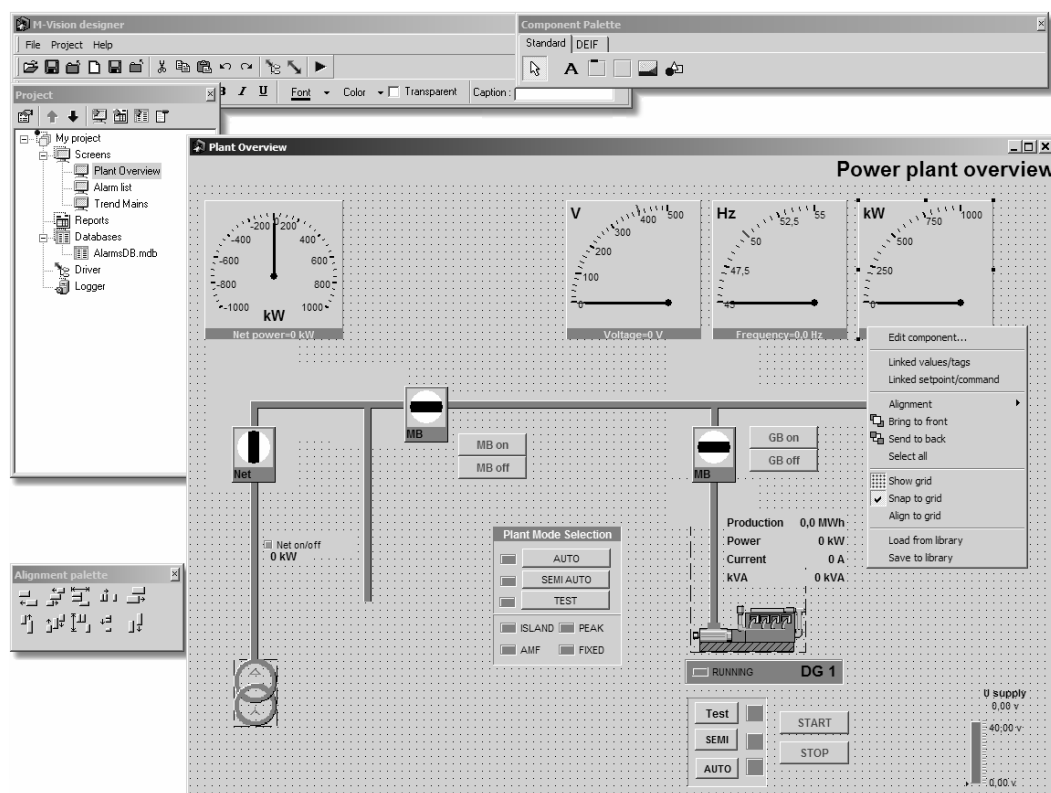


M-Vision designer

4189340351C



- Client server application
- Remote control
- Data logging and trending
- Alarm monitoring and logging
- Report generator
- OPC based software

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1. Introduction

Warnings and legal information

End user license agreement for M-Vision designer

You may install and use one copy of the software product, or any prior version for the same operating system, on a single computer.

The software product is licensed as a single product. Its component parts may not be separated for use on more than one computer.

If the software product is labelled as an upgrade, you must be properly licensed to use a product identified by DEIF A/S as being eligible for the upgrade.

You may not reverse engineer, decompile or disassemble the software product, except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation.

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M-Vision designer configuration manual

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This manual

This manual is a complete presentation of the 'M-Vision designer' product from DEIF A/S. After a presentation of the M-Vision product line (server, client and designer), we will detail all aspects of M-Vision designer in order to give you the possibility of creating and maintaining an entire project.

- Presentation of M-Vision server and client
- Presentation of M-Vision designer
- Installation of the product
- Use of the software (driver, screens, report and configuration of the various modules)

M-Vision

General description

M-Vision is a Windows-based software for Human Machine Interface of a power plant controlled by DEIF multi-line 2 or Delomatic systems.

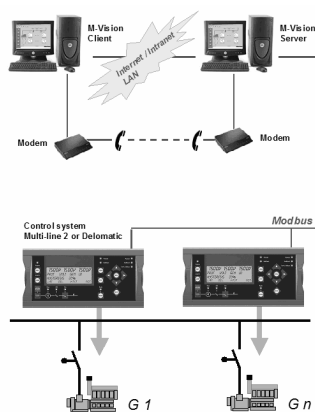
M-Vision communicates with the control system of the power plant through a standard OPC driver. It retrieves all analogue and digital values for real time visualisation and logging purposes.

It also provides the possibility of sending commands to the control system.

M-Vision includes the following functions:

- Alarm management (see below)
- Trending (see below)
- Driver (Modbus/OPC) which links the control system to the application
- Data logger: The data read by the driver are periodically saved into a database located on the server
- Report generator (see below)

The application developed on the M-Vision software is configured by DEIF according to customer specifications or by the customer himself, by means of the 'M-Vision designer' tool.



In addition to the M-Vision server, located on site, the system can share its screens and reports with one or several remote client applications.

The facilities provided by M-Vision server and client are completely identical, but the server application uses some extra modules as summarised below:

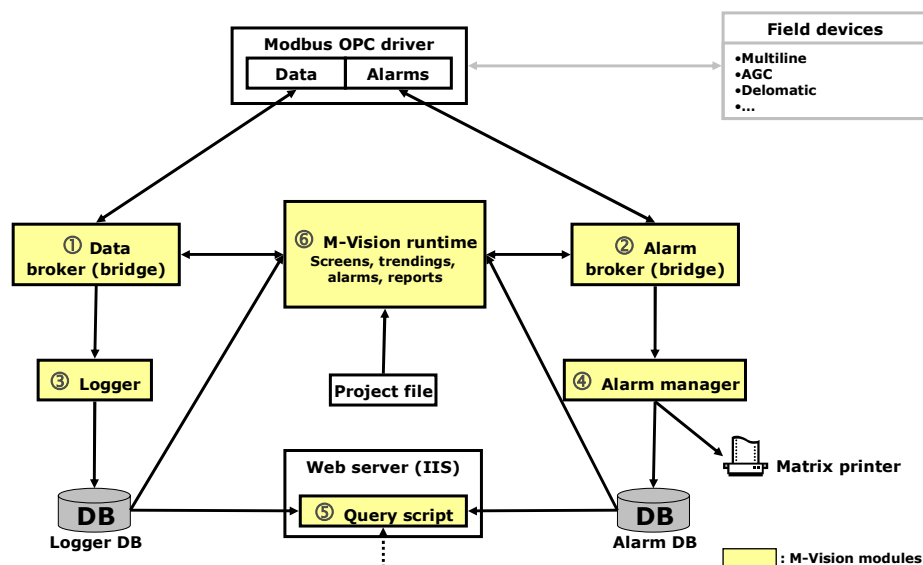
	M-Vision client	M-Vision server
Visualisation	●	●
Reporting	●	●
Data logging		●
Alarm logging		●
Driver		●

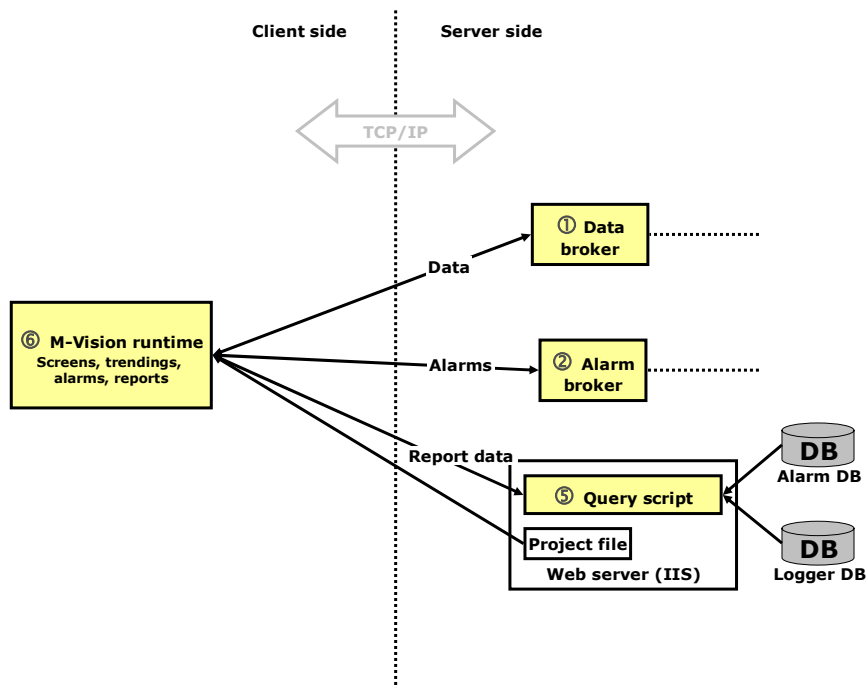
The communication between M-Vision client and M-Vision server can be established through:

- A modem connection

System architecture

The server is divided into several modules, each having their specialised task. A schematic overview of the modules, their organisation and interactions is shown below:





① Data broker (bridge):

Data related interface between the driver and M-Vision. Converts OPC to XML in order to provide higher flexibility and ease with additional local or network application. It will provide external applications requiring its services with all value changes (measurements from the devices) occurring at runtime.

