <li>• in case the mouse is moved to the left, the current point in time is shifted into the past <ul style="list-style-type: none"> <li>○ the slider button can not be dragged out of the left border of the <b>Slider Area</b></li> </ul> </li> <li>• in case the mouse is moved to the right, the current point in time is shifted into the future <ul style="list-style-type: none"> <li>○ the slider button can not be dragged out of the right border of the <b>Slider Area</b></li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without modifying the current point in time</li> </ul>

## Operations via the Right Mouse Button

The following operation can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>Slider Area</b> opens the context menu for the <b>Slider Area</b>.</p>

## Operations via the Mouse Wheel

The following operations can be performed via the mouse wheel:

Operation	Description
scrolling	<p>Scrolling with the mouse wheel can be used to shift or zoom the <b>Slider Area</b>. The actual operation is performed when the mouse wheel is scrolled:</p> <ul style="list-style-type: none"> <li>• [mouse wheel down] moves the slider button left (into the past) <ul style="list-style-type: none"> <li>○ in case the current begin time of the displayed interval already is the oldest available point in time (or older), [mouse wheel down] does not change the currently displayed interval</li> </ul> </li> <li>• [mouse wheel up] moves the slider button right (into the future) <ul style="list-style-type: none"> <li>○ in case the current end time of the displayed interval already is the newest available point in time (or newer), [mouse wheel up] does not change the currently displayed interval</li> </ul> </li> </ul>

### Drag&Drop of Data

When an yx-compatible data is dropped into the **Slider Area**, it is added to the currently present data of the **MTC yx T001**:

- [left mouse button up] ends the Drag&Drop operation and adds the dragged data(s) to the currently present x-axis data as if the data would have been dropped directly into the **Curve Area** (see point 2.2.6.2).
- In case the current Drag&Drop operation has been started within the **MTC yx T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yx T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yx T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yx T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.

Data of other types are handled according to the definitions which are found later in this document.

### Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show Sliders > ...	sets the visibility of the <b>Slider Area</b> to the state which is specified via the submenu of this item
Manual scale Renderer...	opens the <b>Manual scale Renderer</b> dialog
Pause Visualization	pauses the visualization, which pauses the automatic update of all data which belongs to this slider
Continue Visualization	continues the visualization, which continues the automatic update of all data which belongs to this slider
Update Display Time after Open > ...	sets the update type of the display time after opening of the Monitoring View File to the type which is specified via the submenu of this item
Update Display Time after Action > ...	sets the update type of the display time after an action to the type which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

### 2.2.6.6 Legend Area

The **Legend Area** displays all of the data which are present within the **MTC yx T001** at the moment.

All of the present data are arranged via legend trees. All data which is assigned to a common x-axis data is shown together within a common legend tree. The root item of each legend tree represents the x-axis data whereas the below items of each tree represent the according y-axis data.

The following screenshot shows an example of the **Legend Area** of a **MTC yx T001**:

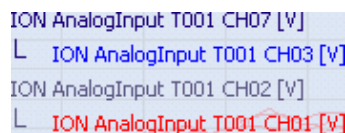


Figure 104: Example of the **Legend Area** of a **MTC yx T001**

## Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with releasing the button	<p>Selecting of data within the <b>Legend Area</b> is performed identically to the selecting of items within the other trees of the <b>X-Tools Client</b>.</p> <p>In case a data within the <b>Legend Area</b> is being selected, all items of other type (e.g. x-axis and y-axis) of the clicked <b>Monitoring Chart</b> are deselected automatically.</p>
single click with keeping the button	<p>A single click of the left mouse button with keeping the button down onto any text within the <b>Legend Area</b> starts a Drag&amp;Drop operation for the currently selected data(s) as soon as the mouse cursor is moved:</p> <ul style="list-style-type: none"> <li>• a Drag&amp;Drop operation within the same <b>MTC yx T001</b> moves the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Ctrl&gt; can be pressed in order to execute a copy operation instead of the move operation within the same <b>MTC yx T001</b></li> </ul> </li> <li>• a Drag&amp;Drop operation to another <b>MTC yx T001</b> copies the dragged data(s) to the new position <ul style="list-style-type: none"> <li>○ &lt;Shift&gt; can be pressed in order to execute a move operation instead of the copy operation to the other <b>MTC yx T001</b></li> </ul> </li> <li>• &lt;Esc&gt; cancels the current operation without moving or copying anything</li> </ul>
double click	<p>A double click of the left mouse button onto any text within the <b>Legend Area</b> opens the <b>Data Style</b> dialog for the data below the current mouse position.</p>

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	<p>A single click of the right mouse button with releasing the button above the <b>Legend Area</b> opens the context menu for the <b>Legend Area</b>.</p>
single click with keeping the button	<p>A single click of the right mouse button with keeping the button above the <b>Legend Area</b> starts a shift operation for the legend texts. The actual shifting is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move down] moves the <b>Legend Area</b> down</li> <li>• [right mouse button down] + [mouse move up] moves the <b>Legend Area</b> up</li> <li>• &lt;Esc&gt; cancels the current operation and sets the position of the <b>Legend Area</b> back to the place which it had before the shift operation had been started</li> </ul> <p>The shifting of the legend texts is enabled only in case not all of the available legend texts fit into the currently available vertical space.</p>

## Drag&Drop of Data

During all Drag&Drop of data into the **Legend Area**, the following rules apply:

- In case the current Drag&Drop operation has been started within the **MTC yx T001** onto which the drop is performed, a move operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation has been started outside the **MTC yx T001** onto which the drop is performed, a copy operation is being performed by default (the default operation can be changed, see below).
- In case the current Drag&Drop operation would copy the currently selected data into the **MTC yx T001**, <Shift> can be pressed in order to perform a move instead of a copy.
- In case the current Drag&Drop operation would move the currently selected data into the **MTC yx T001**, <Ctrl> can be pressed in order to perform a copy instead of a move.
- A horizontal bar shows where exactly the currently dragged data would be dropped. The bar always is being displayed between the two existing legend tree entries where the first of the currently dragged data will be inserted (or at the top or at the bottom of the existing legend tree, in case the mouse cursor is above or below the current legend tree).
- In order to insert the currently dragged data as x-axis data, the position bar must be placed at the very left of the legend area. In order to insert the currently dragged data as y-axis data, the position bar must be placed with a small space from the very left of the legend area.
- In order to remove a data from the legend tree with the mouse, the desired data has to be dragged to any position within the **X-Tools Client** which does not accept data.

In order to drag a data from the legend tree to another area of the **MTC yx T001**, the desired data has to be dragged from its legend tree to the target area. This functionality can be used in order to copy/move the data onto another legend tree or to create a new (x or y) axis for it. The actual operation which is performed depends to the area of the **MTC yx T001** where the dragged data is dropped.

## Context Menu

The following specific context menu items are provided for each x-axis data:

Context Menu Item	Description
Show Legend > ...	sets the visibility of the legend to the state which is specified via the submenu of this item
Show Data Sources > ...	specifies whether the legend trees shall display the name of the source server together with the data name or not
Remove Data	removes the selected data(s) from the <b>MTC yx T001</b>
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

The following specific context menu items are provided for each y-axis data:

Context Menu Item	Description
Show Legend > ...	sets the visibility of the legend to the state which is specified via the submenu of this item
Show Data Sources > ...	specifies whether the legend trees shall display the name of the source server together with the data name or not
Move to x-Axis	moves the selected data(s) to the x-axis
Data Style...	opens the <b>Data Style</b> dialog for the selected data(s)
Copy Data Style	copies the style of the data below the current mouse position
Paste Data Style	pastes the currently copied data style onto the data below the current mouse position
Center Cursor 1 > ...	sets the automatic centering of cursor 1 to the state which is specified via the submenu of this item; the center point is calculated by the arithmetic average of the according y-axis data (y-axis position) and x-axis data (x-axis position)
Center Cursor 2 > ...	sets the automatic centering of cursor 2 to the state which is specified via the submenu of this item; the center point is calculated by the arithmetic average of the according y-axis data (y-axis position) and x-axis data (x-axis position)
Remove Data	removes the selected data(s) from the <b>MTC yx T001</b>
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

### 2.2.6.7 Toolbar Area

The **Toolbar Area** displays the buttons which are provided for fast access to frequently used functionalities.

The following screenshot shows an example of the **Toolbar Area** of a **MTC yx T001**:



Figure 105: Example of the **Toolbar Area** of a **MTC yx T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click onto the <b>On/Off Measurement Cursors</b> button	A single click of the left mouse button onto the <b>On/Off Measurement Cursors</b> button toggles the measurement cursors between on and off.
single click onto the <b>Undo</b> button	A single click of the left mouse button onto the <b>Undo</b> button undoes the last operation from the undo buffer.
single click onto the <b>Redo</b> button	A single click of the left mouse button onto the <b>Redo</b> button redoes the last operation from the redo buffer.
single click onto the <b>Continue Visualization</b> button	A single click of the left mouse button onto the <b>Continue Visualization</b> button continues the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Continue Visualization</b> button sets the visualization of all data of all (t and y) axes to running.
single click onto the <b>Pause Visualization</b> button	A single click of the left mouse button onto the <b>Pause Visualization</b> button pause the visualization.  This button applies to all currently present data independently to whether they are paused or running at the moment. The <b>Pause Visualization</b> button sets the visualization of all data of all (t and y) axes to paused.
single click onto the <b>Store Data Snapshot</b> button	A single click of the left mouse button onto the <b>Store Data Snapshot</b> button starts the storing of the data which are contained within the <b>MTC yx T001</b> .  While the storing is in progress, the <b>Storage Progress</b> dialog shows the current progress of the storing and also can be used in order to cancel the storing.  See also tutorial, chapter "Storing of Data Snapshots out of the Monitoring System".

## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with releasing the button	A single click of the right mouse button with releasing the button above the <b>Toolbar Area</b> opens the context menu for the <b>Toolbar Area</b> . The displayed context menu is dependent to the clicked toolbar button as described below.

### Context Menu

The following specific context menu items are provided for the **On/Off Measurement Cursors** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Show Measurement Cursors > ...	sets the visibility of measurement cursors to the state which is specified via the submenu of this item
Restore Measurement Cursors	restores the positions of the measurement cursors so that both of them are visible at the screen again
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

The following specific context menu items are provided for the **Undo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Undo	undoes the last operation from the undo buffer
Undo all	undoes all operations from the undo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC yx T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

The following specific context menu items are provided for the **Redo** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Redo	redoes the last operation from the redo buffer
Redo all	redoes all operations from the redo buffer
Clear Undo/Redo Buffer	removes all entries from the undo/redo buffer of the <b>MTC yx T001</b>
Change Undo/Redo Buffer Size	opens the <b>Chart Options</b> dialog, sets the input focus to the <b>Undo/Redo Buffer Size</b> edit control and puts it into editing mode
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

The following specific context menu items are provided for the **Pause Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

The following specific context menu items are provided for the **Continue Visualization** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Pause Visualization	pauses the visualization, which stops the automatic update of all data
Continue Visualization	continues the visualization, which continues the automatic update of all data
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

The following specific context menu items are provided for the **Store Data Snapshot** button:

Context Menu Item	Description
Show Toolbar > ...	sets the visibility of the toolbar to the state which is specified via the submenu of this item
Store Data Snapshot	starts the storing of the data which are contained within the <b>MTC yx T001</b>
Data Snapshot Scope > ...	sets the scope for data snapshots to the setting which is specified via the submenu of this item
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the <b>MTC yx T001</b>

### 2.2.6.8 Measurement Cursors

The **Measurement Cursors** are represented through two 2-dimensional crosses, where the cross is placed exactly at the point of intersection of both dimensions and moves into all four directions from there, until it reaches the borders of the **Curve Area**. The **Measurement Cursors** can be shifted independently in horizontal and vertical direction.

The following screenshot shows an example of the **Measurement Cursors** of a **MTC yx T001**:

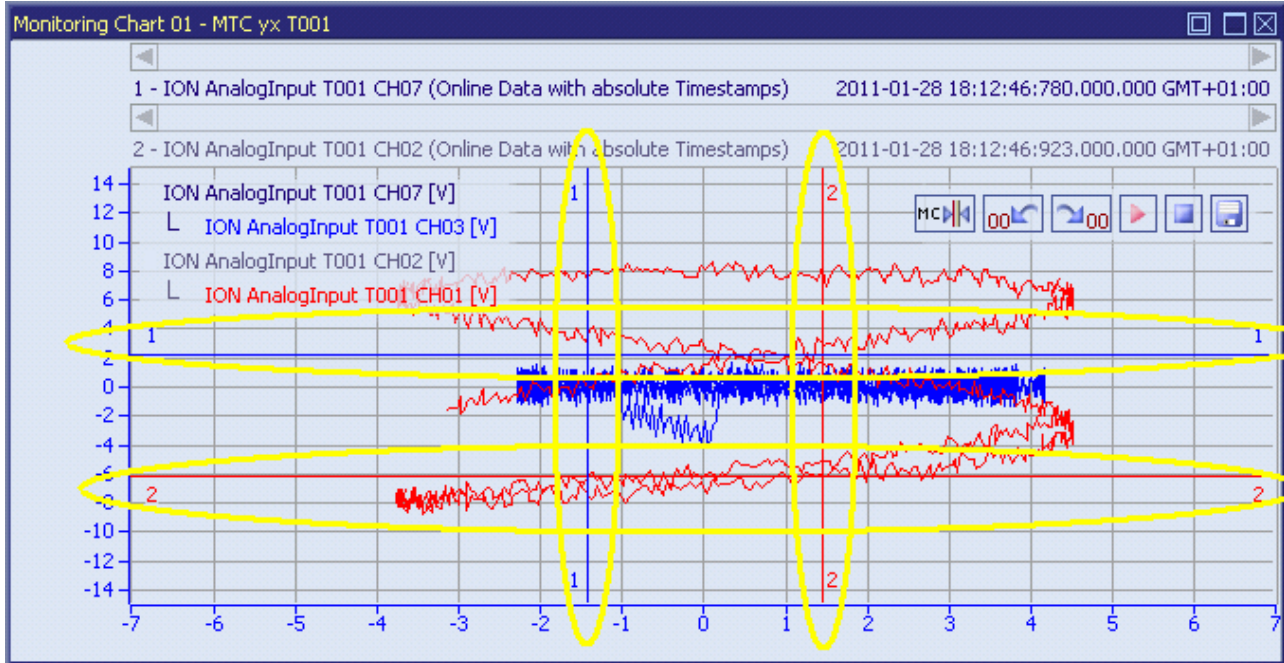


Figure 106: Example of the **Measurement Cursors** of a **MTC yx T001**

#### Operations via the Left Mouse Button

The following operations can be performed via the left mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the left mouse button with keeping the button starts a shift operation. The actual shifting of the measurement cursor is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [left mouse button down] + [mouse move] shifts the targeted measurement cursor to the new mouse position                             <ul style="list-style-type: none"> <li>○ in case the left mouse button was pressed above the horizontal line of the cursor, the cursor is shifted only in vertical direction</li> <li>○ in case the left mouse button was pressed above the vertical line of the cursor, the cursor is shifted only in horizontal direction</li> <li>○ in case the left mouse button was pressed above the point of intersection of both lines of the cursor, the cursor is shifted in horizontal and vertical direction</li> </ul> </li> </ul> <p>The values which are displayed by the <b>Measurement Cursors</b> table are updated automatically while the measurement cursor is shifted.</p>



## Operations via the Right Mouse Button

The following operations can be performed via the right mouse button:

Operation	Description
single click with keeping the button	<p>A single click of the right mouse button with keeping the button starts a shift operation. The actual shifting of the measurement cursors is performed when the mouse is moved:</p> <ul style="list-style-type: none"> <li>• [right mouse button down] + [mouse move] shifts both measurement cursors simultaneously with keeping the interval between them <ul style="list-style-type: none"> <li>○ in case the left mouse button was pressed above the horizontal line of a cursor, the cursors are shifted only in vertical direction</li> <li>○ in case the left mouse button was pressed above the vertical line of a cursor, the cursors are shifted only in horizontal direction</li> <li>○ in case the left mouse button was pressed above the point of intersection of both lines of a cursor, the cursors are shifted in horizontal and vertical direction</li> </ul> </li> </ul> <p>The values which are displayed by the <b>Measurement Cursors</b> table are updated automatically while the measurement cursors are shifted.</p>

### 2.2.6.9 Measurement Cursors Table

The **Measurement Cursors** table contains the measurement values of all **MTC yx T001s** which are present within the parent **Monitoring View Editor**. The following screenshot shows an example for the **Measurement Cursors** table for a **MTC yx T001**:

Measurement Cursors - MTC yx T001								
No.	Chart	X1	Y1	X2	Y2	X2-X1	Y2-Y1	Norm  XY
1	Online Data	-5.000	5.000	5.000	-5.000	10.000	-10.000	14.142

Figure 107: Example of a **Measurement Cursors** table of a **MTC yx T001**

It is opened within the **Cursor Area** of the parent **Monitoring View Editor** of the **MTC yx T001**:

Column	Description
No.	contains the row number
Chart	contains the name of the chart from which the data comes
X1	contains the x-axis value of the data at the position of cursor 1
Y1	contains the y-axis value of the data at the position of cursor 1
X2	contains the x-axis value of the data at the position of cursor 2
Y2	contains the y-axis value of the data at the position of cursor 2
X2-X1	contains the difference in between X2 and X1
Y2-Y1	contains the difference in between Y2 and Y1
Norm  XY	contains the norm between the position of cursor 1 and the position of cursor 2

The contents of the **Measurement Cursors** table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.

