SIEMENS

SIPLUS CMS

SIPLUS CMS4000 X-Tools

User Manual - 05 - Monitoring System

English

Release 2011-09

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.

Caution

Used without safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

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.

Trademarks

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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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Siemens AG 2011
Technical data subject to change

English
Release 2011-09

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1 Preface

1.1 Purpose of this Document

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

- SIPLUS CMS4000 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 CMS4000 X-Tools - User Manual - 01 - Introduction
  - provides an introduction into the basic functionalities of SIPLUS CMS4000 ***X-Tools***
- SIPLUS CMS4000 X-Tools - User Manual - 02 - Master Data System
  - provides detailed information about the functionality which is provided by the **Master Data System**
- SIPLUS CMS4000 X-Tools - User Manual - 03 - Main Management System
  - provides detailed information about the functionality which is provided by the **Main Management System**
- SIPLUS CMS4000 X-Tools - User Manual - 04 - Device Management System
  - provides detailed information about the functionality which is provided by the **Device Management System**
- SIPLUS CMS4000 X-Tools - User Manual - 06 - Analyzing System
  - provides detailed information about the functionality which is provided by the **Analyzing System**
- SIPLUS CMS4000 X-Tools - User Manual - 07 - Storage System
  - provides detailed information about the functionality which is provided by the **Storage System**
- SIPLUS CMS4000 X-Tools - Release Notes
  - provides additional information about the released version of SIPLUS CMS4000 ***X-Tools***
- SIPLUS CMS4000 X-Tools - Change Log
  - provides an overview about the changes which have been introduced with the current version of SIPLUS CMS4000 ***X-Tools***

1.2 Validity of this Document

This document is valid for the following software:

- SIPLUS CMS4000 X-Tools Demo V 03.04
- SIPLUS CMS4000 X-Tools Standard V 03.04
- SIPLUS CMS4000 X-Tools Professional V 03.04

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**:

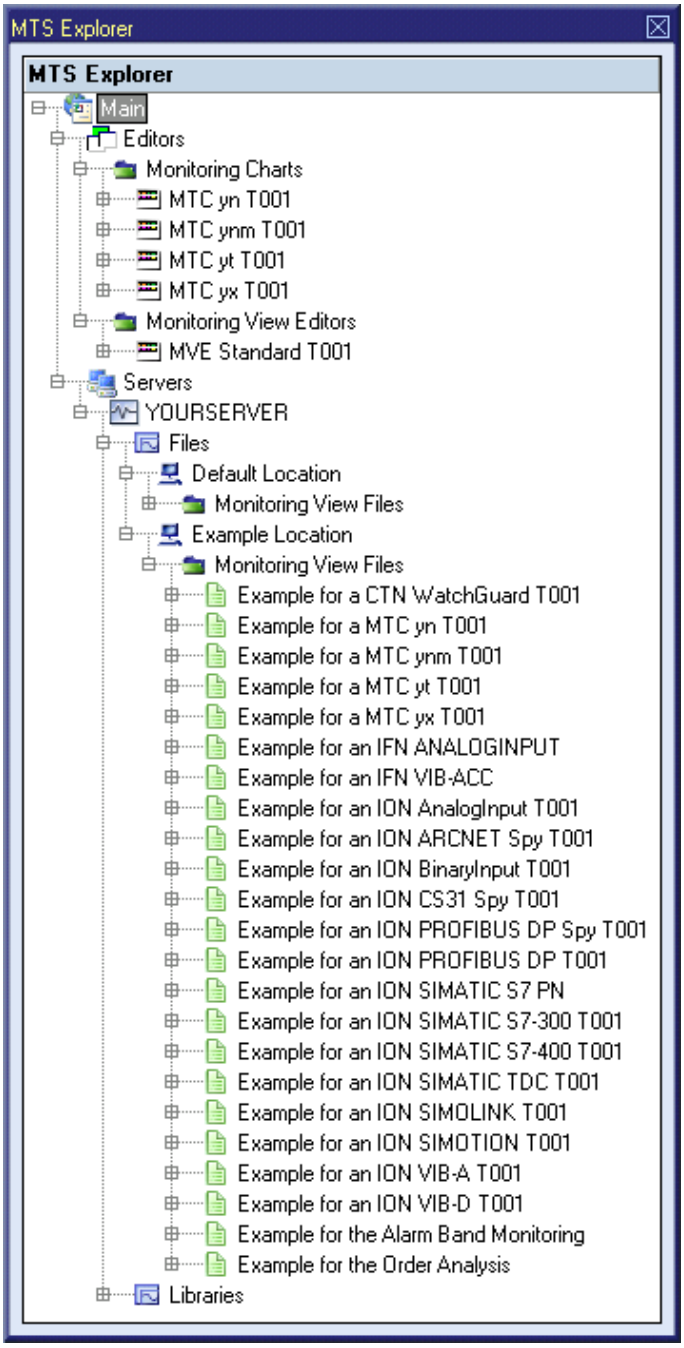


*Figure 1: Example of a **MTS Explorer***

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 **Monitoring View Editor** within the **Monitoring System** workspace, creates a new Monitoring View, initializes it with default values and opens an empty **Monitoring Chart** of the chosen type within the new Monitoring View
New Monitoring View > …	opens a **Monitoring View Editor** within the **Monitoring System** workspace, creates a new Monitoring View, initializes it with default values and opens an empty **Monitoring Chart** 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 **Monitoring Editor** of the chosen type within the **Monitoring System** workspace
New Monitoring View > …	opens a **Monitoring View Editor** of the chosen type within the **Monitoring System** 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 **Add Location** 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 ***X-Tools*** 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.

The following specific context menu items are provided:

Context Menu Item	Description
New Monitoring View > …	opens a **Monitoring View Editor** of the chosen type within the **Monitoring System** workspace, creates a new Monitoring View and initializes it with default values
Edit	opens a new **Monitoring View Editor** for the chosen file within the **Monitoring System** 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 **MTS Explorer**
New Directory…	opens the **Add Directory** dialog and creates a new directory afterwards

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 **Monitoring View Editor** within the **Monitoring System** workspace, creates a new Monitoring View, initializes it with default values and opens an empty **Monitoring Chart** of the chosen type within the new Monitoring View

2.2 Monitoring Charts

2.2.1 MTC yt T001

2.2.1.1 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**:

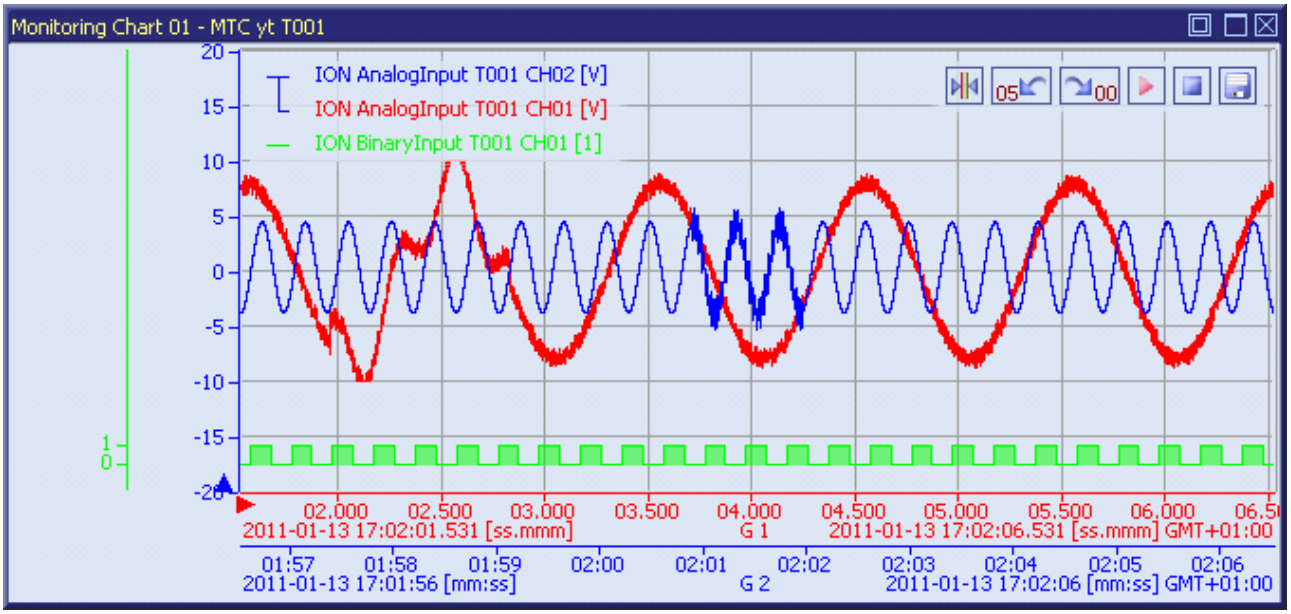


*Figure 2: Example of a **MTC yt T001***

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
- Cursor 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

2.2.1.2 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**:

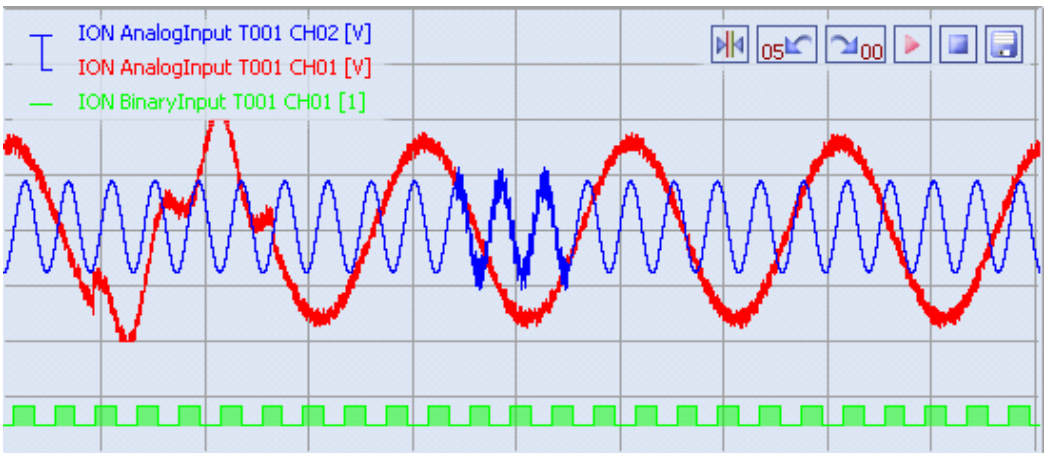


*Figure 3: Example of the Curve Area of a **MTC yt T001***

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	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:
	• [left mouse button down] + [mouse move] zooms into the specified area of the t- and y-axes simultaneously
	• <Shift> + [left mouse button down] + [mouse move] zooms only into the specified area of the t-axes
	  o <x> + [left mouse button down] + [mouse move] behaves like <Shift> + [left mouse button down] + [mouse move]
	• <Ctrl> + [left mouse button down] + [mouse move] zooms only into the specified area of the y-axes
	  o <y> + [left mouse button down] + [mouse move] behaves like <Ctrl> + [left mouse button down] + [mouse move]
	• <Esc> cancels the current operation without changing of any axis scaling

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 Curve Area opens the context menu for the Curve Area.
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: • [right mouse button down] + [mouse move] moves all curves within the Curve Area into the direction of the mouse move o when the <Shift> key is being pressed during the shift operation, the curves are shifted only in horizontal direction ▪ when <x> key is being pressed during the shift operation, the behavior is like if the <Shift> key is being pressed during the shift operation o when the <Ctrl> key is being pressed during the shift operation, the curves are shifted only in vertical direction ▪ when <y> key is being pressed during the shift operation, the behavior is like if the <Shift> key is being pressed during the shift operation • <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started 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.

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 Curve Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] zooms out of the current mouse position of the t- and y-axes simultaneously • [mouse wheel up] zooms into the current mouse position of the t- and y-axes simultaneously • <Shift> + [mouse wheel down] moves all curves within the Curve Area to the left o <x> + [mouse wheel down] behaves like <Shift> + [mouse wheel down] • <Shift> + [mouse wheel up] moves all curves within the Curve Area to the right o <x> + [mouse wheel up] behaves like <Shift> + [mouse wheel up] • <Ctrl> + [mouse wheel down] moves all curves within the Curve Area up o <y> + [mouse wheel down] behaves like <Ctrl> + [mouse wheel down] • <Ctrl> + [mouse wheel up] moves all curves within the Curve Area down o <y> + [mouse wheel up] behaves like <Ctrl> + [mouse wheel up] 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.

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 **MTC yt T001** become visible
Fit to Charts	sets the scaling of all **Monitoring Charts** within the parent **Monitoring View Editor** so that the complete values of all data within all **Monitoring Charts** 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 **Chart Options** dialog
Copy Chart Options	copies the options of the **MTC yt T001** below the current mouse position
Paste Chart Options	pastes the currently copied **MTC yt T001** options onto the **MTC yt T001** below the current mouse position
Chart Styles…	opens the **Chart Styles** dialog
Copy Chart Styles	copies the styles of the **MTC yt T001** below the current mouse position
Paste Chart Styles	pastes the currently copied **MTC yt T001** styles onto the **MTC yt T001** 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 Legend Area to the state which is specified via the submenu of this item
Show Toolbar > …	sets the visibility of the Toolbar Area to the state which is specified via the submenu of this item
Show t-Axes > …	sets the visibility of the t-Axes Area to the state which is specified via the submenu of this item
Show y-Axes > …	sets the visibility of the y-Axes Area 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 **MTC yt T001**

2.2.1.3 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**:

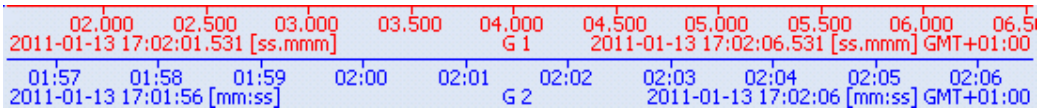


*Figure 4: Example of the t-Axes Area of a **MTC yt T001***

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	Single and multiple t-axes can be selected/deselected through a left mouse button click: • [left mouse button down] above any t-axis selects the below t-axis • <Ctrl> + [left mouse button down] is used in order to select/deselect t-axis after t-axis • <Shift> + [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 ○ in case there is no t-axis selected at the moment, only the below t-axis is selected • multiple t-axes can be selected/deselected after each other through combinations of the above methods • 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 <Shift> or <Ctrl> keys, the currently selected items of the clicked **Monitoring Chart** are deselected and the clicked t-axis becomes selected instead • in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the t-Axes Area, the currently selected items of the clicked **Monitoring Chart** are deselected
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: • [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 • [left mouse button down] + [mouse move left] zooms into the t-axis from the t position where the left mouse button has been pressed • <Esc> cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started
double click	A double click of the left mouse button onto any t-axis opens the **Manual scale t-Axis** dialog for the t-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 t-Axes Area opens the context menu for the t-Axes Area.
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: • [right mouse button down] + [mouse move right] moves the t-axis right • [right mouse button down] + [mouse move left] moves the t-axis left • <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started 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.

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 t-Axes Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the t-axis left • [mouse wheel up] moves the t-axis right • <Shift> + [mouse wheel down] zooms out of the t-axis from the current t position of the mouse cursor • <Shift> + [mouse wheel up] zooms into the t-axis from the current t position of the mouse cursor

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 t-Axes Area 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 Measurement Cursors 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 **Manual scale t-Axis** 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 **MTC yt T001**
… > 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 **MTC yt T001**

2.2.1.4 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**:

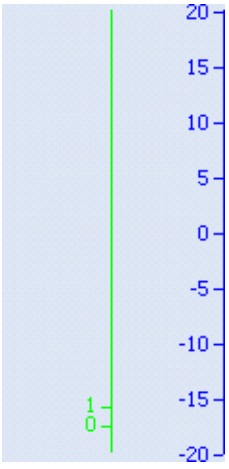


*Figure 5: Example of the y-Axes Area of a **MTC yt T001***

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	Single and multiple y-axes can be selected/deselected through a left mouse button click: • [left mouse button down] above y-axis selects the below y-axis • <Ctrl> + [left mouse button down] is used in order to select/deselect y-axis after y-axis • <Shift> + [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 ○ in case there is no y-axis selected at the moment, only the below y-axis is selected • multiple y-axes can be selected/deselected after each other through combinations of the above methods • 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 <Shift> or <Ctrl> keys, the currently selected items of the clicked **Monitoring Chart** are deselected and the clicked y-axis becomes selected instead • in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the y-Axes Area, the currently selected items of the clicked **Monitoring Chart** are deselected
single click with keeping the button	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: • [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 • [left mouse button down] + [mouse move up] zooms into the y-axis from the y position where the left mouse button has been pressed • <Esc> cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started
double click	A double click of the left mouse button onto any y-axis opens the **Manual scale y-Axis** 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 y-Axes Area opens the context menu for the y-Axes Area.
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: • [right mouse button down] + [mouse move down] moves the y-axis down • [right mouse button down] + [mouse move up] moves the y-axis up • <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started

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 y-Axes Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the y-axis up • [mouse wheel up] moves the y-axis down • <Ctrl> + [mouse wheel down] zooms out of the y-axis from the current y position of the mouse cursor • <Ctrl> + [mouse wheel up] zooms into the y-axis from the current y position of the mouse cursor

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 y-Axes Area 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 **MTC yt T001** 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 **Manual scale y-Axis** 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 **MTC yt T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC yt T001**

2.2.1.5 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**:

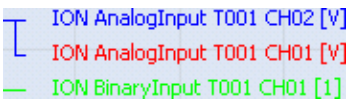


*Figure 6: Example of the Legend Area of a **MTC yt T001***

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	Selecting of data within the Legend Area is performed identically to the selecting of items within the other trees of the ***X-Tools Client***. In case a data within the Legend Area is being selected, all items of other type (e.g. t-axes and y-axes) of the clicked **Monitoring Chart** are deselected automatically.
single click with keeping the button	A single click of the left mouse button with keeping the button down onto any text within the Legend Area starts a Drag&Drop operation for the currently selected data(s) as soon as the mouse cursor is moved: • a Drag&Drop operation within the same **MTC yt T001** moves the dragged data(s) to the new position o <Ctrl> can be pressed in order to execute a copy operation instead of the move operation within the same **MTC yt T001** • a Drag&Drop operation to another **MTC yt T001** copies the dragged data(s) to the new position o <Shift> can be pressed in order to execute a move operation instead of the copy operation to the other **MTC yt T001** • <Esc> cancels the current operation without moving or copying anything
double click	A double click of the left mouse button onto any text within the Legend Area opens the **Data Style** 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 Legend Area opens the context menu for the Legend Area.
single click with keeping the button	A single click of the right mouse button with keeping the button above the Legend Area starts a shift operation for the legend texts. The actual shifting is performed when the mouse is moved: • [right mouse button down] + [mouse move down] moves the Legend Area down • [right mouse button down] + [mouse move up] moves the Legend Area up • <Esc> cancels the current operation and sets the position of the Legend Area back to the place which it had before the shift operation had been started 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.

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 **Data Style** 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 **MTC yt T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC yt T001**

2.2.1.6 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 7: 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 On/Off Cursor button	A single click of the left mouse button onto the On/Off Cursor button toggles the cursors between on and off.
single click onto the Undo button	A single click of the left mouse button onto the Undo button undoes the last operation from the undo buffer.
single click onto the Redo button	A single click of the left mouse button onto the Redo button redoes the last operation from the redo buffer.
single click onto the Continue Visualization button	A single click of the left mouse button onto the Continue Visualization button continues the visualization. This button applies to all currently present data independently to whether they are paused or running at the moment. The Continue Visualization button sets the visualization of all data of all (t and y) axes to running.
single click onto the Pause Visualization button	A single click of the left mouse button onto the Pause Visualization button pause the visualization. This button applies to all currently present data independently to whether they are paused or running at the moment. The Pause Visualization button sets the visualization of all data of all (t and y) axes to paused.
single click onto the Store Data Snapshot button	A single click of the left mouse button onto the Store Data Snapshot button starts the storing of the data which are contained within the **MTC yt T001**. While the storing is in progress, the **Storage Progress** 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 Toolbar Area opens the context menu for the Toolbar Area. 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 Cursor 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 Cursors > …	sets the visibility of measurement cursors to the state which is specified via the submenu of this item
Restore Cursors	restores the positions of the two measurement cursors so that both of them are visible at the screen again
Auto-scroll Cursors (Running) > …	sets whether the cursors of running visualizations shall scroll with the t-axis to the state which is specified via the submenu of this item
Auto-scroll Cursors (Paused) > …	sets whether the 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 **MTC yt T001**

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 **MTC yt T001**
Change Undo/Redo Buffer Size	opens the **Chart Options** dialog, sets the input focus to the Undo/Redo Buffer Size 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 **MTC yt T001**

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 **MTC yt T001**
Change Undo/Redo Buffer Size	opens the **Chart Options** dialog, sets the input focus to the Undo/Redo Buffer Size 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 **MTC yt T001**

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 **MTC yt T001**

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 **MTC yt T001**

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 **MTC yt T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC yt T001**

2.2.1.7 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**:

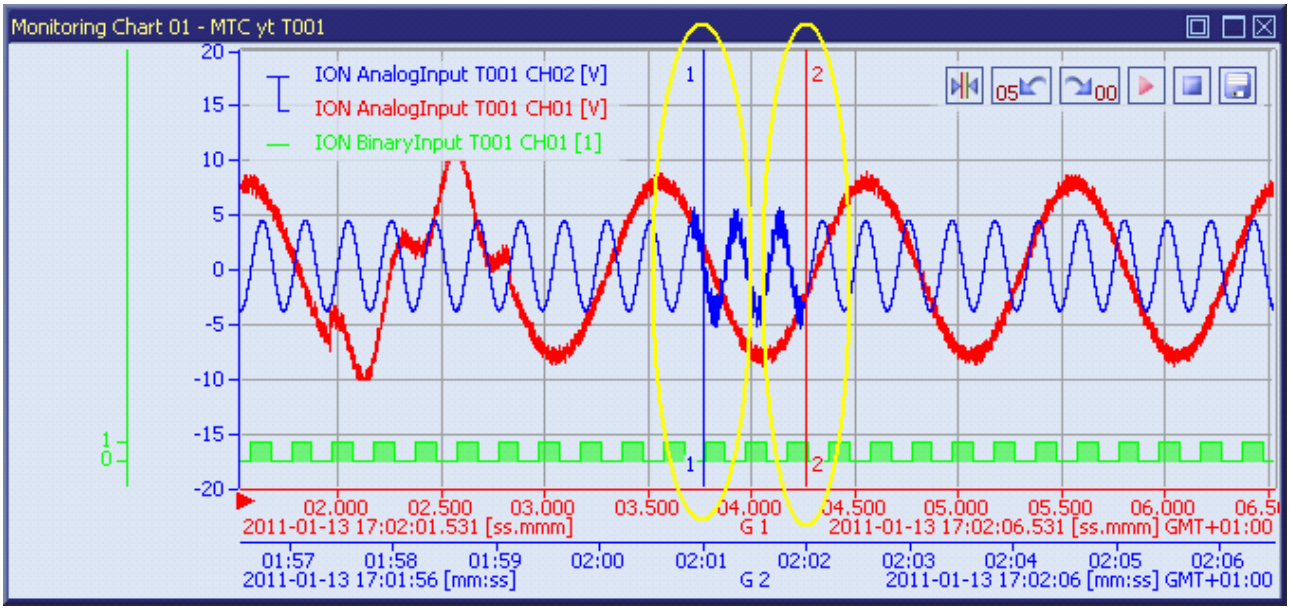


*Figure 8: Example of the Measurement Cursors of a **MTC yt T001***

Automatic Scrolling

The scrolling of the Measurement Cursors can be set to the following values via the context menu of the On/Off Cursor 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 Measurement Cursors 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 Measurement Cursors are changed in relation to the framework of the **MTC yt T001** when the t-axis is shifted or zoomed. In case multiple t-axes are present, the position in time of the Measurement Cursors stay constant in relation to the default t-axis.
No	When the Measurement Cursors are configured to keep their static position within the framework of the **MTC yt T001**, their position stays constant in relation to the framework of the **MTC yt T001** 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	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: • [left mouse button down] + [mouse move] shifts the targeted measurement cursor horizontally to the new mouse position The values which are displayed by the cursor table are updated automatically while the measurement cursor is shifted.

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	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: • [right mouse button down] + [mouse move] shifts both measurement cursors horizontally simultaneously with keeping the time interval between them The values which are displayed by the cursor table are updated automatically while the measurement cursors are shifted.

2.2.1.8 Cursor Table

The Cursor 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 Cursor Table for a **MTC yt T001**:

Cursor Table - MTC yt T001

No.	Data	Unit	T1 [Text]	Y1	T2 [Text]	Y2
1	ION AnalogInput T001 CH02	V	2011-01-13 17:02:01:008.961.612	0.345	2011-01-13 17:02:01:999.787.254	-3.004
2	ION AnalogInput T001 CH01	V	2011-01-13 17:02:03:762.521.220	2.264	2011-01-13 17:02:04:263.466.355	-2.640
3	ION BinaryInput T001 CH01	1	2011-01-13 17:02:03:762.521.220	0.000	2011-01-13 17:02:04:263.466.355	1.000

*Figure 9: Example of a Cursor 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 Cursor Table, 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 Cursor Table, 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 Cursor Table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.

2.2.1.9 Chart Options Dialog

2.2.1.9.1 Overview

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

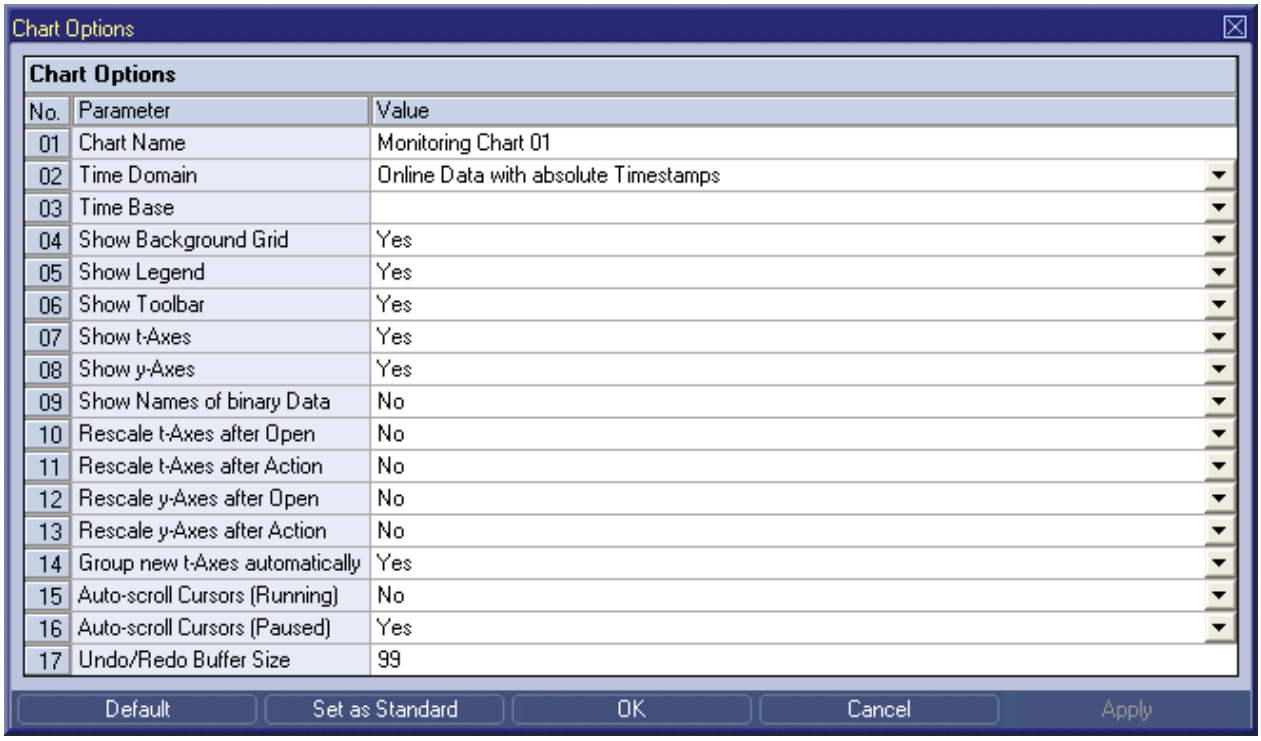


*Figure 10: Example of a **Chart Options** Dialog of a **MTC yt T001***

2.2.1.9.2 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 Curve Area
Show Legend	allows to choose whether the Legend Area shall be shown
Show Toolbar	allows to choose whether the Toolbar Area shall be shown
Show t-Axes	allows to choose whether the t-Axes Area shall be shown
Show y-Axes	allows to choose whether the y-Axes Area shall be shown
Show Names of binary Data	allows to choose whether the names of binary data shall be displayed directly within the Curve Area
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 **MTC yt T001** or after a new data has been dropped into the **MTC yt T001**
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 **MTC yt T001** or after a new data has been dropped into the **MTC yt T001**
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 **MTC yt T001**

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 **MTC yt T001** 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 **MTC yt T001** 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 **MTC yt T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC yt T001**
No	In case the rescale mode for the t-axes after an action is set to “No”, the **MTC yt T001** 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 **MTC yt T001** 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 **MTC yt T001** 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 **MTC yt T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC yt T001**
No	In case the rescale mode for the y-axes after an action is set to “No”, the **MTC yt T001** 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	In case the automatically grouping of t-axes is set to “Yes”, the **MTC yt T001** 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. 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.
No	In case the automatically grouping of t-axes is set to “No”, the **MTC yt T001** does not add a newly created t-axis to any of the possible present groups of t-axes.

2.2.1.9.3 Menu Bar

Menu Button	Description
Default	Sets all options back to their default settings.
Set as Standard	Sets the current options as standard options for each new **MTC yt T001**. The options of already existing **MTC yt T001s** 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.