② Alarm broker (bridge):

Alarms related interface between the driver and M-Vision. Converts OPC to XML in order to provide higher flexibility and ease with additional local or network application. All alarm activities, such as an alarm becoming active, inactive or acknowledged, are forwarded to its client applications.

③ Logger:

Its behaviour is defined by the project file (what to log, how often and where). Receives data change notifications automatically and logs records periodically in the logger database.

④ Alarm manager:

Receives alarm notifications automatically, and its main function is to log alarms in the alarm database and to possibly output these to a matrix printer.

⑤ Query script:

Interface between M-Vision runtime (server and remote) and the databases (logger and alarms). Receives an XML-encoded query and returns the corresponding data set in compressed form.

⑥ M-Vision runtime:

Visual part of the system. Retrieves the project file and extracts information from it:

- Screens (visual components including meters, gauges, alarm grid and trending)
- Report definitions (template and underlying query with possible parameters)
- Establishes connection with the data and alarm brokers
- Processes pieces of information from the brokers asynchronously (as they come)

M-Vision designer

The M-Vision designer is basically a configuration tool, giving you the possibility of creating an M-Vision application, executable by M-Vision server and client. Such an application consists of the following items:

- Driver configuration
- Project file
- Alarm database
- Alarm manager configuration
- Data logging configuration and its associated database

This application has been thought and made as a user friendly tool, where the design of e.g. screens is a matter of dragging and dropping some predefined graphical components, and defining the dynamic values (driver tags) they should be linked to.

Contacting DEIF A/S

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7800 Skive
Denmark

Telephone:	+45 9614 9614
Fax:	+45 9614 9615
Web site:	www.deif.com
E-mail address:	deif@deif.com
E-mail address (support related):	support@deif.com

2. Your first steps with M-Vision designer

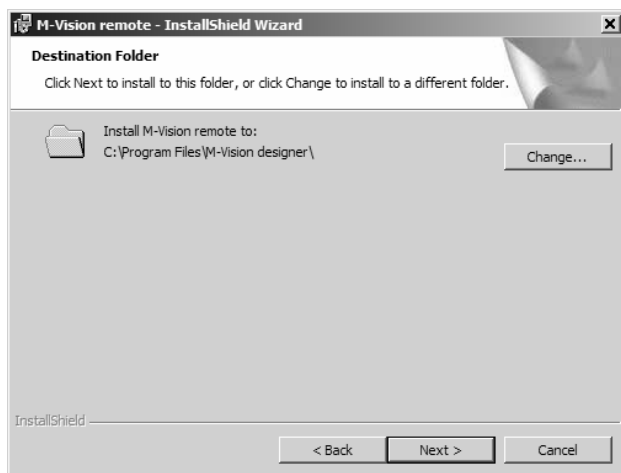
Installation process

The installation procedure is quite simple, and an installation wizard will start right after you have inserted the M-Vision CD in your CD drive. If you have chosen to disable the 'CD autoplay' function on your computer, you will have to start the wizard manually. It is located at the root of the M-Vision CD-ROM and named AutoRun.exe.



Start the application of M-Vision designer by pressing the corresponding button on the installation wizard.

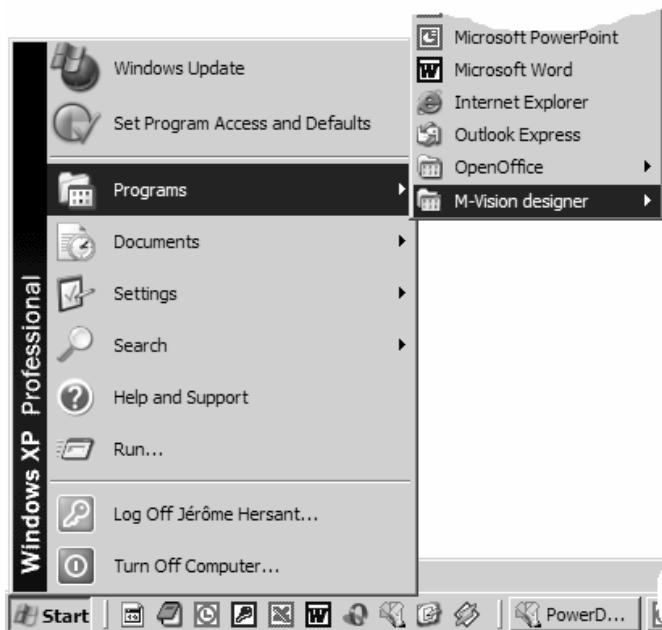
When the Windows installer is started, you can choose the directory in which M-Vision designer will be installed as shown below:



The default directory is C:\Program files\M-Vision designer. If your version of Windows is another than English, the name of the directory 'Program files' will be changed accordingly (e.g. to 'Programmer' if you are using a Danish version of Windows).

After the installation

A new program group called M-Vision designer will then be created:



The contents of the program group is a single icon , which starts the M-Vision designer application.

Registration

Running an M-Vision product (client, server or designer) requires a license from DEIF. While unregistered the products are fully functional, but have the following limitations:

- M-Vision server or client will shut down automatically after 5 hours of activity
- DEIF will not provide free support

When you start an unregistered application, a notification message will pop up and provide the possibility of launching the registration process. This process consists of two steps:

- Send your user key to DEIF, bea@deif.com (you can copy and paste the user key into a mail program such as Outlook)
- DEIF will then process your user key and subsequently issue a registration key. This key is to be entered or pasted into the 'Registration key' field



NOTE:

A registration key is linked to the computer on which the user key has been generated. This means that you cannot use an existing registration key on another computer.

M-Vision project

An M-Vision project consists of the following items:

- M-Vision project file
- Driver configuration
- Alarm database
- Logging database

On the server, a full project is structured as:

- M-Vision root (C:\Program files\M-Vision for instance)
 - ▢ Subdirectory Project
 - ▢ Subdirectory Databases
 - ▢ Subdirectory Driver settings

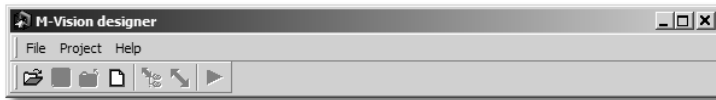
M-Vision client has no knowledge of the databases and the driver configuration residing on the server, as the project file itself contains all necessary pieces of information. These items are therefore completely transparent to M-Vision client. The only thing M-Vision needs to know is the project file (actually the URL to the project file), such as <http://ServerPC/ScadaRoot/ThePorject.project>.

The project file is usually quite small and is easily downloaded, even on modem connections.

3. Using M-Vision designer

User interface

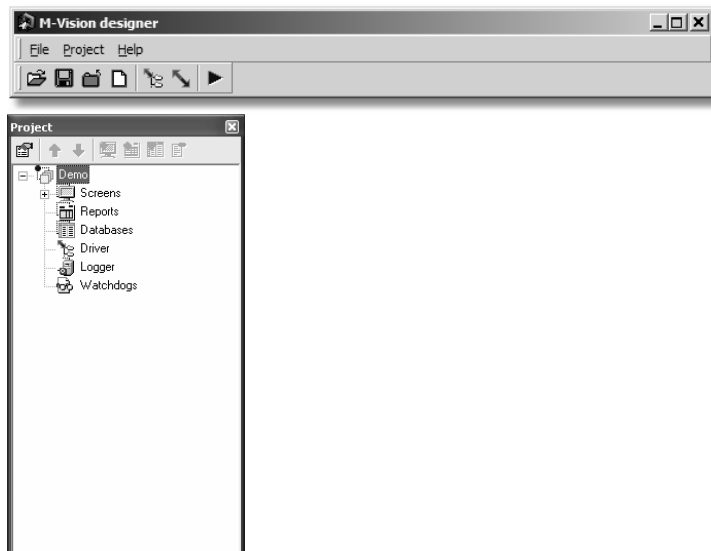
When you start the application, the following window will appear on the screen:



From here you can either open an existing project or create a new one through the project wizard.

M-Vision designer will always remember the last 5 projects you have opened, and any of these can easily be reopened through the 'Most Recently Used' list, which can be found at the bottom of the file menu. How to create a new project is detailed in the chapter 'Creating a new project' on page 11.

After opening a new project or executing the project wizard, your screen will look like this:



An additional window shows the contents of the project (e.g. the project above has 3 screens named 'Plant Overview', 'Alarm List' and 'Trend Mains' and a single database).



Open an existing project.



Save the current project.



Close the current project.



Create a new project through the Project wizard.



Edit the tag groups (see 'Tag groups' on page 34).



Edit the driver configuration (see 'Driver configuration' on page 26).



Execute the current project.

The toolbar on the project window allows you to manipulate the project items. Note that its buttons can be enabled or disabled, depending on the item you have selected in the project window.