## 2.2.6.10 Chart Options Dialog

### 2.2.6.10.1 Overview

The following screenshot shows an example of a **Chart Options** dialog:

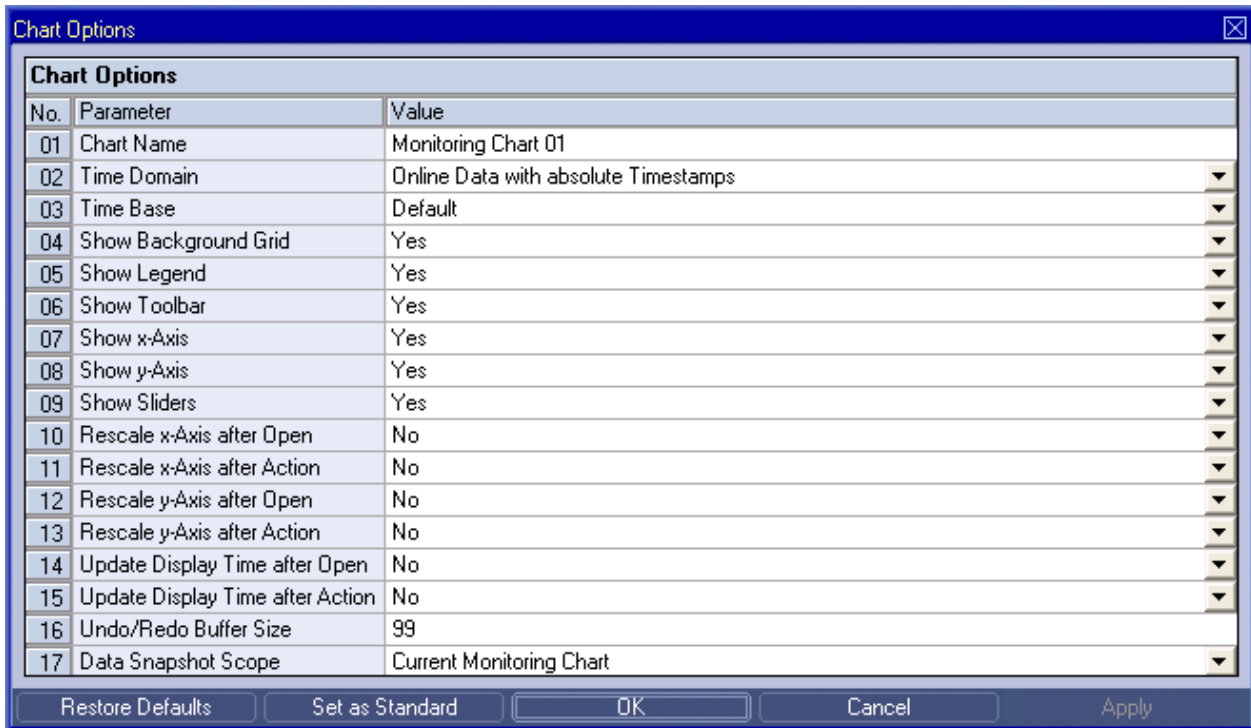


Figure 108: Example of a **Chart Options** Dialog of a **MTC yx T001**

## 2.2.6.10.2 Chart Options Table

The **Chart Options** table contains the chart options of the **MTC yx T001**:

Parameter	Description
Chart Name	allows to enter a name for the chart
Time Domain	allows to choose the time domain
Time Base	allows to choose the time base
Show Background Grid	allows to choose whether the background grid shall be shown within the <b>Curve Area</b>
Show Legend	allows to choose whether the <b>Legend Area</b> shall be shown
Show Toolbar	allows to choose whether the <b>Toolbar Area</b> shall be shown
Show x-Axis	allows to choose whether the <b>x-Axis Area</b> shall be shown
Show y-Axis	allows to choose whether the <b>y-Axis Area</b> shall be shown
Show Sliders	allows to choose whether the <b>Slider Area</b> shall be shown
Rescale x-Axis after Open	allows to choose whether the x-axis shall be scaled automatically after the Monitoring View File has been opened
Rescale x-Axis after Action	allows to choose whether the x-axis shall be scaled automatically after the displayed data have been modified outside the <b>MTC yx T001</b> or after a new data has been dropped into the <b>MTC yx T001</b>
Rescale y-Axis after Open	allows to choose whether the y-axis shall be scaled automatically after the Monitoring View File has been opened
Rescale y-Axis after Action	allows to choose whether the y-axis shall be scaled automatically after the displayed data have been modified outside the <b>MTC yx T001</b> or after a new data has been dropped into the <b>MTC yx T001</b>
Update Display Time after Open	allows to choose whether the display time shall be updated automatically after the Monitoring View File has been opened
Update Display Time after Action	allows to choose whether the display time shall be updated automatically after the displayed data have been modified outside the <b>MTC yx T001</b> or after a new data has been dropped into the <b>MTC yx T001</b>
Undo/Redo Buffer Size	allows to enter the total size of undo/redo operations which shall be remembered by the <b>MTC yx T001</b>
Data Snapshot Scope	allows to choose whether data snapshots shall store only the data from the current <b>Monitoring Chart</b> or from the whole Monitoring View

### Chart Name

The **Chart Name** is used by other modules in order to identify a certain **MTC yx T001**. Within the current Monitoring View, the **Chart Name** of each **MTC yx T001** must be unique.

### Time Domain

The following time domains are supported by the **Chart Options** dialog of the **MTC yx T001**:

- Online Data with absolute Timestamps
- Offline Data with absolute Timestamps
- Offline Data with relative Timestamps

The **Time Domain** cell displays the time domain which is currently being used by all x-axis of the **MTC yx T001**. In case more than one time domain is being used currently, the **Time Domain** cell stays empty.

When another time domain is being chosen via the **Time Domain** cell, the chosen time domain is applied to all of the x-axis of the **MTC yx T001**. As a result, all x-axis use the data with the known name and specified time domain for their visualization. In case there is no data with the known name and matching time domain, the affected data becomes marked as not present.

In case the time domain is being changed, the x-/y-axis and the display time can be updated automatically in case the **Rescale x-Axis after Action**, **Rescale y-Axis after Action** or **Rescale Display Time after Action** options are being set to "Yes".

## Time Base

The chosen time base specifies how the time stamps of each probe, which are being stored in GMT internally, are being represented by the **MTC yx T001**. In case online data is being displayed and the option "Use the local Time of the Offline Data" is being chosen, the time base for all online data is taken from the time base setting of the Monitoring View (like if "Default" would have been chosen for the time base of the **MTC yx T001**).

### Rescale x-Axis after Open

Rescale x-Axis after Open	Description
Yes	In case the rescale mode for the x-axis after open is set to "Yes", the <b>MTC yx T001</b> automatically rescales its x-axis after the Monitoring View File has been opened so that all values from all data of the x-axis become visible.
No	In case the rescale mode for the x-axis after open is set to "No", the <b>MTC yx T001</b> does not touch the scaling of its x-axis after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale x-Axis after Action

Rescale x-Axis after Action	Description
Yes	In case the rescale mode for the x-axis after an action is set to "Yes", the <b>MTC yx T001</b> automatically rescales its x-axis after an external action has modified the displayed data so that all values of the x-axis become visible.  The following actions result in an automatic rescale of the x-axis in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC yx T001</b></li> </ul>
No	In case the rescale mode for the x-axis after an action is set to "No", the <b>MTC yx T001</b> does not touch the scaling of its x-axis after an external action has modified the displayed and leaves it at the current values.

### Rescale y-Axis after Open

Rescale y-Axis after Open	Description
Yes	In case the rescale mode for the y-axis after open is set to "Yes", the <b>MTC yx T001</b> automatically rescales its y-axis after the Monitoring View File has been opened so that all values from all data of the y-axis become visible.
No	In case the rescale mode for the y-axis after open is set to "No", the <b>MTC yx T001</b> does not touch the scaling of its y-axis after the Monitoring View File has been opened and leaves it at the stored values from the Monitoring View File.

### Rescale y-Axis after Action

Rescale y-Axis after Action	Description
Yes	In case the rescale mode for the y-axis after an action is set to "Yes", the <b>MTC yx T001</b> automatically rescales the y-axis after an external action has modified the displayed data so that all values from the y-axis become visible.  The following actions result in an automatic rescale of the y-axis in case this mode is chosen: <ul style="list-style-type: none"> <li>• another part of a contained data has been opened/appended/overwritten</li> <li>• a contained data has been recalculated</li> <li>• another data is added to the <b>MTC yx T001</b></li> </ul>
No	In case the rescale mode for the y-axis after an action is set to "No", the <b>MTC yx T001</b> does not touch the scaling of its y-axis after an external action has modified the displayed data and leaves it at the current values.