2.2.1.10 Chart Styles Dialog

2.2.1.10.1 Overview

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

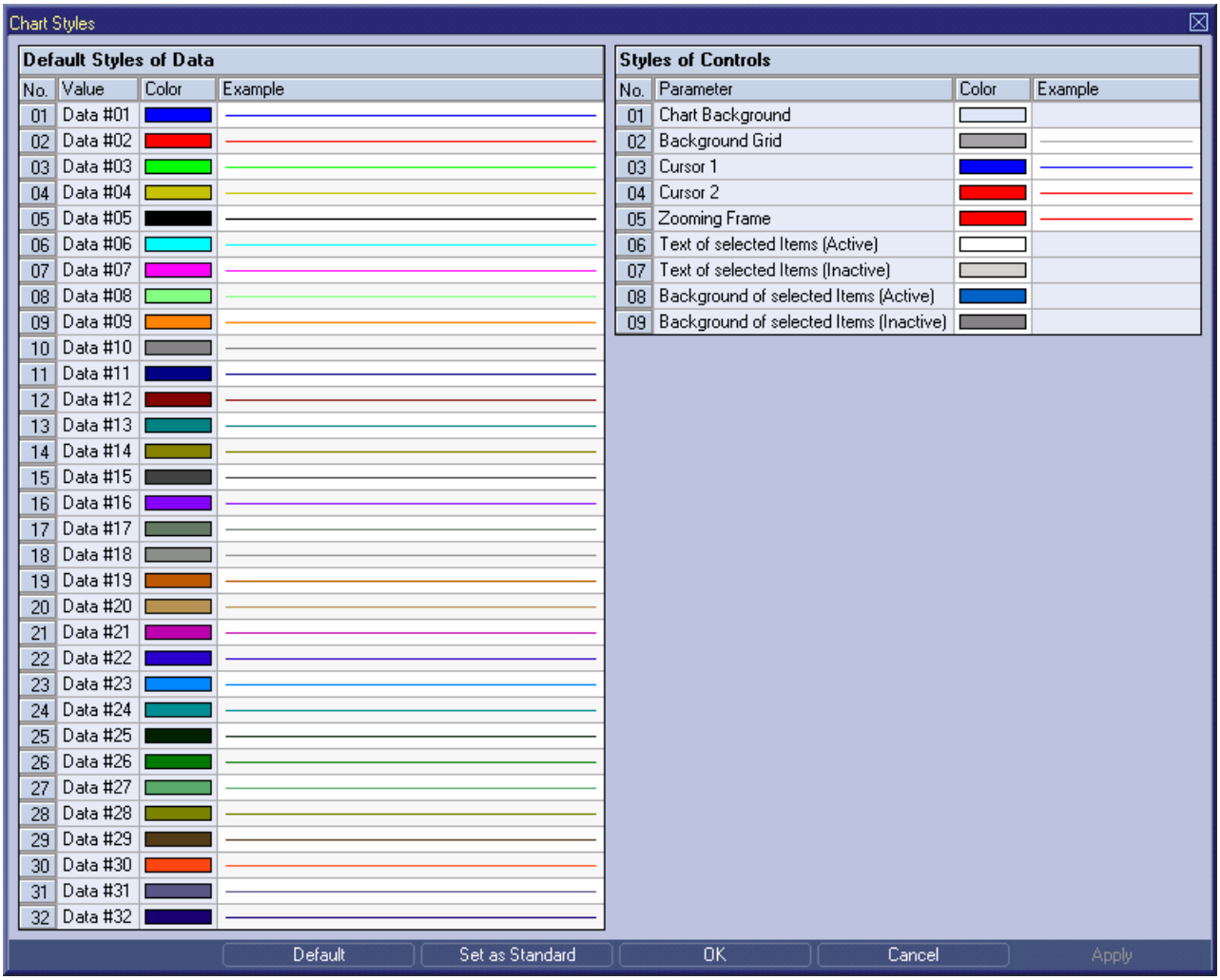


*Figure 11: Example of a **Chart Styles** Dialog of a **MTC yt T001***

2.2.1.10.2 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.

2.2.1.10.3 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.

2.2.1.10.4 Menu Bar

Menu Button	Description
Default	Sets all styles back to their default settings.
Set as Standard	Sets the current styles as standard styles for each new **MTC yt T001**. The styles of already existing **MTC yt T001s** 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.

2.2.1.11 Data Style Dialog

2.2.1.11.1 Overview

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

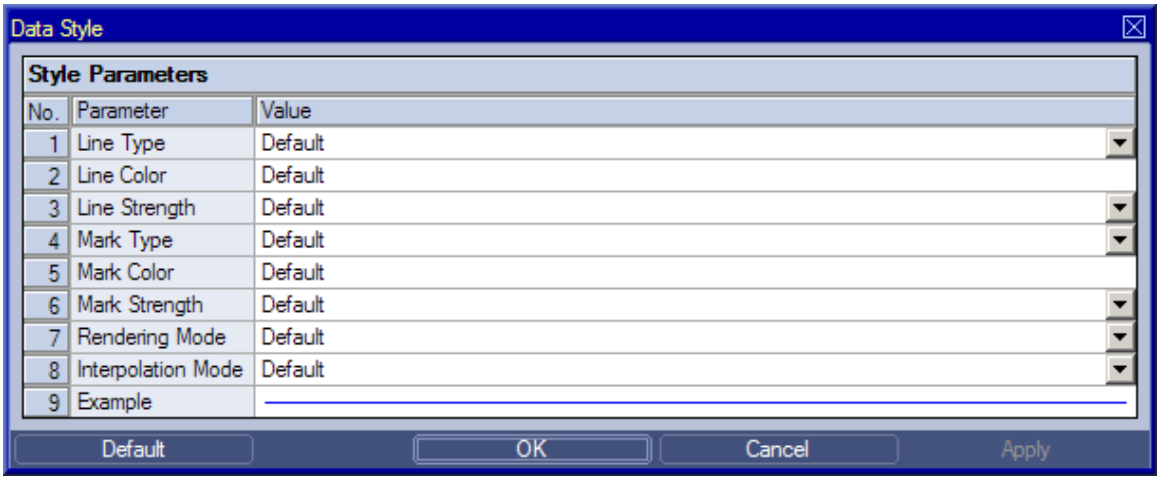


*Figure 12: Example of a **Data Style** Dialog of a **MTC yt T001***

2.2.1.11.2 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.

2.2.1.11.3 Menu Bar

Menu Button	Description
Default	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.

2.2.1.12 Select Style Dialog

2.2.1.12.1 Overview

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

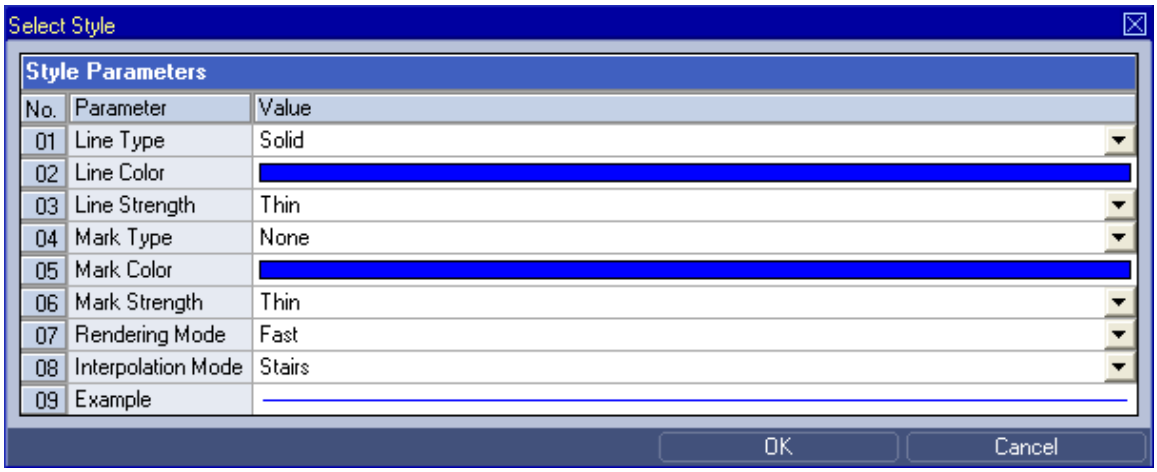


*Figure 13: Example of a **Select Style** Dialog of a **MTC yt T001***

The functionality of the **Select Style** dialog matches the functionality of the **Data Style** dialog (see point 2.2.1.11).

2.2.1.13 Manual scale t-Axis Dialog

2.2.1.13.1 Overview

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

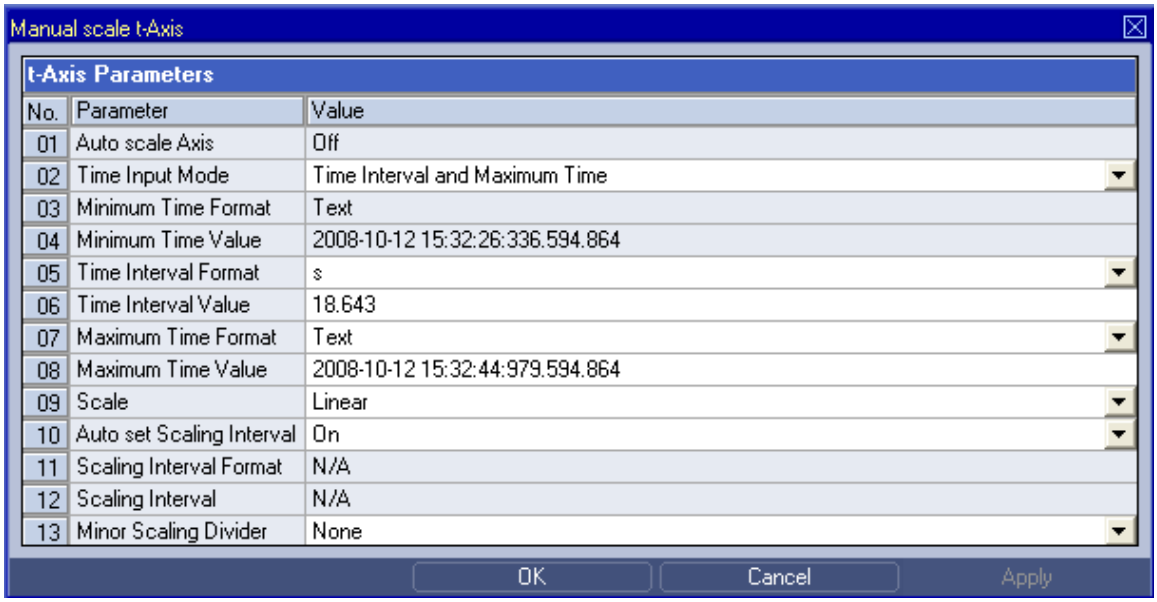


*Figure 14: Example of a **Manual scale t-Axis** Dialog of a **MTC yt T001***

2.2.1.13.2 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 **MTC yt T001** constantly sets the scaling interval of the t-axis according to the currently displayed time interval.
Off	In this mode, the **MTC yt T001** uses the specified Scaling Interval Format and Scaling Interval 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.

2.2.1.13.3 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.

2.2.1.14 Manual scale y-Axis Dialog for numerical y-Axes

2.2.1.14.1 Overview

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

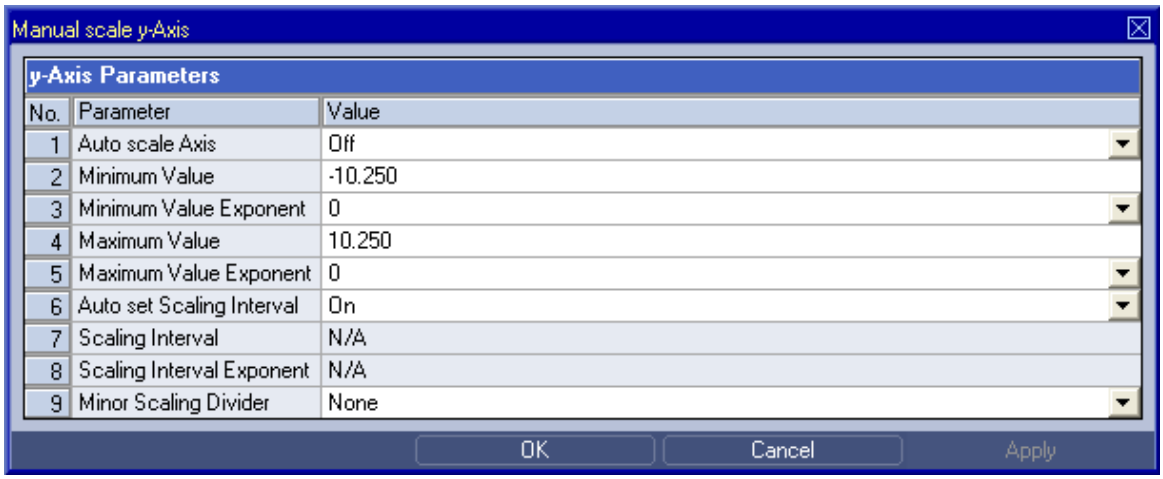


*Figure 15: Example of a **Manual scale y-Axis** Dialog for numerical y-Axes of a **MTC yn T001***

2.2.1.14.2 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 **MTC yt T001** 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 **MTC yt T001** uses the specified Minimum Value and Maximum Value parameters for the scaling of the y-axis.

Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the **MTC yt T001** constantly sets the scaling interval of the y-axis according to the currently displayed value interval.
Off	In this mode, the **MTC yt T001** uses the specified Scaling Interval and Scaling Interval Exponent 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.

2.2.1.14.3 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 for binary y-Axes

2.2.1.15.1 Overview

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

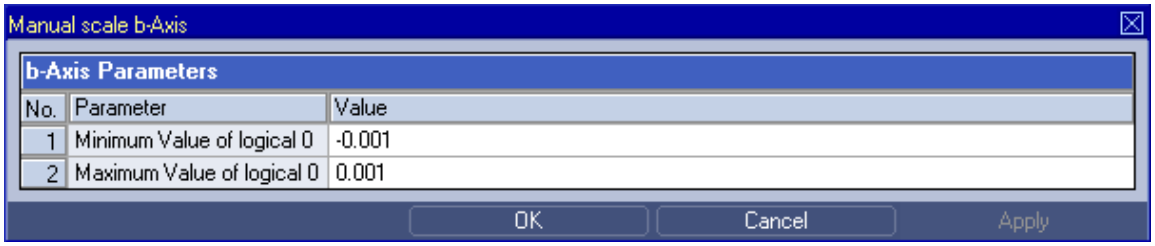


*Figure 16: Example of a **Manual scale y-Axis** Dialog for binary y-Axes of a **MTC yt T001***

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
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

2.2.1.15.3 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 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**:

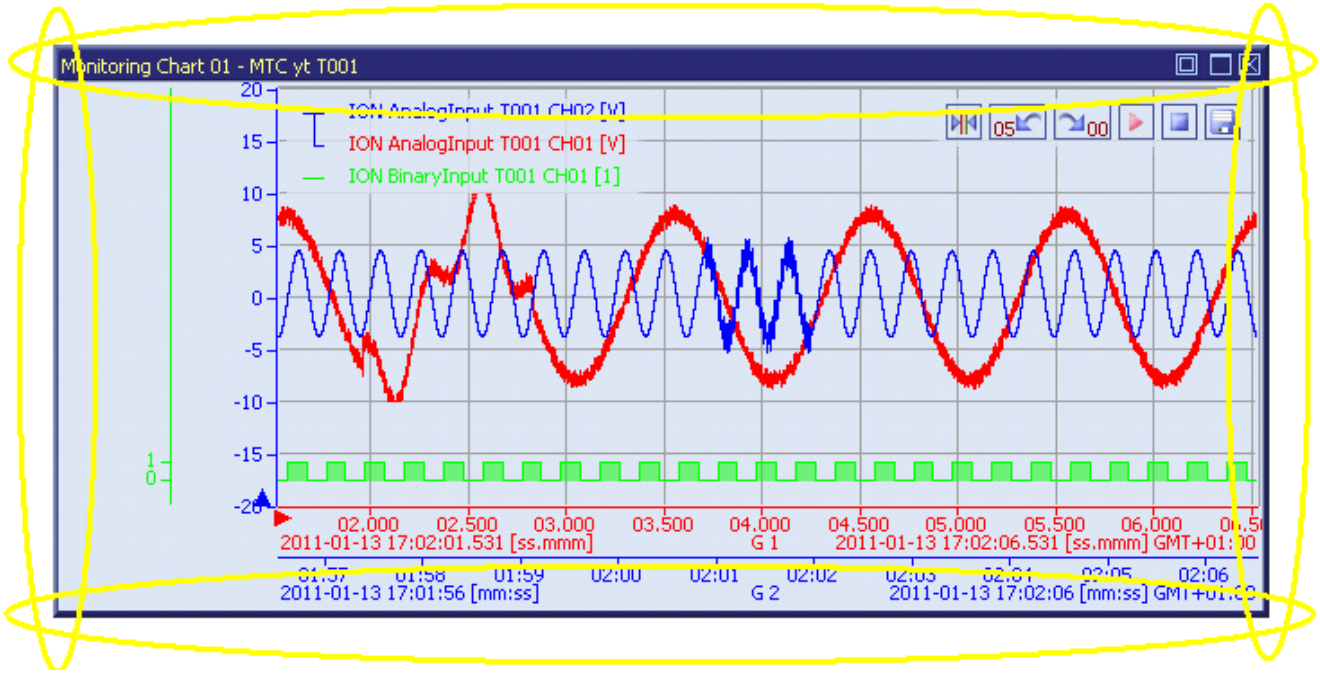


*Figure 17: Dropping of Data in order to open a new **Monitoring Chart***

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**:

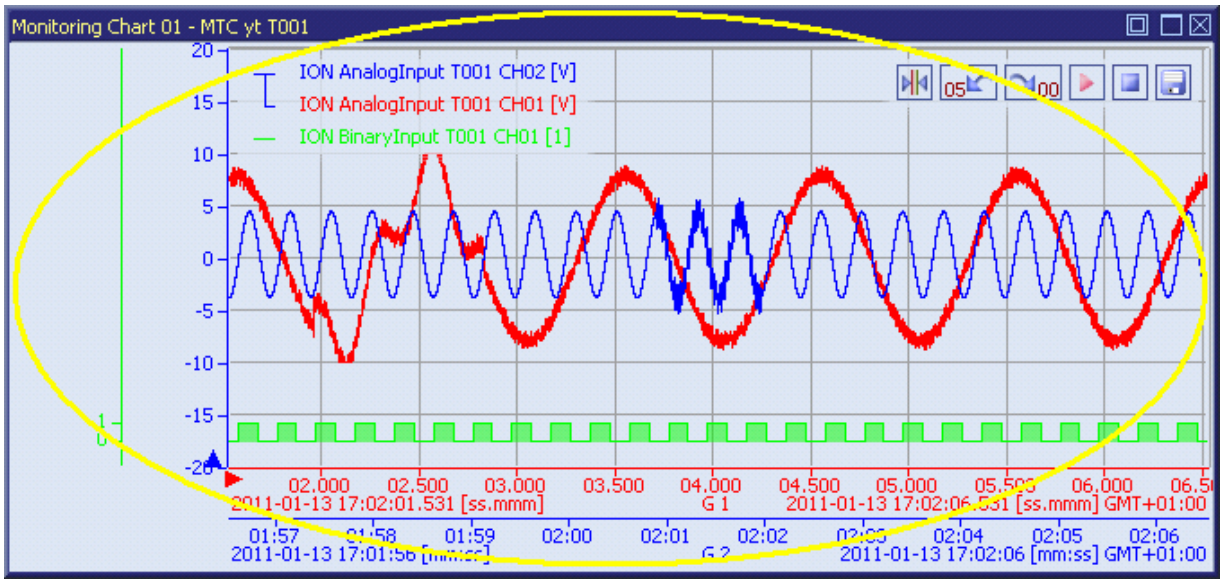


*Figure 18: Dropping of Data in order to add it to the existing **MTC yt T001***

2.2.2 MTC yx T001

2.2.2.1 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**:

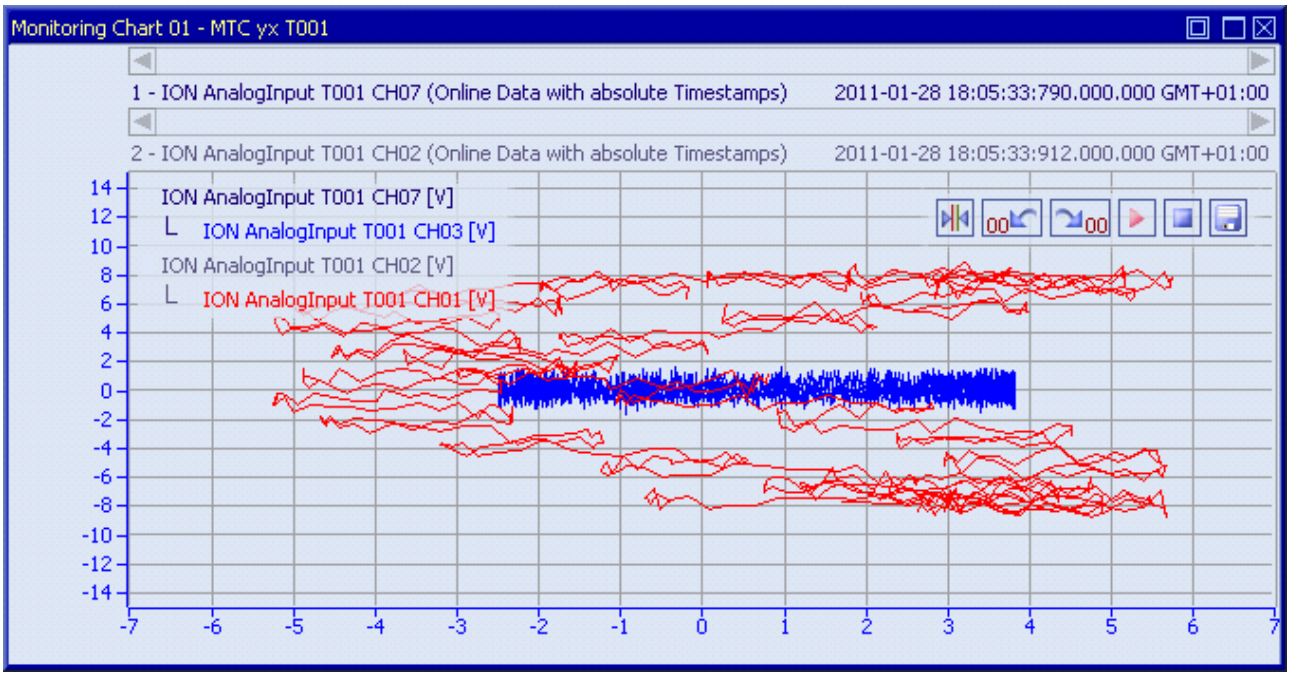


*Figure 19: Example of a **MTC yx T001***

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
- Cursor 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 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**:

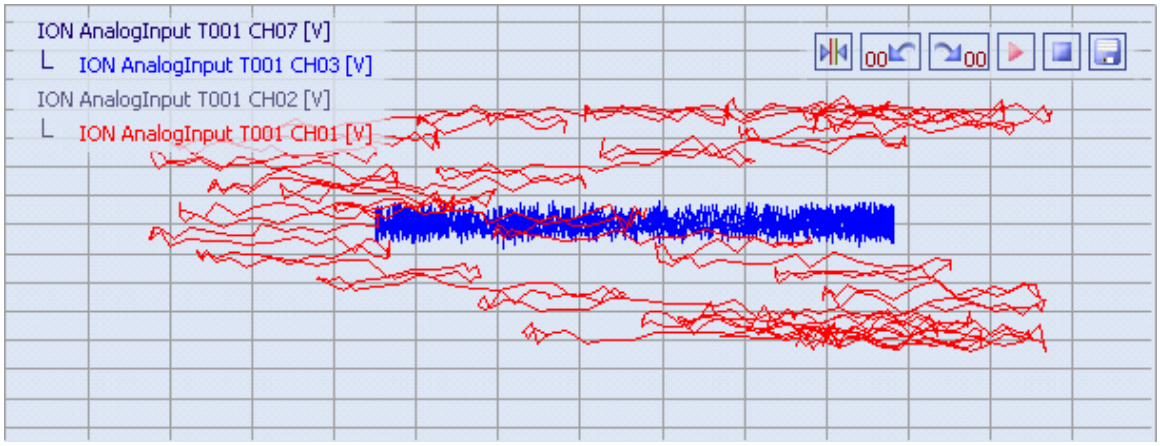


*Figure 20: Example of the Curve Area of a **MTC yx T001***

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	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:
	• [left mouse button down] + [mouse move] zooms into the specified area of the x- and y-axis simultaneously
	• <Shift> + [left mouse button down] + [mouse move] zooms only into the specified area of the x-axis
	  o <x> + [left mouse button down] + [mouse move] behaves like <Shift> + [left mouse button down] + [mouse move]
	• <Ctrl> + [left mouse button down] + [mouse move] zooms only into the specified area of the y-axis
	  o <y> + [left mouse button down] + [mouse move] behaves like <Ctrl> + [left mouse button down] + [mouse move]
	• <Esc> cancels the current operation without changing of any axis scaling

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 Curve Area opens the context menu for the Curve Area.
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: • [right mouse button down] + [mouse move] moves all curves within the Curve Area into the direction of the mouse move o when the <Shift> key is being pressed during the shift operation, the curves are shifted only in horizontal direction ▪ when <x> key is being pressed during the shift operation, the behavior is like if the <Shift> key is being pressed during the shift operation o when the <Ctrl> key is being pressed during the shift operation, the curves are shifted only in vertical direction ▪ when <y> key is being pressed during the shift operation, the behavior is like if the <Shift> key is being pressed during the shift operation • <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started

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 Curve Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] zooms out of the current mouse position of the x- and y-axis simultaneously • [mouse wheel up] zooms into the current mouse position of the x- and y-axis simultaneously • <Shift> + [mouse wheel down] moves all curves within the Curve Area to the left o <x> + [mouse wheel down] behaves like <Shift> + [mouse wheel down] • <Shift> + [mouse wheel up] moves all curves within the Curve Area to the right o <x> + [mouse wheel up] behaves like <Shift> + [mouse wheel up] • <Ctrl> + [mouse wheel down] moves all curves within the Curve Area up o <y> + [mouse wheel down] behaves like <Ctrl> + [mouse wheel down] • <Ctrl> + [mouse wheel up] moves all curves within the Curve Area down o <y> + [mouse wheel up] behaves like <Ctrl> + [mouse wheel up]

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 **MTC yx T001** become visible
Fit to Charts	sets the scaling of all **Monitoring Charts** within the parent **Monitoring View Editor** so that the complete values of all data within all **Monitoring Charts** 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 **Manual scale Renderer** dialog
Chart Options…	opens the **Chart Options** dialog
Copy Chart Options	copies the options of the **MTC yx T001** below the current mouse position
Paste Chart Options	pastes the currently copied **MTC yx T001** options onto the **MTC yx T001** below the current mouse position
Chart Styles…	opens the **Chart Styles** dialog
Copy Chart Styles	copies the styles of the **MTC yx T001** below the current mouse position
Paste Chart Styles	pastes the currently copied **MTC yx T001** styles onto the **MTC yx T001** 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 Legend Area to the state which is specified via the submenu of this item
Show Toolbar > …	sets the visibility of the Toolbar Area to the state which is specified via the submenu of this item
Show x-Axis > …	sets the visibility of the t-Axis Area to the state which is specified via the submenu of this item
Show y-Axis > …	sets the visibility of the y-Axis Area to the state which is specified via the submenu of this item
Show Sliders > …	sets the visibility of the Slider Area 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 **MTC yx T001**

2.2.2.3 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 21: 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	Single and multiple x-axis can be selected/deselected through a left mouse button click: • [left mouse button down] above any x-axis selects the below x-axis • <Ctrl> + [left mouse button down] is used in order to select/deselect x-axis after x-axis • <Shift> + [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 ○ in case there is no x-axis selected at the moment, only the below x-axis is selected • multiple x-axis can be selected/deselected after each other through combinations of the above methods • 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 <Shift> or <Ctrl> keys, the currently selected items of the clicked **Monitoring Chart** are deselected and the clicked x-axis becomes selected instead • in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the x-Axis Area, the currently selected items of the clicked **Monitoring Chart** are deselected
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: • [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 • [left mouse button down] + [mouse move left] zooms into the x-axis from the x position where the left mouse button has been pressed • <Esc> cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started
double click	A double click of the left mouse button onto any x-axis opens the **Manual scale x-Axis** 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 x-Axis Area opens the context menu for the x-Axis Area.
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: • [right mouse button down] + [mouse move right] moves the x-axis right • [right mouse button down] + [mouse move left] moves the x-axis left • <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started

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 x-Axes Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the x-axis left • [mouse wheel up] moves the x-axis right • <Shift> + [mouse wheel down] zooms out of the x-axis from the current x position of the mouse cursor • <Shift> + [mouse wheel up] zooms into the x-axis from the current x position of the mouse cursor

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 x-Axis Area 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 **Manual scale Renderer** dialog
Manual scale x-Axis…	opens the **Manual scale x-Axis** 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 **MTC yx T001**

2.2.2.4 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 22: 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	Single and multiple y-axis can be selected/deselected through a left mouse button click: • [left mouse button down] above any y-axis selects the below y-axis • <Ctrl> + [left mouse button down] is used in order to select/deselect y-axis after y-axis • <Shift> + [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 ○ in case there is no y-axis selected at the moment, only the below y-axis is selected • multiple y-axis can be selected/deselected after each other through combinations of the above methods • 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 <Shift> or <Ctrl> keys, the currently selected items of the clicked **Monitoring Chart** are deselected and the clicked y-axis becomes selected instead • in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the y-Axis Area, the currently selected items of the clicked **Monitoring Chart** are deselected
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: • [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 • [left mouse button down] + [mouse move up] zooms into the y-axis from the y position where the left mouse button has been pressed • <Esc> cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started
double click	A double click of the left mouse button onto any y-axis opens the **Manual scale y-Axis** 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 y-Axis Area opens the context menu for the y-Axis Area.
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: • [right mouse button down] + [mouse move down] moves the y-axis down • [right mouse button down] + [mouse move up] moves the y-axis up • <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started

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 y-Axis Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the y-axis up • [mouse wheel up] moves the y-axis down • <Ctrl> + [mouse wheel down] zooms out of the y-axis from the current y position of the mouse cursor • <Ctrl> + [mouse wheel up] zooms into the y-axis from the current y position of the mouse cursor

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 2.2.2.2).

Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show y-Axis > …	sets the visibility of the y-Axis Area 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 **Manual scale Renderer** dialog
Manual scale y-Axis…	opens the **Manual scale y-Axis** 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 **MTC yx T001**

2.2.2.5 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**:

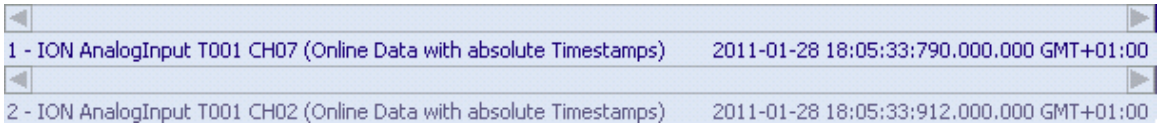


*Figure 23: Example of the Slider Area of a **MTC yx T001***

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	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: • 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 ○ 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
single click with releasing the button onto the right step button	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: • 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 ○ 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
single click with keeping the button onto the left step button	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.
single click with keeping the button onto the right step button	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.
single click with keeping the button onto the slider button	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: • in case the mouse is moved to the left, the current point in time is shifted into the past ○ the slider button can not be dragged out of the left border of the Slider Area • in case the mouse is moved to the right, the current point in time is shifted into the future ○ the slider button can not be dragged out of the right border of the Slider Area • <Esc> cancels the current operation without modifying the current point in time

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 Slider Area opens the context menu for the Slider Area.