-  Display the properties of the opened project.
-  Move the selected item up within its group.
-  Move the selected item down within its group.
-  Add a new screen.
-  Add a new report by starting the new report wizard.
-  Add a database.
-  Remove the selected item.

Creating a new project

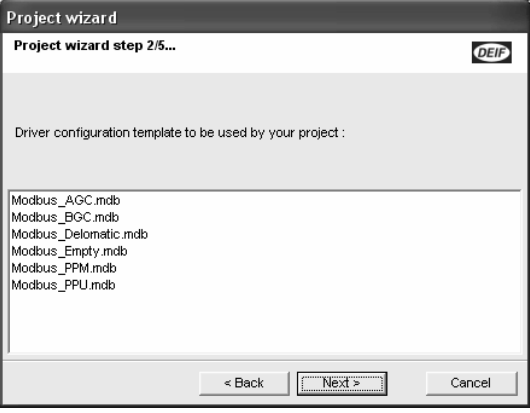
You can create a new project by means of a project wizard, which will guide you through the most important parts of a project:



The screenshot shows the 'Project wizard' dialog box, step 1/5. The title bar says 'Project wizard' and the subtitle is 'Project wizard step 1/5...'. There is a DEIF logo in the top right corner. The main area contains two text input fields: 'Project name :' and 'Project description :'. Below the 'Project description :' field is a 'Logo' button. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

The name and a short description of the project being created are defined in the fields 'Project name' and 'Project description'.

Note that the name you enter in the field 'Project name' will become the name of the project file.



The screenshot shows the 'Project wizard' dialog box, step 2/5. The title bar says 'Project wizard' and the subtitle is 'Project wizard step 2/5...'. There is a DEIF logo in the top right corner. The main area contains the text 'Driver configuration template to be used by your project :'. Below this text is a list box containing the following items: 'Modbus_AGC.mdb', 'Modbus_BGC.mdb', 'Modbus_Delomatic.mdb', 'Modbus_Empty.mdb', 'Modbus_PPM.mdb', and 'Modbus_PPU.mdb'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

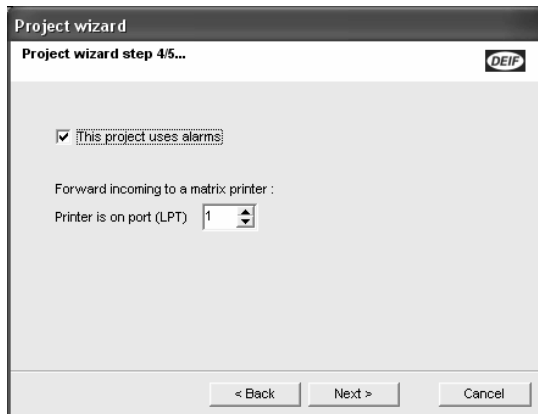
You then have to choose a basic driver configuration from the list of templates provided by DEIF.

These templates include a full definition of the most common DEIF devices such as AGC, PPU or Delomatic (one device defined) and have explicit names.



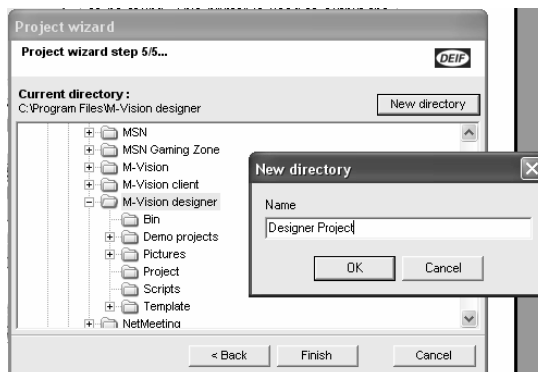
The screenshot shows the 'Project wizard' dialog box, step 3/5. The title bar says 'Project wizard' and the subtitle is 'Project wizard step 3/5...'. There is a DEIF logo in the top right corner. The main area contains the text 'Databases (logger) to be included in your project :'. Below this text are two buttons: 'Add' and 'Remove'. Below these buttons is a large empty rectangular area for a list. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

If you intend to use the data logging facilities, you can add a database created in Microsoft Access there. More on this matter in the chapter 'Data logger' on page 43.



This step is related to alarms, where you can specify if this project will make use of alarms.

If this is the case, then an alarm database will automatically be appended to the project, and you will also have the possibility of defining the parallel (LPT) port where the matrix printer is to be found. This printer is used to output the alarms linearly as soon as they appear in and disappear from the system.

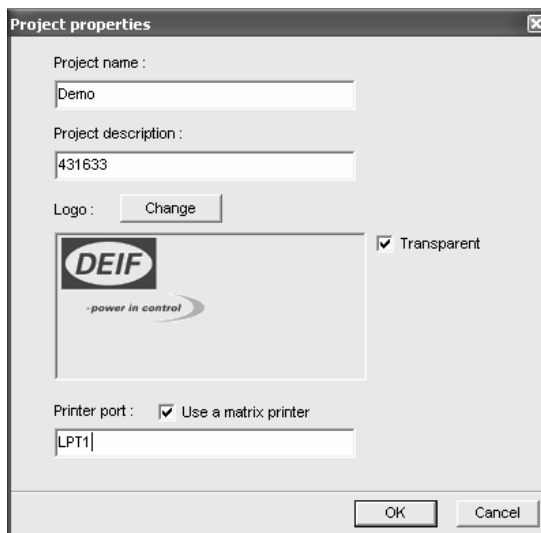


The last step is saving your new project.

A project must be saved in its own directory in order to avoid possible conflicts.

To keep a good structure in the project, it is recommended to save all new projects in the M-Vision designer folder in a new directory named Designer project.

You can access the project properties at any time by clicking the project properties button  on the project window, or by selecting the context menu item 'Project properties'.



You have the possibility of changing the name and description of the project. The actual name of the project file will remain the same though.

You can also change the logo, which will be displayed at the top right side of M-Vision server and client.

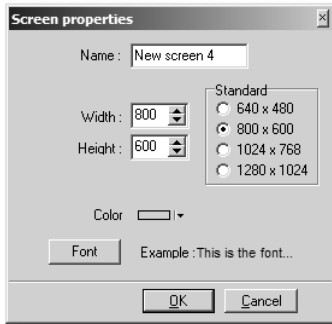
If you intend to run M-Vision server with a matrix printer receiving all alarm activities, you can define the parallel port (LPT) it is actually connected to.

Editing an M-Vision screen

If you intend to append a new screen to the project you are working on, select the item  New screen in the context menu (right click) in the project window.

A new screen will then be created and automatically named 'New screen xx' where 'xx' corresponds to the number of screens in the project.

You can change the basic properties of a screen by selecting the item  Screen properties in its context menu. The following dialog will appear:



You have the possibility of defining the following properties:

- Name of the screen
- Size of the screen (default 800x600)
- Default font (default Arial 8pt)
- Background colour (default standard Windows grey)

You can freely place, move, delete, copy and paste some predefined objects (called visual components) on a screen. These components are located on a palette and are divided into two categories:

- Static components on the tab sheet named 'Standard'



- Dynamic components on the tab sheet named 'DEIF'

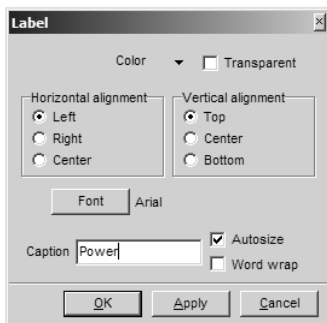


Visual components (static)



Label (static)

This component displays a static text and has the following property editor:



- **Color:** Background colour.
- **Transparent:** The background can be transparent or filled with the Color defined above.
- **Horizontal alignment:** Horizontal justification of the text.
- **Vertical alignment:** Vertical justification of the text.
- **Font:** Font to be used for your text.
- **Caption:** Text to be shown.
- **Autosize:** Specifies whether the size of the component should automatically fit the text or be fixed.
- **Word wrap:** Specifies if the height of the text should automatically fit the text or be fixed.



Image (static)

This component displays an image (bitmap, JPEG or metafiles) and has the following property editor:

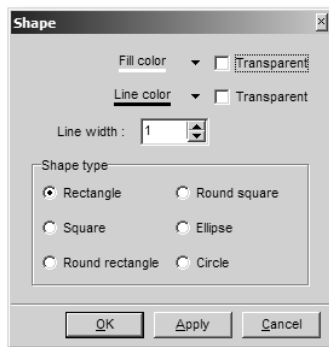


- **Load/Clear:** Loads a picture from your hard disk or clears the actual picture. You can use bitmaps, JPEG or metafiles.
- **Transparent:** Defines whether the picture should be drawn over a transparent background or not¹.
- **Autosize:** If checked, the size of the component will automatically fit the size of the picture.
- **Center:** If checked, the picture is placed at the centre of the component, otherwise it is placed at the top left corner.
- **Stretch:** If checked, the size of the picture will fit the size of the component.