### Update Display Time after Open

Update Display Time after Open	Description
Yes	<p>In case the update mode for the display time after open is set to "Yes", the <b>MTC yx T001</b> automatically sets its display time to 10 seconds after the Monitoring View File has been opened:</p> <ul style="list-style-type: none"> <li>in case of online data, the newest visualized point in time is being set to the current system time</li> <li>in case of offline data, the newest visualized point in time is being set to the newest common time of the (y- and x-) data of each x-axis</li> </ul> <p>In case the display time is being updated, also the number of to-be-rendered points is being set to 1000.</p>
No	<p>In case the update mode for the display time after open is set to "No", the <b>MTC yx T001</b> does not touch the display time after the Monitoring View File has been opened and leaves it at the stored value from the Monitoring View File.</p>

### Update Display Time after Action

Update Display Time after Action	Description
Yes	<p>In case the update mode for the display time after an action is set to "Yes", the <b>MTC yx T001</b> automatically sets its display time to 10 seconds after an external action has modified the displayed data so that all values from the y-axis become visible:</p> <ul style="list-style-type: none"> <li>in case of online data, the newest visualized point in time is being set to the current system time</li> <li>in case of offline data, the newest visualized point in time is being set to the newest common time of the (y- and x-) data of each x-axis</li> </ul> <p>The following actions result in an automatic update of the display time in case this mode is chosen:</p> <ul style="list-style-type: none"> <li>another part of a contained data has been opened/append/overwritten</li> <li>a contained data has been recalculated</li> <li>another data is added to the <b>MTC yx T001</b></li> </ul> <p>In case the display time is being updated, also the number of to-be-rendered points is being set to 1000.</p>
No	<p>In case the update mode for the display time after an action is set to "No", the <b>MTC yx T001</b> does not touch the display time after an external action has modified the displayed data and leaves it at the current value.</p>

#### 2.2.6.10.3

### Menu Bar

Menu Button	Description
Restore Defaults	Sets all options back to their default settings.
Set as Standard	Sets the current options as standard options for each new <b>MTC yx T001</b> . The options of already existing <b>MTC yx T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

## 2.2.6.11 Chart Styles Dialog

### 2.2.6.11.1 Overview

The following screenshot shows an example of a **Chart Styles** dialog:

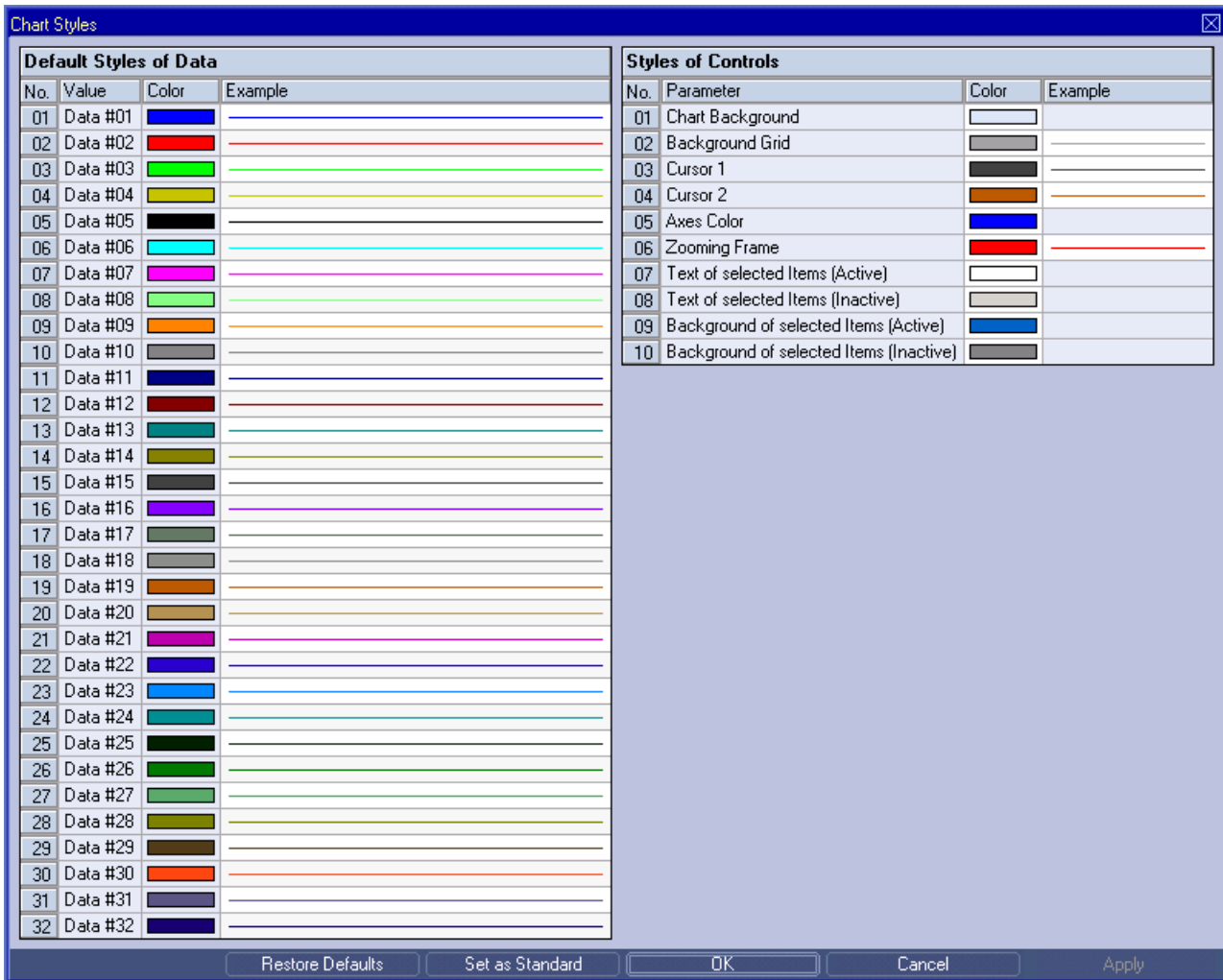


Figure 109: Example of a **Chart Styles** Dialog of a **MTC yx T001**

### 2.2.6.11.2 Default Styles of Data Table

The **Default Styles of Data** table contains the default styles of data within the **MTC yx T001**:

Parameter	Description
Data #01 ... Data #32	displays the currently chosen color and style for the according data

A double-click into the **Color** column of this control opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of this control opens the **Select Style** dialog for the according row.

### 2.2.6.11.3 Styles of Controls Table

The **Styles of Controls** table contains the styles of the controls of the **MTC yx T001**:

Parameter	Description
Chart Background	displays the currently chosen color for the chart background
Background Grid	displays the currently chosen style for the background grid
Cursor 1	displays the currently chosen color for the first cursor
Cursor 2	displays the currently chosen color for the second cursor
Axes Color	displays the currently chosen color for the axes
Zooming Frame	displays the currently chosen style for the zooming frame
Text of selected Items (Active)	displays the currently chosen color of the text of active selected items
Text of selected Items (Inactive)	displays the currently chosen color of the text of inactive selected items
Background of selected Items (Active)	displays the currently chosen color of the background of active selected items
Background of selected Items (Inactive)	displays the currently chosen color of the background of inactive selected items

A double-click into the **Color** column of any row opens the **Select Color** dialog for the according row.

A double-click into the **Example** column of a row which supports different styles opens the **Select Style** dialog for the according row. In case different styles are not supported by a row, a double-click into the **Example** column opens the **Select Color** dialog for the according row.

### 2.2.6.11.4 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
Set as Standard	Sets the current styles as standard styles for each new <b>MTC yx T001</b> . The styles of already existing <b>MTC yx T001s</b> are not being changed by this operation.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.

### 2.2.6.12 Data Style Dialog

#### 2.2.6.12.1 Overview

The following screenshot shows an example of a **Data Style** dialog:

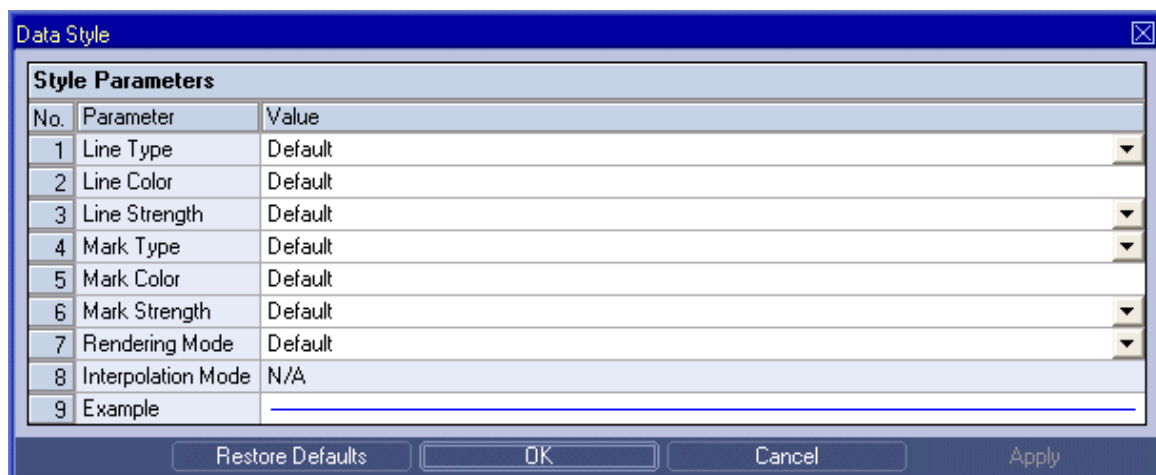


Figure 110: Example of a **Data Style** Dialog of a **MTC yx T001**

### 2.2.6.12.2 Style Parameters Table

The **Style Parameters** table contains the visualization style parameters of the currently selected data:

Parameter	Description
Line Type	allows to switch between the available line types
Line Color	allows to enter the desired line color
Line Strength	allows to switch between the available line strengths
Mark Type	allows to switch between the available mark types
Mark Color	allows to enter the desired mark color
Mark Strength	allows to switch between the available mark strengths
Rendering Mode	allows to switch between the available rendering modes
Interpolation Mode	not applicable
Example	displays an example curve according to the specified data style

A value of "Default" can be assigned to each style parameter. In case "Default" is being chosen, the according value from the **Chart Styles** dialog is being used for the visualization of the data.

#### Rendering Mode

In order to visualize data of the function  $y = f(x)$ , there are two signals necessary. One is defining the value on the x-axis and the second is defining the value on the y-axis.