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 Slider Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the slider button left (into the past) ○ 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 • [mouse wheel up] moves the slider button right (into the future) ○ 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

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 2.2.2.2).
- 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 Slider Area to the state which is specified via the submenu of this item
Manual scale Renderer…	opens the **Manual scale Renderer** 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 **MTC yx T001**

2.2.2.6 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**:

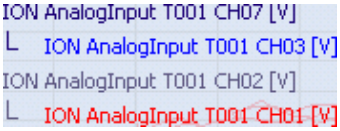


*Figure 24: Example of the Legend Area of a **MTC yx T001***

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	Selecting of data within the Legend Area is performed identically to the selecting of items within the other trees of the ***X-Tools Client***. In case a data within the Legend Area is being selected, all items of other type (e.g. x-axis and y-axis) of the clicked **Monitoring Chart** are deselected automatically.
single click with keeping the button	A single click of the left mouse button with keeping the button down onto any text within the Legend Area starts a Drag&Drop operation for the currently selected data(s) as soon as the mouse cursor is moved: • a Drag&Drop operation within the same **MTC yx T001** moves the dragged data(s) to the new position o <Ctrl> can be pressed in order to execute a copy operation instead of the move operation within the same **MTC yx T001** • a Drag&Drop operation to another **MTC yx T001** copies the dragged data(s) to the new position o <Shift> can be pressed in order to execute a move operation instead of the copy operation to the other **MTC yx T001** • <Esc> cancels the current operation without moving or copying anything
double click	A double click of the left mouse button onto any text within the Legend Area opens the **Data Style** 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 Legend Area opens the context menu for the Legend Area.
single click with keeping the button	A single click of the right mouse button with keeping the button above the Legend Area starts a shift operation for the legend texts. The actual shifting is performed when the mouse is moved: • [right mouse button down] + [mouse move down] moves the Legend Area down • [right mouse button down] + [mouse move up] moves the Legend Area up • <Esc> cancels the current operation and sets the position of the Legend Area back to the place which it had before the shift operation had been started 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.

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 **MTC yx T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC yx T001**

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 **Data Style** 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 **MTC yx T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC yx T001**

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 yx T001**:

*Figure 25: 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 On/Off Cursor button	A single click of the left mouse button onto the On/Off Cursor button toggles the cursors between on and off.
single click onto the Undo button	A single click of the left mouse button onto the Undo button undoes the last operation from the undo buffer.
single click onto the Redo button	A single click of the left mouse button onto the Redo button redoes the last operation from the redo buffer.
single click onto the Continue Visualization button	A single click of the left mouse button onto the Continue Visualization button continues the visualization. This button applies to all currently present data independently to whether they are paused or running at the moment. The Continue Visualization button sets the visualization of all data of all (t and y) axes to running.
single click onto the Pause Visualization button	A single click of the left mouse button onto the Pause Visualization button pause the visualization. This button applies to all currently present data independently to whether they are paused or running at the moment. The Pause Visualization button sets the visualization of all data of all (t and y) axes to paused.
single click onto the Store Data Snapshot button	A single click of the left mouse button onto the Store Data Snapshot button starts the storing of the data which are contained within the **MTC yx T001**. While the storing is in progress, the **Storage Progress** 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 Toolbar Area opens the context menu for the Toolbar Area. 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 Cursor 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 Cursors > …	sets the visibility of measurement cursors to the state which is specified via the submenu of this item
Restore Cursors	restores the positions of the two 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 **MTC yx T001**

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 **MTC yx T001**
Change Undo/Redo Buffer Size	opens the **Chart Options** dialog, sets the input focus to the Undo/Redo Buffer Size 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 **MTC yx T001**

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 **MTC yx T001**
Change Undo/Redo Buffer Size	opens the **Chart Options** dialog, sets the input focus to the Undo/Redo Buffer Size 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 **MTC yx T001**

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 **MTC yx T001**

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 **MTC yx T001**

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 **MTC yx T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC yx T001**

2.2.2.8 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**:

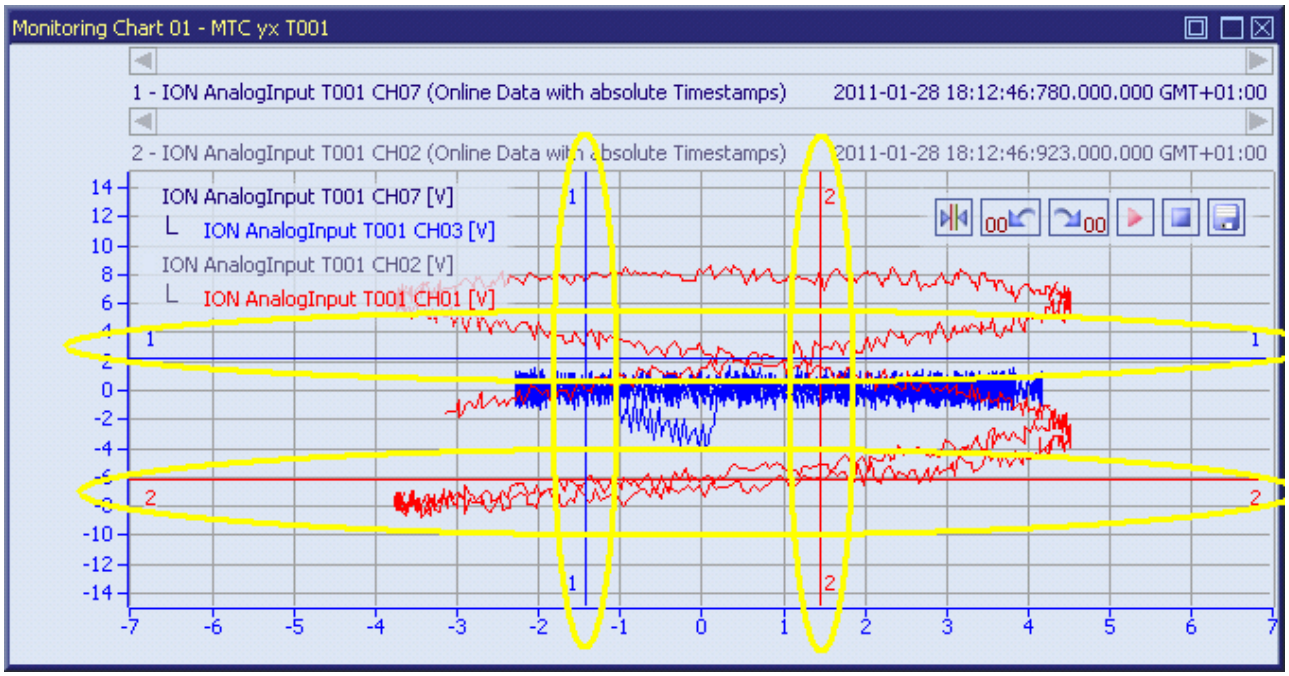


*Figure 26: Example of the Measurement Cursors of a **MTC yx T001***

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	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:
	• [left mouse button down] + [mouse move] shifts the targeted measurement cursor to the new mouse position
	  ○ in case the left mouse button was pressed above the horizontal line of the cursor, the cursor is shifted only in vertical direction
	  ○ in case the left mouse button was pressed above the vertical line of the cursor, the cursor is shifted only in horizontal direction
	  ○ 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
	The values which are displayed by the cursor table are updated automatically while the measurement cursor is shifted.

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	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: • [right mouse button down] + [mouse move] shifts both measurement cursors simultaneously with keeping the interval between them o in case the left mouse button was pressed above the horizontal line of a cursor, the cursors are shifted only in vertical direction o in case the left mouse button was pressed above the vertical line of a cursor, the cursors are shifted only in horizontal direction o 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 The values which are displayed by the cursor table are updated automatically while the measurement cursors are shifted.

2.2.2.9 Cursor Table

The Cursor 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 Cursor Table for a **MTC yx T001**:

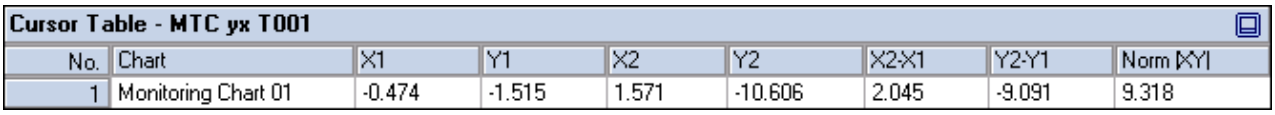


*Figure 27: Example of a Cursor Table of a **MTC yx T001***

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 Cursor 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:

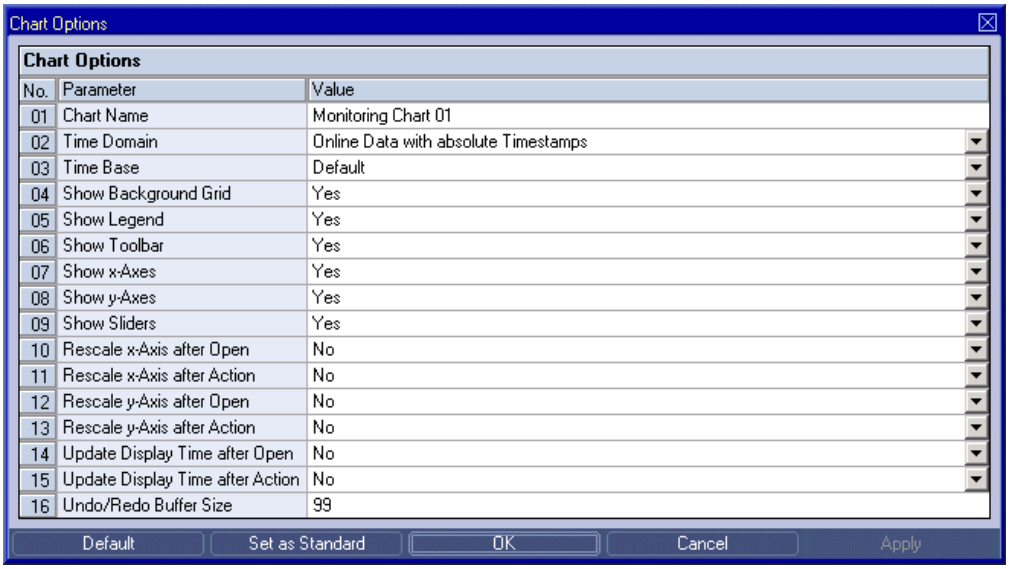


*Figure 28: Example of a **Chart Options** Dialog of a **MTC yx T001***

2.2.2.10.2 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 Curve Area
Show Legend	allows to choose whether the Legend Area shall be shown
Show Toolbar	allows to choose whether the Toolbar Area shall be shown
Show x-Axis	allows to choose whether the x-Axis Area shall be shown
Show y-Axis	allows to choose whether the y-Axis Area shall be shown
Show Sliders	allows to choose whether the Slider Area 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 **MTC yx T001** or after a new data has been dropped into the **MTC yx T001**
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 **MTC yx T001** or after a new data has been dropped into the **MTC yx T001**
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 **MTC yx T001** or after a new data has been dropped into the **MTC yx T001**
Undo/Redo Buffer Size	allows to enter the total size of undo/redo operations which shall be remembered by the **MTC yx T001**

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 **MTC yx T001** 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 **MTC yx T001** 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 **MTC yx T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC yx T001**
No	In case the rescale mode for the x-axis after an action is set to “No”, the **MTC yx T001** 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 **MTC yx T001** 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 **MTC yx T001** 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 **MTC yx T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC yx T001**
No	In case the rescale mode for the y-axis after an action is set to “No”, the **MTC yx T001** 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 **MTC yx T001** automatically sets its display time to 10 seconds after the Monitoring View File has been opened: • in case of online data, the newest visualized point in time is being set to the current system time • 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 In case the display time is being updated, also the number of to-be-rendered points is being set to 1000.
No	In case the update mode for the display time after open is set to “No”, the **MTC yx T001** 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	In case the update mode for the display time after an action is set to “Yes”, the **MTC yx T001** 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: • in case of online data, the newest visualized point in time is being set to the current system time • 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 The following actions result in an automatic update of the display time in case this mode is chosen: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC yx T001** In case the display time is being updated, also the number of to-be-rendered points is being set to 1000.
No	In case the update mode for the display time after an action is set to “No”, the **MTC yx T001** 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
Default	Sets all options back to their default settings.
Set as Standard	Sets the current options as standard options for each new **MTC yx T001**. The options of already existing **MTC yx T001s** 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:

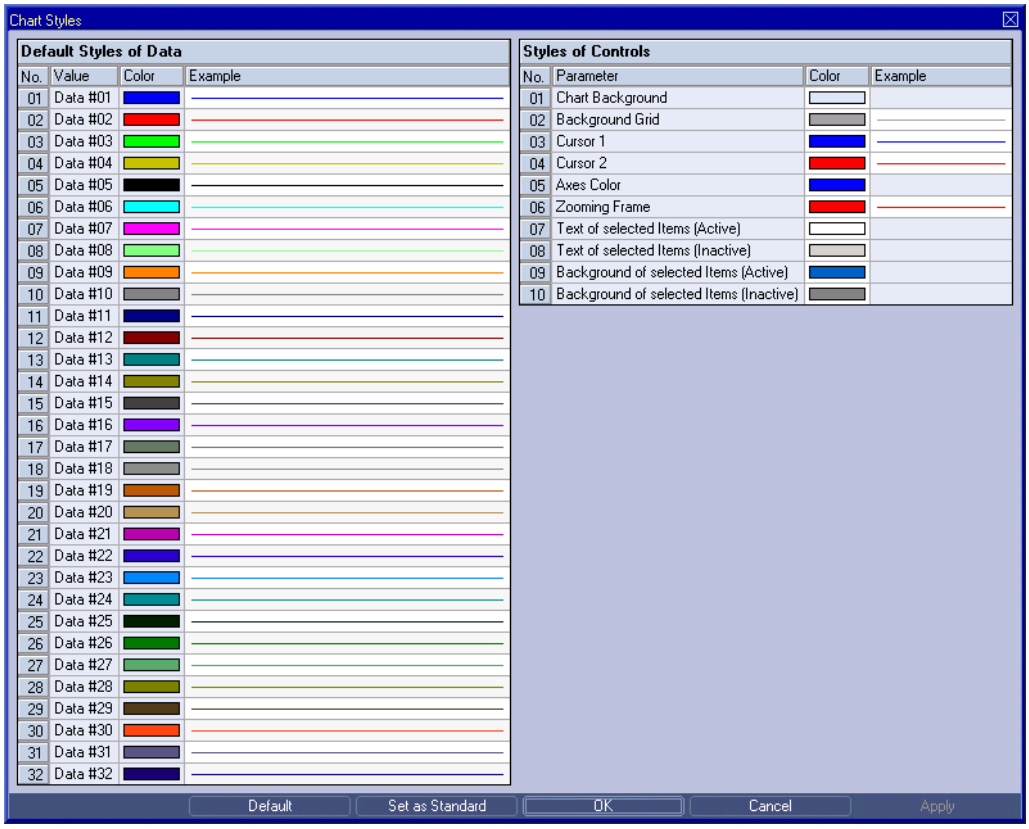


*Figure 29: Example of a **Chart Styles** Dialog of a **MTC yx T001***

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 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.

2.2.2.11.3 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.

2.2.2.11.4 Menu Bar

Menu Button	Description
Default	Sets all styles back to their default settings.
Set as Standard	Sets the current styles as standard styles for each new **MTC yx T001**. The styles of already existing **MTC yx T001s** 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:

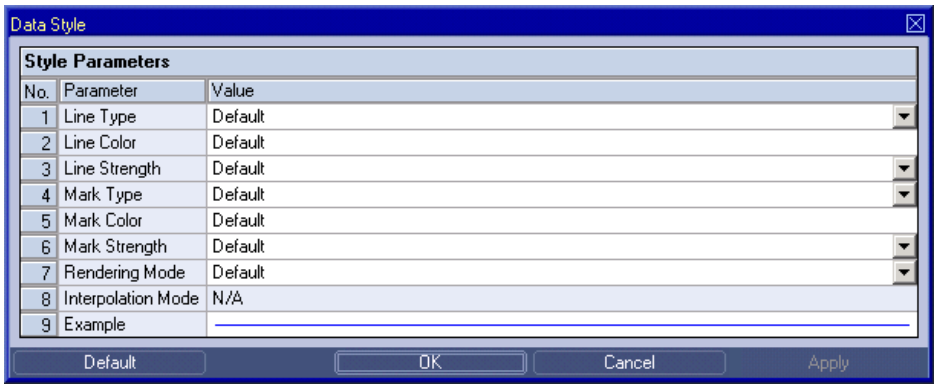


*Figure 30: Example of a **Data Style** Dialog of a **MTC yx T001***

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.

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)	When the rendering mode is set to “Minimal and Maximal Value (x-Axis)”, the following values are calculated for each calculation interval: • smallest value of the x-axis data • biggest value of the x-axis data • average value of the y-axis data 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.
Minimal and Maximal Value (y-Axis)	When the rendering mode is set to “Minimal and Maximal Value (y-Axis)”, the following values are calculated for each calculation interval: • average value of the x-axis data • smallest value of the y-axis data • biggest value of the y-axis data 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.

2.2.2.12.3 Menu Bar

Menu Button	Description
Default	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:

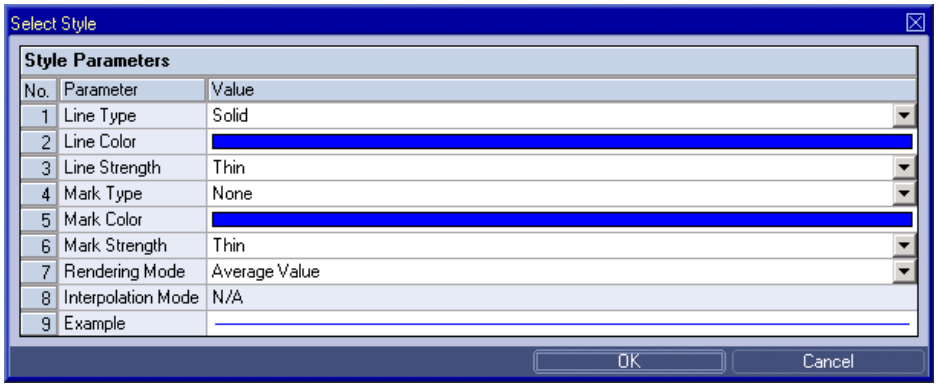


*Figure 31: Example of a **Select Style** Dialog of a **MTC yx T001***

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

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:

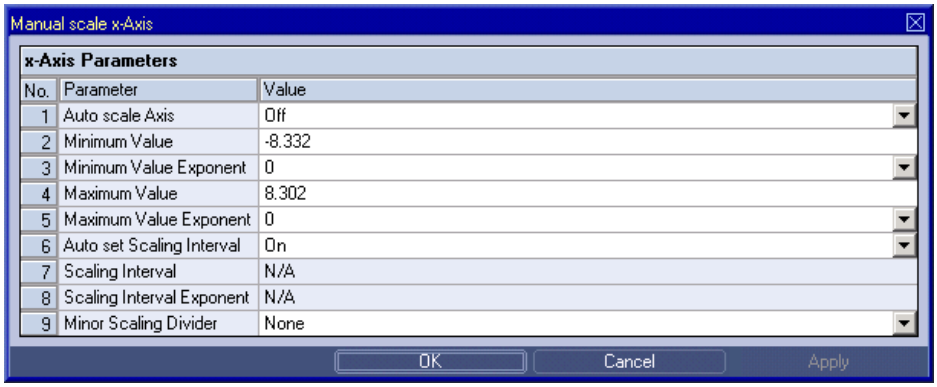


*Figure 32: Example of a **Manual scale x-Axis** Dialog of a **MTC yx T001***

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 **MTC yx T001** 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 **MTC yx T001** uses the specified Minimum Value and Maximum Value parameters for the scaling of the x-axis.

Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the **MTC yx T001** constantly sets the scaling interval of the x-axis according to the currently displayed value interval.
Off	In this mode, the **MTC yx T001** uses the specified Scaling Interval and Scaling Interval Exponent 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:

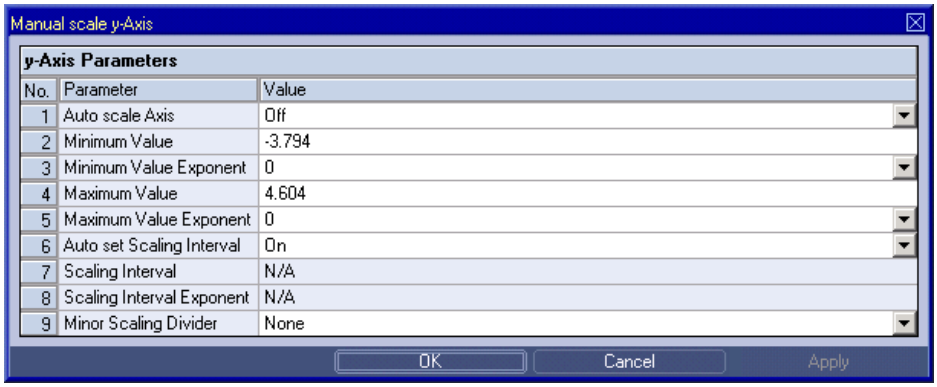


*Figure 33: Example of a **Manual scale y-Axis** Dialog of a **MTC yx T001***

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 **MTC yx T001** 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 **MTC yx T001** uses the specified Minimum Value and Maximum Value parameters for the scaling of the y-axis.

Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the **MTC yx T001** constantly sets the scaling interval of the y-axis according to the currently displayed value interval.
Off	In this mode, the **MTC yx T001** uses the specified Scaling Interval and Scaling Interval Exponent 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.

2.2.2.15.3 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.

2.2.2.16 Manual scale Renderer Dialog

2.2.2.16.1 Overview

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

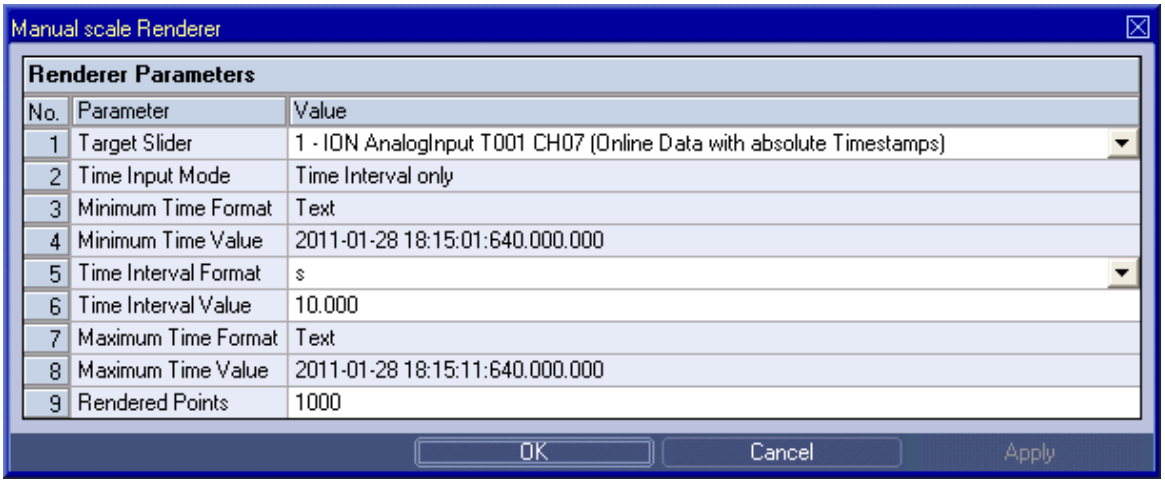


*Figure 34: Example of a **Manual scale Renderer** Dialog of a **MTC yx T001***

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
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

2.2.2.16.3 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.

2.2.2.17 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**:

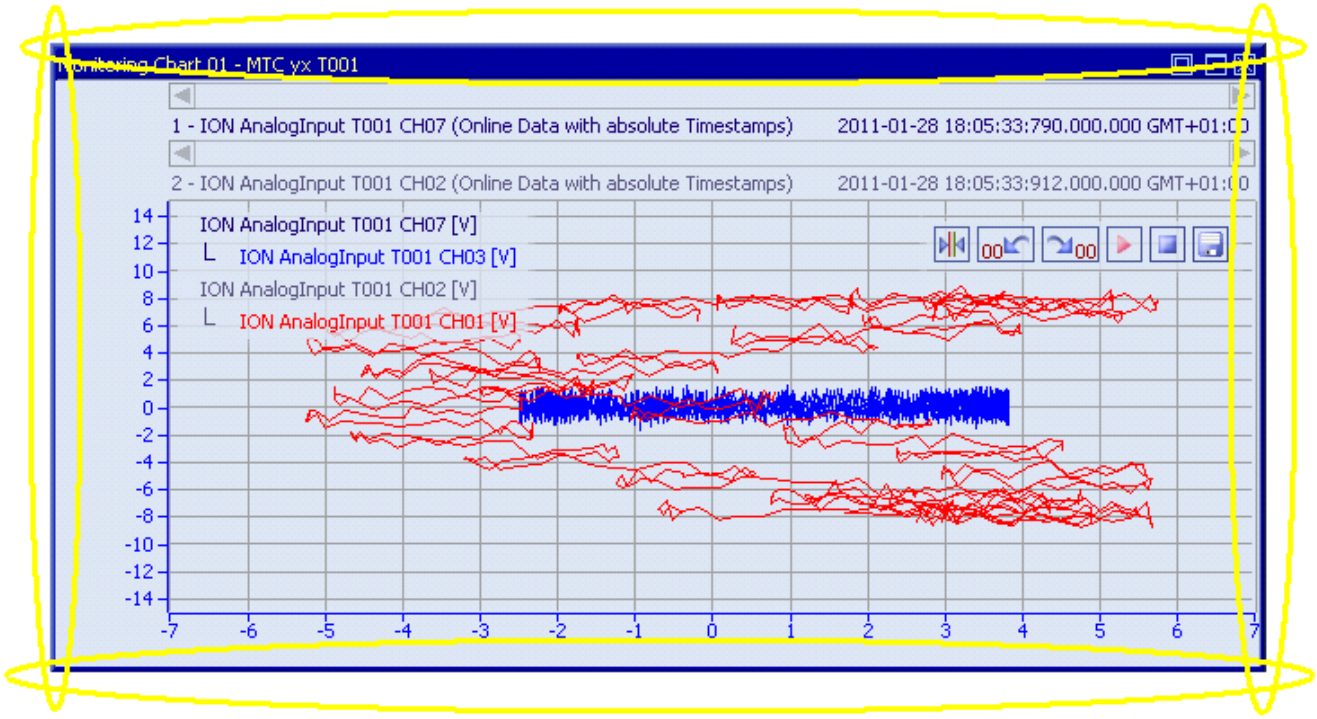


*Figure 35: Dropping of Data in order to open a new **Monitoring Chart***

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**:

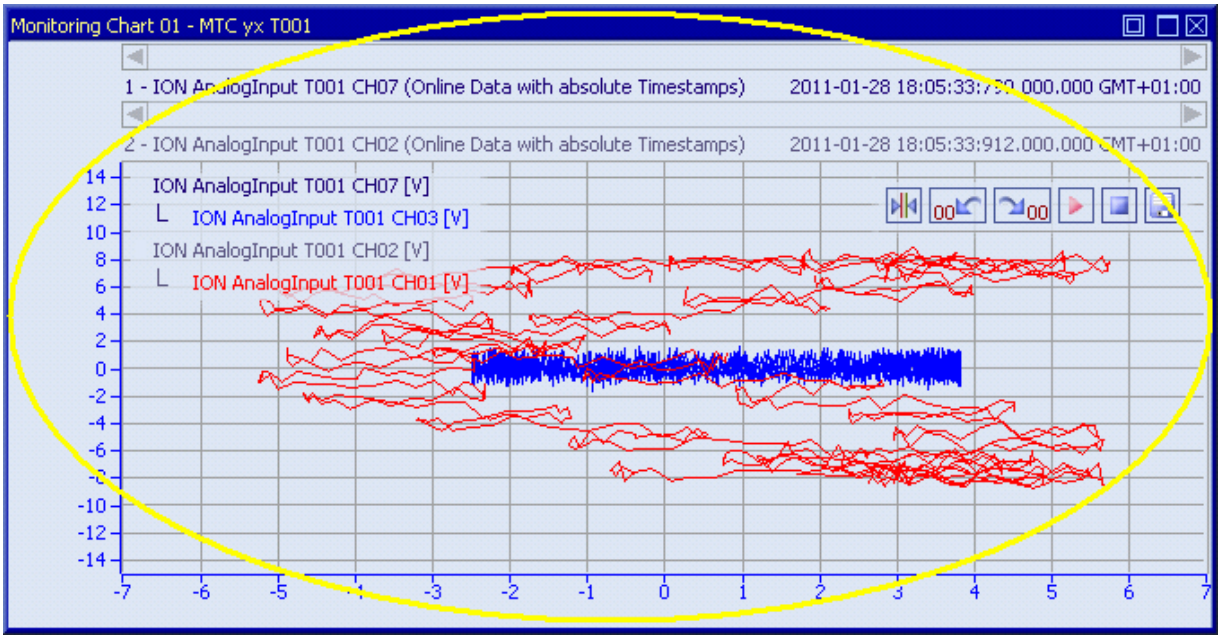


*Figure 36: Dropping of Data in order to add it to the existing **MTC yx T001***

2.2.3 MTC Orbit T001

2.2.3.1 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**:

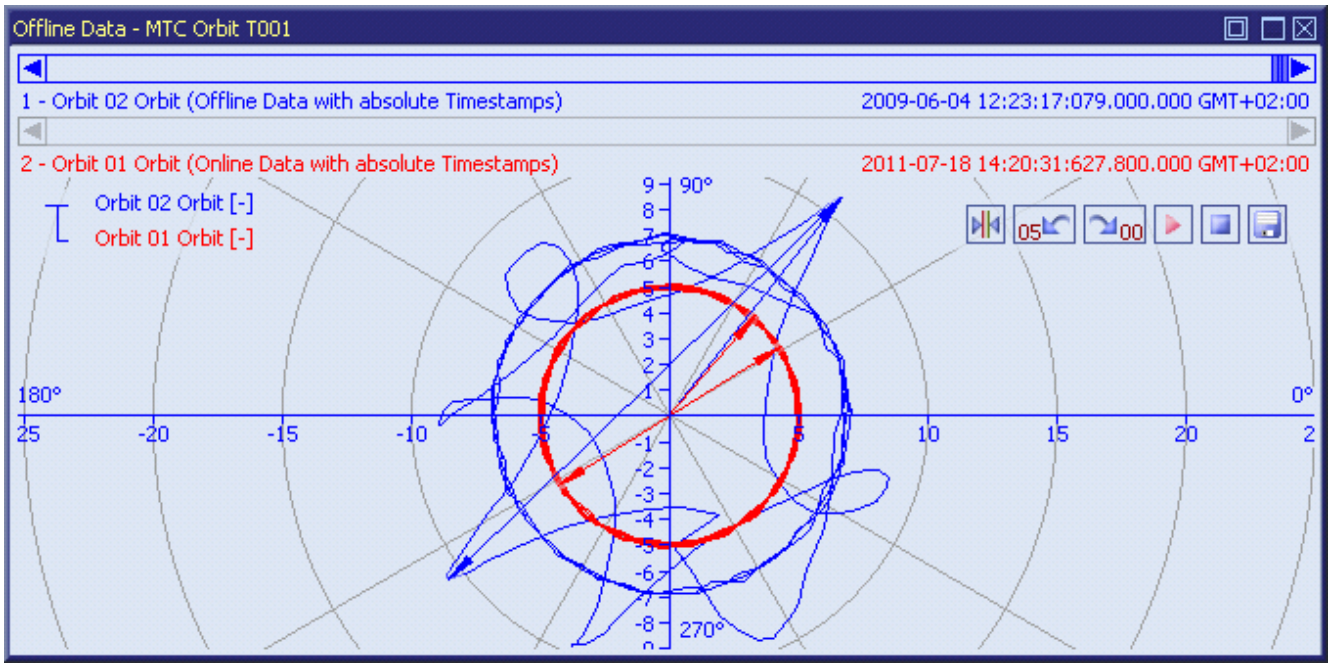


*Figure 37: Example of a **MTC Orbit T001***

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
- Cursor 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

2.2.3.2 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**:

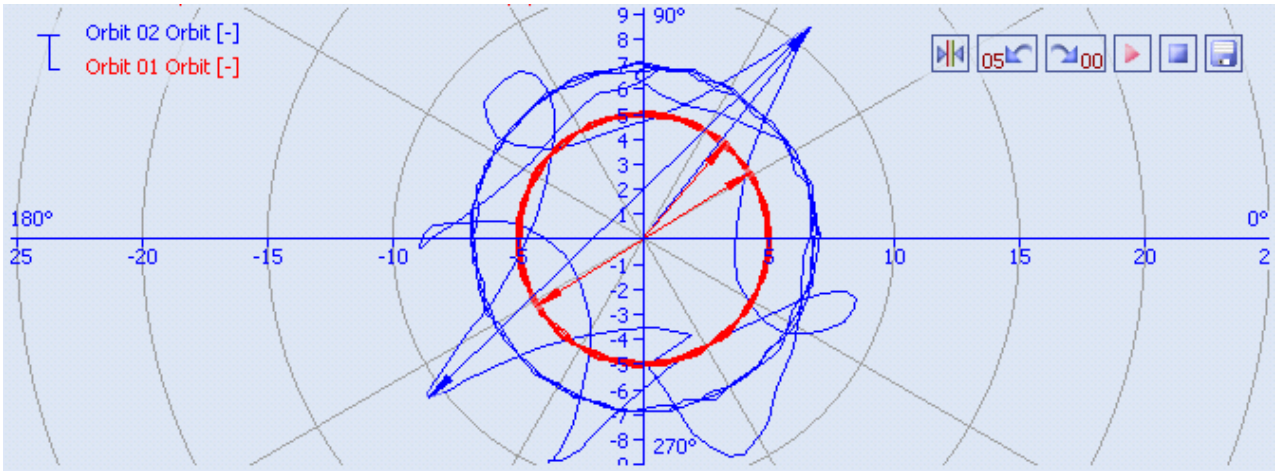


*Figure 38: Example of the Curve Area of a **MTC Orbit T001***

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 "
<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	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:
	• [left mouse button down] + [mouse move] zooms into the specified area of the x- and y-axis simultaneously
	• <Shift> + [left mouse button down] + [mouse move] zooms only into the specified area of the x-axis
	  ○ <x> + [left mouse button down] + [mouse move] behaves like <Shift> + [left mouse button down] + [mouse move]
	• <Ctrl> + [left mouse button down] + [mouse move] zooms only into the specified area of the y-axis
	  ○ <y> + [left mouse button down] + [mouse move] behaves like <Ctrl> + [left mouse button down] + [mouse move]
	• <Esc> cancels the current operation without changing of any axis scaling

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 Curve Area opens the context menu for the Curve Area.