Shape (static)

This component displays a shape, such as a rectangle, a square, a circle etc., and has the following property editor:

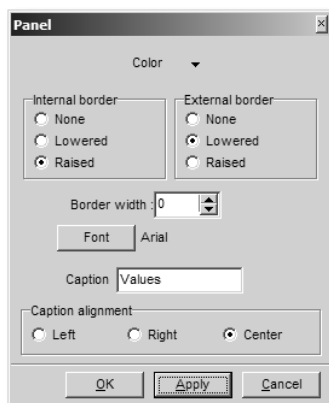


- **Fill color/Transparent:** Defines how the shape should be filled (colour or transparent).
- **Line color/Transparent:** Defines the line around the shape (colour or transparent).
- **Line width:** Width of the line around the shape.
- **Shape type:** Type of the shape.



Panel (static)

This is a panel with customisable borders, which can also contain other components and work as their parent. If you place other components inside a panel, deleting the panel will delete the owned components as well. The property editor is as follows:



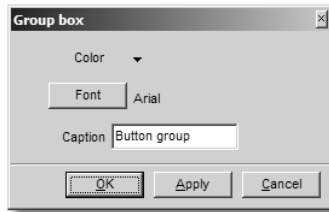
- **Color:** Background colour.
- **Internal border:** Type of the inner border.
- **External border:** Type of the outer border.
- **Border width:** Width of the border (depends on internal and external border).
- **Font:** Font for the caption.
- **Caption:** Text to be shown.
- **Caption alignment:** Alignment of the caption (left, right or center).

¹ The transparent colour is the colour found at the bottom right corner of the image. This feature is only possible with a bitmap (*.bmp) file because of its encoding.



Group box (static)

This is a simple panel with a caption at the top left corner. Just like a panel, it can also contain other components and its property editor is:

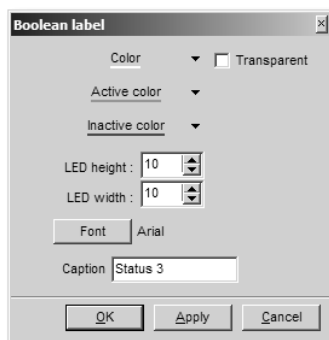


- **Color:** Background colour.
- **Font:** Font for the caption.
- **Caption:** Text to be shown at the top left side of the group box.

Visual components (dynamic)



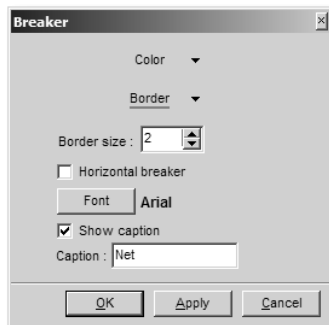
Boolean label



- **Color:** Background colour.
- **Transparent:** The background can be transparent or filled with the Color defined above.
- **Active color:** Colour to be used when the driver returns a TRUE/HIGH value.
- **Inactive color:** Colour to be used when the driver returns a FALSE/LOW value.
- **LED height:** Height of the LED symbol.
- **LED width:** Width of the LED symbol.
- **Font:** Font for the caption.
- **Caption:** Text to be shown.



Breaker



- **Color:** Background colour.
- **Border:** Colour of the border.
- **Border width:** Width of the border.
- **Horizontal breaker:** Determines the orientation of the breaker like when the driver returns a TRUE/HIGH value.



Horizontal breaker checked (default)

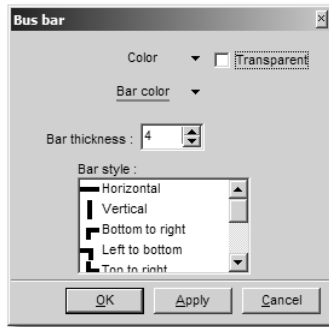


Horizontal breaker not checked

- **Font:** Font for the caption.
- **Show caption:** Shows or hides the caption.
- **Caption:** Text below the breaker.



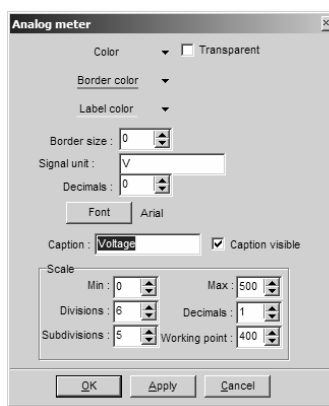
Busbar



- **Color:** Colour of the background.
- **Transparent:** The background can be transparent or filled with the Color defined above.
- **Bar color:** Colour of the bar.
- **Bar thickness:** Thickness of the bar.
- **Bar style:** Type or style of the bar.



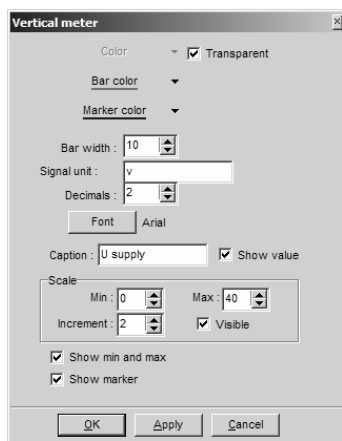
Meter 90 and Meter 240



- **Color:** Colour of the background.
- **Transparent:** The background can be transparent or filled with the Color defined above.
- **Border color:** Colour of the border of the component.
- **Label color:** Colour of the label at the bottom.
- **Border size:** Width of the border.
- **Signal unit:** Engineering unit.
- **Decimals:** Number of decimals.
- **Font:** Font for the graduations and the caption.
- **Caption:** Text at the bottom.
- **Caption visible:** Shows or hides the caption.
- **Scale:** Adjustment of the scale settings such as Min, Max, Divisions and Subdivisions. The decimals for the graduations as well as the value of the set point can be adjusted here.



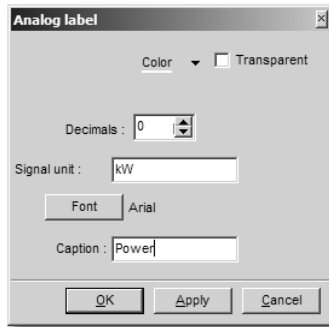
Vertical meter



- **Color:** Colour of the background.
- **Transparent:** The background can be transparent or filled with the Color defined above.
- **Bar color:** Background colour of the bar.
- **Marker color:** Colour of the value marker on the left side of the bar.
- **Bar width:** Width of the bar.
- **Signal unit:** Engineering unit.
- **Decimals:** Number of decimals.
- **Font:** Font for the texts.
- **Caption:** Text to be shown at the top of the bar.
- **Show value:** Shows or hides the latest value at the top of the bar.
- **Scale:** Scale settings. The scale can also be hidden.
- **Show min and max:** Shows or hides the min. and max. values on the scale.
- **Show marker:** Shows or hides the value marker on the left side of the bar.



Analog label



- **Color:** Colour of the background.
- **Transparent:** The background can be transparent or filled with the Color defined above.
- **Decimals:** Number of decimals.
- **Signal unit:** Engineering unit.
- **Font:** Font for the caption.
- **Caption:** Text to be shown.



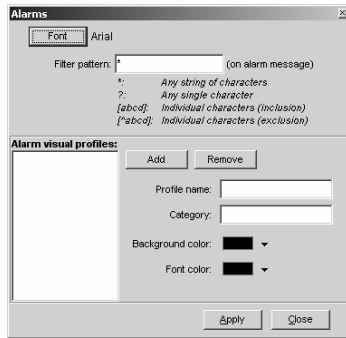
Command button



- **Image:** Windows bitmap to be shown on the left side of the button. The bitmap will automatically be set to transparent by using the colour of the bottom right pixel as the transparency colour.
- **Flat button:** Defines whether the button should be flat or have a slight 3D effect.
- **Font:** Font for the caption of the button.
- **Caption:** Caption of the button.



Alarms list



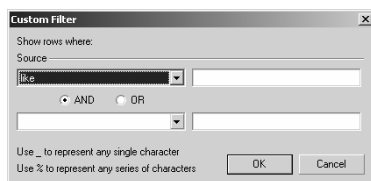
- The box appears when you press one of the boxes in the top bar, e.g. Source, Message, Category ...
- **Font:** Font for the various column headers and for the contents of the alarm grid.
- **Filter pattern enables a filter function according to the outlined functions:** E.g. if the operator only wants to see Events, he can enter *Event*.
- **Visual profiles:** Defines what the alarms should look like in the grid according to the category they belong to, in order to clearly identify alarms.

When you define an alarm in the driver, you can specify its particular category. The category is a text, which can be e.g. 'CRITICAL ALARMS', 'ALARMS', 'EVENTS'. When M-Vision receives an alarm, it is dispatched to the alarms list component(s), and the corresponding profile, if any, will then be applied.

A profile is composed of a background colour (colour of the line) and a font colour (colour of the font).

A profile for a 'serious' alarm can e.g. be a red font on a light grey background, whereas an event can be a dark grey font on a white background.

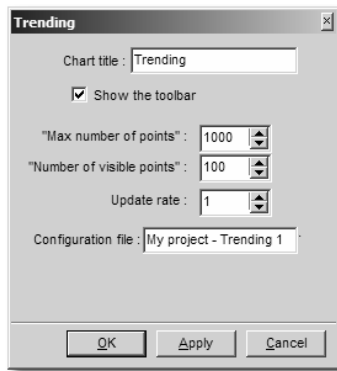
If no profile is defined, then all alarms will be displayed with a black font on a white background.