The rendering mode can be used in order to configure how the to-be-displayed value shall be calculated.

Rendering Mode	Description
Default	This setting keeps the default value for the rendering mode of the data.
Average Value	When the rendering mode is set to "Average Value", the arithmetic average value is taken as value for the visualization (for both axes).
Minimal and Maximal Value (x-Axis)	<p>When the rendering mode is set to "Minimal and Maximal Value (x-Axis)", the following values are calculated for each calculation interval:</p> <ul style="list-style-type: none"> <li>• smallest value of the x-axis data</li> <li>• biggest value of the x-axis data</li> <li>• average value of the y-axis data</li> </ul> <p>In the visualization (and in case the line type is set to "Solid"), a horizontal line is drawn from the smallest to the biggest x-value at the vertical position of the y-value. In order to connect two calculation intervals, a line is drawn from the previous center of the horizontal line to the next center of the horizontal line.</p>
Minimal and Maximal Value (y-Axis)	<p>When the rendering mode is set to "Minimal and Maximal Value (y-Axis)", the following values are calculated for each calculation interval:</p> <ul style="list-style-type: none"> <li>• average value of the x-axis data</li> <li>• smallest value of the y-axis data</li> <li>• biggest value of the y-axis data</li> </ul> <p>In the visualization (and in case the line type is set to "Solid"), a vertical line is drawn from the smallest to the biggest y-value at the horizontal position of the x-value. In order to connect two calculation intervals, a line is drawn from the previous center of the vertical line to the next center of the vertical line.</p>

### 2.2.6.12.3 Menu Bar

Menu Button	Description
Restore Defaults	Sets all styles back to their default settings.
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the styles within the dialog have been changed.



## 2.2.6.13 Select Style Dialog

### 2.2.6.13.1 Overview

The following screenshot shows an example of a **Select Style** dialog:

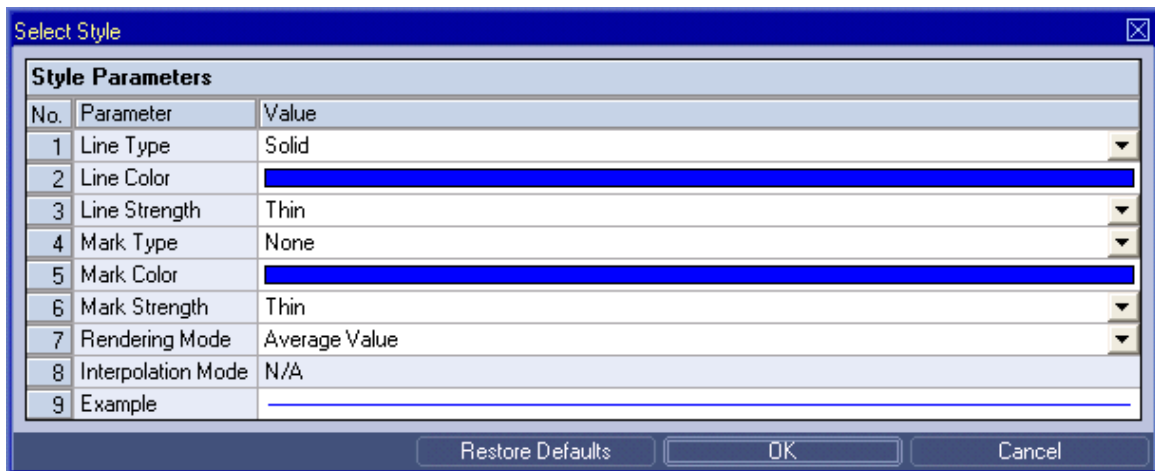


Figure 111: Example of a **Select Style** Dialog of a **MTC yx T001**

The functionality of the **Select Style** dialog matches the functionality of the **Data Style** dialog (see point 2.2.6.12).

## 2.2.6.14 Manual scale x-Axis Dialog

### 2.2.6.14.1 Overview

The following screenshot shows an example of a **Manual scale x-Axis** dialog:

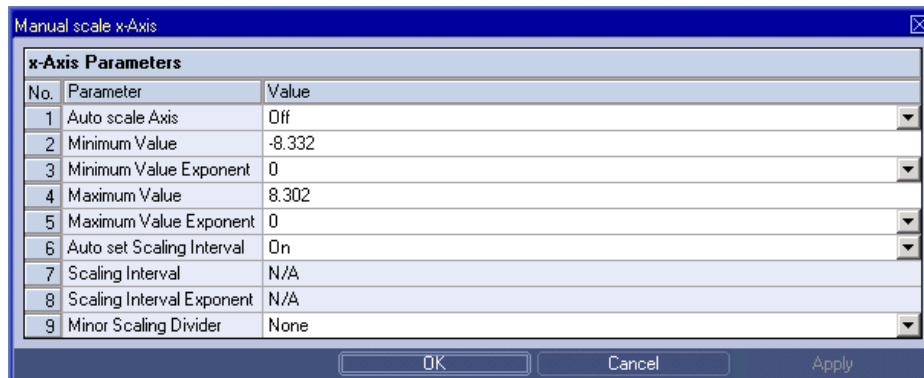


Figure 112: Example of a **Manual scale x-Axis** Dialog of a **MTC yx T001**

### 2.2.6.14.2 x-Axis Parameters Table

The **x-Axis Parameters** table contains the parameters of a currently selected x-axis:

Parameter	Description
Auto scale Axis	allows to switch between the available auto scale axis modes
Minimum Value	allows to enter the minimum value of the scaling
Minimum Value Exponent	allows to switch between the supported minimum value exponents
Maximum Value	allows to enter the maximum value of the scaling
Maximum Value Exponent	allows to switch between the supported maximum value exponents
Auto set Scaling Interval	allows to switch between the available modes for the automatic scaling interval
Scaling Interval	allows to enter the scaling interval
Scaling Interval Exponent	allows to switch between the supported scaling interval exponents
Minor Scaling Divider	allows to switch between the available minor scaling dividers

#### Auto scale Axis

Auto scale Axis	Description
On	In this mode, the <b>MTC yx T001</b> constantly sets the scaling of the x-axis so that all available values of the data at the x-axis stay visible.
Off	In this mode, the <b>MTC yx T001</b> uses the specified <b>Minimum Value</b> and <b>Maximum Value</b> parameters for the scaling of the x-axis.

#### Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the <b>MTC yx T001</b> constantly sets the scaling interval of the x-axis according to the currently displayed value interval.
Off	In this mode, the <b>MTC yx T001</b> uses the specified <b>Scaling Interval</b> and <b>Scaling Interval Exponent</b> parameters for the scaling interval of the x-axis. In case the specified parameters would lead to overlapping numbers, the automatic scaling interval is being used automatically until the specified parameters allow a valid scaling again.

### 2.2.6.14.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

## 2.2.6.15 Manual scale y-Axis Dialog

### 2.2.6.15.1 Overview

The following screenshot shows an example of a **Manual scale y-Axis** dialog:

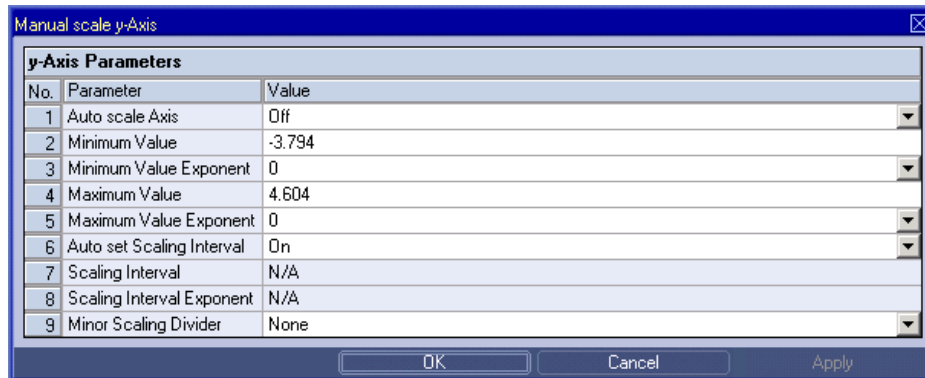


Figure 113: Example of a **Manual scale y-Axis** Dialog of a **MTC yx T001**

### 2.2.6.15.2 y-Axis Parameters Table

The **y-Axis Parameters** table contains the parameters of a currently selected y-axis:

Parameter	Description
Auto scale Axis	allows to switch between the available auto scale axis modes
Minimum Value	allows to enter the minimum value of the scaling
Minimum Value Exponent	allows to switch between the supported minimum value exponents
Maximum Value	allows to enter the maximum value of the scaling
Maximum Value Exponent	allows to switch between the supported maximum value exponents
Auto set Scaling Interval	allows to switch between the available modes for the automatic scaling interval
Scaling Interval	allows to enter the scaling interval
Scaling Interval Exponent	allows to switch between the supported scaling interval exponents
Minor Scaling Divider	allows to switch between the available minor scaling dividers

#### Auto scale Axis

Auto scale Axis	Description
On	In this mode, the <b>MTC yx T001</b> constantly sets the scaling of the y-axis so that all available values of the data at the y-axis stay visible.
Off	In this mode, the <b>MTC yx T001</b> uses the specified <b>Minimum Value</b> and <b>Maximum Value</b> parameters for the scaling of the y-axis.

#### Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the <b>MTC yx T001</b> constantly sets the scaling interval of the y-axis according to the currently displayed value interval.
Off	In this mode, the <b>MTC yx T001</b> uses the specified <b>Scaling Interval</b> and <b>Scaling Interval Exponent</b> parameters for the scaling interval of the y-axis. In case the specified parameters would lead to overlapping numbers, the automatic scaling interval is being used automatically until the specified parameters allow a valid scaling again.

### 2.2.6.15.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.6.16 Manual scale Renderer Dialog

#### 2.2.6.16.1 Overview

The following screenshot shows an example of a **Manual scale Renderer** dialog:

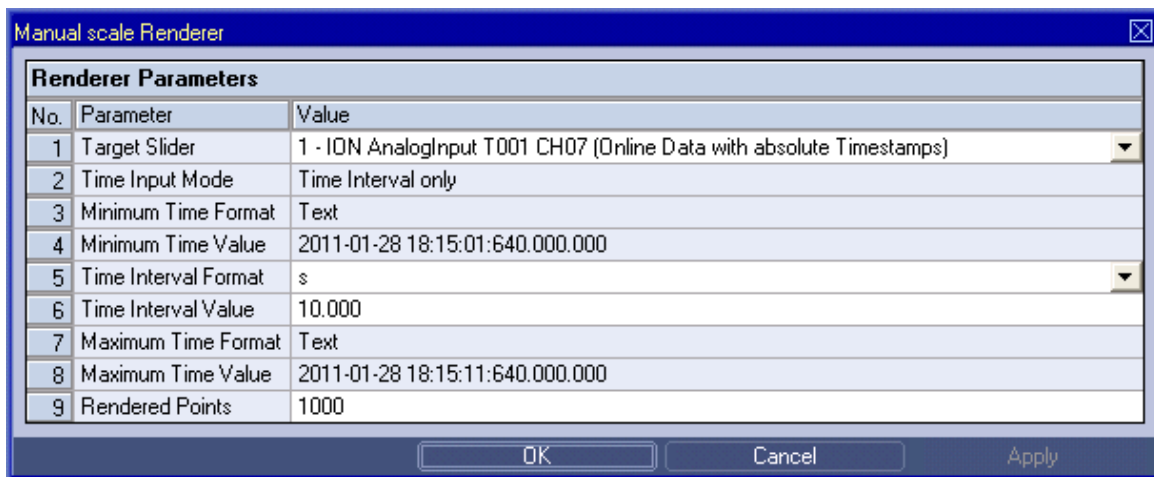


Figure 114: Example of a **Manual scale Renderer** Dialog of a **MTC yx T001**

#### 2.2.6.16.2 Renderer Parameters Table

The **Renderer Parameters** table contains the rendering parameters of a currently selected slider:

Parameter	Description
Target Slider	allows to switch between the available sliders
Time Input Mode	allows to switch between the available time input modes
Minimum Time Format	allows to switch between the available input formats for the minimum time
Minimum Time Value	allows to enter the minimum time of the scaling
Time Interval Format	allows to switch between the available input formats of the time interval
Time Interval Value	allows to enter the time interval of the scaling
Maximum Time Format	allows to switch between the available input formats for the maximum time
Maximum Time Value	allows to enter the maximum time of the scaling
Rendered Points	allows to enter the number of points which shall be calculated by the renderer for the current time interval of interest

### 2.2.6.16.3 Menu Bar

Menu Button	Description
OK	Closes the dialog and takes over all user inputs.
Cancel	Closes the dialog and discards all user inputs.
Apply	Takes over all user inputs without closing the dialog. This control is enabled only in case the settings within the dialog have been changed.

### 2.2.6.17 Drag&Drop sensitive Areas

The following screenshot shows the places within a **MTC yx T001** onto which data can be dropped in order to open a new **Monitoring Chart**:

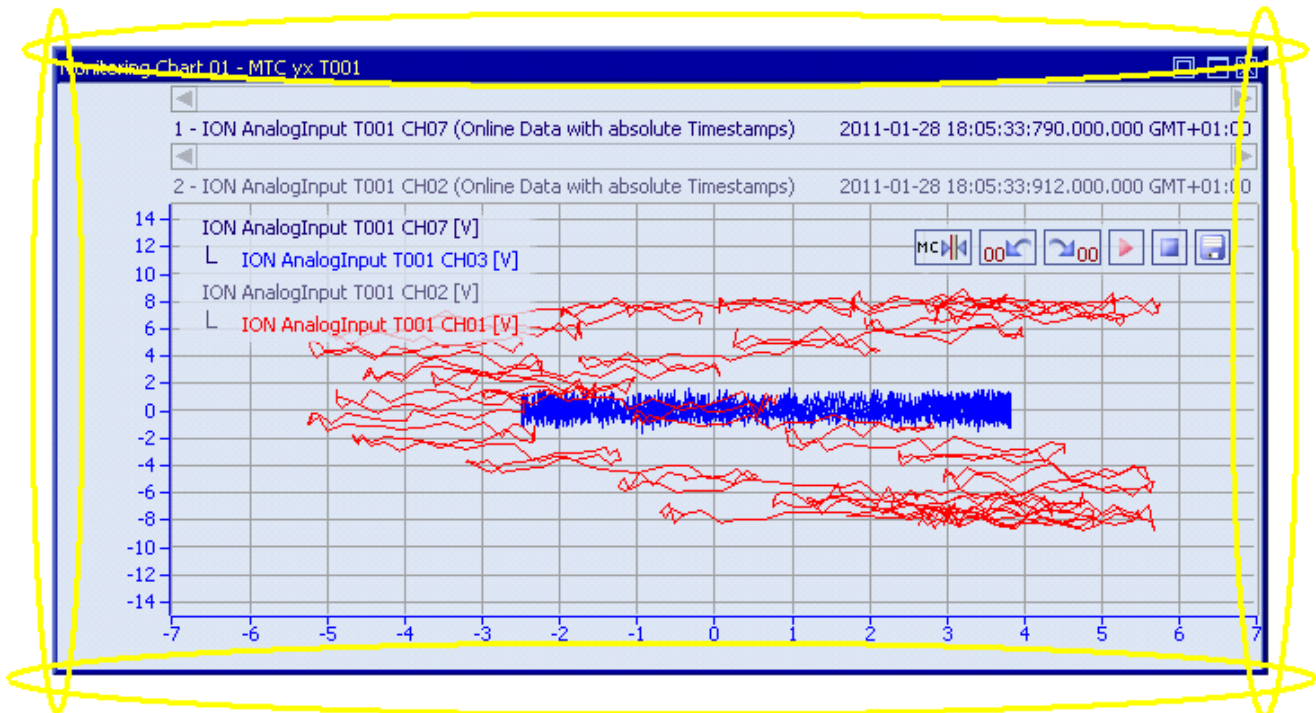


Figure 115: Dropping of Data in order to open a new **Monitoring Chart**

The following screenshot shows the places within a **MTC yx T001** onto which data can be dropped in order to add the data to the existing **MTC yx T001**:

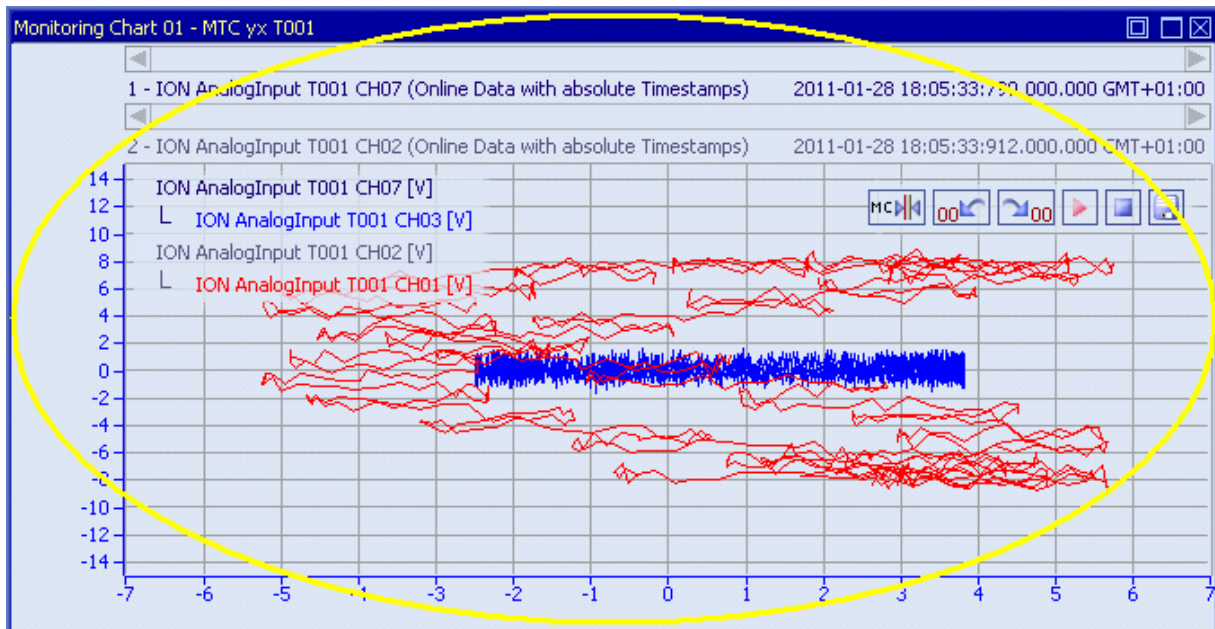


Figure 116: Dropping of Data in order to add it to the existing **MTC yx T001**

## 2.3 Monitoring View Editors

### 2.3.1 Overview

**Monitoring View Editors** are used in order to edit Monitoring Views. A Monitoring View contains one or more **Monitoring Charts** which are used in order to visualize their contained data. Depending to the **Monitoring View Editor**, one ore multiple **Monitoring Charts** can be put into one Monitoring View and different **Monitoring Charts** may or may not be allowed to be used simultaneously.