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:
	• [right mouse button down] + [mouse move] moves all curves within the Curve Area into the direction of the mouse move
	  ○ when the <Shift> key is being pressed during the shift operation, the curves are shifted only in horizontal direction
	  ▪ when <x> key is being pressed during the shift operation, the behavior is like if the <Shift> key is being pressed during the shift operation
	  ○ when the <Ctrl> key is being pressed during the shift operation, the curves are shifted only in vertical direction
	  ▪ when <y> key is being pressed during the shift operation, the behavior is like if the <Shift> key is being pressed during the shift operation
	• <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started
	Shifting of the Curve Area 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	Scrolling with the mouse wheel can be used to shift or zoom the Curve Area. The actual operation is performed when the mouse wheel is scrolled:
	• [mouse wheel down] zooms out of the current mouse position of the x- and y-axis simultaneously
	• [mouse wheel up] zooms into the current mouse position of the x- and y-axis simultaneously
	• <Shift> + [mouse wheel down] moves all curves within the Curve Area to the left
	  ○ <x> + [mouse wheel down] behaves like <Shift> + [mouse wheel down]
	• <Shift> + [mouse wheel up] moves all curves within the Curve Area to the right
	  ○ <x> + [mouse wheel up] behaves like <Shift> + [mouse wheel up]
	• <Ctrl> + [mouse wheel down] moves all curves within the Curve Area up
	  ○ <y> + [mouse wheel down] behaves like <Ctrl> + [mouse wheel down]
	• <Ctrl> + [mouse wheel up] moves all curves within the Curve Area down
	  ○ <y> + [mouse wheel up] behaves like <Ctrl> + [mouse wheel up]

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 **MTC Orbit T001** become visible
Fit to Charts	sets the scaling of all **Monitoring Charts** within the parent **Monitoring View Editor** so that the complete values of all data within all **Monitoring Charts** 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 **Manual scale Renderer** dialog
Chart Options…	opens the **Chart Options** dialog
Copy Chart Options	copies the options of the **MTC Orbit T001** below the current mouse position
Paste Chart Options	pastes the currently copied **MTC Orbit T001** options onto the **MTC Orbit T001** below the current mouse position
Chart Styles…	opens the **Chart Styles** dialog
Copy Chart Styles	copies the styles of the **MTC Orbit T001** below the current mouse position
Paste Chart Styles	pastes the currently copied **MTC Orbit T001** styles onto the **MTC Orbit T001** 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 Legend Area to the state which is specified via the submenu of this item
Show Toolbar > …	sets the visibility of the Toolbar Area to the state which is specified via the submenu of this item
Show x-Axis > …	sets the visibility of the t-Axis Area to the state which is specified via the submenu of this item
Show y-Axis > …	sets the visibility of the y-Axis Area to the state which is specified via the submenu of this item
Show Sliders > …	sets the visibility of the Slider Area 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 **MTC Orbit T001**

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.

2.2.3.3 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**:

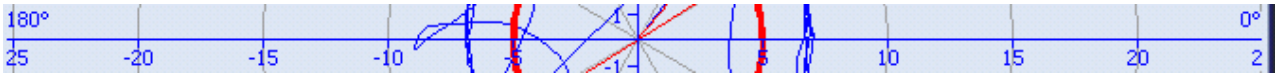


*Figure 39: Example of the x-Axis Area of a **MTC Orbit T001***

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	Single and multiple x-axis can be selected/deselected through a left mouse button click: • [left mouse button down] above any x-axis selects the below x-axis • in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the x-Axis Area, the currently selected items of the clicked **Monitoring Chart** are deselected
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: • [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 • [left mouse button down] + [mouse move left] zooms into the x-axis from the x position where the left mouse button has been pressed • <Esc> cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started
double click	A double click of the left mouse button onto any x-axis opens the **Manual scale x-Axis** 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 x-Axis Area opens the context menu for the x-Axis Area.
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: • [right mouse button down] + [mouse move right] moves the x-axis right • [right mouse button down] + [mouse move left] moves the x-axis left • <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started Shifting of the x-Axis Area 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	Scrolling with the mouse wheel can be used to shift or zoom the x-Axes Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the x-axis left • [mouse wheel up] moves the x-axis right • <Shift> + [mouse wheel down] zooms out of the x-axis from the current x position of the mouse cursor • <Shift> + [mouse wheel up] zooms into the x-axis from the current x position of the mouse cursor Shifting of the x-Axis Area is possible only in case the origin is not locked.

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 2.2.3.2).

Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show x-Axis > …	sets the visibility of the x-Axis Area 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 **Manual scale Renderer** dialog
Manual scale x-Axis…	opens the **Manual scale x-Axis** 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 **MTC Orbit T001**

2.2.3.4 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**:

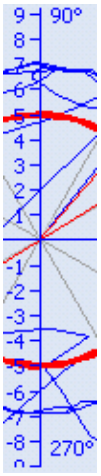


*Figure 40: Example of the y-Axis Area of a **MTC Orbit T001***

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	Single and multiple y-axis can be selected/deselected through a left mouse button click: • [left mouse button down] above any y-axis selects the below y-axis • in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the y-Axis Area, the currently selected items of the clicked **Monitoring Chart** are deselected
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: • [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 • [left mouse button down] + [mouse move up] zooms into the y-axis from the y position where the left mouse button has been pressed • <Esc> cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started
double click	A double click of the left mouse button onto any y-axis opens the **Manual scale y-Axis** 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 y-Axis Area opens the context menu for the y-Axis Area.
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: • [right mouse button down] + [mouse move down] moves the y-axis down • [right mouse button down] + [mouse move up] moves the y-axis up • <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started Shifting of the y-Axis Area 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	Scrolling with the mouse wheel can be used to shift or zoom the y-Axis Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the y-axis up • [mouse wheel up] moves the y-axis down • <Ctrl> + [mouse wheel down] zooms out of the y-axis from the current y position of the mouse cursor • <Ctrl> + [mouse wheel up] zooms into the y-axis from the current y position of the mouse cursor Shifting of the y-Axis Area is possible only in case the origin is not locked.

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 2.2.3.2).

Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show y-Axis > …	sets the visibility of the y-Axis Area 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 **Manual scale Renderer** dialog
Manual scale y-Axis…	opens the **Manual scale y-Axis** 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 **MTC Orbit T001**

2.2.3.5 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**:

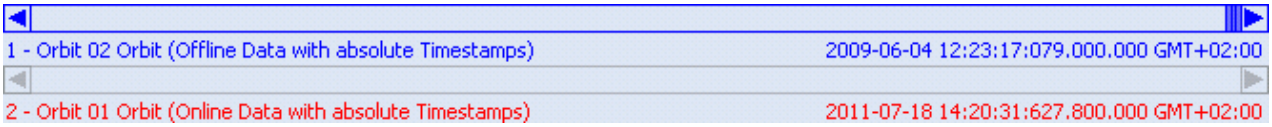


*Figure 41: Example of the Slider Area of a **MTC Orbit T001***

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	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: • the next older timestamp from the data at the time domain of the slider is being chosen as new current point in time ○ 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
single click with releasing the button onto the right step button	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: • 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 ○ 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
single click with keeping the button onto the left step button	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.
single click with keeping the button onto the right step button	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.
single click with keeping the button onto the slider button	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: • in case the mouse is moved to the left, the current point in time is shifted into the past ○ the slider button can not be dragged out of the left border of the Slider Area • in case the mouse is moved to the right, the current point in time is shifted into the future ○ the slider button can not be dragged out of the right border of the Slider Area • <Esc> cancels the current operation without modifying the current point in time

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 Slider Area opens the context menu for the Slider Area.

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 Slider Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the slider button left (into the past) ○ 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 • [mouse wheel up] moves the slider button right (into the future) ○ 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

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 2.2.3.2).

Context Menu

The following specific context menu items are provided:

Context Menu Item	Description
Show Sliders > …	sets the visibility of the Slider Area to the state which is specified via the submenu of this item
Manual scale Renderer…	opens the **Manual scale Renderer** 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 sub-menu 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 **MTC Orbit T001**

2.2.3.6 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**:

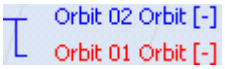


*Figure 42: Example of the Legend Area of a **MTC Orbit T001***

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	Selecting of data within the Legend Area is performed identically to the selecting of items within the other trees of the ***X-Tools Client***. In case a data within the Legend Area is being selected, all items of other type (e.g. x-axis and y-axis) of the clicked **Monitoring Chart** are deselected automatically.

single click with keeping the button	A single click of the left mouse button with keeping the button down onto any text within the Legend Area starts a Drag&Drop operation for the currently selected data(s) as soon as the mouse cursor is moved:
	• a Drag&Drop operation within the same **MTC Orbit T001** moves the dragged data(s) to the new position
	  ○ <Ctrl> can be pressed in order to execute a copy operation instead of the move operation within the same **MTC Orbit T001**
	• a Drag&Drop operation to another **MTC Orbit T001** copies the dragged data(s) to the new position
	  ○ <Shift> can be pressed in order to execute a move operation instead of the copy operation to the other **MTC Orbit T001**
	• <Esc> cancels the current operation without moving or copying anything

double click	A double click of the left mouse button onto any text within the Legend Area opens the **Data Style** 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 Legend Area opens the context menu for the Legend Area.
single click with keeping the button	A single click of the right mouse button with keeping the button above the Legend Area starts a shift operation for the legend texts. The actual shifting is performed when the mouse is moved: • [right mouse button down] + [mouse move down] moves the Legend Area down • [right mouse button down] + [mouse move up] moves the Legend Area up • <Esc> cancels the current operation and sets the position of the Legend Area back to the place which it had before the shift operation had been started 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.

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 Curve Area or not
Show Spp > …	specifies whether the vector of Spp shall be shown within the Curve Area or not
Set Cursor Data	assigns the measurement cursor to this orbit data
Data Style…	opens the **Data Style** 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 **MTC ynm T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC ynm T001**

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 Orbit T001**:

*Figure 43: 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 On/Off Cursor button	A single click of the left mouse button onto the On/Off Cursor button toggles the cursor between on and off.
single click onto the Undo button	A single click of the left mouse button onto the Undo button undoes the last operation from the undo buffer.
single click onto the Redo button	A single click of the left mouse button onto the Redo button redoes the last operation from the redo buffer.
single click onto the Continue Visualization button	A single click of the left mouse button onto the Continue Visualization button continues the visualization. This button applies to all currently present data independently to whether they are paused or running at the moment. The Continue Visualization button sets the visualization of all data to running.
single click onto the Pause Visualization button	A single click of the left mouse button onto the Pause Visualization button pause the visualization. This button applies to all currently present data independently to whether they are paused or running at the moment. The Pause Visualization button sets the visualization of all data to paused.
single click onto the Store Data Snapshot button	A single click of the left mouse button onto the Store Data Snapshot button starts the storing of the data which are contained within the **MTC Orbit T001**. While the storing is in progress, the **Storage Progress** 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 Toolbar Area opens the context menu for the Toolbar Area. 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 Cursor 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 Cursors > …	sets the visibility of measurement cursors to the state which is specified via the submenu of this item
Restore 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 **MTC Orbit T001**

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 **MTC Orbit T001**
Change Undo/Redo Buffer Size	opens the **Chart Options** dialog, sets the input focus to the Undo/Redo Buffer Size 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 **MTC Orbit T001**

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 **MTC Orbit T001**
Change Undo/Redo Buffer Size	opens the **Chart Options** dialog, sets the input focus to the Undo/Redo Buffer Size 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 **MTC Orbit T001**

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 **MTC Orbit T001**

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 **MTC Orbit T001**

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 **MTC Orbit T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC Orbit T001**

2.2.3.8 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**:

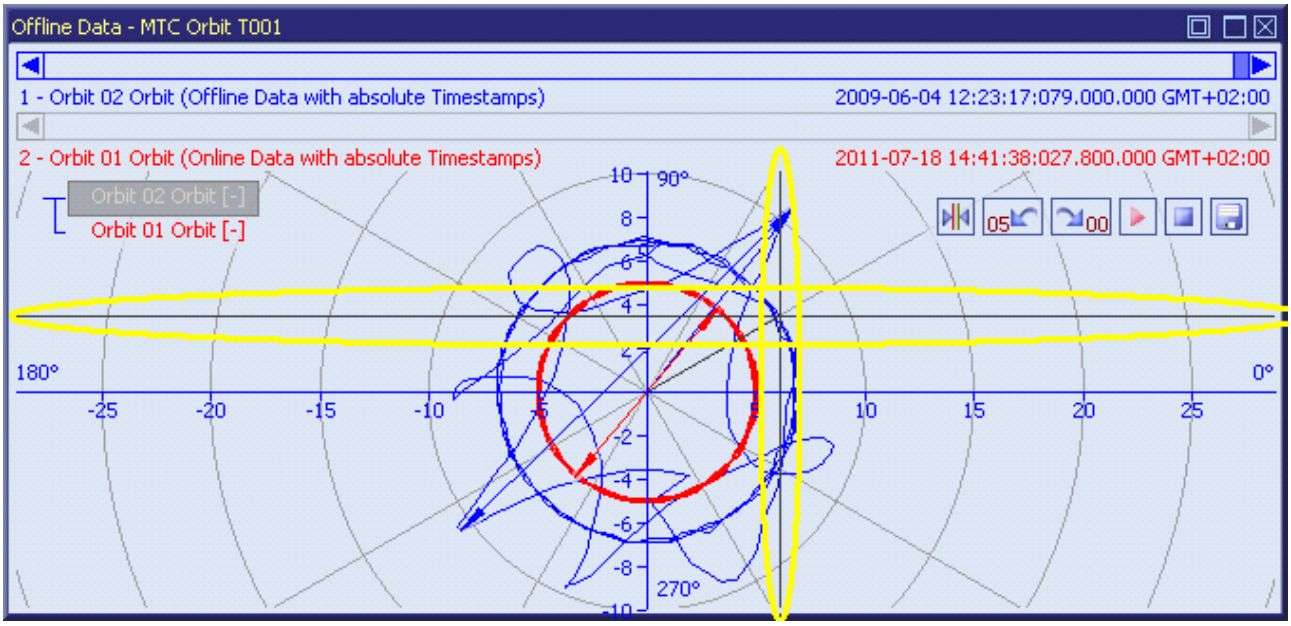


*Figure 44: Example of the Measurement Cursor of a **MTC Orbit T001***

Operations via the Left Mouse Button

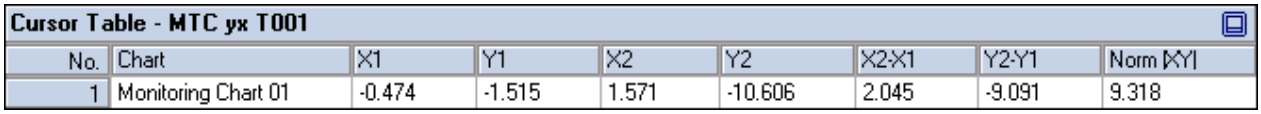
The following operations can be performed via the left mouse button:

Operation	Description

single click with keeping the button	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:
	• [left mouse button down] + [mouse move] shifts the targeted measurement cursor to the new mouse position
	  ○ in case the left mouse button was pressed above the horizontal line of the cursor, the cursor is shifted only in vertical direction
	  ○ in case the left mouse button was pressed above the vertical line of the cursor, the cursor is shifted only in horizontal direction
	  ○ 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
	The values which are displayed by the cursor table are updated automatically while the measurement cursor is shifted.
	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.

2.2.3.9 Cursor Table

The Cursor 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 Cursor Table for a **MTC Orbit T001**:



Cursor Table - MTC yx T001

No.	Chart	X1	Y1	X2	Y2	X2-X1	Y2-Y1	Norm |XY|
1	Monitoring Chart 01	-0.474	-1.515	1.571	-10.606	2.045	-9.091	9.318

*Figure 45: Example of a Cursor 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 Curve Area and the point of intersection of the cursor
Angle Cursor [°]	contains the angle between the origin of the Curve Area and the point of intersection of the cursor
|Smax|	contains the norm between the origin of the Curve Area and Smax
Agnle Smax [°]	contains the angle between the origin of the Curve Area and Smax
|Spp|	contains the norm of Spp

The contents of the Cursor Table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.

2.2.3.10 Chart Options Dialog

2.2.3.10.1 Overview

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

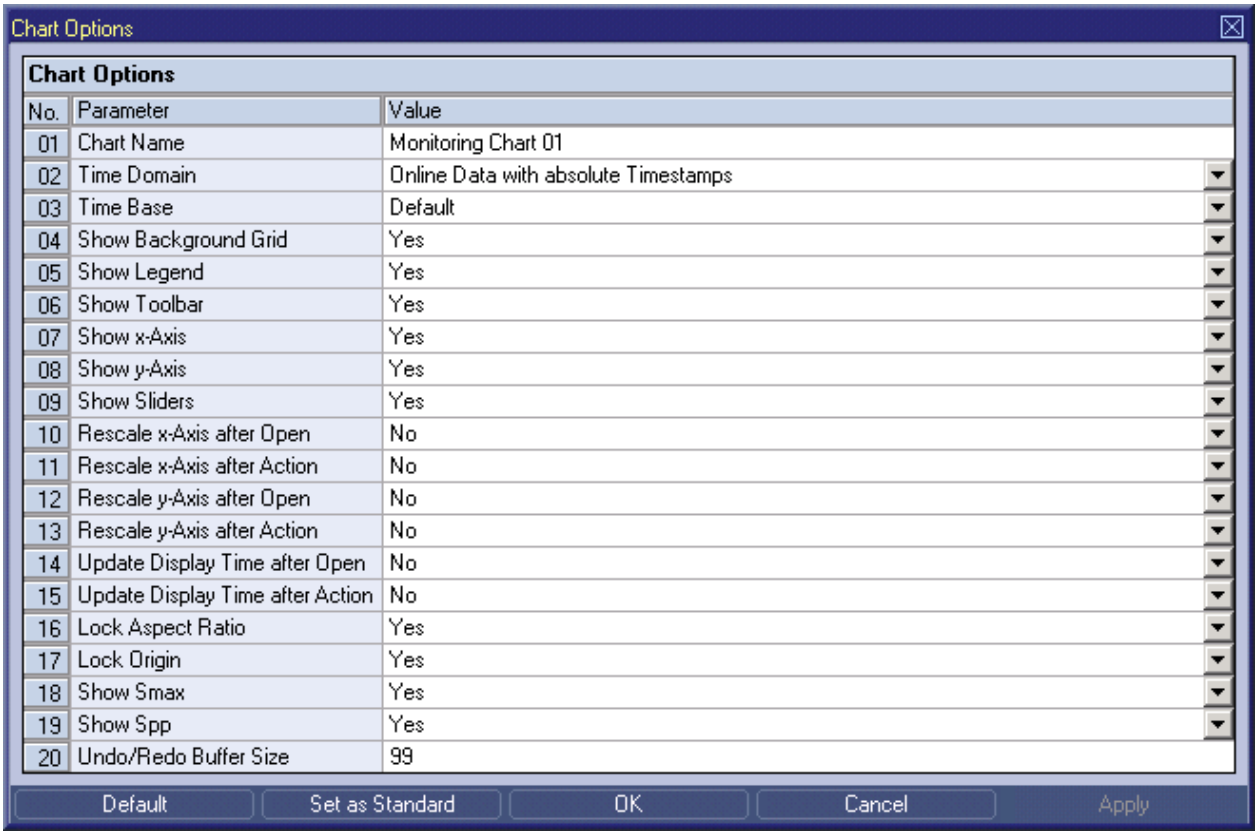


*Figure 46: Example of a **Chart Options** Dialog of a **MTC Orbit T001***

2.2.3.10.2 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 Curve Area
Show Legend	allows to choose whether the Legend Area shall be shown
Show Toolbar	allows to choose whether the Toolbar Area shall be shown
Show x-Axis	allows to choose whether the x-Axis Area shall be shown
Show y-Axis	allows to choose whether the y-Axis Area shall be shown
Show Sliders	allows to choose whether the Slider Area 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 **MTC Orbit T001** or after a new data has been dropped into the **MTC Orbit T001**
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 **MTC Orbit T001** or after a new data has been dropped into the **MTC Orbit T001**
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 **MTC Orbit T001** or after a new data has been dropped into the **MTC Orbit T001**
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 Curve Area
Show Spp	allows to choose whether the vector of Spp shall be shown within the Curve Area
Undo/Redo Buffer Size	allows to enter the total size of undo/redo operations which shall be remembered by the **MTC Orbit T001**

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 **MTC Orbit T001** 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 **MTC Orbit T001** 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 **MTC Orbit T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC Orbit T001**
No	In case the rescale mode for the x-axis after an action is set to “No”, the **MTC Orbit T001** 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 **MTC Orbit T001** 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 **MTC Orbit T001** 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 **MTC Orbit T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC Orbit T001**
No	In case the rescale mode for the y-axis after an action is set to “No”, the **MTC Orbit T001** 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 **MTC Orbit T001** 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 **MTC Orbit T001** 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	In case the update mode for the display time after an action is set to “Yes”, the **MTC Orbit T001** 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. The following actions result in an automatic update of the display time in case this mode is chosen: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC Orbit T001**
No	In case the update mode for the display time after an action is set to “No”, the **MTC Orbit T001** does not touch the display time after an external action has modified the displayed data and leaves it at the current value.

2.2.3.10.3 Menu Bar

Menu Button	Description
Default	Sets all options back to their default settings.
Set as Standard	Sets the current options as standard options for each new **MTC Orbit T001**. The options of already existing **MTC Orbit T001s** 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.

2.2.3.11 Chart Styles Dialog

2.2.3.11.1 Overview

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

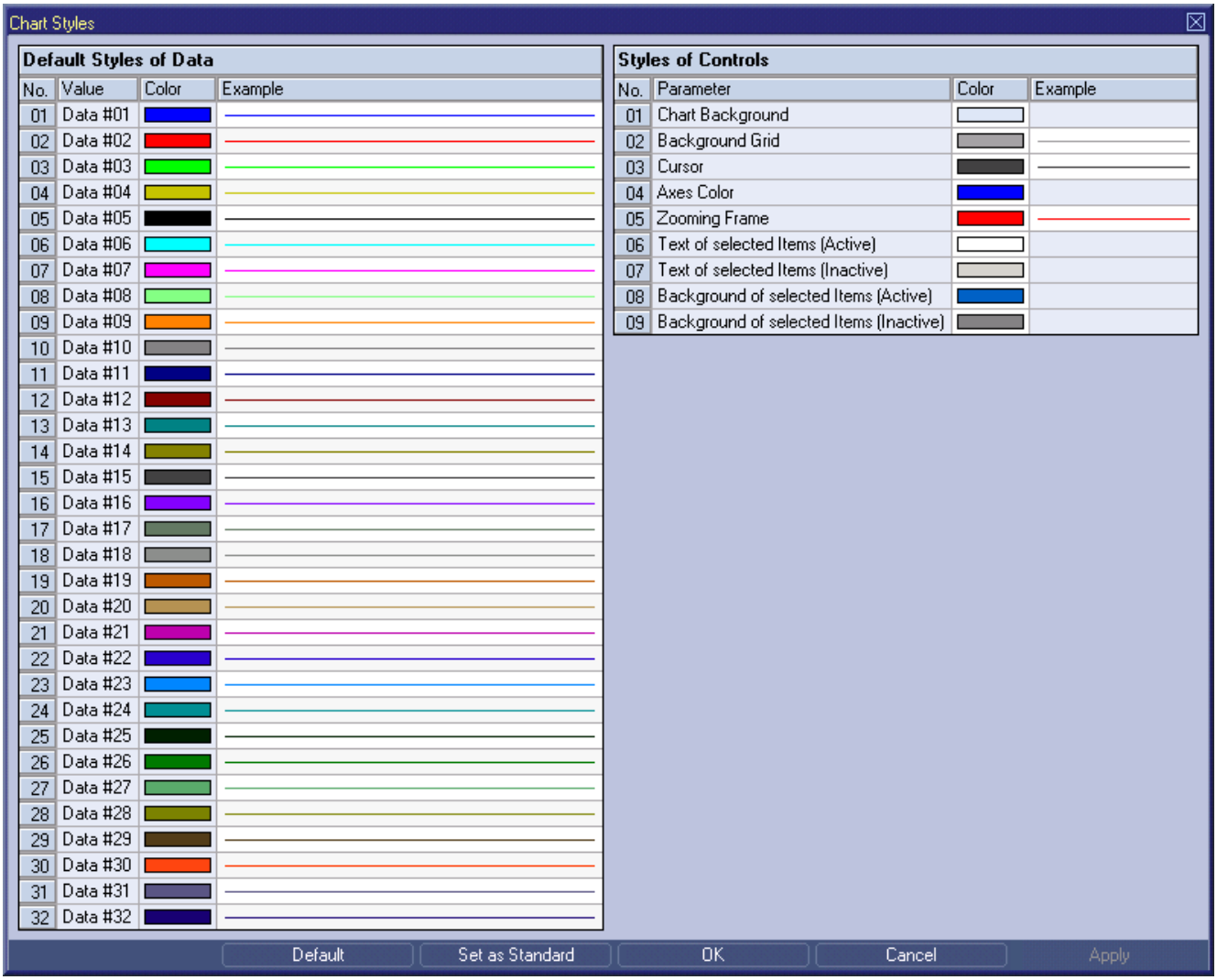


*Figure 47: Example of a **Chart Styles** Dialog of a **MTC Orbit T001***

2.2.3.11.2 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.

2.2.3.11.3 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.

2.2.3.11.4 Menu Bar

Menu Button	Description
Default	Sets all styles back to their default settings.
Set as Standard	Sets the current styles as standard styles for each new **MTC Orbit T001**. The styles of already existing **MTC Orbit T001s** 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.