- In play mode the alarm list has an additional filter that can be opened by pressing one of the black arrows in the boxes in the top bar, e.g. Source, Message, Category ...
- The functions that can be chosen are Equals, Does not equal, Is less than, Is less than or equal to, Is greater than, Is greater than or equal to, Like, Not like, Is blank, Is not blank.



Trending

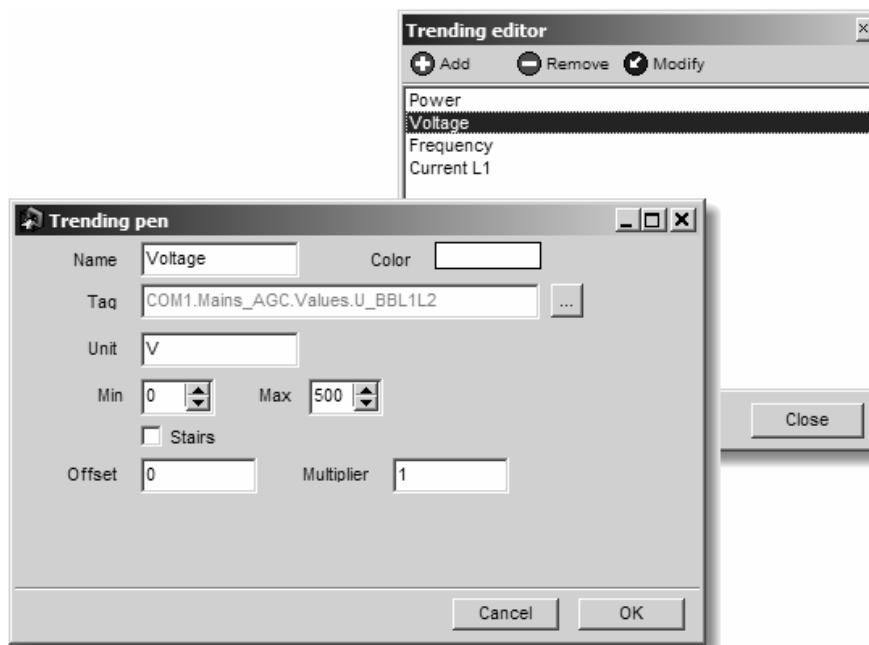


- **Chart title:** Title at the top of the trending.
- **Show the toolbar:** Specifies whether the trending toolbar should be visible or not.
- **Max number of points:** Number of points (buffer) the trending should retain.
- **Number of visible points:** This is the number of points or samples the trending should keep visible.
- **Update rate:** Update rate of the trending in seconds.
- **Configuration file:** This is where the definition of the trending pens will be saved when exiting the application. The configuration file is a standard Windows INI file (*.ini). This applies to M-Vision server and client and allows your end users to save the tags they want to trend, instead of redefining these every time they start the application. If left blank, the pen definitions will not be saved, even if the end user makes some changes at runtime.

NOTE:

If you use several trending components in your application, use different configuration file names to prevent deletion of other trending charts. It is also recommended to use unique names for the configuration files, such as '[Name of the project] – Trending [Trending component number].ini' as shown on the snapshot.

When a trending component is selected, the context menu contains the item **Trending pens**. When selected, you will have the possibility of defining the default pens included in the trending component. These can be overridden by the user at runtime, if you have provided the possibility by specifying a configuration file (see above).



The window Trending editor allows you to add, remove or modify a pen.

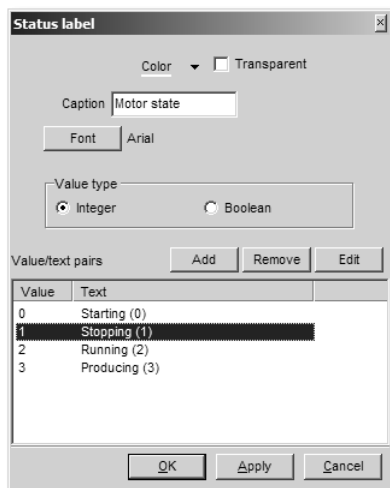
After a click on either the  or the  button, a trending pen editor will pop up and allow you to change the following properties:

- **Name:** Name of the trending pen.
- **Color:** Colour of the trending pen, e.g. of the line.
- **Tag:** Driver tag to be linked to this pen. You can pick it from the list of available tags by clicking the button .
- **Unit:** Engineering unit, e.g. V, A or kW.
- **Min** and **Max:** The min. and max. values of the tag. The trending component can show the pens as absolute values or relative (percent) at runtime.
- **Stairs:** Determines if the pen should be drawn as a simple line (~~~~) or as stairs (┌─┐┌─┐). This can be useful when plotting a Boolean value, the state of which can only be true or false.
- **Offset** and **Multiplier:** Instead of plotting the 'raw' value as received from the driver, you can plot it as $A \times \text{Value} + B$, where A is the Multiplier and B the Offset.



Status label

This component gives the possibility of displaying an understandable status text out of a status value returned by the driver (Boolean or integer).

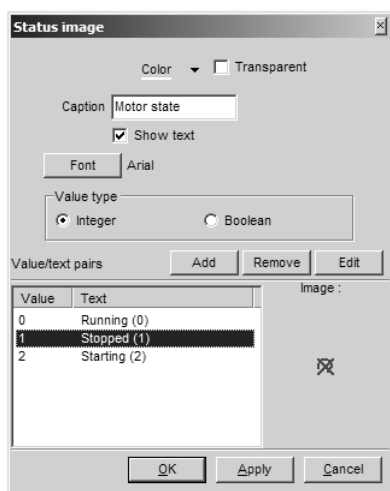


- **Color:** Colour of the background.
- **Transparent:** The background can be transparent or filled with the Color defined above.
- **Caption:** Text to be displayed on the left side of the component.
- **Font:** Font to be used for the text.
- **Value type:** Defines whether the value is a Boolean or an integer value.
- **Value/text pairs:** Defines the value/text pairs by using the Add/Remove and Edit buttons.



Status image

This component is an extension of the Status label component, which allows you to associate an image to the status.

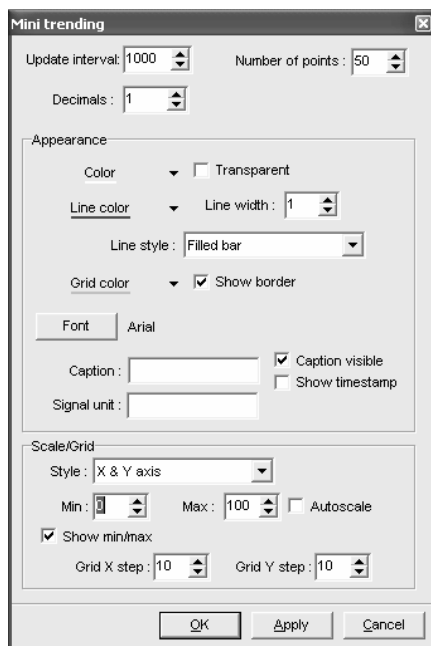


- **Color:** Colour of the background.
- **Transparent:** The background can be transparent or filled with the Color defined above.
- **Caption:** Text to be displayed on the left side of the component.
- **Show text:** Defines if you also want the status text to be shown on the left side of the image.
- **Font:** Font to be used for the text.
- **Value type:** Defines whether the value is a Boolean or an integer value.
- **Value/text pairs:** Defines the value/text pairs by using the Add/Remove and Edit buttons. The pairs can also be associated to a picture, which can be transparent.



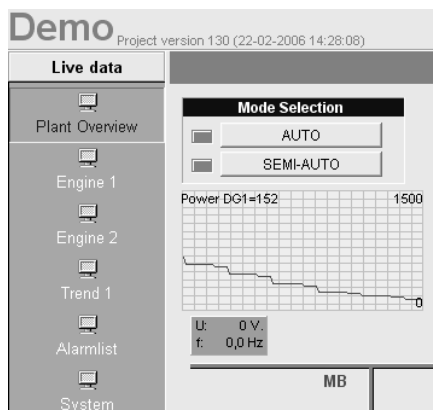
DEIF mini trending

This component gives the possibility of displaying a small trending window.



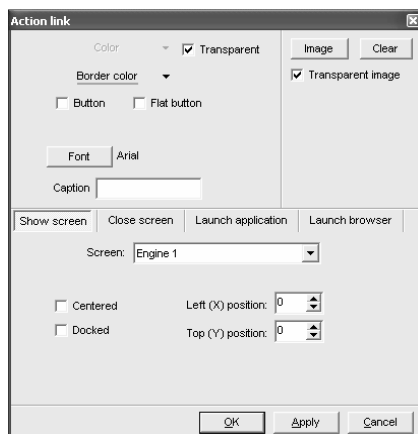
- **Update interval:** How often the tag/value has to be updated measured in ms.
- **Number of points:** How many logging points that are visible in the Trending screen. An update of 1000 ms and 50 points will result in 50 sec. of visible logging window.
- **Decimal:** Number of decimals in the tag/value.
- **Color:** Background colour of the Trending window.
- **Line color:** Colour of the indicator line.
- **Line width:** Thickness of the indicator line.
- **Line style:** Indicator style.
- **Grid color:** Colour of the grid.
- **Font:** Font to be used for the text.
- **Caption:** Name that can be displayed in the Trending window.
- **Signal unit:** Unit that can be shown in the Trending window.
- **Style:** Which axes that are shown in the Trending window.
- **Min/Max:** Scale of the different axes.
- **Grid X/Y step:** Steps that the axes are divided into.