**Monitoring View Editors** are known and accessed exclusively by the **X-Tools Client**, the **X-Tools Server** has no knowledge about **Monitoring View Editors** at all. However, the **X-Tools Server** is responsible to maintain Monitoring View Files and therefore all Monitoring View reading and writing operations are performed via the **X-Tools Server**.

### 2.3.2 Common Controls

#### 2.3.2.1 Overview

As all **Monitoring View Editors** are built up in a similar way, they share some common controls (e.g. tables and the menu bar) which are the same in all **Monitoring View Editors**.

Each control of a **Monitoring View Editor** has a defined task and provides certain functionalities. The following major controls are provided by the **Monitoring View Editors**. Depending to the **Monitoring View Editor**, one or more parts may not be supported (because they are not needed) and one or more parts may be present in addition to the following ones (because they are necessary):

- Monitoring View Settings Table
- Menu Bar

#### 2.3.2.2 Monitoring View Settings Table

The **Monitoring View Settings** table contains all of the view-dependent settings which can be configured within a Monitoring View:

Parameter	Description
Target Name	contains the name of the target to which the Monitoring View is stored
Storage Path	contains the path to which the Monitoring View is stored (absolute or symbolic path)
Creation Date	contains the creation date of the Monitoring View
Modification Date	contains the last modification date of the Monitoring View
View Description	contains the description of the Monitoring View
Company Name	contains the company name
Author Name	contains the author name

#### Target Name

All of the information about the **Target Name** and **Storage Path** is set up within the **Save As** dialog.

### 2.3.2.3 Menu Bar

Menu Button	Description
New	This button creates a new, empty Monitoring View and initializes the <b>Monitoring View Settings</b> table with the default values for new Monitoring Views.  In case there is a Monitoring View opened already, it is closed automatically before the new one is being created.
Open...	This button opens the <b>Open</b> dialog where the user is able to select the file which shall be opened.
Save	This button saves the currently opened Monitoring View to the currently known storage location. In case the storage location has not been defined yet, the <b>Save As</b> dialog is popping up automatically and the user is able to select the desired storage location.
Save As...	This button opens the <b>Save As</b> dialog where the user is able to select the desired storage location.
Close	This button closes the editor. In case the currently opened Loading Profile is not saved, the editor asks the user whether the Loading Profile shall be saved before it is closed.

### 2.3.3 MVE Standard T001

#### 2.3.3.1 Overview

The **MVE Standard T001** is used in order to visualize, create and edit Monitoring Views of type “Standard T001”, where each Monitoring View can contain one or multiple **Monitoring Charts**. Multiple editors of this type can be opened and used simultaneously.

The following screenshot shows an example of a **MVE Standard T001**:

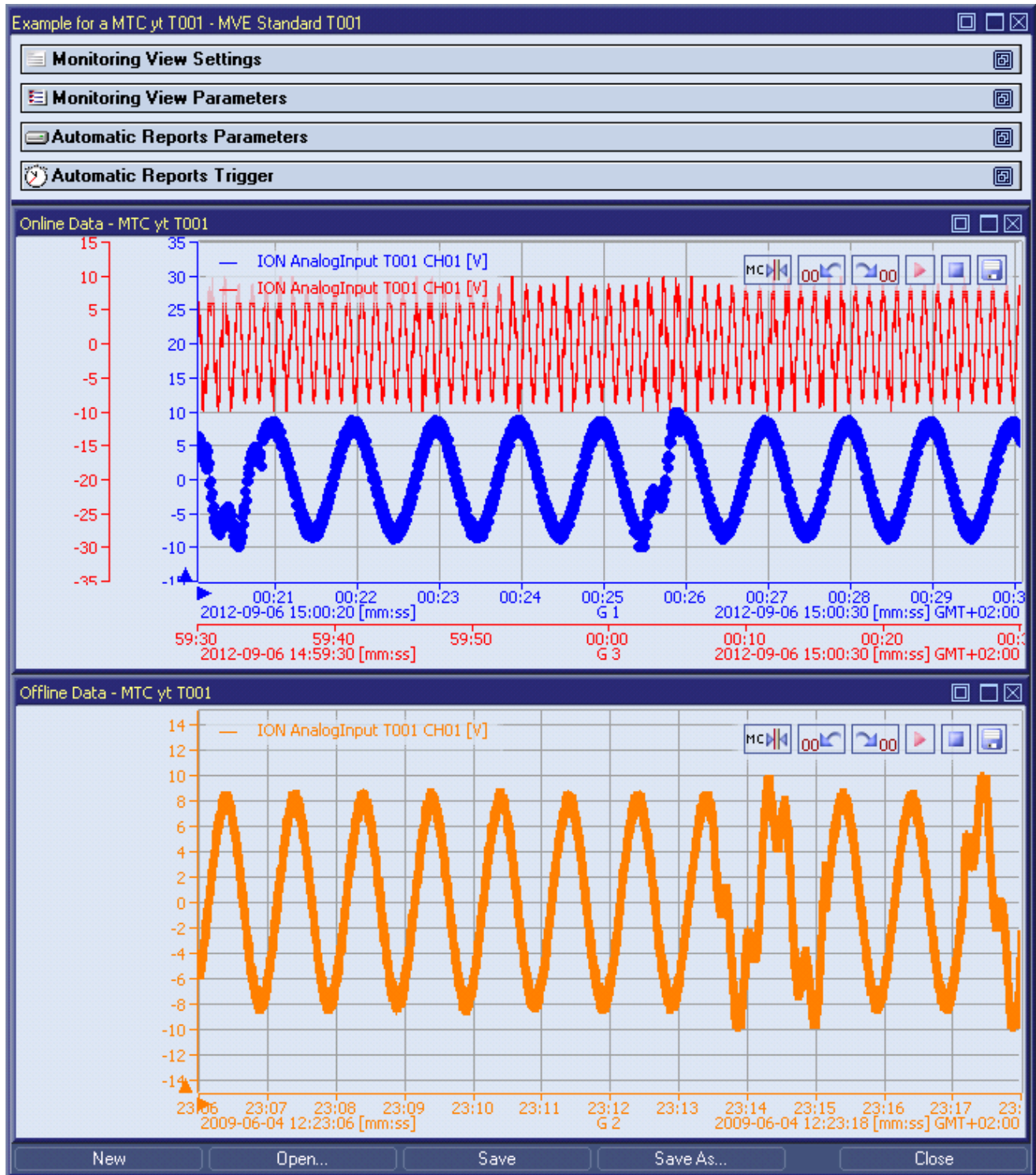


Figure 117: Example of a MVE Standard T001



Each control of the **MVE Standard T001** has a defined task and provides certain functionalities. The following major controls are provided by the **MVE Standard T001**:

- Monitoring View Settings Table
- Monitoring View Parameters Table
- Automatic Reports Parameters Table
- Automatic Reports Trigger Table
- Action Area
- Cursor Area
- Menu Bar
- Dropping of Items

### 2.3.3.2 Monitoring View Settings Table

The standard **Monitoring View Settings** table is being used by the **MVE Standard T001** (see point 2.3.2.2).

### 2.3.3.3 Monitoring View Parameters Table

The **Monitoring View Parameters** table contains all of the view-dependent parameters which can be configured within a Monitoring View:

Parameter	Description
Time Domain	allows to choose the time domain
Time Base	allows to choose the time base
Keep Width of Curve Areas synchronized	allows to configure whether the width of <b>Curve Areas</b> shall be synchronized
Keep Cursors synchronized	allows to configure whether the position of cursors shall be synchronized

#### Time Domain

The **Time Domain** cell displays the time domain which is currently being used by all t-axes of all **Monitoring Charts** of the **MVE Standard T001**. In case more than one time domain is being used currently, the **Time Domain** cell stays empty.

When another time domain is being chosen via the **Time Domain** cell, the chosen time domain is applied to all of the t-axes within the **MVE Standard T001** and to all of its **Monitoring Charts**. As a result, all t-axes use the data with the known name and specified time domain for their visualization. In case there is no data with the known name and matching time domain, the affected data becomes marked as not present.

#### Time Base

The **Time Base** cell displays the time base which is currently being used by all t-axes of all **Monitoring Charts** of the **MVE Standard T001**. In case more than one time base is being used currently, the **Time Base** cell stays empty.

When another time base is being chosen via the **Time Base** cell, the chosen time base is applied to all of the t-axes within the **MVE Standard T001** and to all of its **Monitoring Charts**. As a result, all t-axes use the specified time base for their visualization.

In case online data is being displayed and the option "Use the local Time of the Offline Data" is being chosen, the time base for all online data is automatically set to "Use the local time of the Server".