2.2.3.12 Data Style Dialog

2.2.3.12.1 Overview

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

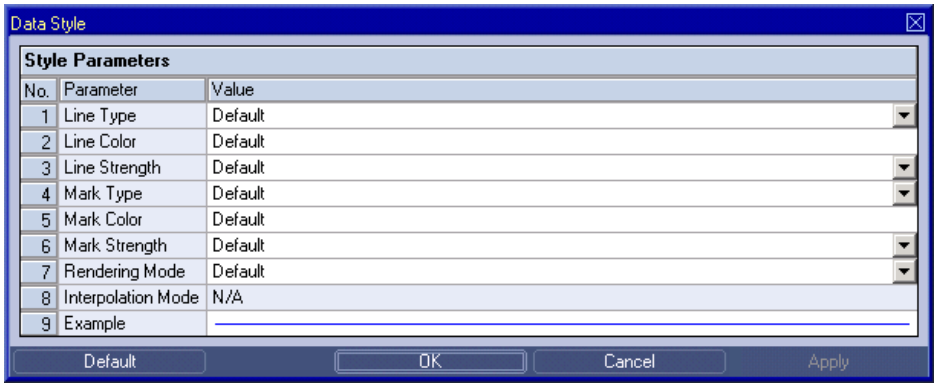


*Figure 48: Example of a **Data Style** Dialog of a **MTC Orbit T001***

2.2.3.12.2 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)	When the rendering mode is set to “Minimal and Maximal Value (x-Axis)”, the following values are calculated for each to-be-drawn point: • smallest value of the x-axis data • biggest value of the x-axis data • average value of the y-axis data 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.
Minimal and Maximal Value (y-Axis)	When the rendering mode is set to “Minimal and Maximal Value (y-Axis)”, the following values are calculated for each to-be-drawn point: • average value of the x-axis data • smallest value of the y-axis data • biggest value of the y-axis data 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.

2.2.3.12.3 Menu Bar

Menu Button	Description
Default	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.

2.2.3.13 Select Style Dialog

2.2.3.13.1 Overview

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

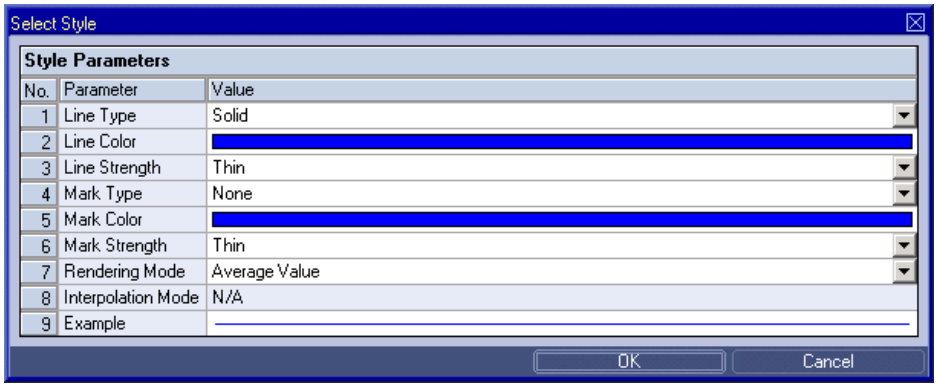


*Figure 49: Example of a **Select Style** Dialog of a **MTC Orbit T001***

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

2.2.3.14 Manual scale x-Axis Dialog

2.2.3.14.1 Overview

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

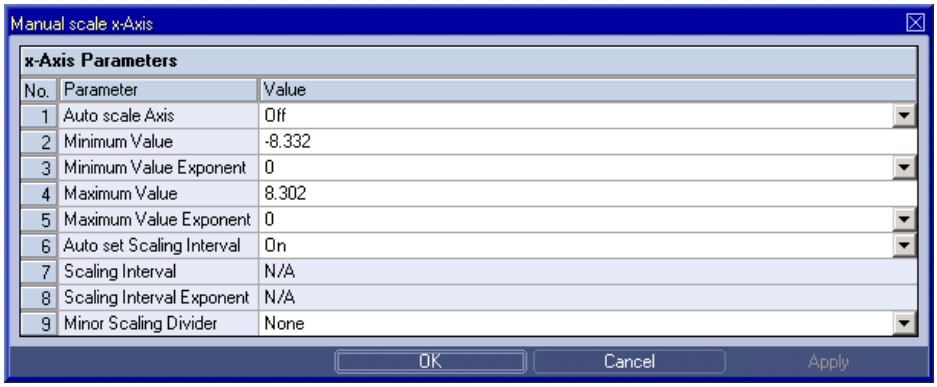


*Figure 50: Example of a **Manual scale x-Axis** Dialog of a **MTC Orbit T001***

2.2.3.14.2 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 **MTC Orbit T001** 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 **MTC Orbit T001** uses the specified Minimum Value and Maximum Value parameters for the scaling of the x-axis.

Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the **MTC Orbit T001** constantly sets the scaling interval of the x-axis according to the currently displayed value interval.
Off	In this mode, the **MTC Orbit T001** uses the specified Scaling Interval and Scaling Interval Exponent 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.

2.2.3.14.3 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.

2.2.3.15 Manual scale y-Axis Dialog

2.2.3.15.1 Overview

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

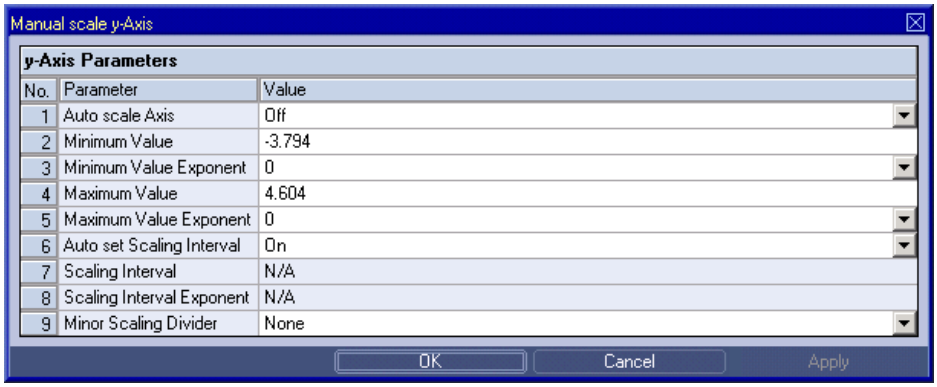


*Figure 51: Example of a **Manual scale y-Axis** Dialog of a **MTC Orbit T001***

2.2.3.15.2 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 **MTC Orbit T001** 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 **MTC Orbit T001** uses the specified Minimum Value and Maximum Value parameters for the scaling of the y-axis.

Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the **MTC Orbit T001** constantly sets the scaling interval of the y-axis according to the currently displayed value interval.
Off	In this mode, the **MTC Orbit T001** uses the specified Scaling Interval and Scaling Interval Exponent 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.

2.2.3.15.3 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.

2.2.3.16 Manual scale Renderer Dialog

2.2.3.16.1 Overview

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

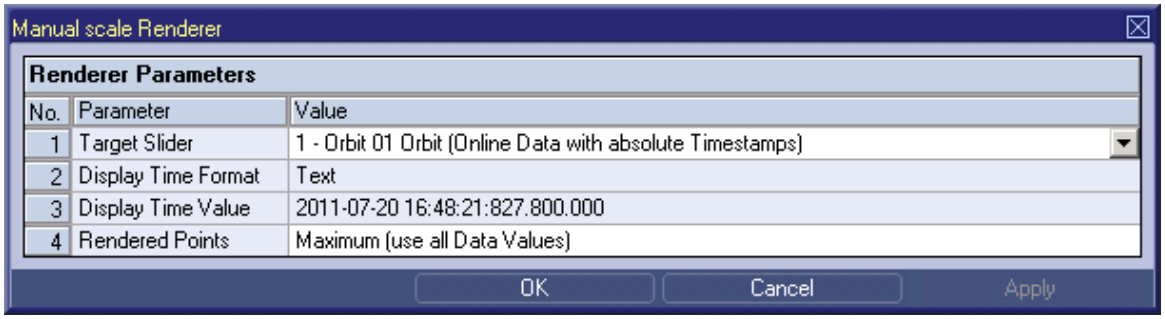


*Figure 52: Example of a **Manual scale Renderer** Dialog of a **MTC Orbit T001***

2.2.3.16.2 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

2.2.3.16.3 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.

2.2.3.17 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**:

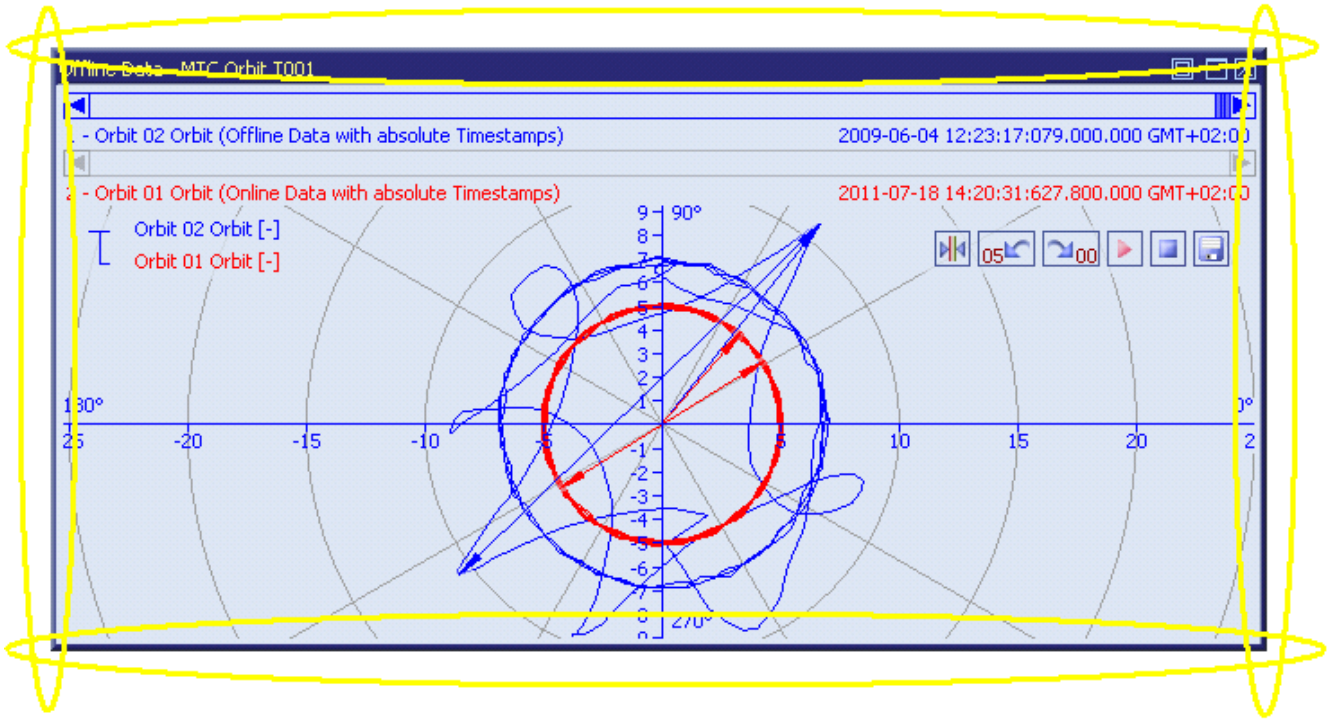


*Figure 53: Dropping of Data in order to open a new **Monitoring Chart***

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**:

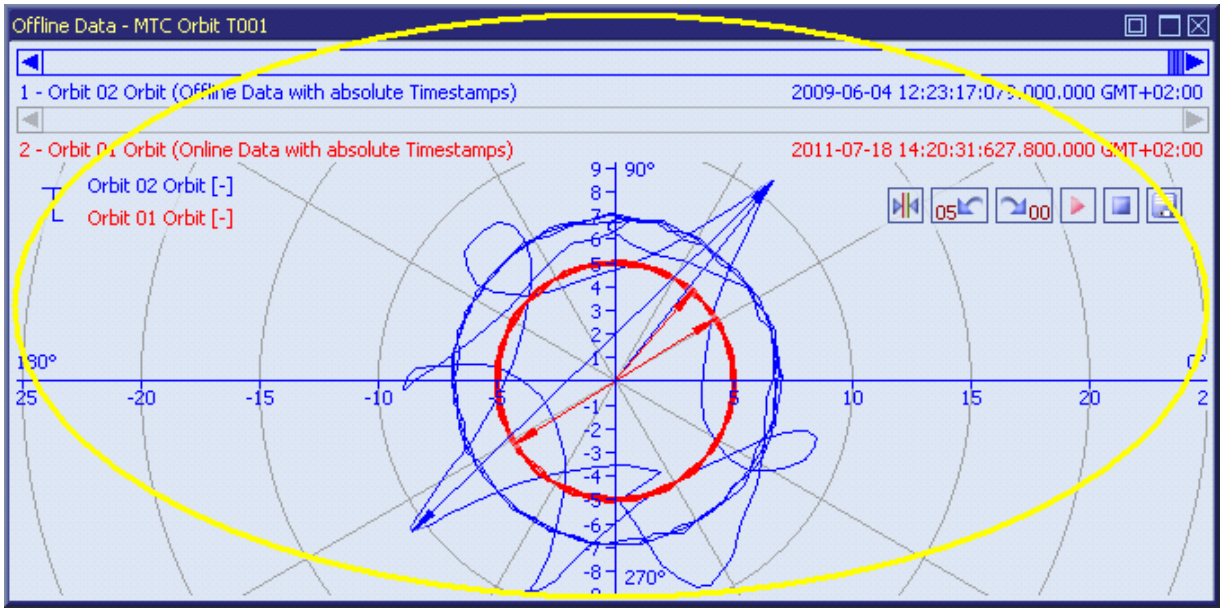


*Figure 54: Dropping of Data in order to add it to the existing **MTC Orbit T001***

2.2.4 MTC yn T001

2.2.4.1 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**:

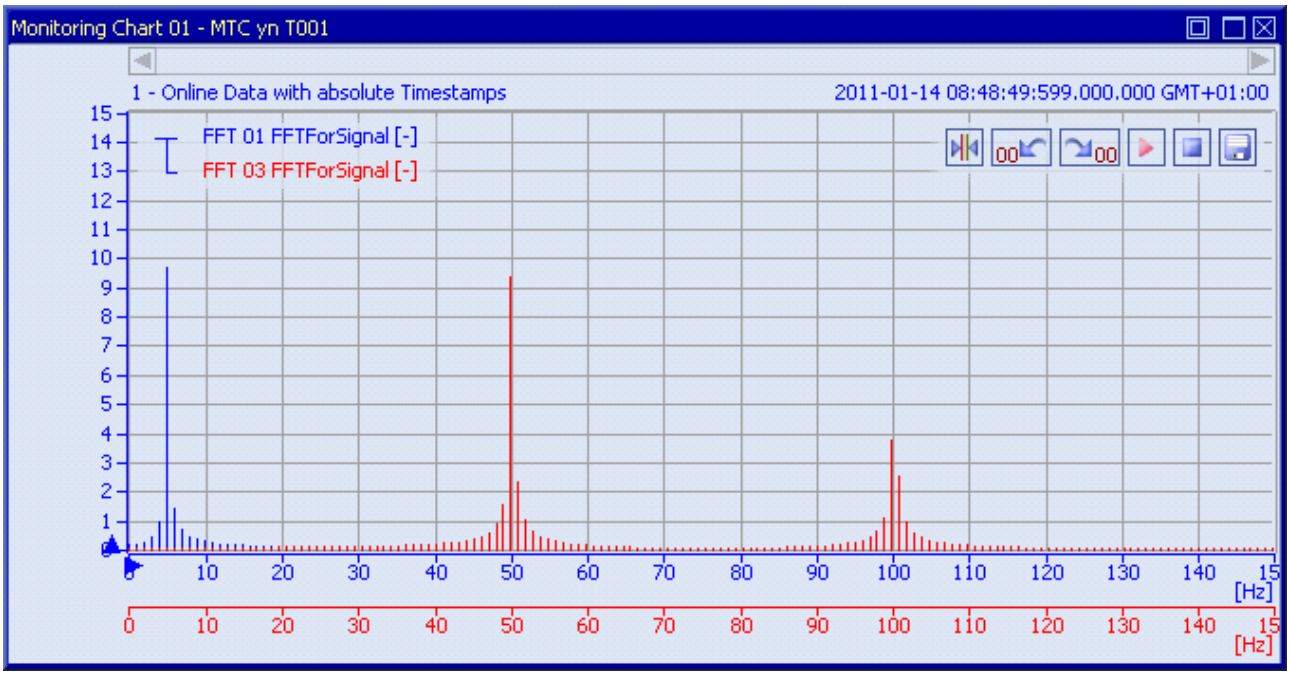


*Figure 55: Example of a **MTC yn T001***

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
- Cursor Table
- Chart Options Dialog
- Chart Styles Dialog
- Data Style Dialog
- Select Style Dialog
- Manual scale x-Axis Dialog
- Manual scale y-Axis Dialog
- Drag&Drop sensitive Areas

2.2.4.2 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**:

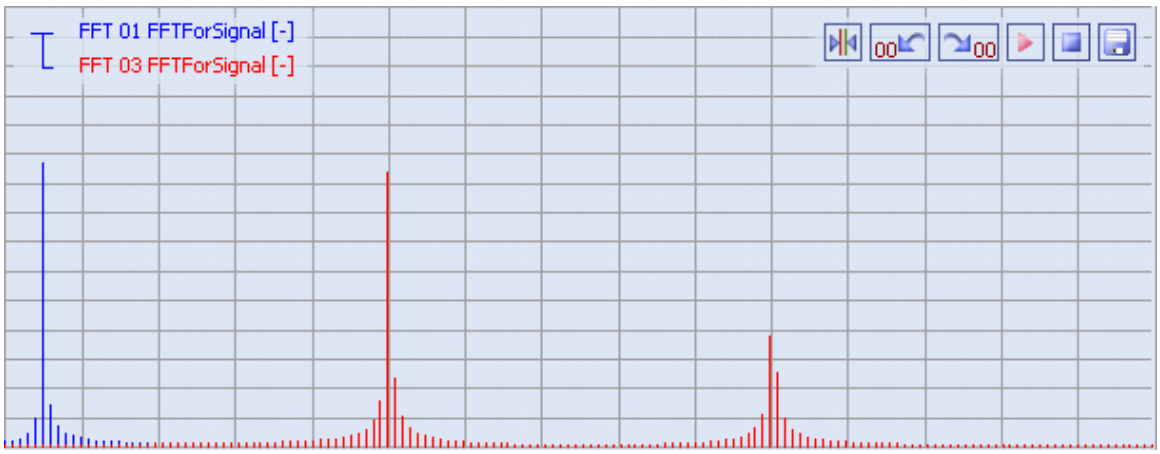


*Figure 56: Example of the Curve Area of a **MTC yn T001***

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

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	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:
	• [left mouse button down] + [mouse move] zooms into the specified area of the x and y-axes simultaneously
	• <Shift> + [left mouse button down] + [mouse move] zooms only into the specified area of the x-axes
	  o <x> + [left mouse button down] + [mouse move] behaves like <Shift> + [left mouse button down] + [mouse move]
	• <Ctrl> + [left mouse button down] + [mouse move] zooms only into the specified area of the y-axes
	  o <y> + [left mouse button down] + [mouse move] behaves like <Ctrl> + [left mouse button down] + [mouse move]
	• <Esc> cancels the current operation without changing of any axis scaling

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 Curve Area opens the context menu for the Curve Area.
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: • [right mouse button down] + [mouse move] moves all curves within the Curve Area into the direction of the mouse move o when the <Shift> key is being pressed during the shift operation, the curves are shifted only in horizontal direction ▪ when <x> key is being pressed during the shift operation, the behavior is like if the <Shift> key is being pressed during the shift operation o when the <Ctrl> key is being pressed during the shift operation, the curves are shifted only in vertical direction ▪ when <y> key is being pressed during the shift operation, the behavior is like if the <Shift> key is being pressed during the shift operation • <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started

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 Curve Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] zooms out of the current mouse position of the x- and y-axes simultaneously • [mouse wheel up] zooms into the current mouse position of the x- and y-axes simultaneously • <Shift> + [mouse wheel down] moves all curves within the Curve Area to the left o <x> + [mouse wheel down] behaves like <Shift> + [mouse wheel down] • <Shift> + [mouse wheel up] moves all curves within the Curve Area to the right o <x> + [mouse wheel up] behaves like <Shift> + [mouse wheel up] • <Ctrl> + [mouse wheel down] moves all curves within the Curve Area up o <y> + [mouse wheel down] behaves like <Ctrl> + [mouse wheel down] • <Ctrl> + [mouse wheel up] moves all curves within the Curve Area down o <y> + [mouse wheel up] behaves like <Ctrl> + [mouse wheel up]

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 **MTC yn T001** become visible
Fit to Charts	sets the scaling of all **Monitoring Charts** within the parent **Monitoring View Editor** so that the complete values of all data within all **Monitoring Charts** 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 **Chart Options** dialog
Copy Chart Options	copies the options of the **MTC yn T001** below the current mouse position
Paste Chart Options	pastes the currently copied **MTC yn T001** options onto the **MTC yn T001** below the current mouse position
Chart Styles…	opens the **Chart Styles** dialog
Copy Chart Styles	copies the styles of the **MTC yn T001** below the current mouse position
Paste Chart Styles	pastes the currently copied **MTC yn T001** styles onto the **MTC yn T001** 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 Legend Area to the state which is specified via the submenu of this item
Show Toolbar > …	sets the visibility of the Toolbar Area to the state which is specified via the submenu of this item
Show x-Axes > …	sets the visibility of the x-Axes Area to the state which is specified via the submenu of this item
Show y-Axes > …	sets the visibility of the y-Axes Area to the state which is specified via the submenu of this item
Show Sliders > …	sets the visibility of the Slider Area 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 **MTC yn T001**

2.2.4.3 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**:

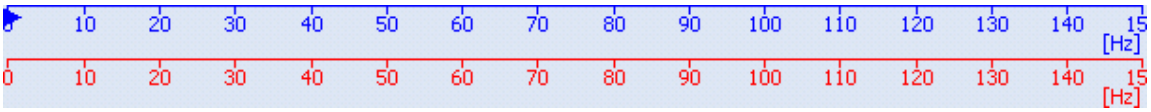


*Figure 57: Example of the x-Axes Area of a **MTC yn T001***

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	Single and multiple x-axes can be selected/deselected through a left mouse button click: • [left mouse button down] above any x-axis selects the below x-axis • <Ctrl> + [left mouse button down] is used in order to select/deselect x-axis after x-axis • <Shift> + [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 ○ in case there is no x-axis selected at the moment, only the below x-axis is selected • multiple x-axes can be selected/deselected after each other through combinations of the above methods • 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 <Shift> or <Ctrl> keys, the currently selected items of the clicked **Monitoring Chart** are deselected and the clicked x-axis becomes selected instead • in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the x-Axes Area, the currently selected items of the clicked **Monitoring Chart** are deselected
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: • [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 • [left mouse button down] + [mouse move left] zooms into the x-axis from the x position where the left mouse button has been pressed • <Esc> cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started
double click	A double click of the left mouse button onto any x-axis opens the **Manual scale x-Axis** 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 x-Axes Area opens the context menu for the x-Axes Area.
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: • [right mouse button down] + [mouse move right] moves the x-axis right • [right mouse button down] + [mouse move left] moves the x-axis left • <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started

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 x-Axes Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the x-axis left • [mouse wheel up] moves the x-axis right • <Shift> + [mouse wheel down] zooms out of the x-axis from the current x position of the mouse cursor • <Shift> + [mouse wheel up] zooms into the x-axis from the current x position of the mouse cursor

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 x-Axes Area 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 Measurement Cursors 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 **Manual scale x-Axis** 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 **MTC yn T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC yn T001**

2.2.4.4 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**:

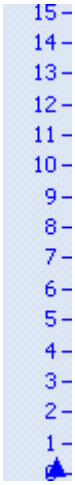


*Figure 58: Example of the y-Axes Area of a **MTC yn T001***

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	Single and multiple y-axes can be selected/deselected through a left mouse button click: • [left mouse button down] above any y-axis selects the below y-axis • <Ctrl> + [left mouse button down] is used in order to select/deselect y-axis after y-axis • <Shift> + [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 ○ in case there is no y-axis selected at the moment, only the below y-axis is selected • multiple y-axes can be selected/deselected after each other through combinations of the above methods • 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 <Shift> or <Ctrl> keys, the currently selected items of the clicked **Monitoring Chart** are deselected and the clicked y-axis becomes selected instead • in case the [left mouse button] or the [right mouse button] is being pressed anywhere outside the y-Axes Area, the currently selected items of the clicked **Monitoring Chart** are deselected
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: • [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 • [left mouse button down] + [mouse move up] zooms into the y-axis from the y position where the left mouse button has been pressed • <Esc> cancels the current operation and sets the axes scaling back to the values which they had before the zooming operation had been started
double click	A double click of the left mouse button onto any y-axis opens the **Manual scale y-Axis** 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 y-Axes Area opens the context menu for the y-Axes Area.
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: • [right mouse button down] + [mouse move down] moves the y-axis down • [right mouse button down] + [mouse move up] moves the y-axis up • <Esc> cancels the current operation and sets all axes scaling back to the values which they had before the shift operation had been started

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 y-Axes Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the y-axis up • [mouse wheel up] moves the y-axis down • <Ctrl> + [mouse wheel down] zooms out of the y-axis from the current y position of the mouse cursor • <Ctrl> + [mouse wheel up] zooms into the y-axis from the current y position of the mouse cursor

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 y-Axes Area 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 **Manual scale y-Axis** 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 **MTC yn T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC yn T001**

2.2.4.5 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 59: 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	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: • 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 ○ 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
single click with releasing the button onto the right step button	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: • 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 ○ 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
single click with keeping the button onto the left step button	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.
single click with keeping the button onto the right step button	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.
single click with keeping the button onto the slider button	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: • in case the mouse is moved to the left, the current point in time is shifted into the past ○ the slider button can not be dragged out of the left border of the Slider Area • in case the mouse is moved to the right, the current point in time is shifted into the future ○ the slider button can not be dragged out of the right border of the Slider Area • <Esc> cancels the current operation without modifying the current point in time

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 Slider Area opens the context menu for the Slider Area.

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 Slider Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the slider button left (into the past) ○ 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 • [mouse wheel up] moves the slider button right (into the future) ○ 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

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 Slider Area 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 sub-menu 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 **MTC yn T001**

2.2.4.6 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 60: 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	Selecting of data within the Legend Area is performed identically to the selecting of items within the other trees of the ***X-Tools Client***. In case a data within the Legend Area is being selected, all items of other type (e.g. x-axes and y-axes) of the clicked **Monitoring Chart** are deselected automatically.
single click with keeping the button	A single click of the left mouse button with keeping the button down onto any text within the Legend Area starts a Drag&Drop operation for the currently selected data(s) as soon as the mouse cursor is moved: • a Drag&Drop operation within the same **MTC yn T001** moves the dragged data(s) to the new position o <Ctrl> can be pressed in order to execute a copy operation instead of the move operation within the same **MTC yn T001** • a Drag&Drop operation to another **MTC yn T001** copies the dragged data(s) to the new position o <Shift> can be pressed in order to execute a move operation instead of the copy operation to the other **MTC yn T001** • <Esc> cancels the current operation without moving or copying anything
double click	A double click of the left mouse button onto any text within the Legend Area opens the **Data Style** 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 Legend Area opens the context menu for the Legend Area.
single click with keeping the button	A single click of the right mouse button with keeping the button above the Legend Area starts a shift operation for the legend texts. The actual shifting is performed when the mouse is moved: • [right mouse button down] + [mouse move down] moves the Legend Area down • [right mouse button down] + [mouse move up] moves the Legend Area up • <Esc> cancels the current operation and sets the position of the Legend Area back to the place which it had before the shift operation had been started 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.

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 **Data Style** 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 **MTC yn T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC yn T001**

2.2.4.7 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 61: 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 On/Off Cursor button	A single click of the left mouse button onto the On/Off Cursor button toggles the cursors between on and off.
single click onto the Undo button	A single click of the left mouse button onto the Undo button undoes the last operation from the undo buffer.
single click onto the Redo button	A single click of the left mouse button onto the Redo button redoes the last operation from the redo buffer.
single click onto the Continue Visualization button	A single click of the left mouse button onto the Continue Visualization button continues the visualization. This button applies to all currently present data independently to whether they are paused or running at the moment. The Continue Visualization button sets the visualization of all data of all (x and y) axes to running.
single click onto the Pause Visualization button	A single click of the left mouse button onto the Pause Visualization button pause the visualization. This button applies to all currently present data independently to whether they are paused or running at the moment. The Pause Visualization button sets the visualization of all data of all (x and y) axes to paused.
single click onto the Store Data Snapshot button	A single click of the left mouse button onto the Store Data Snapshot button starts the storing of the data which are contained within the **MTC yn T001**. While the storing is in progress, the **Storage Progress** 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 Toolbar Area opens the context menu for the Toolbar Area. 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 Cursor 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 Cursors > …	sets the visibility of measurement cursors to the state which is specified via the submenu of this item
Restore Cursors	restores the positions of the two 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 **MTC yn T001**

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 **MTC yn T001**
Change Undo/Redo Buffer Size	opens the **Chart Options** dialog, sets the input focus to the Undo/Redo Buffer Size 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 **MTC yn T001**

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 **MTC yn T001**
Change Undo/Redo Buffer Size	opens the **Chart Options** dialog, sets the input focus to the Undo/Redo Buffer Size 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 **MTC yn T001**

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 **MTC yn T001**

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 **MTC yn T001**

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 **MTC yn T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC yn T001**

2.2.4.8 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**:

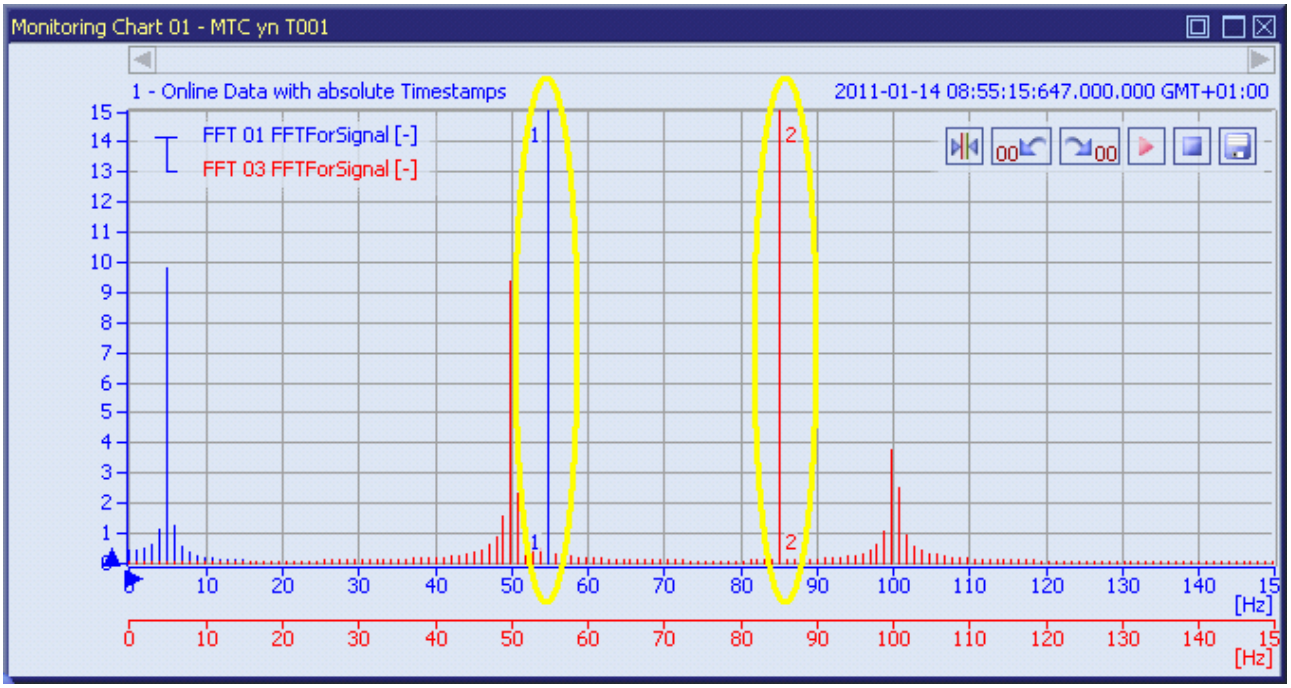


*Figure 62: Example of the Measurement Cursors of a **MTC yn T001***

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	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: • [left mouse button down] + [mouse move] shifts the targeted measurement cursor horizontally to the new mouse position The values which are displayed by the cursor table are updated automatically while the measurement cursor is shifted.