- Example of DEIF mini trending.



Action link

This component gives the possibility of creating a button that can perform a number of different tasks.



- **Color:** Colour of the background.
- **Transparent:** The background can be transparent or filled with the Color defined above.
- **Border color:** Colour of the border line.
- **Button:** The layout of the component will look like a command button.
- **Flat button:** Like above, but without borderline.
- **Font:** Font to be used for the text.
- **Caption:** Name that can be displayed in the action link.
- Position of the pop-up window can also be configured.

Components selection and manipulation

In order to add a component to the screen you are working on, select it on the component palette and place it on the screen by clicking on the screen. The point you have just defined corresponds to the top left corner of the component.

Selecting a single component is simply a matter of selecting by pressing the left button of your mouse. A double click will invoke the property editor of the selected component.

Selecting multiple components can be done in several ways:

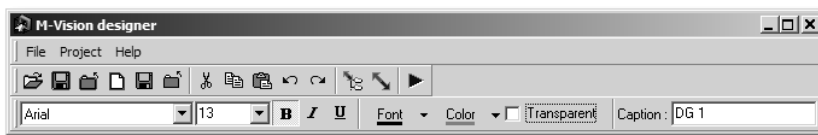
- Point your mouse on an empty area of the screen, press the left button of your mouse and move the mouse while keeping the button down. A selection rectangle will then be drawn, and after you release the left button, all components within the selection rectangle will then be selected.
- Press the SHIFT key and keep it down, and then select the components by pointing the mouse and clicking on them.

A selection can be freely moved by:

- Dragging and dropping on the screen being selected. Be aware that the movements are constrained by the grid settings, e.g. if the 'snap to grid' feature is activated, then the selection will be movable according to the vertical and horizontal settings of the grid. These settings can be modified at any time, as described later.
- Pressing the up/left/down/right keys while keeping the CTRL and SHIFT keys down will move the selection according to the grid settings.
- Pressing the up/left/down/right keys while keeping the CTRL key down will move the selection by one pixel, regardless of the grid settings.

Any component can be copied, cut and pasted, just like any standard Windows application. Use the dedicated buttons of the main toolbar or the usual short cuts for copying, cutting and pasting.

The most common properties are also accessible through a specific toolbar, which is only visible when editing a screen. This toolbar can be used to modify a single component or a group of components.

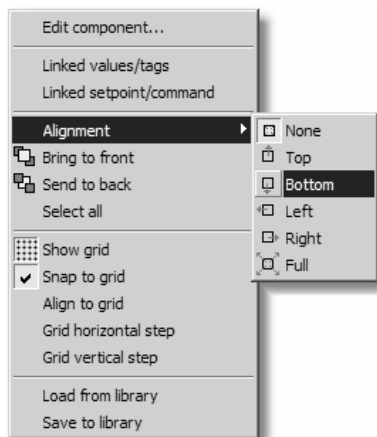


The properties which can be modified with the toolbar buttons are the following:

- Font name
- Font size
- Bold font
- Italic font
- Underlined font
- Font colour
- Colour
- Transparent
- Caption

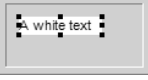
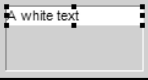
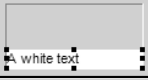
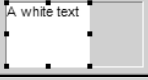
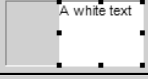
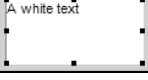
If the component(s) you select does/do not support one of these properties, then the corresponding component(s) will appear as disabled (grey).

When a component is selected, the context menu will look like this:



The meaning of the menu items are:

- **Edit component...:** This will invoke the component editor. This action is similar to a double click on the component.
- **Linked values/tags:** Allows you to define how the component should be linked to a driver tag (more on this in the chapter 'Link for visualisation' on page 25).
- **Linked set point/command:** Specifies if the component should be linked to a set point or to a command, so that a click on the component will write a fixed or user defined value back to the driver (more on this in the chapter 'Link for commands and set points' on page 25).
- **Alignment:** Defines how the component should be aligned in relation to its parent or owner, such as the screen, a panel or a group box. The following table illustrates how the possible alignments work with a white static label positioned on a panel having a border of 5 pixels:

☐ None		Default alignment for all components
☐ Top		
☐ Bottom		
☐ Left		
☐ Right		
☐ Full		

- **Bring to front:** Puts the selected component in front of the other components (overlapping or not).
- **Send to back:** Puts the selected component behind the other components (overlapping or not).
- **Select all:** Selects all components on the current screen.
- **Show grid:** Shows or hides the grid.
- **Snap to grid:** Defines whether the movements are constrained by the grid or not.
- **Align to grid:** Forces the top left corner of the selection to the closest grid dot.
- **Grid horizontal step:** Modifies the horizontal step of the grid (default is 5 pixels).
- **Grid vertical step:** Modifies the vertical step of the grid (default is 5 pixels).
- **Load from library:** Loads a group of components from the library and places them at the cursor position (see below).
- **Save to library:** Saves a group of components to the library (see below).

Note that the three first items will not be shown in case of a multiple selection.

The alignment palette can be used to align a selection of components:



The buttons have the following meaning and action:

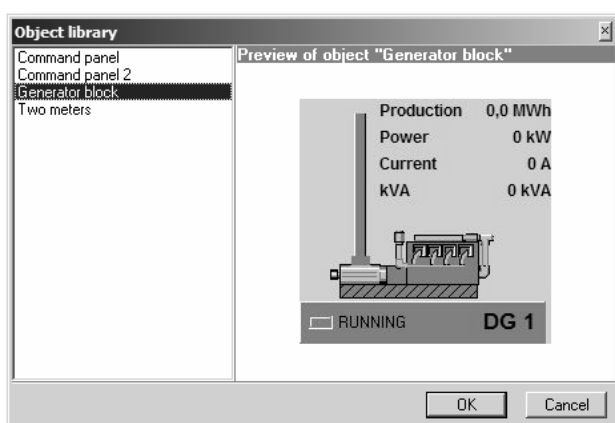
	Alignment button	Description
Horizontal alignments	Align left edges	Lines up the left edges of the selected components (horizontal only).
	Align horizontal edges	Lines up horizontally the centers of the selected components.
	Center horizontally in window	Lines up horizontally the selected components with the center of the window.
	Space equally, horizontally	Lines up horizontally the selected components equidistant from each other.
	Align right edges	Lines up the right edges of the selected components (horizontal only).
Vertical alignments	Align tops	Lines up the top edges of the selected components (vertical only).
	Align vertical centers	Lines up vertically the centers of the selected components.
	Center vertically in window	Lines up vertically the selected components with the center of the window.
	Space equally, vertically	Lines up vertically the selected components equidistant from each other.
	Align bottoms	Lines up the bottom edges of the selected components (vertical only).

Object library

It is likely that you will need to reuse some groups of components across the projects you will be working on. Instead of having to do the same thing again and again, you can use the object library, which provides you with the possibility of saving some component groups, so that you can reuse these in other projects and/or other screens in your project.

The object library can store some component selections, which you can reuse at your convenience. In order to create a new entry, select a group of components you intend to reuse at a later stage, select the item **Save to library** in the context menu and enter an explicit name to the entry being created when prompted. The name you have defined will be saved as well as a preview.

In order to append an item from the library to the screen you are editing, select the item **Load from library** in the context menu, and a new window presenting the current contents of the library should then pop up:



You then have to select the desired item and click on 'OK' to append it to your screen.

If you have defined an object in the library which you do not use anymore, you can delete it permanently by selecting it on the list and pressing the delete ('DEL') key.