**Keep Width of Curve Areas synchronized**

Keep Width of Curve Areas synchronized	Description
Yes	<p>In case this parameter is set to “Yes”, the width of the <b>Curve Area</b> of all compatible <b>Monitoring Charts</b> is kept aligned so that the width of the <b>Curve Area</b> of all compatible <b>Monitoring Charts</b> always is identical:</p> <ul style="list-style-type: none"> <li>• whenever a y-axis is being added/removed/shown/hidden within any of the present, compatible <b>Monitoring Charts</b>, the width of the <b>Curve Area</b> of all compatible <b>Monitoring Charts</b> is being recalculated and updated</li> <li>• the width of the <b>Curve Areas</b> of all compatible <b>Monitoring Charts</b> is defined by the <b>Monitoring Charts</b> which shows the most y-axes at the moment, because the width of the <b>Curve Areas</b> of all compatible <b>Monitoring Charts</b> is being set to the width of this <b>Monitoring Charts</b> (= the smallest present width of a present <b>Curve Area</b>)</li> <li>• in addition to the width, also the horizontal position of all <b>Curve Areas</b> is identical (all <b>Curve Areas</b> start from the right border of their <b>Monitoring Charts</b>)</li> <li>• the y-axes of each <b>Monitoring Charts</b> start directly at the left of the <b>Curve Area</b> (not at the left border of the <b>Monitoring Charts</b>)</li> <li>• the following <b>Monitoring Charts</b> are compatible to this setting: <ul style="list-style-type: none"> <li>○ MTC yt T001</li> <li>○ MTC yn T001</li> </ul> </li> </ul> <p>When this setting is being turned on, the <b>MVE Standard T001</b> automatically sets the widths of all present columns (of <b>Monitoring Charts</b>) to an equal width. While this setting is being turned on, it is not possible to change the width of the present columns.</p>
No	<p>In case this parameter is set to “No”, each <b>Monitoring Chart</b> calculates the width of its <b>Curve Area</b> separately and without considering of the other, possible present <b>Monitoring Charts</b>.</p>

## Keep Cursors synchronized

Keep Cursors synchronized	Description
Yes	<p>In case this parameter is set to "Yes", the cursors of all compatible <b>Monitoring Charts</b> are kept aligned so that moving and turning on/off of a cursor within one <b>Monitoring Chart</b> is being propagated to all related <b>Monitoring Chart</b> automatically:</p> <ul style="list-style-type: none"> <li>• whenever a cursor is being moved within one <b>Monitoring Chart</b>, the position of the cursor in time is being propagated to all t-axis of matching groups (within the other present <b>Monitoring Charts</b>) <ul style="list-style-type: none"> <li>○ this is valid for all t-axes groups within the <b>Monitoring Chart</b> within which the cursor is being moved</li> <li>○ the cursors of all <b>Monitoring Chart</b> are being updated immediately when the cursor is being moved (not only at the end of the moving operation)</li> </ul> </li> <li>• in case the cursors are being turned on/off within one <b>Monitoring Chart</b>, the cursors also are being turned on/off within all other <b>Monitoring Charts</b> which contain t-axes of matching groups</li> <li>• example 1 <ul style="list-style-type: none"> <li>○ <b>Monitoring Chart 1</b> contains the t-axes group G1</li> <li>○ <b>Monitoring Chart 2</b> contains the t-axes groups G1 and G2</li> <li>○ <b>Monitoring Chart 3</b> contains the t-axes groups G2 and G3</li> <li>○ when the cursor is being moved within <b>Monitoring Chart 1</b>, the cursors within <b>Monitoring Chart 2</b> are being moved automatically <ul style="list-style-type: none"> <li>▪ the position of the moved cursor within <b>Monitoring Chart 2</b> is synchronized via G1 - thus, the cursor within <b>Monitoring Chart 2</b> is being moved to the same position in time at G1 as the user has moved the cursor within <b>Monitoring Chart 1</b></li> </ul> </li> <li>○ the cursors within <b>Monitoring Chart 3</b> are not being touched by this moving because <b>Monitoring Chart 3</b> does not have any common t-axis with <b>Monitoring Chart 1</b></li> </ul> </li> <li>• example 2 <ul style="list-style-type: none"> <li>○ the same <b>Monitoring Chart</b> and groups like in example 1 are present</li> <li>○ the user turns on the cursors within <b>Monitoring Chart 1</b>, which turns the cursors on automatically in <b>Monitoring Chart 2</b> (but not in <b>Monitoring Chart 3</b>)</li> <li>○ afterwards the user turns on the cursors within <b>Monitoring Chart 3</b>, which again turns on the cursors within <b>Monitoring Chart 2</b> (it does not turn them off there)</li> <li>○ if the user finally would turn off the cursors within <b>Monitoring Chart 2</b>, the cursors automatically also turn off in <b>Monitoring Chart 1</b> and <b>Monitoring Chart 3</b></li> </ul> </li> <li>• the following <b>Monitoring Charts</b> are compatible to this setting: <ul style="list-style-type: none"> <li>○ MTC yt T001</li> </ul> </li> </ul>
No	<p>In case this parameter is set to "No", the cursors can be moved and turned on/off within each <b>Monitoring Chart</b> separately. Moving or turning on/off of the cursors is not being propagated to other <b>Monitoring Charts</b> in this case.</p>

### 2.3.3.4 Automatic Reports Parameters Table

The **Automatic Reports Parameters** table contains all of the parameters which can be configured for the automatic reports:

Parameter	Description
Width	contains the width, in pixels, which the created report shall have
Height	contains the height, in pixels, which the created report shall have
Target Location	contains the location to which the reports shall be stored

### 2.3.3.5 Automatic Reports Trigger Table

The **Automatic Reports Trigger** table contains all of the parameters which are relevant for the triggers of automatic reports:

Parameter	Description
Trigger Mode	contains the trigger mode
Time Domain	contains the time domain of the data onto which shall be triggered
Trigger Data Name	contains the name of the data onto which shall be triggered
Trigger Type	contains the trigger type
Threshold Type	contains the threshold type
Interval Type	contains the interval type
Threshold Value	contains the threshold value
Lower Limit	contains the lower limit of the interval
Upper Limit	contains the upper limit of the interval
Hysteresis Value	contains the hysteresis value
Capture Delay Format	contains the capture delay format
Capture Delay Value	contains the capture delay value

#### Trigger Mode

Trigger Mode	Description
Once	In this trigger mode, the trigger is creating the report only once. Thus, the Monitoring View is stopped completely after the first report has been created.
Repeating	In this trigger mode, the Monitoring View is continuing to trigger after each created report and may create reports infinite times.

#### Trigger Data Name

The desired trigger data either can be set through Drag&Drop from the **MDS Explorer** or through typing of its name by hand.

#### Trigger Type

Trigger Type	Description
Threshold	In case of this trigger type, the trigger is waiting until the specified threshold is reached.
Interval	In case of this trigger type, the trigger is waiting until the specified interval is reached.

#### Threshold Type

Threshold Type	Description
Rising Edge with Threshold	In case of this threshold type, the trigger is waiting until a rising edge above the specified threshold is detected.
Falling Edge with Threshold	In case of this threshold type, the trigger is waiting until a falling edge below the specified threshold is detected.
Value > Threshold	In case of this threshold type, the trigger is waiting until a value which is bigger than the specified threshold is detected.
Value < Threshold	In case of this threshold type, the trigger is waiting until a value which is lower than the specified threshold is detected.

#### Interval Type

Interval Type	Description
Join Interval	In case of this interval type, the trigger is waiting until the specified interval is joined.
Leave Interval	In case of this interval type, the trigger is waiting until the specified interval is left.
Inside Interval	In case of this interval type, the trigger is waiting until a value inside the interval is detected.
Outside Interval	In case of this interval type, the trigger is waiting until a value outside the interval is detected.

### 2.3.3.6 Action Area

The **Action Area** contains all of the **Monitoring Charts** of the current Monitoring View. Each present **Monitoring Chart** can be configured individually or synchronized with other **Monitoring Charts** within the same Monitoring View. Via Drag&Drop, additional **Monitoring Charts** and additional data can be dragged into the Monitoring View.

The **Monitoring Charts** within a Monitoring View can be arranged like all other windows of the *X-Tools Client* within their according parent windows.

### 2.3.3.7 Cursor Area

Each cursor table is represented within the **Cursor Area** via a separated table. There may be multiple cursor tables present in case **Monitoring Charts** of different type are present within the **Action Area**.

A detailed description of the cursor table of each **Monitoring Chart** is found together with the description of each **Monitoring Chart**.

### 2.3.3.8 Menu Bar

The standard **Menu Bar** is being used by the **MVE Standard T001** (see point 2.3.2.3).

### 2.3.3.9 Dropping of Items

Dropped Item	Description
Monitoring View File Branches of type "MVF Standard T001"	opens the dropped Monitoring View
Monitoring Chart Branches	adds the dropped <b>Monitoring Chart</b> to the <b>Action Area</b> of the <b>MVE Standard T001</b>
Offline Data Branches	opens a new <b>Monitoring Chart</b> of matching type for the dropped offline data
Online Data Branches	opens a new <b>Monitoring Chart</b> of matching type for the dropped online data

## 3 Contact Information

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