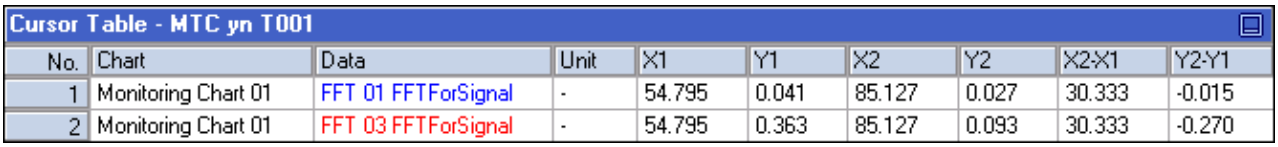
Operations via the Right Mouse Button

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

Operation	Description
single click with keeping the button	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: • [right mouse button down] + [mouse move] shifts both measurement cursors horizontally simultaneously with keeping the value distance between them The values which are displayed by the cursor table are updated automatically while the measurement cursors are shifted.

2.2.4.9 Cursor Table

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



Cursor Table - MTC yn T001

No.	Chart	Data	Unit	X1	Y1	X2	Y2	X2-X1	Y2-Y1
1	Monitoring Chart 01	FFT 01 FFTForSignal	-	54.795	0.041	85.127	0.027	30.333	-0.015
2	Monitoring Chart 01	FFT 03 FFTForSignal	-	54.795	0.363	85.127	0.093	30.333	-0.270

*Figure 63: Example of a Cursor 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 Cursor Table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.

2.2.4.10 Chart Options Dialog

2.2.4.10.1 Overview

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

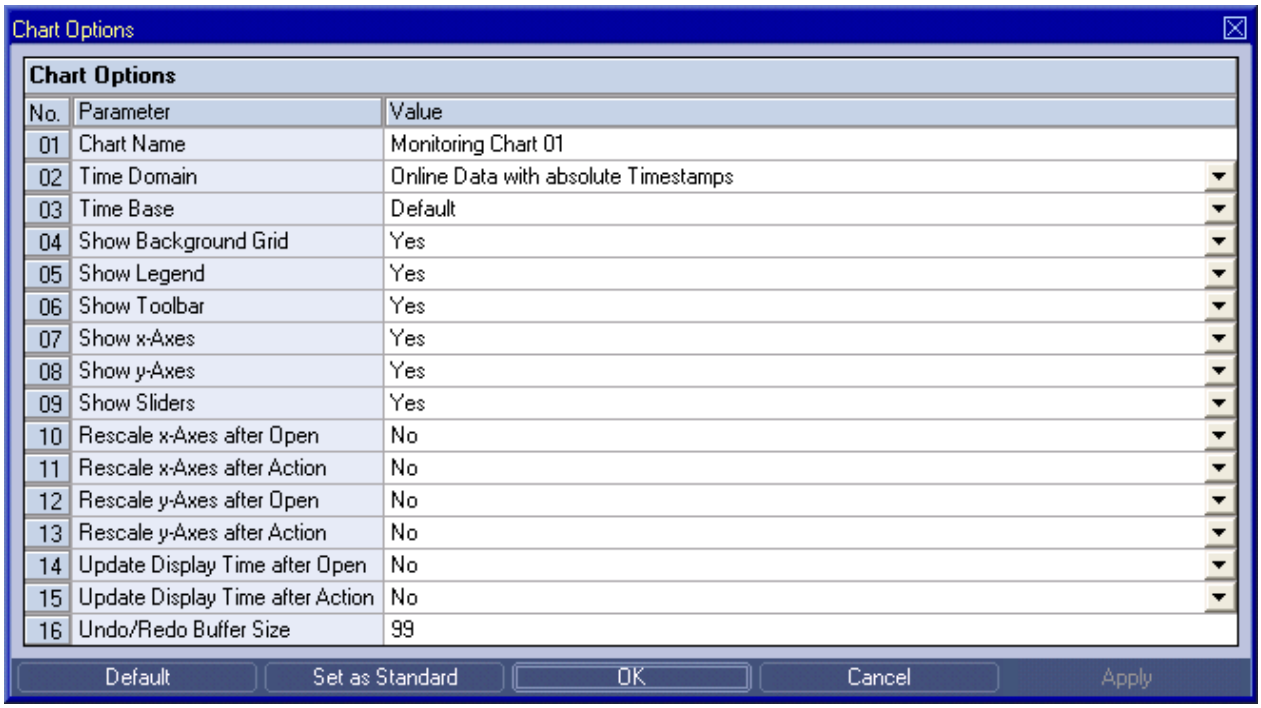


Chart Options

Chart Options

No.	Parameter	Value
01	Chart Name	Monitoring Chart 01
02	Time Domain	Online Data with absolute Timestamps
03	Time Base	Default
04	Show Background Grid	Yes
05	Show Legend	Yes
06	Show Toolbar	Yes
07	Show x-Axes	Yes
08	Show y-Axes	Yes
09	Show Sliders	Yes
10	Rescale x-Axes after Open	No
11	Rescale x-Axes after Action	No
12	Rescale y-Axes after Open	No
13	Rescale y-Axes after Action	No
14	Update Display Time after Open	No
15	Update Display Time after Action	No
16	Undo/Redo Buffer Size	99

Default | Set as Standard | OK | Cancel | Apply

*Figure 64: Example of a **Chart Options** Dialog of a **MTC yn T001***

2.2.4.10.2 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 Curve Area
Show Legend	allows to choose whether the Legend Area shall be shown
Show Toolbar	allows to choose whether the Toolbar Area shall be shown
Show x-Axes	allows to choose whether the x-Axes Area shall be shown
Show y-Axes	allows to choose whether the y-Axes Area shall be shown
Show Sliders	allows to choose whether the Slider Area 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 **MTC yn T001** or after a new data has been dropped into the **MTC yn T001**
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 **MTC yn T001** or after a new data has been dropped into the **MTC yn T001**
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 **MTC yn T001** or after a new data has been dropped into the **MTC yn T001**
Undo/Redo Buffer Size	allows to enter the total size of undo/redo operations which shall be remembered by the **MTC yn T001**

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 **MTC yn T001** 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 **MTC yn T001** 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 **MTC yn T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC yn T001**
No	In case the rescale mode for the x-axes after an action is set to “No”, the **MTC yn T001** 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 **MTC yn T001** 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 **MTC yn T001** 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 yn 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 **MTC yn T001** automatically rescales the y-axes 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-axes become visible. The following actions result in an automatic rescale of the y-axes in case this mode is chosen: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC yn T001**
No	In case the rescale mode for the y-axes after an action is set to “No”, the **MTC yn T001** 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.

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 **MTC yn T001** 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 **MTC yn T001** 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 **MTC yn T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC yn T001**
No	In case the update mode for the display time after an action is set to “No”, the **MTC yn T001** 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.

2.2.4.10.3 Menu Bar

Menu Button	Description
Default	Sets all options back to their default settings.
Set as Standard	Sets the current options as standard options for each new **MTC yn T001**. The options of already existing **MTC yn T001s** 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.

2.2.4.11 Chart Styles Dialog

2.2.4.11.1 Overview

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

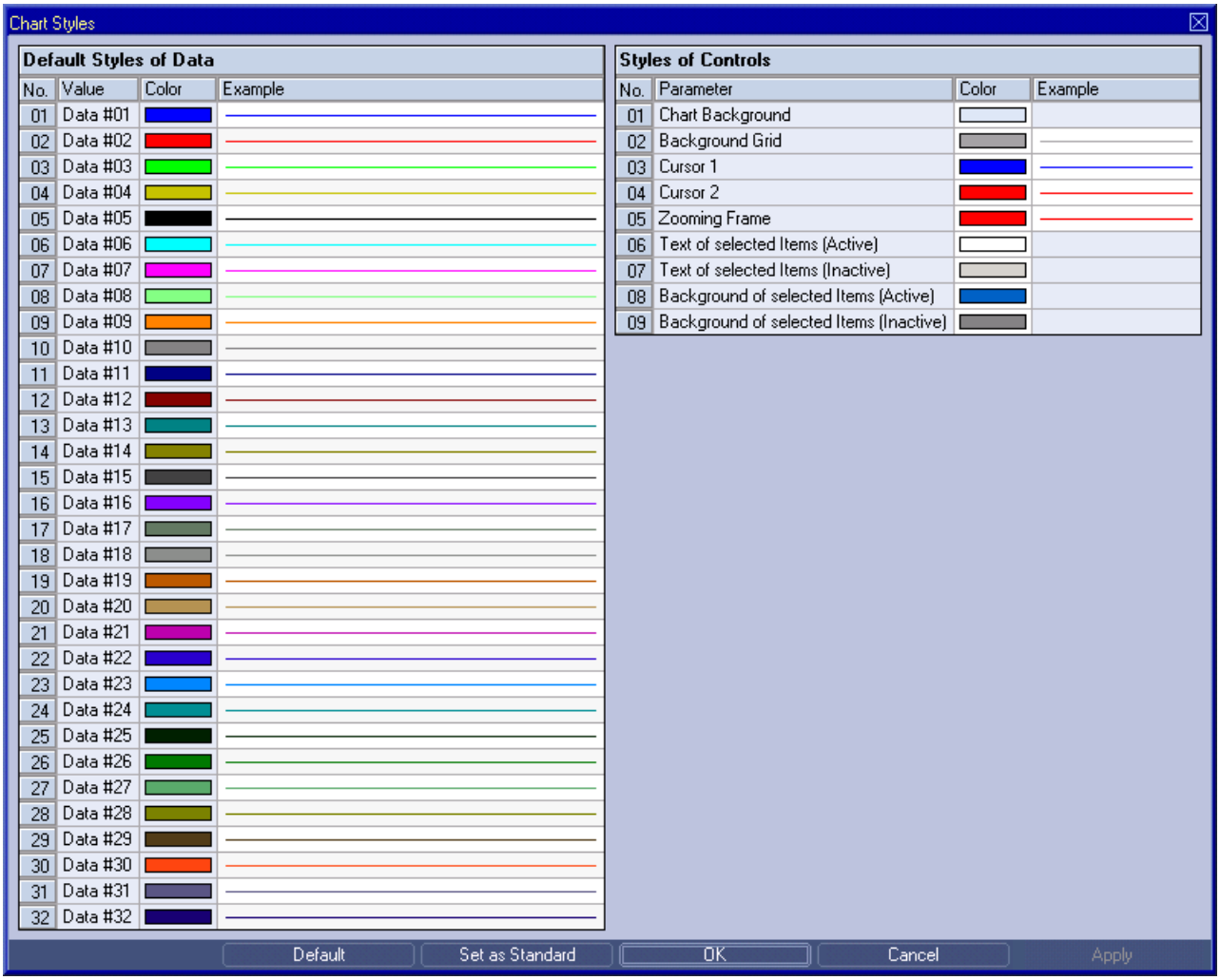


*Figure 65: Example of a **Chart Styles** Dialog of a **MTC yn T001***

2.2.4.11.2 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.

2.2.4.11.3 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.

2.2.4.11.4 Menu Bar

Menu Button	Description
Default	Sets all styles back to their default settings.
Set as Standard	Sets the current styles as standard styles for each new **MTC yn T001**. The styles of already existing **MTC yn T001s** 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.

2.2.4.12 Data Style Dialog

2.2.4.12.1 Overview

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

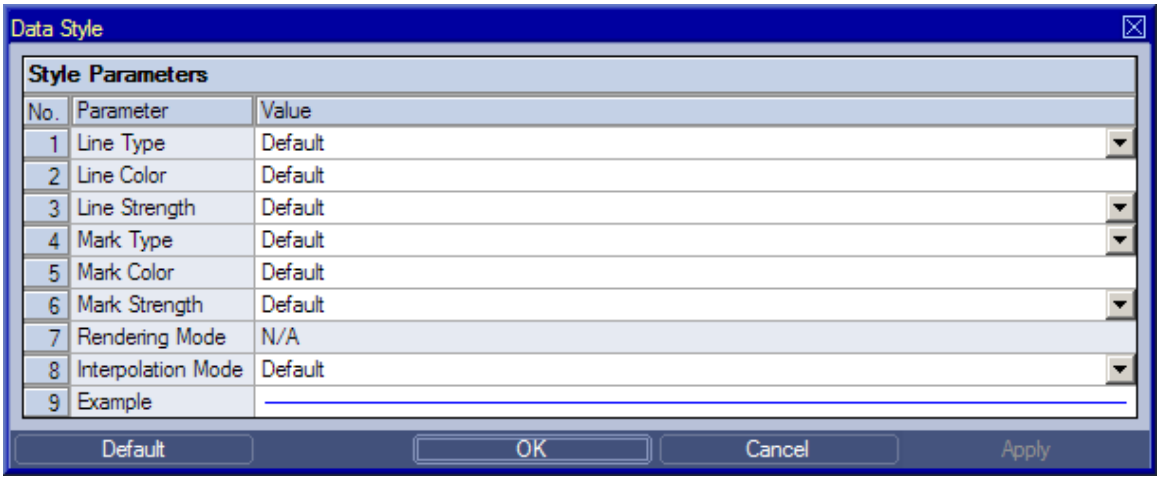


*Figure 66: Example of a **Data Style** Dialog of a **MTC yn T001***

2.2.4.12.2 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	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 Line Strength.
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.

2.2.4.12.3 Menu Bar

Menu Button	Description
Default	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.

2.2.4.13 Select Style Dialog

2.2.4.13.1 Overview

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

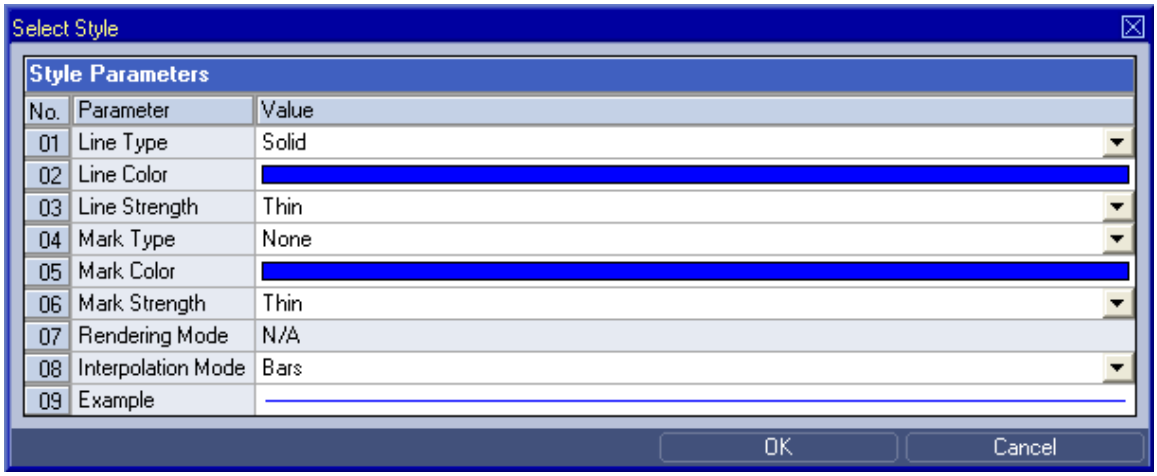


*Figure 67: Example of a **Select Style** Dialog of a **MTC yn T001***

The functionality of the **Select Style** dialog matches the functionality of the **Data Style** dialog (see point 2.2.4.12).

2.2.4.14 Manual scale x-Axis Dialog

2.2.4.14.1 Overview

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

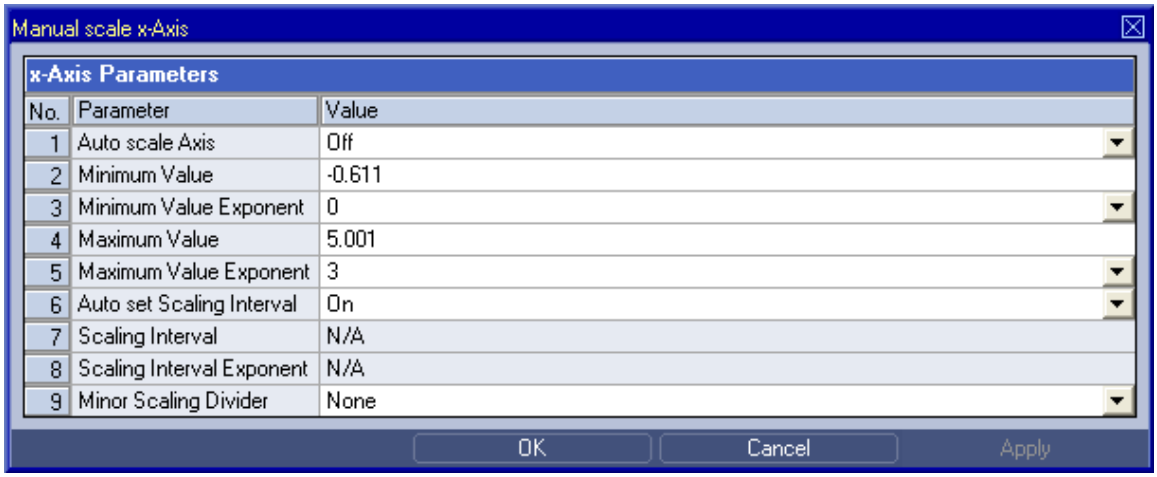


*Figure 68: Example of a **Manual scale x-Axis** Dialog of a **MTC yn T001***

2.2.4.14.2 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 **MTC yn T001** 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 **MTC yn T001** uses the specified Minimum Value and Maximum Value parameters for the scaling of the x-axis.

Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the **MTC yn T001** constantly sets the scaling interval of the x-axis according to the currently displayed time interval.
Off	In this mode, the **MTC yn T001** uses the specified Scaling Interval and Scaling Interval Exponent 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.

2.2.4.14.3 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.

2.2.4.15 Manual scale y-Axis Dialog

2.2.4.15.1 Overview

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

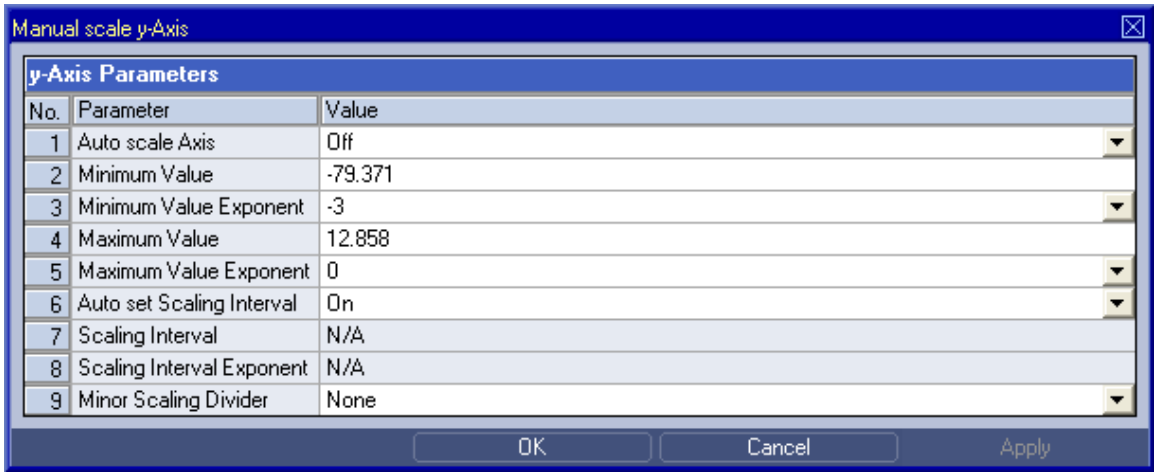


*Figure 69: Example of a **Manual scale y-Axis** Dialog of a **MTC yn T001***

The functionality of the **Manual scale y-Axis** dialog matches the functionality of the **Manual scale x-Axis** dialog (see point 2.2.4.14).

2.2.4.16 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**:

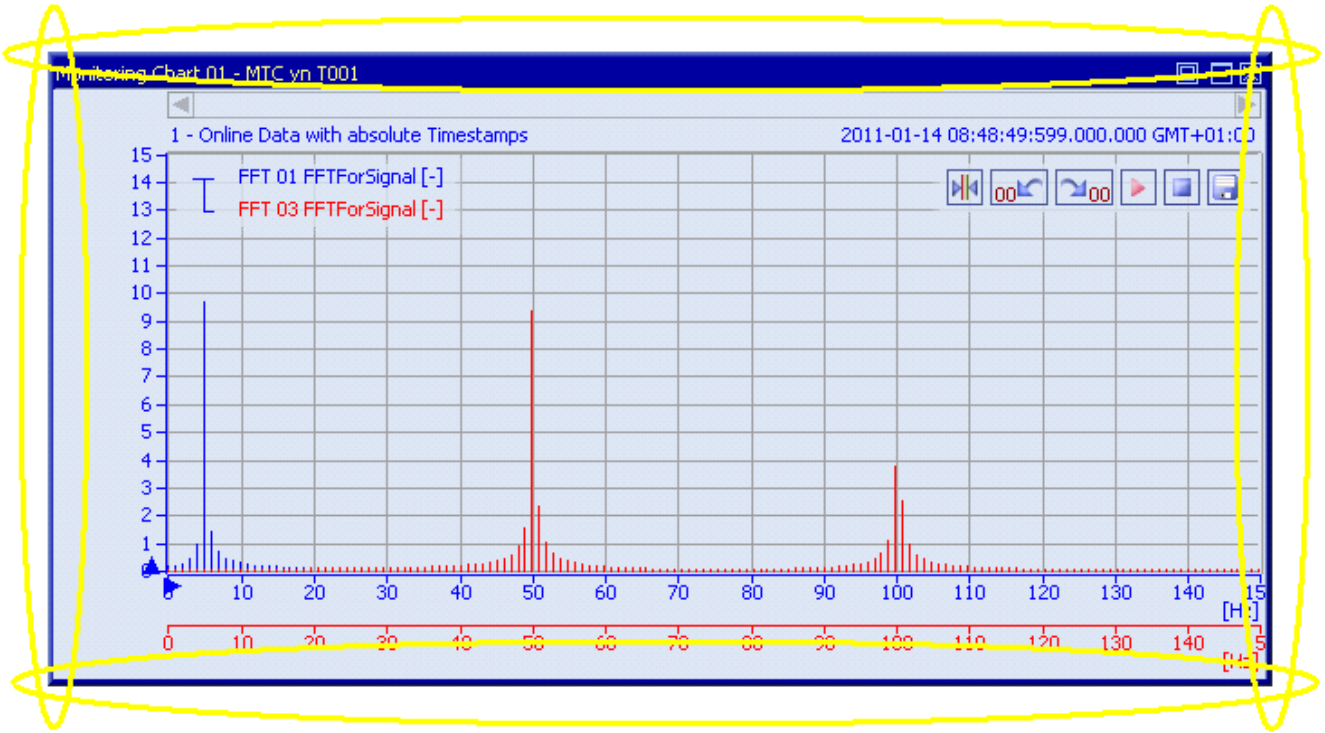


*Figure 70: Dropping of Data in order to open a new **Monitoring Chart***

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**:

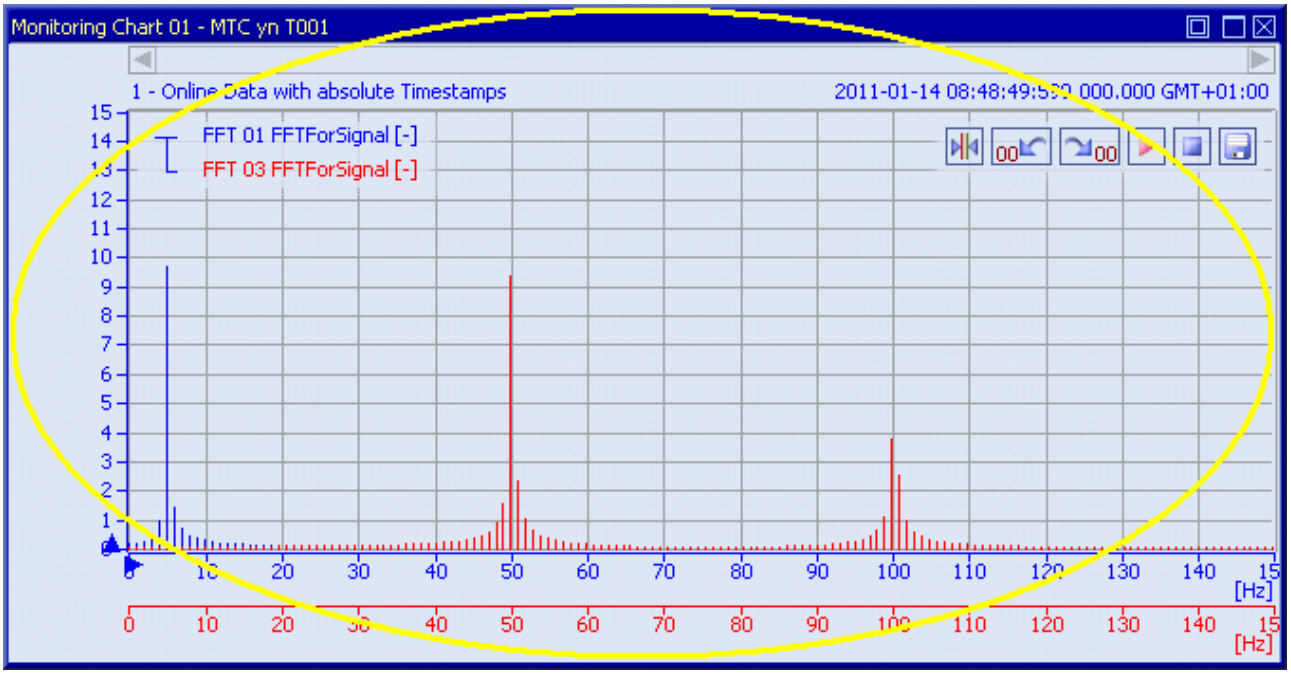


*Figure 71: Dropping of Data in order to add it to the existing **MTC yn T001***

2.2.5 MTC ynm T001

2.2.5.1 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**:

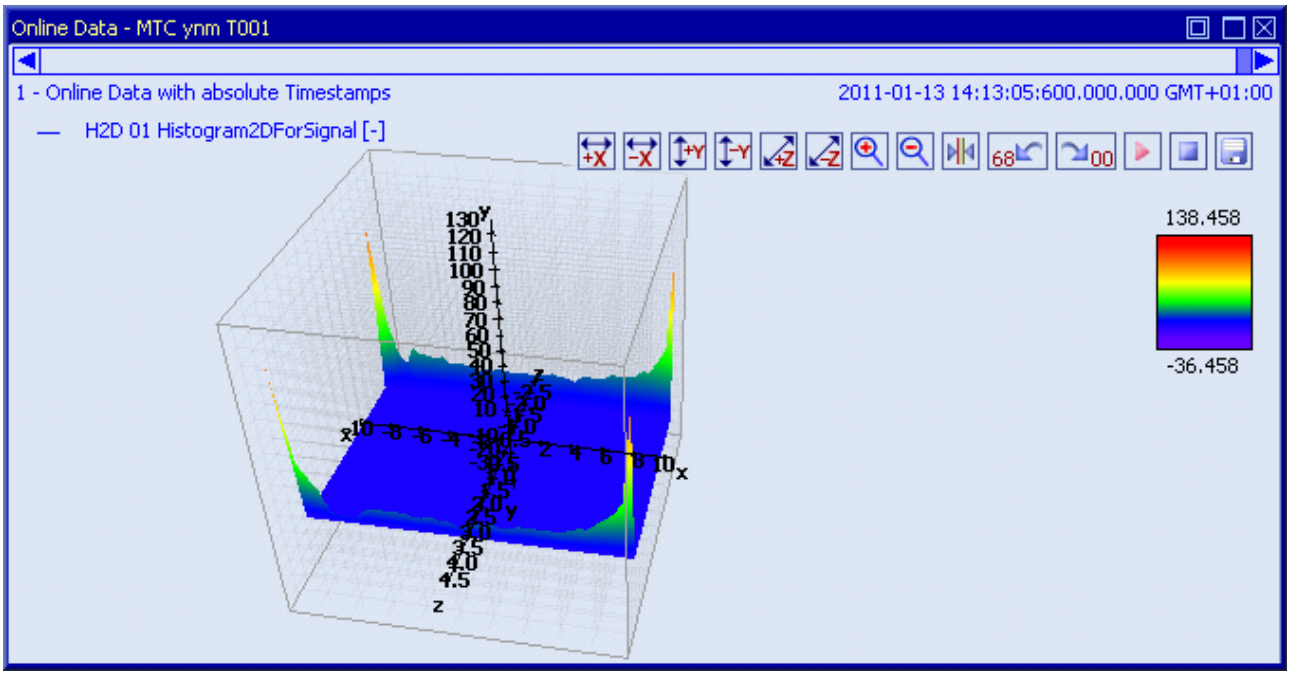


*Figure 72: Example of a **MTC ynm T001***

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
- Cursor 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

2.2.5.2 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**:

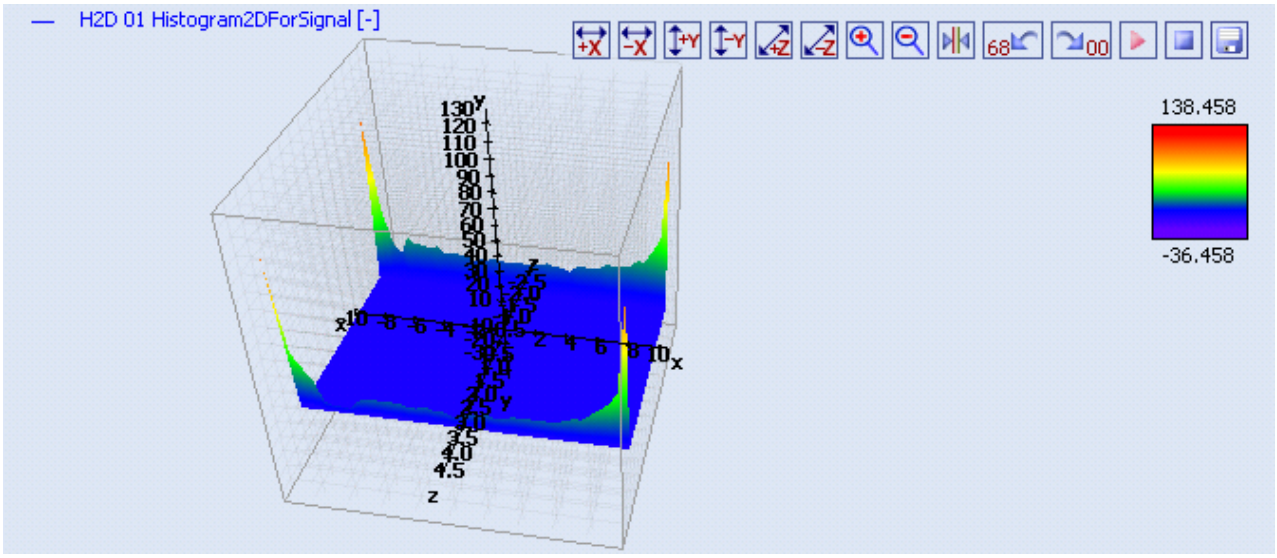


*Figure 73: Example of the Curve Area of a **MTC ynm T001***

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	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. 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: • [left mouse button down] + [mouse move] rotates the cuboid into the direction of the mouse move • <Esc> cancels the current operation and sets the orientation of the cuboid back to the orientation which it had before the rotation had been started

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 Curve Area opens the context menu for the Curve Area.
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: • [right mouse button down] + [mouse move] moves all curves within the cuboid into the direction of the mouse move o <Shift> + [right mouse button down] + [mouse move left/up] moves all curves within the cuboid to the left in direction of the horizontal axis ▪ <x> + [right mouse button down] + [mouse move left/up] behaves like <Shift> + [right mouse button down] + [mouse move left] o <Shift> + [right mouse button down] + [mouse move right/down] moves all curves within the cuboid to the right in direction of the horizontal axis ▪ <x> + [right mouse button down] + [mouse move right/down] behaves like <Shift> + [right mouse button down] + [mouse move right] o <Ctrl> + [right mouse button down] + [mouse move left/up] moves all curves within the cuboid up in the direction of the vertical axis ▪ <y> + [right mouse button down] + [mouse move left/up] behaves like <Ctrl> + [right mouse button down] + [mouse move left] o <Ctrl> + [right mouse button down] + [mouse move right/down] moves all curves within the cuboid down in the direction of the vertical axis ▪ <y> + [right mouse button down] + [mouse move right/down] behaves like <Ctrl> + [right mouse button down] + [mouse move right] o <Alt> + [right mouse button down] + [mouse move left/up] moves all curves within the cuboid to the front in the direction of the depth axis ▪ <z> + [right mouse button down] + [mouse move left/up] behaves like <Ctrl> + [right mouse button down] + [mouse move left] o <Alt> + [right mouse button down] + [mouse move right/down] moves all curves within the cuboid to the back in the direction of the depth axis ▪ <z> + [right mouse button down] + [mouse move right/down] behaves like <Ctrl> + [right mouse button down] + [mouse move right] • <Esc> 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

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 cuboid. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] zooms out of the current mouse position in all three directions • [mouse wheel up] zooms into the current mouse position in all three directions • <Shift> + [mouse wheel down] zooms only out from the horizontal axis from the middle of the horizontal axis o <x> + [mouse wheel down] behaves like <Shift> + [mouse wheel down] • <Shift> + [mouse wheel up] zooms only into the horizontal axis from the middle of the horizontal axis o <x> + [mouse wheel up] behaves like <Shift> + [mouse wheel up] • <Ctrl> + [mouse wheel down] zooms only out from the vertical axis from the middle of the vertical axis o <y> + [mouse wheel down] behaves like <Ctrl> + [mouse wheel down] • <Ctrl> + [mouse wheel up] zooms only into the vertical axis from the middle of the vertical axis o <y> + [mouse wheel up] behaves like <Ctrl> + [mouse wheel up] • <Alt> + [mouse wheel down] zooms only out from the depth axis from the middle of the depth axis o <z> + [mouse wheel down] behaves like <Alt> + [mouse wheel down] • <Alt> + [mouse wheel up] zooms only into the depth axis from the middle of the depth axis o <z> + [mouse wheel up] behaves like <Alt> + [mouse wheel up]

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 **MTC ynm T001** become visible
Fit to Charts	sets the scaling of all **Monitoring Charts** within the parent **Monitoring View Editor** so that the complete values of all data within all **Monitoring Charts** become visible
Zoom in	zooms into the cuboid
Zoom out	zooms out from the cuboid
Manual scale x-Axis	opens the **Manual scale x-Axis** dialog
Manual scale y-Axis	opens the **Manual scale y-Axis** dialog
Manual scale z-Axis	opens the **Manual scale z-Axis** dialog
Manual scale Color Gradient	opens the **Manual scale Color Gradient** dialog
Chart Options…	opens the **Chart Options** dialog
Copy Chart Options	copies the options of the **MTC ynm T001** below the current mouse position
Paste Chart Options	pastes the currently copied **MTC ynm T001** options onto the **MTC ynm T001** below the current mouse position
Chart Styles…	opens the **Chart Styles** dialog
Copy Chart Styles	copies the styles of the **MTC ynm T001** below the current mouse position
Paste Chart Styles	pastes the currently copied **MTC ynm T001** styles onto the **MTC ynm T001** 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 Legend Area to the state which is specified via the submenu of this item
Show Color Gradient > …	sets the visibility of the Color Gradient Area to the state which is specified via the submenu of this item
Show Toolbar > …	sets the visibility of the Toolbar Area to the state which is specified via the submenu of this item
Show x-Axis > …	sets the visibility of the x-Axes Area to the state which is specified via the submenu of this item
Show y-Axis > …	sets the visibility of the y-Axes Area to the state which is specified via the submenu of this item
Show z-Axis > …	sets the visibility of the z-Axis Area to the state which is specified via the submenu of this item
Show Slider > …	sets the visibility of the Slider Area 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 **MTC ynm T001**

2.2.5.3 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**:

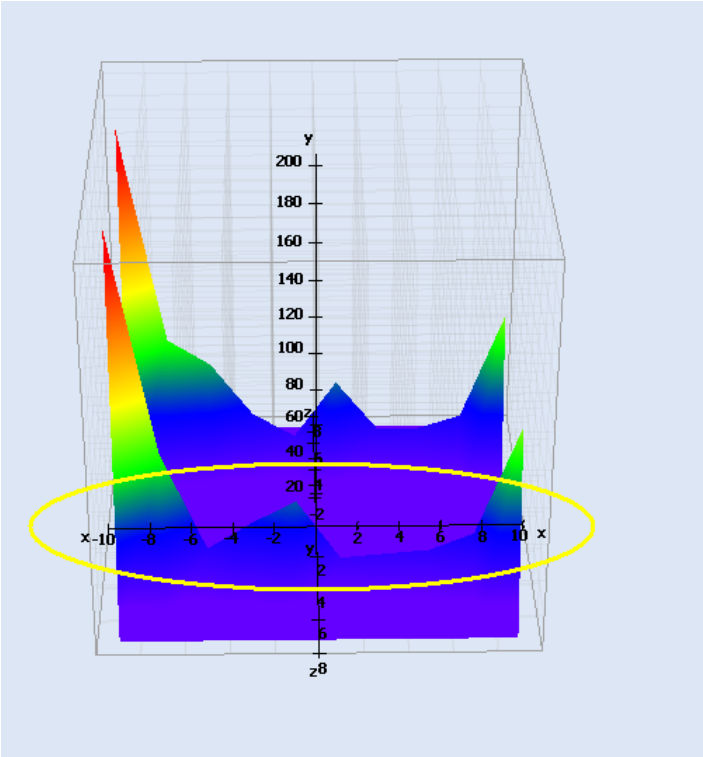


*Figure 74: Example of the x-Axis Area of a **MTC ynm T001***

2.2.5.4 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**:

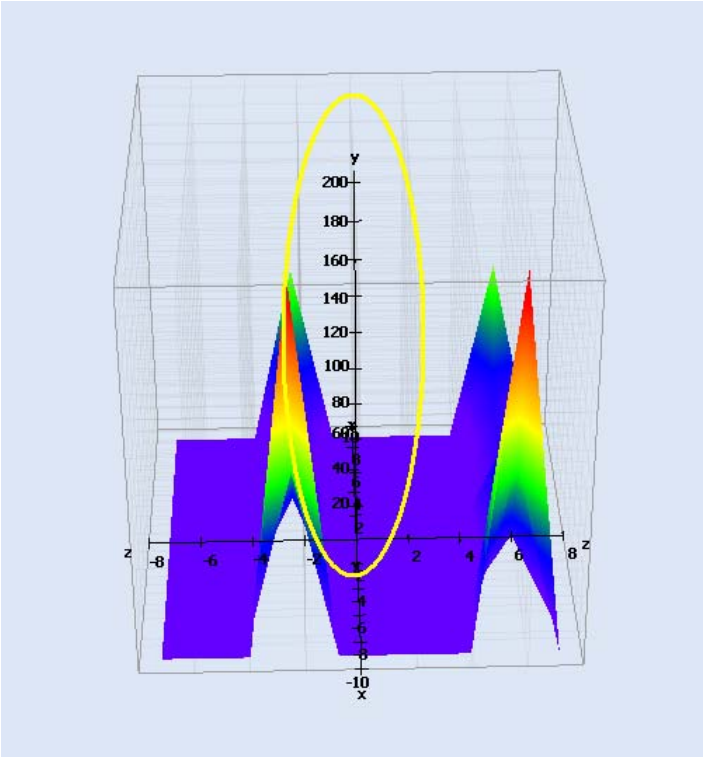


*Figure 75: Example of the y-Axis Area of a **MTC ynm T001***

2.2.5.5 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**:

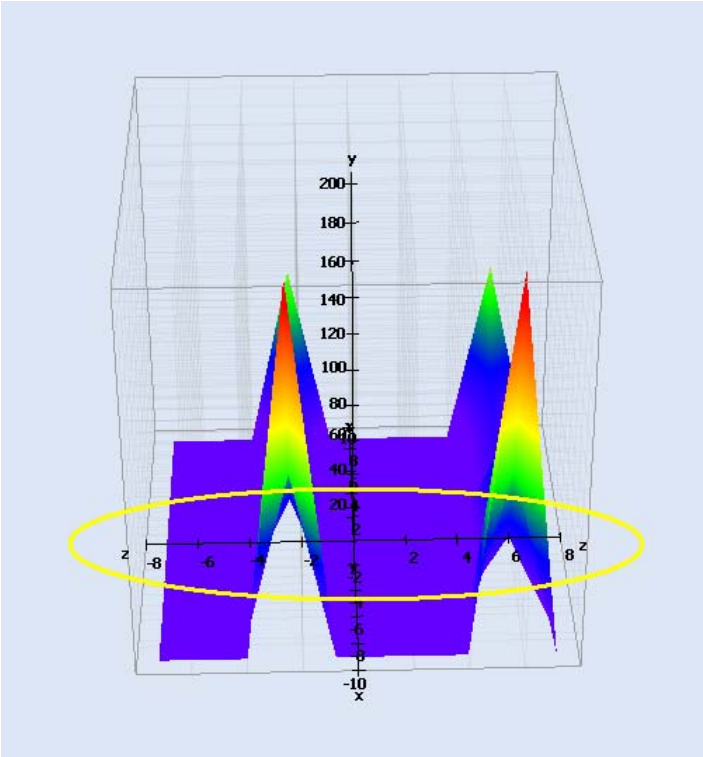


*Figure 76: Example of the z-Axis Area of a **MTC ynm T001***

2.2.5.6 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 77: 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	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: • 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 ○ 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 ○ the new end time of the displayed time interval is being set to (new begin time + old time interval) • <Alt> + [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 ○ 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 ○ 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 ○ the new end time of the displayed time interval is being set to (new begin time + old time interval)
single click with releasing the button onto the right step button	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: • 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 ○ 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 ○ the new begin time of the displayed time interval is being set to (new end time - old time interval) • <Alt> + [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 ○ 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 ○ 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 ○ the new begin time of the displayed time interval is being set to (new end time - old time interval)
single click with keeping the button onto the left step button	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.
single click with keeping the button onto the right step button	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.
single click with keeping the button onto the left border of the slider button	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: • in case the mouse is moved to the left, the oldest displayed time is shifted into the past

	○ the left border of the slider button can not be dragged out of the left border of the Slider Area • in case the mouse is moved to the right, the oldest displayed time is shifted into the future ○ the left border of the slider button can not be dragged out of the right border of the Slider Area ○ 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 • <Esc> cancels the current operation without modifying the oldest displayed time
single click with keeping the button onto the right border of the slider button	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: • in case the mouse is moved to the left, the newest displayed time is shifted into the past ○ the right border of the slider button can not be dragged out of the left border of the Slider Area ○ 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) • in case the mouse is moved to the right, the newest displayed time is shifted into the future ○ the right border of the slider button can not be dragged out of the right border of the Slider Area • <Esc> cancels the current operation without modifying the newest displayed time
single click with keeping the button onto the left and right borders of the slider button simultaneously	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: • 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
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: • 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 ○ the left border of the slider button can not be dragged out of the left border of the slider • 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 ○ the right border of the slider button can not be dragged out of the right border of the slider • <Esc> cancels the current operation without modifying the displayed oldest and newest times
double click onto the slider button	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.

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 Slider Area opens the context menu for the Slider Area.
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: • 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
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: • 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
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: • 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
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: • 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

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 Slider Area. The actual operation is performed when the mouse wheel is scrolled: • [mouse wheel down] moves the slider button left (into the past) ○ 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 • [mouse wheel up] moves the slider button right (into the future) ○ 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 • <Shift> + [mouse wheel down] zooms out of the slider button from the current x position of the mouse cursor • <Shift> + [mouse wheel up] zooms into the slider button from the current x position of the mouse cursor

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 Slider Area 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 sub-menu 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 **MTC ynm T001**

2.2.5.7 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**:

*Figure 78: 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	Selecting of data within the Legend Area is performed identically to the selecting of items within the other trees of the ***X-Tools Client***. In case a data within the Legend Area is being selected, all items of other type (e.g. x-axes, y-axes and z-axes) of the clicked **Monitoring Chart** are deselected automatically.

single click with keeping the button	A single click of the left mouse button with keeping the button down onto any text within the Legend Area starts a Drag&Drop operation for the currently selected data(s) as soon as the mouse cursor is moved:
	• a Drag&Drop operation within the same **MTC ynm T001** moves the dragged data(s) to the new position
	  ○ <Ctrl> can be pressed in order to execute a copy operation instead of the move operation within the same **MTC ynm T001**
	• a Drag&Drop operation to another **MTC ynm T001** copies the dragged data(s) to the new position
	  ○ <Shift> can be pressed in order to execute a move operation instead of the copy operation to the other **MTC ynm T001**
	• <Esc> cancels the current operation without moving or copying anything

double click	A double click of the left mouse button onto any text within the Legend Area opens the **Data Style** 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 Legend Area opens the context menu for the Legend Area.
single click with keeping the button	A single click of the right mouse button with keeping the button above the Legend Area starts a shift operation for the legend texts. The actual shifting is performed when the mouse is moved: • [right mouse button down] + [mouse move down] moves the Legend Area down • [right mouse button down] + [mouse move up] moves the Legend Area up • <Esc> cancels the current operation and sets the position of the Legend Area back to the place which it had before the shift operation had been started 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.

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 **Data Style** 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 **MTC ynm T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC ynm T001**

2.2.5.8 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 79: 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 Zoom into x-Axis button with releasing the button	A single click of the left mouse button with releasing the button onto the Zoom into x-Axis button zooms into the x-axis once.
single click onto the Zoom into x-Axis button with keeping the button	A single click of the left mouse button with keeping the button onto the Zoom into x-Axis button zooms into the x-axis continuously.
single click onto the Zoom out from x-Axis button with releasing the button	A single click of the left mouse button with releasing the button onto the Zoom out from x-Axis button zooms out from the x-axis once.
single click onto the Zoom out from x-Axis button with keeping the button	A single click of the left mouse button with keeping the button onto the Zoom out from x-Axis button zooms out from the x-axis continuously.
single click onto the Zoom into y-Axis button with releasing the button	A single click of the left mouse button with releasing the button onto the Zoom into y-Axis button zooms into the y-axis once.
single click onto the Zoom into y-Axis button with keeping the button	A single click of the left mouse button with keeping the button onto the Zoom into y-Axis button zooms into the y-axis continuously.
single click onto the Zoom out from y-Axis button with releasing the button	A single click of the left mouse button with releasing the button onto the Zoom out from y-Axis button zooms out from the y-axis once.
single click onto the Zoom out from y-Axis button with keeping the button	A single click of the left mouse button with keeping the button onto the Zoom out from y-Axis button zooms out from the y-axis continuously.
single click onto the Zoom into z-Axis button with releasing the button	A single click of the left mouse button with releasing the button onto the Zoom into z-Axis button zooms into the z-axis once.
single click onto the Zoom into z-Axis button with keeping the button	A single click of the left mouse button with keeping the button onto the Zoom into z-Axis button zooms into the z-axis continuously.
single click onto the Zoom out from z-Axis button with releasing the button	A single click of the left mouse button with releasing the button onto the Zoom out from z-Axis button zooms out from the z-axis once.
single click onto the Zoom out from z-Axis button with keeping the button	A single click of the left mouse button with keeping the button onto the Zoom out from z-Axis button zooms out from the z-axis continuously.
single click onto the Zoom into all button with releasing the button	A single click of the left mouse button with releasing the button onto the Zoom into all button zooms into all axes simultaneously once.
single click onto the Zoom into all button with keeping the button	A single click of the left mouse button with keeping the button onto the Zoom into all button zooms into all axes simultaneously continuously.
single click onto the Zoom out from all button with releasing the button	A single click of the left mouse button with releasing the button onto the Zoom out from all button zooms out from all axes simultaneously once.
single click onto the Zoom out from all button with keeping the button	A single click of the left mouse button with keeping the button onto the Zoom out from all button zooms out from all axes simultaneously continuously.
single click onto the On/Off Cursor button	A single click of the left mouse button onto the On/Off Cursor button toggles the cursors between on and off.
single click onto the Undo button	A single click of the left mouse button onto the Undo button undoes the last operation from the undo buffer.
single click onto the Redo button	A single click of the left mouse button onto the Redo button redoes the last operation from the redo buffer.
single click onto the Continue Visualization button	A single click of the left mouse button onto the Continue Visualization button continues the visualization. This button applies to all currently present data independently to whether they are paused or running at the moment. The Continue Visualization button sets the visualization of all data to running.
single click onto the Pause Visualization button	A single click of the left mouse button onto the Pause Visualization button pause the visualization. This button applies to all currently present data independently to whether they are paused or running at the moment. The Pause Visualization button sets the visualization of all data to paused.
single click onto the Store Data Snapshot button	A single click of the left mouse button onto the Store Data Snapshot button starts the storing of the data which are contained within the ***MTC ynm T001***.

	While the storing is in progress, the **Storage Progress** 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 Toolbar Area opens the context menu for the Toolbar Area. 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 **Manual scale x-Axis** 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 **MTC ynm T001**

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 **Manual scale x-Axis** 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 **MTC ynm T001**

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 **Manual scale y-Axis** 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 **MTC ynm T001**

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 **Manual scale y-Axis** 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 **MTC ynm T001**

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 **Manual scale z-Axis** 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 **MTC ynm T001**

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 **Manual scale z-Axis** 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 **MTC ynm T001**

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 **Manual scale x-Axis** dialog
Manual scale y-Axis …	opens the **Manual scale y-Axis** dialog
Manual scale z-Axis …	opens the **Manual scale z-Axis** dialog
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC ynm T001**

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 **Manual scale x-Axis** dialog
Manual scale y-Axis …	opens the **Manual scale y-Axis** dialog
Manual scale z-Axis …	opens the **Manual scale z-Axis** dialog
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC ynm T001**

The following specific context menu items are provided for the On/Off Cursor 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 Cursors > …	sets the visibility of measurement cursors to the state which is specified via the submenu of this item
Select Cursor > …	specifies whether cursor 1 or cursor 2 shall have the input focus at the moment
Restore Cursors	restores the positions of the two 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 **MTC ynm T001**

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 **MTC ynm T001**
Change Undo/Redo Buffer Size	opens the **Chart Options** dialog, sets the input focus to the Undo/Redo Buffer Size edit control and puts it into editing mode
Close Chart	closes the **MTC ynm T001**

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 **MTC ynm T001**
Change Undo/Redo Buffer Size	opens the **Chart Options** dialog, sets the input focus to the Undo/Redo Buffer Size edit control and puts it into editing mode
Close Chart	closes the **MTC ynm T001**

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 **MTC ynm T001**

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 **MTC ynm T001**

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 **MTC ynm T001**
Print Screenshot	prints the screenshot of the Monitoring View
Save Screenshot	saves the screenshot of the Monitoring View
Close Chart	closes the **MTC ynm T001**

2.2.5.9 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**:

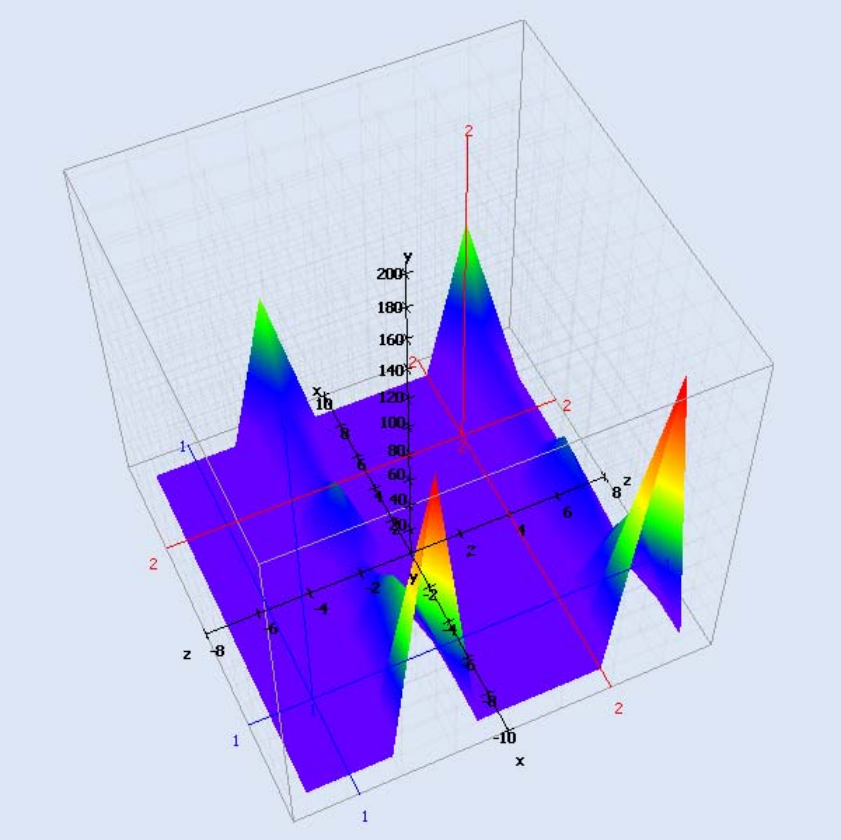


*Figure 80: Example of the Measurement Cursors of a **MTC ynm T001***

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	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: • [left mouse button down] + [mouse move left/right/down/up] moves the currently selected cursor below the current mouse position • <Esc> 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

2.2.5.10 Cursor Table

The Cursor 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 Cursor Table for a **MTC ynm T001**:

Cursor Table - MTC ynm T001

No.	Chart	Data	Unit	X1	Z1	Y1	X2	Z2	Y2	X2-X1	Z2-Z1	Y2-Y1
1	Online Data	H2D 01 H2DForSignals	-	-3.000	0.800	0.000	3.000	2.400	0.000	6.000	1.600	0.000

*Figure 81: Example of a Cursor 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 Cursor Table can be copied to the clipboard of Windows. From there, they can be inserted into any other compatible application.

2.2.5.11 Chart Options Dialog

2.2.5.11.1 Overview

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

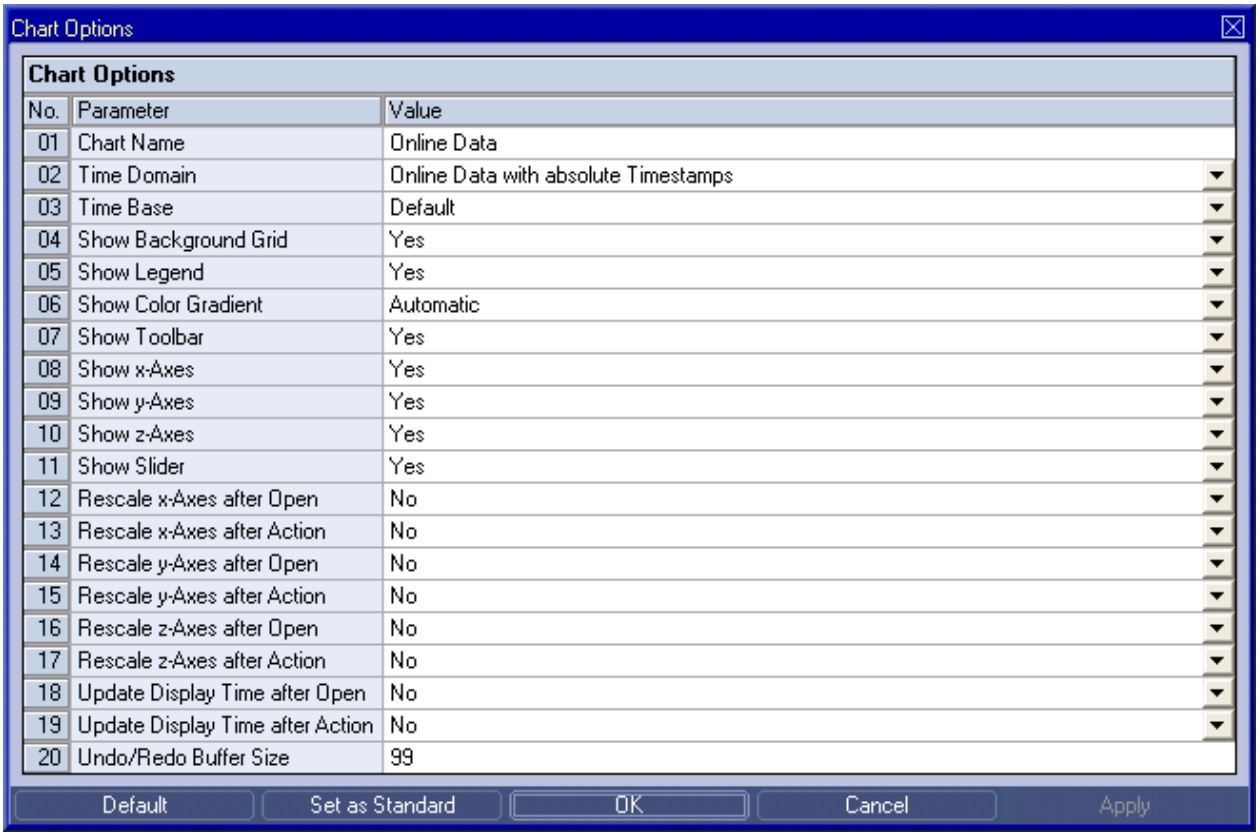


*Figure 82: Example of a **Chart Options** Dialog of a **MTC ynm T001***

2.2.5.11.2 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 Curve Area
Show Legend	allows to choose whether the Legend Area shall be shown
Show Color Gradient	allows to choose whether the Color Gradient Area shall be shown
Show Toolbar	allows to choose whether the Toolbar Area shall be shown
Show x-Axes	allows to choose whether the x-Axes Area shall be shown
Show y-Axes	allows to choose whether the y-Axes Area shall be shown
Show z-Axes	allows to choose whether the z-Axes Area shall be shown
Show Slider	allows to choose whether the Slider Area 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 **MTC ynm T001** or after a new data has been dropped into the **MTC ynm T001**
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 **MTC ynm T001** or after a new data has been dropped into the **MTC ynm T001**
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 **MTC ynm T001** or after a new data has been dropped into the **MTC ynm T001**
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 **MTC ynm T001** or after a new data has been dropped into the **MTC ynm T001**
Undo/Redo Buffer Size	allows to enter the total size of undo/redo operations which shall be remembered by the **MTC ynm T001**

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 **MTC ynm T001** 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 **MTC ynm T001** 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 **MTC ynm T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC ynm T001**
No	In case the rescale mode for the x-axes after an action is set to “No”, the **MTC ynm T001** 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 **MTC ynm T001** 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 **MTC ynm T001** 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 **MTC ynm T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC ynm T001**
No	In case the rescale mode for the y-axes after an action is set to “No”, the **MTC ynm T001** 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 **MTC ynm T001** 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 **MTC ynm T001** 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 **MTC ynm T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC ynm T001**
No	In case the rescale mode for the z-axes after an action is set to “No”, the **MTC ynm T001** 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 **MTC ynm T001** 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 **MTC ynm T001** 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 **MTC ynm T001** 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: • another part of a contained data has been opened/appended/overwritten • a contained data has been recalculated • another data is added to the **MTC ynm T001**
No	In case the update mode for the display time after an action is set to “No”, the **MTC ynm T001** 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.

2.2.5.11.3 Menu Bar

Menu Button	Description
Default	Sets all options back to their default settings.
Set as Standard	Sets the current options as standard options for each new **MTC ynm T001**. The options of already existing **MTC ynm T001s** 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.