Link between components and driver

Link for visualisation

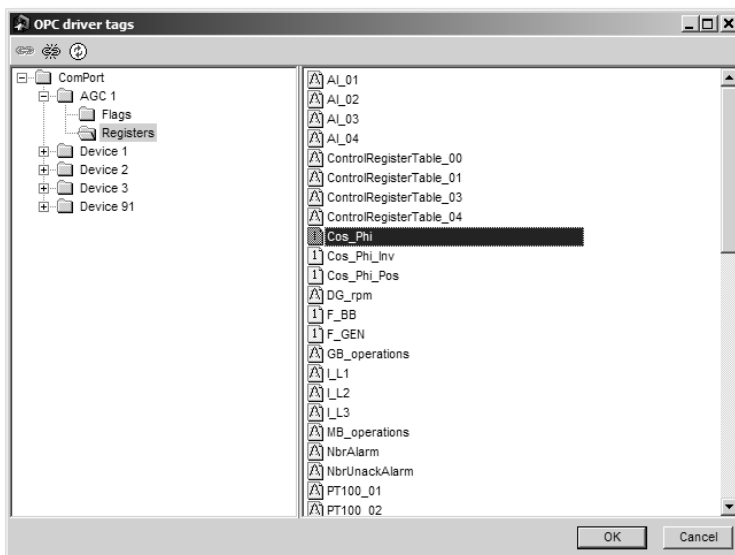
All dynamic components presented in the chapter 'Visual components (dynamic)' on page 15 can be linked to a driver tag in order to visualise or react to its changes. The linkable properties of these components are:

- **Value:** Should be linked to a floating point, an integer or a Boolean tag. The action performed when the value gets a new value depends on the type of the component.
- **Enabled:** Should be linked to a Boolean tag, the value of which will determine whether the component will appear as enabled or disabled (text on the button is grey).
- **Visible:** Should be linked to a Boolean tag, the value of which will determine whether the component will be visible or not.

When a dynamic component is selected, the contextual menu will include the item **Linked values/tags** (this item is not visible when a static component is selected). Selecting this item will invoke the following window:



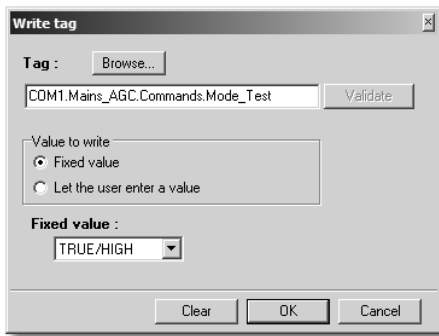
You can manually enter the name of the tag to be linked, and the tag must be valid in the list of available tags in the driver. If this is not the case, then an error message will pop up. You can also browse the tags by clicking the button 'Browse...'.



Link for commands and set points

For most of the dynamic components you have the possibility of specifying, whether the action of writing or forcing a tag value must be performed when the user clicks on it. There are two possibilities:

- Write a fixed value such as a fixed set point or a command
- Write a user defined value such as a set point



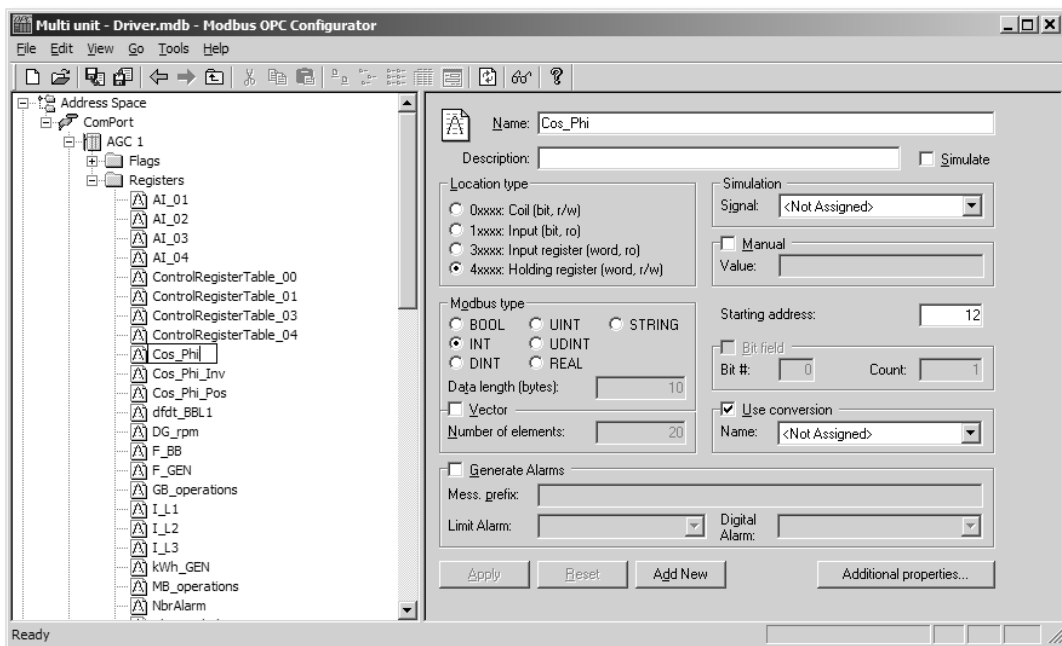
You can either select the tag to be written by clicking on the button 'Browse...' (tag browser), or by entering the name of the tag manually in the tag field. If you choose to do so, you will have to click on the button 'Validate' to make sure that you have entered a valid tag name (existing in the address space of the driver) and to perform the possible adjustments, if the type of tag differs.

Driver configuration

Configurator user interface

The driver configuration is managed by an external application, installed in the same directory as M-Vision designer and called 'Modbus OPC configurator'.

The user interface of the 'Modbus OPC configurator' application provides numerous functions to make the configuration easier, such as Copy and Paste, Drag and Drop, or context based pop-up menus. This tool allows you to arrange and organise the communication ports, devices and their associated tags in an easy way.

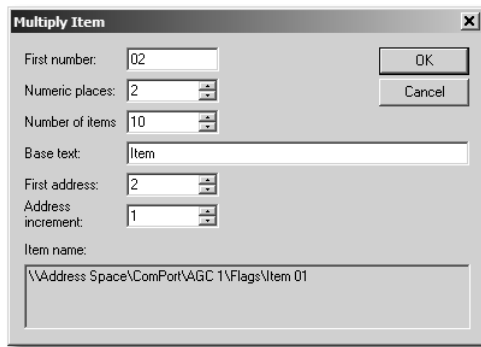


The Edit menu contains many standard commands which do not need detailed explanation, such as Rename, Delete, Cut, Copy, Paste, Select All and Invert Selection. Also note that the configurator supports standard drag-and-drop behaviour in the list and tree views.

This submenu contains commands to add new objects to an active branch in the tree. The actual contents of this submenu (its items) change, based on the type of branch you have selected.

The Multiply command in the Edit menu is not a standard command. Its purpose is to perform a multiple and incremental copy of an item. Selecting this command will launch the Multiply Item dialog. The actual look and contents of the dialog are server dependent. The simplest example

of this dialog is shown below:



In this example the original item was a flag located at address 1. When 'OK' is pressed, 10 new items will then be created with addresses from 2 to 11 and names from 'Item 02' to 'Item 11'.

The following characteristics (with the meaning explained) belong to the group of essential dialog attributes that are always present:

First number	Number appended to the first item generated. Following items will be numbered consecutively
Numeric places	Number of digits used to number the items within the item name
Number of items	Number of items to be generated
Base text	String that the generated item names will start with
Item name	Path to data item in the left tree view pane

The View menu allows users to show/hide toolbars, such as Standard Buttons and Data Manipulation Buttons, or a status bar.

The list of items in the right pane can be displayed in one out of the following four modes: Large Icons, Small Icons, List and Details.

View panes can be shown or hidden selecting the appropriate command from the menu or pressing:

- F11 for Dialog View (described further below) or the button
- F12 for Monitor View or the button

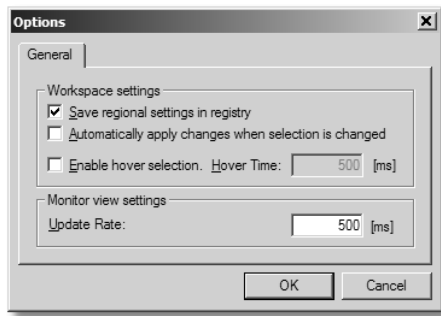
Standard Select Language dialog allows the user to adjust the international environment according to his needs.

Choose Show/hide columns to adjust report view in the right pane of the configurator. The order of data items in the right pane can be influenced by checking appropriate columns within Sort by submenu commands.

To view available records in whichever window is selected, use a command from a list that appears in the Go menu, or use the Arrow, PageUp/down, Home or End keys for moving in the tree view in combination with the Alt key.

The Up one level command moves the cursor one level closer to the root of the tree. Next pane or Previous pane allows users to loop through panes, if more than one is displayed.

The Options dialog in the Tools menu contains workspace parameters. This particular dialog is a prototype, and it can be modified according to programmer's needs.



Save regional settings in registry - enables/disables the configurator to save active language chosen from the Select language dialog into registry and set it up during initialisation.

Automatically apply changes when selection is changed - if checked, the configurator itself tries to update the edited data without clicking on the Apply button and displays the confirmation dialog.

Enable hover selection, Hover time - all configurators support automatic selection of the item above which the mouse is hovering. Enter Hover time parameter in milliseconds.

Update rate - specifies the update frequency of Monitor View items.

Instead of using the standard menus to find the command you need, you can also click the right mouse button on the item in the list or tree view. The pop-up menu that appears shows the most frequently used commands, which are New, Rename, Multiply, Cut/Copy/Paste, Dialog/Monitor View. The pop-up menu is contextual, e.g. its contents will vary depending on the selected item.