2.2.5.12 Chart Styles Dialog

2.2.5.12.1 Overview

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

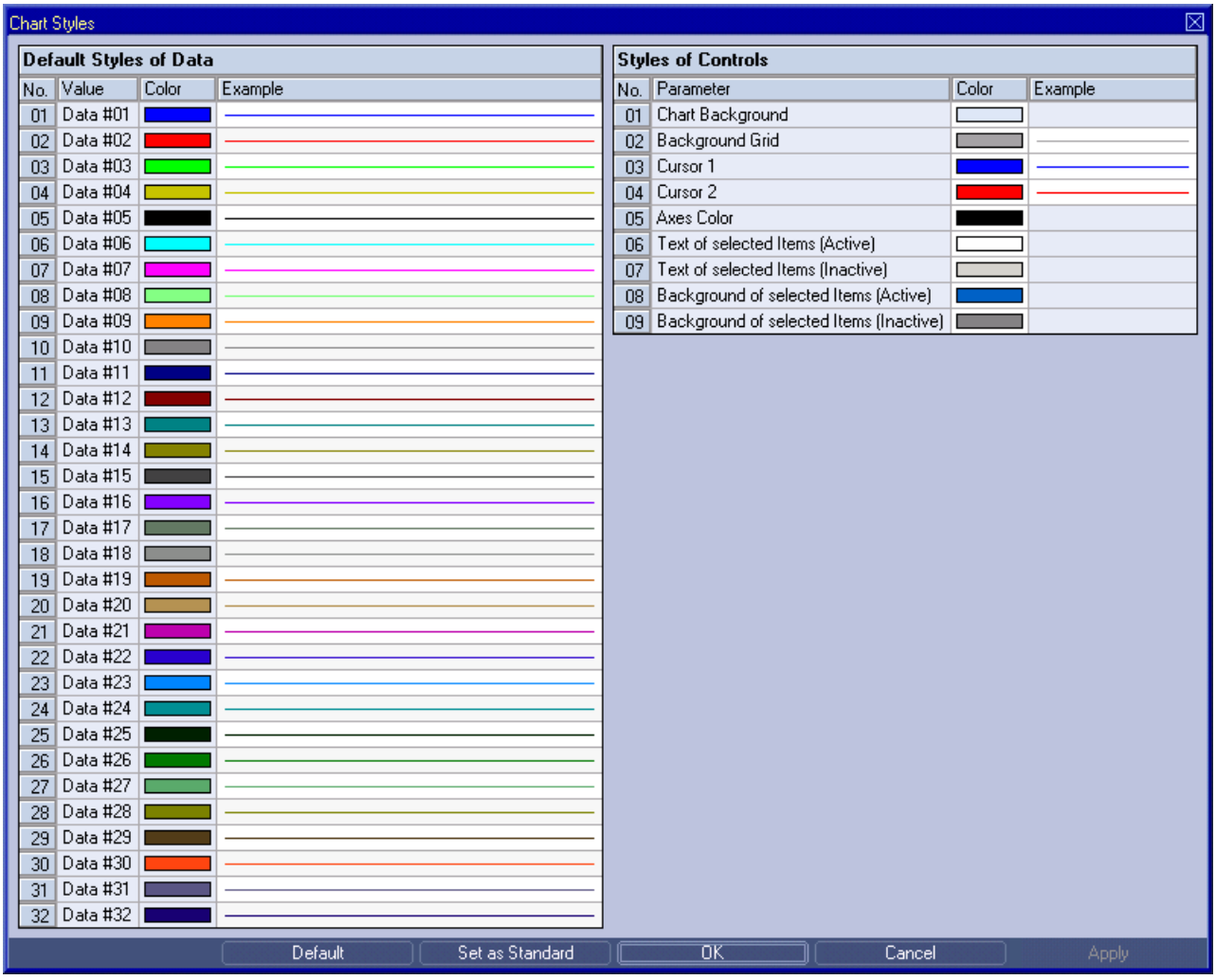


*Figure 83: Example of a **Chart Styles** Dialog of a **MTC ynm T001***

2.2.5.12.2 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.

2.2.5.12.3 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.

2.2.5.12.4 Menu Bar

Menu Button	Description
Default	Sets all styles back to their default settings.
Set as Standard	Sets the current styles as standard styles for each new **MTC ynm T001**. The styles of already existing **MTC ynm T001s** 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.

2.2.5.13 Data Style Dialog

2.2.5.13.1 Overview

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

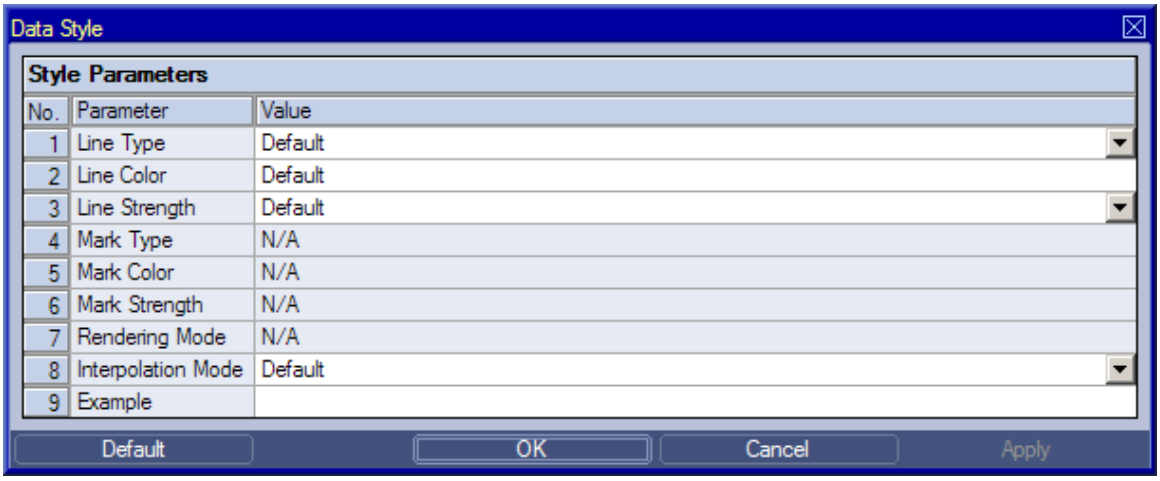


*Figure 84: Example of a **Data Style** Dialog of a **MTC ynm T001***

2.2.5.13.2 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 **Chart Styles** 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 **MTC ynm T001**.

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 **MTC ynm T001**.

2.2.5.13.3 Menu Bar

Menu Button	Description
Default	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.

2.2.5.14 Select Style Dialog

2.2.5.14.1 Overview

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

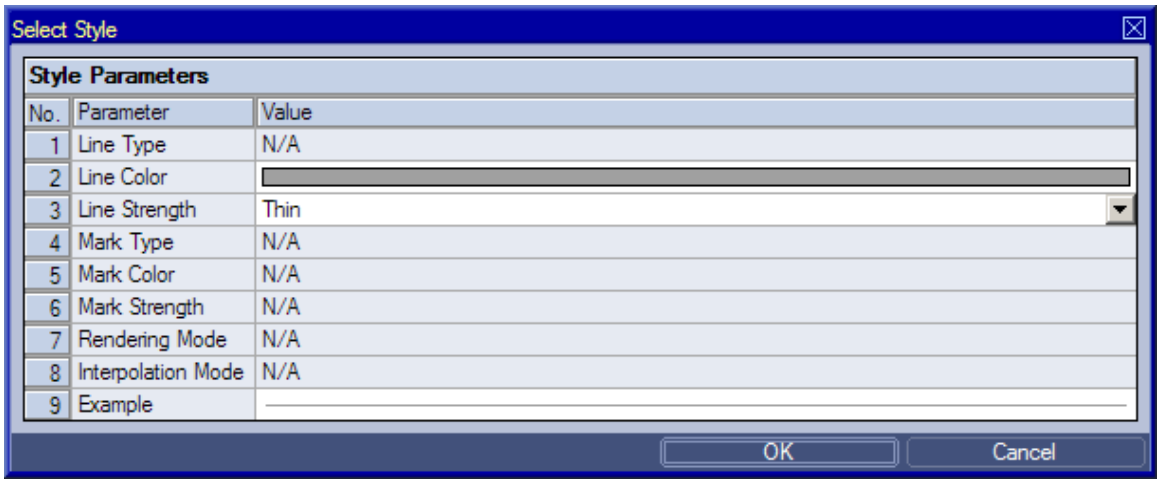


*Figure 85: Example of a **Select Style** Dialog of a **MTC ynm T001***

The functionality of the **Select Style** dialog matches the functionality of the **Data Style** dialog (see point 2.2.5.13).

2.2.5.15 Manual scale x-Axis Dialog

2.2.5.15.1 Overview

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

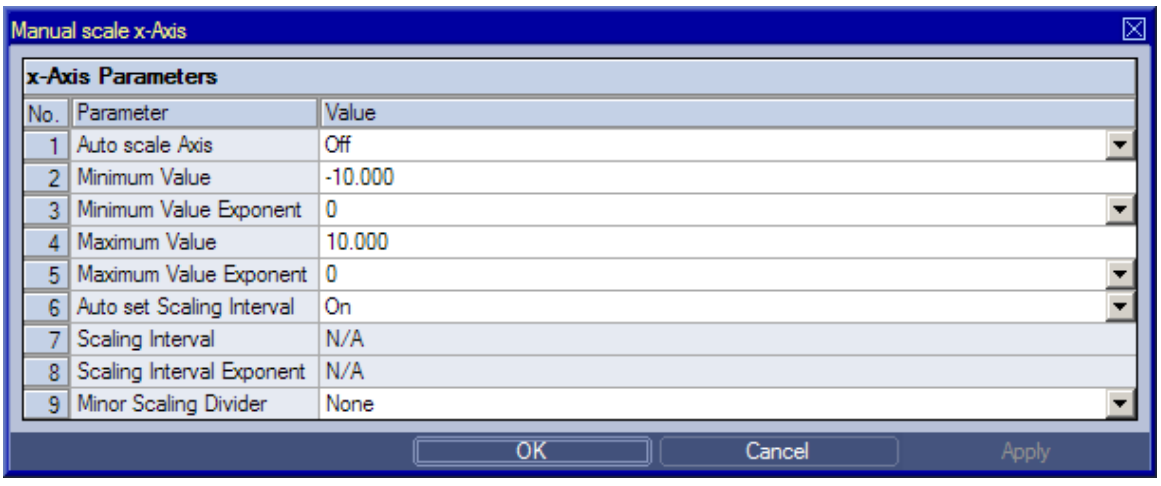


*Figure 86: Example of a **Manual scale x-Axis** Dialog of a **MTC ynm T001***

2.2.5.15.2 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 **MTC ynm T001** 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 **MTC ynm T001** uses the specified Minimum Value and Maximum Value parameters for the scaling of the x-axis.

Auto set Scaling Interval

Auto set Scaling Interval	Description
On	In this mode, the **MTC ynm T001** constantly sets the scaling interval of the x-axis according to the currently displayed time interval.
Off	In this mode, the **MTC ynm T001** uses the specified Scaling Interval and Scaling Interval Exponent 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.

2.2.5.15.3 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 Manual scale y-Axis Dialog

2.2.5.16.1 Overview

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

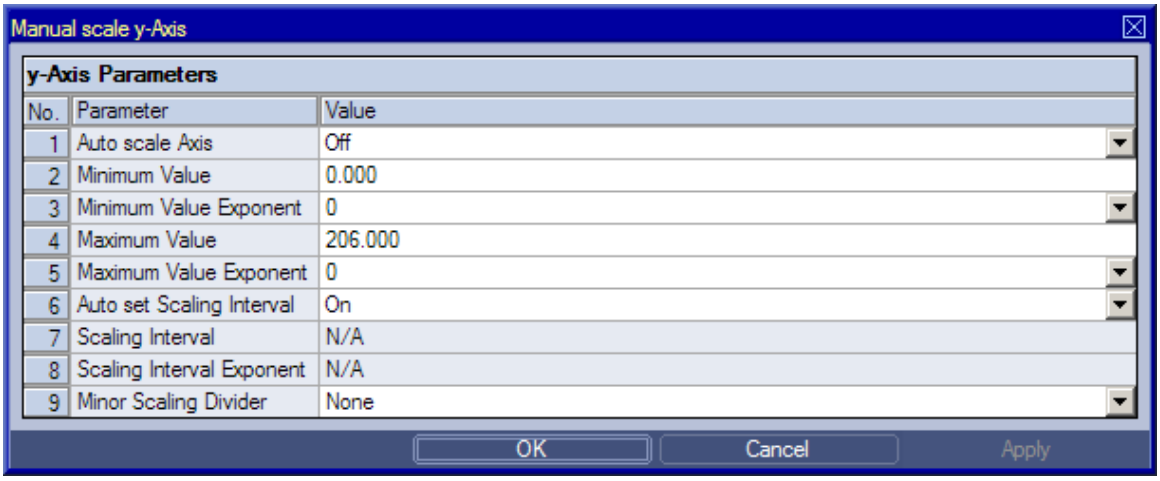


*Figure 87: Example of a **Manual scale y-Axis** Dialog of a **MTC ynm T001***

The functionality of the **Manual scale y-Axis** dialog matches the functionality of the **Manual scale x-Axis** dialog (see point 2.2.5.15).

2.2.5.17 Manual scale z-Axis Dialog

2.2.5.17.1 Overview

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

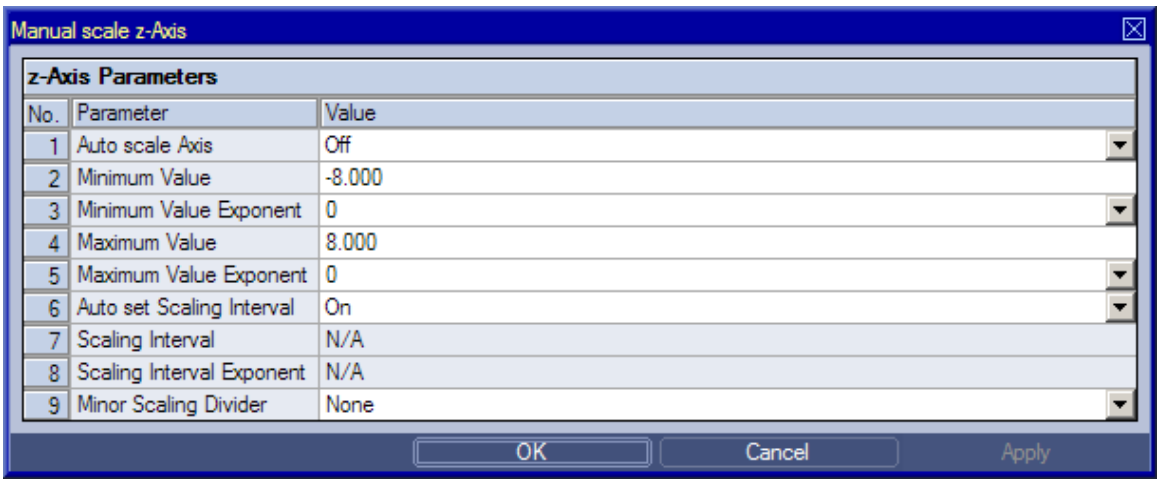


*Figure 88: Example of a **Manual scale z-Axis** Dialog of a **MTC ynm T001***

The functionality of the **Manual scale z-Axis** dialog matches the functionality of the **Manual scale x-Axis** dialog (see point 2.2.5.15).

2.2.5.18 Manual scale Color Gradient Dialog

2.2.5.18.1 Overview

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

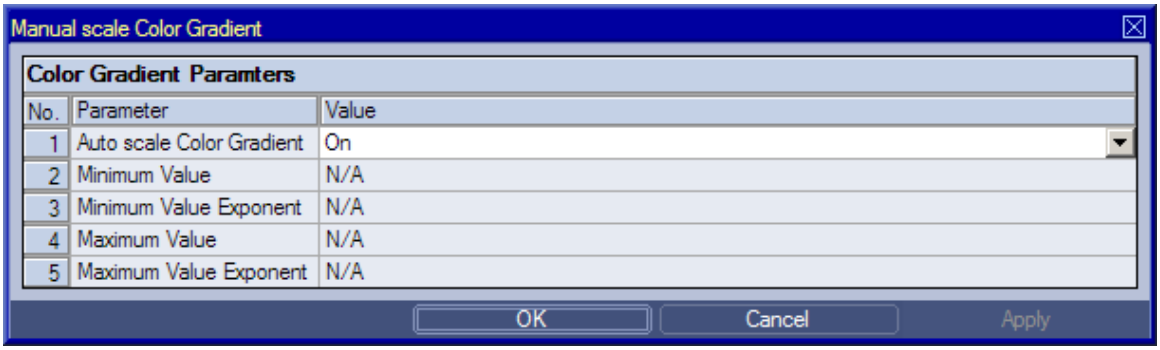


*Figure 89: Example of a **Manual scale Color Gradient** Dialog of a **MTC ynm T001***

2.2.5.18.2 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 **MTC** 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 **MTC** uses the specified Minimum Value and Maximum Value parameters for the color gradient.

2.2.5.18.3 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.

2.2.5.19 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**:

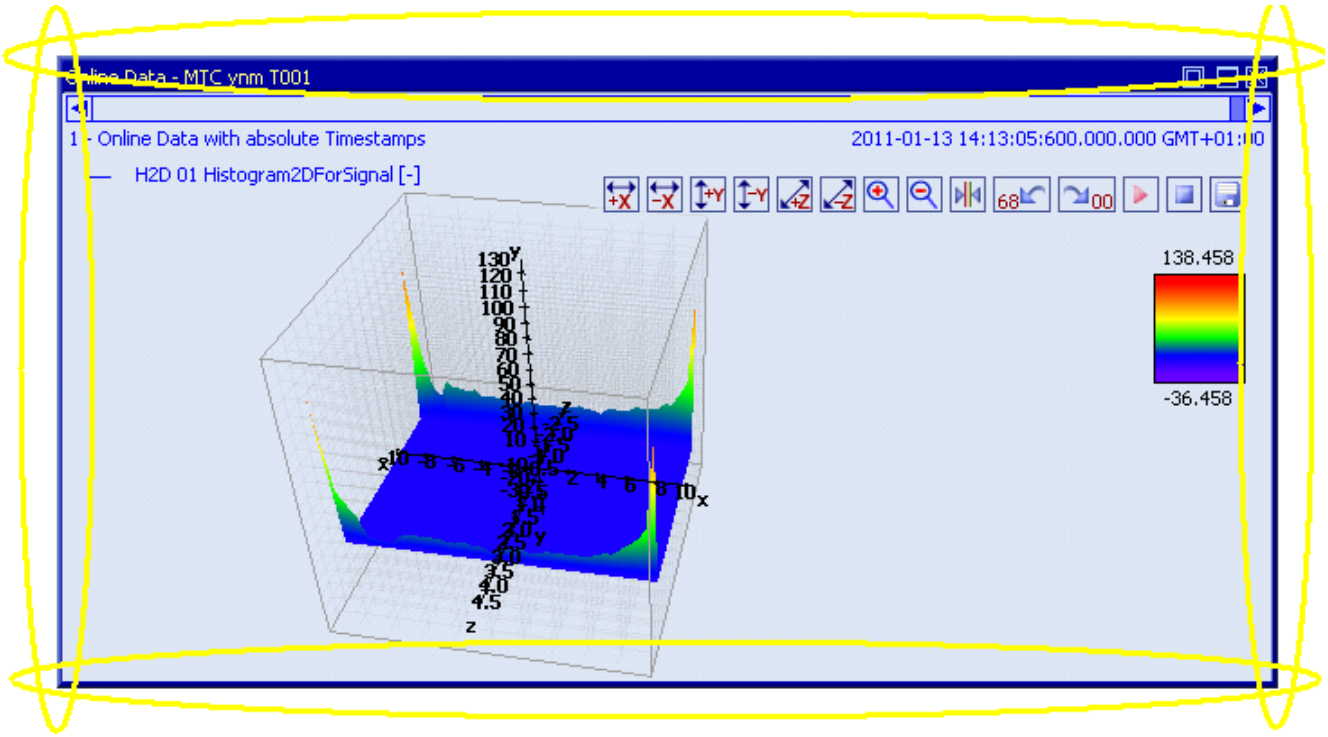


*Figure 90: Dropping of Data in order to open a new **Monitoring Chart***

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**:

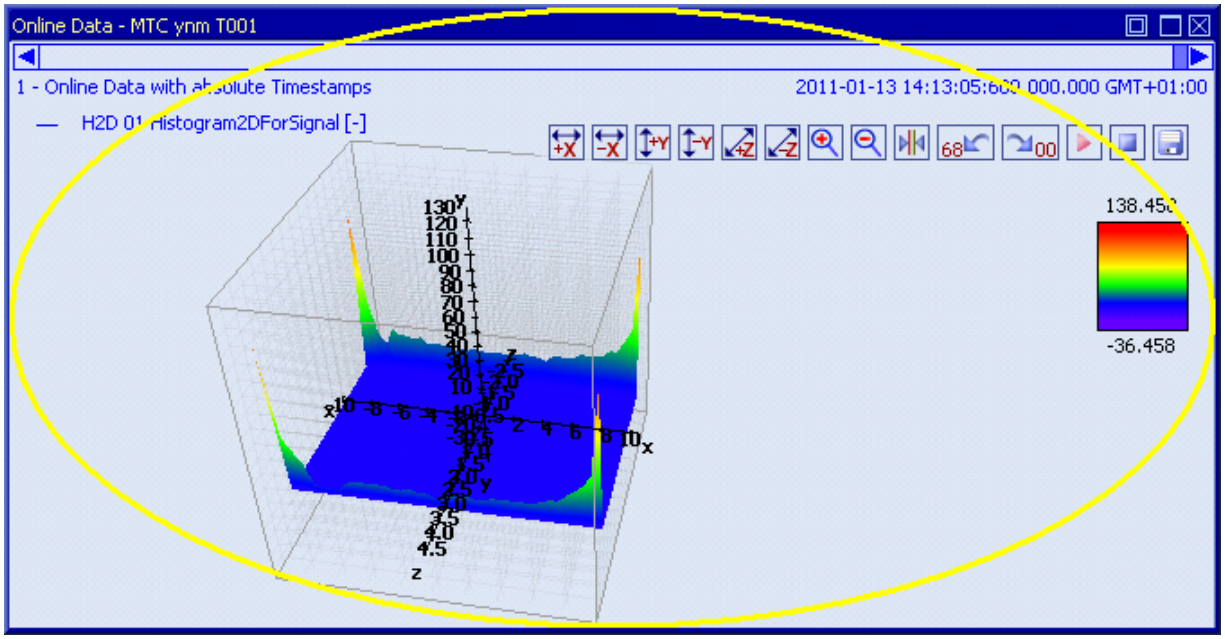


*Figure 91: Dropping of Data in order to add it to the existing **MTC ynm T001***

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 Monitoring View Settings 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 **Open** 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 **Save As** dialog is popping up automatically and the user is able to select the desired storage location.
Save As…	This button opens the **Save As** 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**:

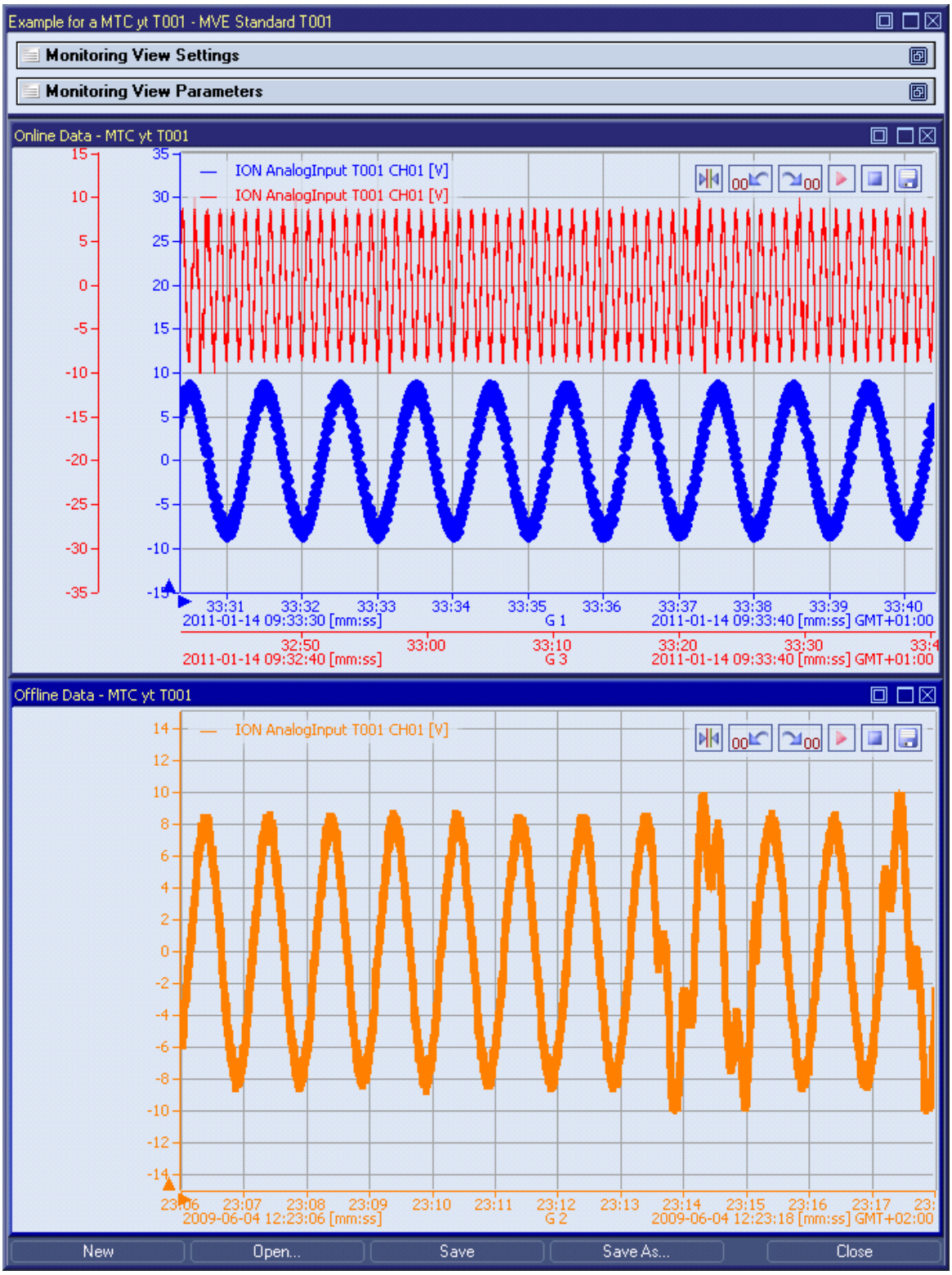


*Figure 92: Example of a **MVE Standard T001***

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
- 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 synchro-nized	allows to configure whether the width of Curve Areas 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 Do-main 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	In case this parameter is set to “Yes”, the width of the Curve Area of all compatible **Monitoring Charts** is kept aligned so that the width of the Curve Area of all compatible **Monitoring Charts** always is identical: • whenever a y-axis is being added/removed/shown/hidden within any of the present, compatible **Monitoring Charts**, the width of the Curve Area of all compatible **Monitoring Charts** is being recalculated and updated • the width of the Curve Areas of all compatible **Monitoring Charts** is defined by the **Monitoring Charts** which shows the most y-axes at the moment, because the width of the Curve Areas of all compatible **Monitoring Charts** is being set to the width of this **Monitoring Charts** (= the smallest present width of a present Curve Area) • in addition to the width, also the horizontal position of all Curve Areas is identical (all Curve Areas start from the right border of their **Monitoring Charts**) • the y-axes of each **Monitoring Charts** start directly at the left of the Curve Area (not at the left border of the **Monitoring Charts**) • the following **Monitoring Charts** are compatible to this setting: o MTC yt T001 o MTC yn T001 When this setting is being turned on, the **MVE Standard T001** automatically sets the widths of all present columns (of **Monitoring Charts**) to an equal width. While this setting is being turned on, it is not possible to change the width of the present columns.
No	In case this parameter is set to “No”, each **Monitoring Chart** calculates the width of its Curve Area separately and without considering of the other, possible present **Monitoring Charts**.

Keep Cursors synchronized

Keep Cursors synchronized	Description
Yes	In case this parameter is set to “Yes”, the cursors of all compatible **Monitoring Charts** are kept aligned so that moving and turning on/off of a cursor within one **Monitoring Chart** is being propagated to all related **Monitoring Chart** automatically: • whenever a cursor is being moved within one **Monitoring Chart**, the position of the cursor in time is being propagated to all t-axis of matching groups (within the other present **Monitoring Charts**) o this is valid for all t-axes groups within the **Monitoring Chart** within which the cursor is being moved o the cursors of all **Monitoring Chart** are being updated immediately when the cursor is being moved (not only at the end of the moving operation) • in case the cursors are being turned on/off within one **Monitoring Chart**, the cursors also are being turned on/off within all other **Monitoring Charts** which contain t-axes of matching groups • example 1 o **Monitoring Chart** 1 contains the t-axes group G1 o **Monitoring Chart** 2 contains the t-axes groups G1 and G2 o **Monitoring Chart** 3 contains the t-axes groups G2 and G3 o when the cursor is being moved within **Monitoring Chart** 1, the cursors within **Monitoring Chart** 2 are being moved automatically ▪ the position of the moved cursor within **Monitoring Chart** 2 is synchronized via G1 - thus, the cursor within **Monitoring Chart** 2 is being moved to the same position in time at G1 as the user has moved the cursor within **Monitoring Chart** 1 o the cursors within **Monitoring Chart** 3 are not being touched by this moving because **Monitoring Chart** 3 does not have any common t-axis with **Monitoring Chart** 1 • example 2 o the same **Monitoring Chart** and groups like in example 1 are present o the user turns on the cursors within **Monitoring Chart** 1, which turns the cursors on automatically in **Monitoring Chart** 2 (but not in **Monitoring Chart** 3) o afterwards the user turns on the cursors within **Monitoring Chart** 3, which again turns on the cursors within **Monitoring Chart** 2 (it does not turn them off there) o if the user finally would turn off the cursors within **Monitoring Chart** 2, the cursors automatically also turn off in **Monitoring Chart** 1 and **Monitoring Chart** 3 • the following **Monitoring Charts** are compatible to this setting: o MTC yt T001
No	In case this parameter is set to “No”, the cursors can be moved and turned on/off within each **Monitoring Chart** separately. Moving or turning on/off of the cursors is not being propagated to other **Monitoring Charts** in this case.

2.3.3.4 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.

2.3.3.5 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**.

2.3.3.6 Menu Bar

The standard Menu Bar is being used by the **MVE Standard T001** (see point 2.3.2.3).

2.3.3.7 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 **Monitoring Chart** to the Action Area of the **MVE Standard T001**
Offline Data Branches	opens a new **Monitoring Chart** of matching type for the dropped offline data
Online Data Branches	opens a new **Monitoring Chart** of matching type for the dropped online data

3 Contact Information

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