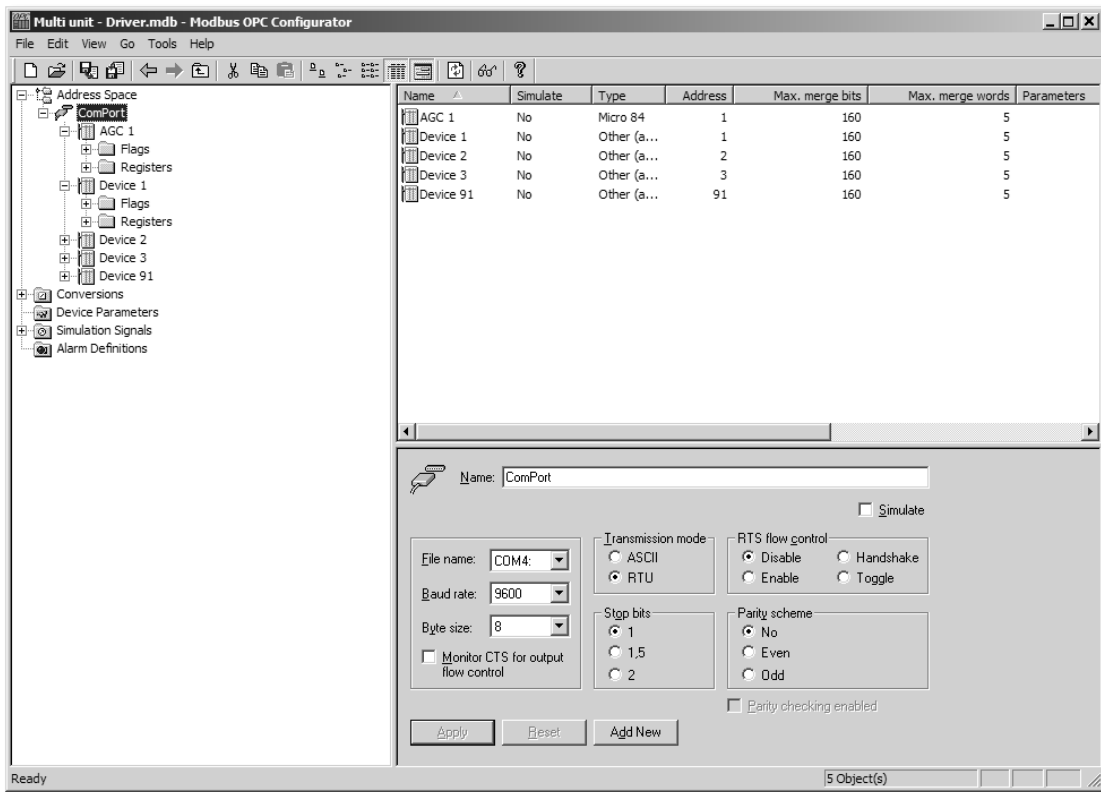
Modbus-specific features

Modbus is a serial communication protocol allowing connection of 247 devices on a serial line. There is always one device (Master) controlling the communication. The rest consists of Slave devices. Every device is identified by its unique address. Its registers are read as Input (1 bit long) or Input Register (16 bits), or written to as Coil (1 bit) or Holding Register (16 bits). Input and coil are sometimes called flags. Registers of each type are addressed by using 16 bit numbers.

Ports

Port is equivalent to a physical serial port in the computer. To configure a port correctly means to set up a serial port as a file name, communication speed (Baud rate) and protocol characteristics: Transmission mode (ASCII or RTU), RTS flow control, stop bits and parity scheme.

If Parity checking enabled is unchecked, this will force the server to ignore the parity bits in the message.



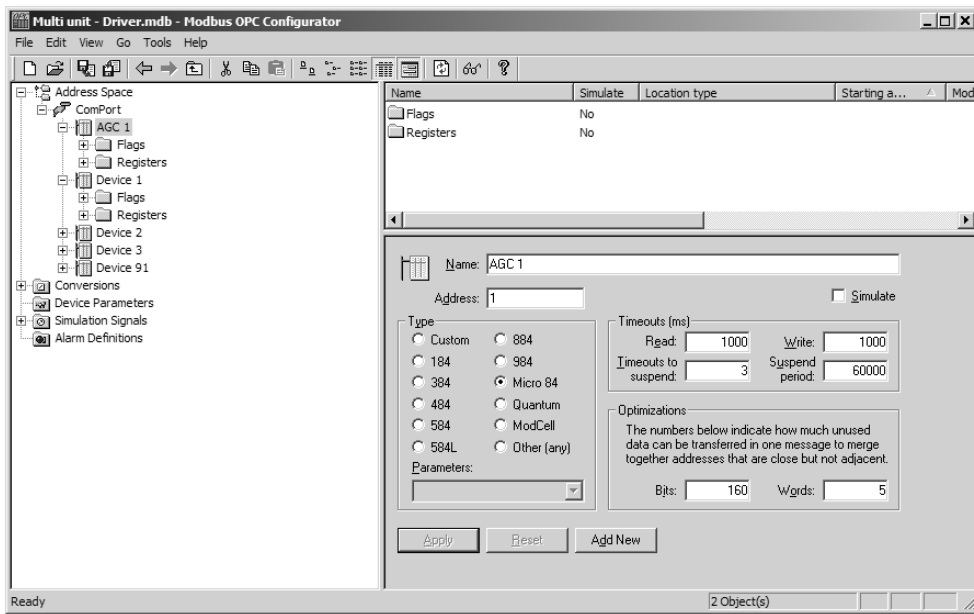
More details can be found in the DEIF documentation.

Devices

Every device is connected to a particular port, so it logically creates second level in the Address space tree. Again, the device is represented by its symbolic name. Also, it is uniquely identified by the Address value. It is impossible to have two devices with the same address connected to one port.

Setting up a device requires configuring of its unique address, type, timeouts and optimisation parameters:

- **Device type:** There is a group of six predefined standard device types enhanced with Other (Any) and Custom options. The device with the most limited parameters and the lowest performance is called Other (Any) alternative. If you have devices which are in the list of predefined types, use Custom option and select from Parameters combo one of the device types predefined by user. For instructions on how to create a new or edit a predefined device, see the chapter 'Device parameters' below.
- **Timeouts:** Timeout parameters (separate for reading and writing messages) specify the period length the server will wait for response from the devices.
- **Optimisations:** The server tries to optimise the communication with the devices by requesting as much data as possible in one message. Consecutive registers are merged together into one request for efficiency. The server can also read registers, which are not really requested, if this allows it to join two blocks of requested registers. The numbers entered under Optimisations specify the maximum block length of adjacent unused data.

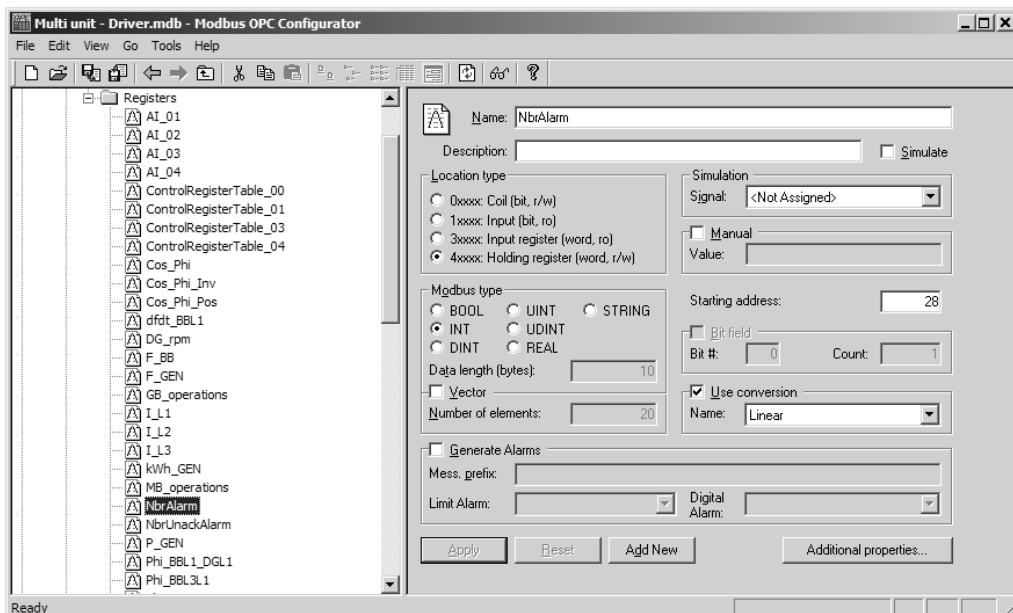


Tags and folders

Once you have defined a port and its attached device(s), you are ready to define the tags which will be available to the outside world. You have the possibility of organising your tags in folders, where a folder is an object, which can group items that logically belong together. It does not have any direct representation in the Modbus protocol; you can design and use folders in any way suitable to your application. Three levels of folders are supported in the Modbus OPC Server.

The folders will contain some data items representing a register in the device or a range of registers. A symbolic name and description is associated with the data item. OPC Client can obtain the data item description.

Each data item can be configured through the following window:



A new data item creation requires configuration of the following properties:

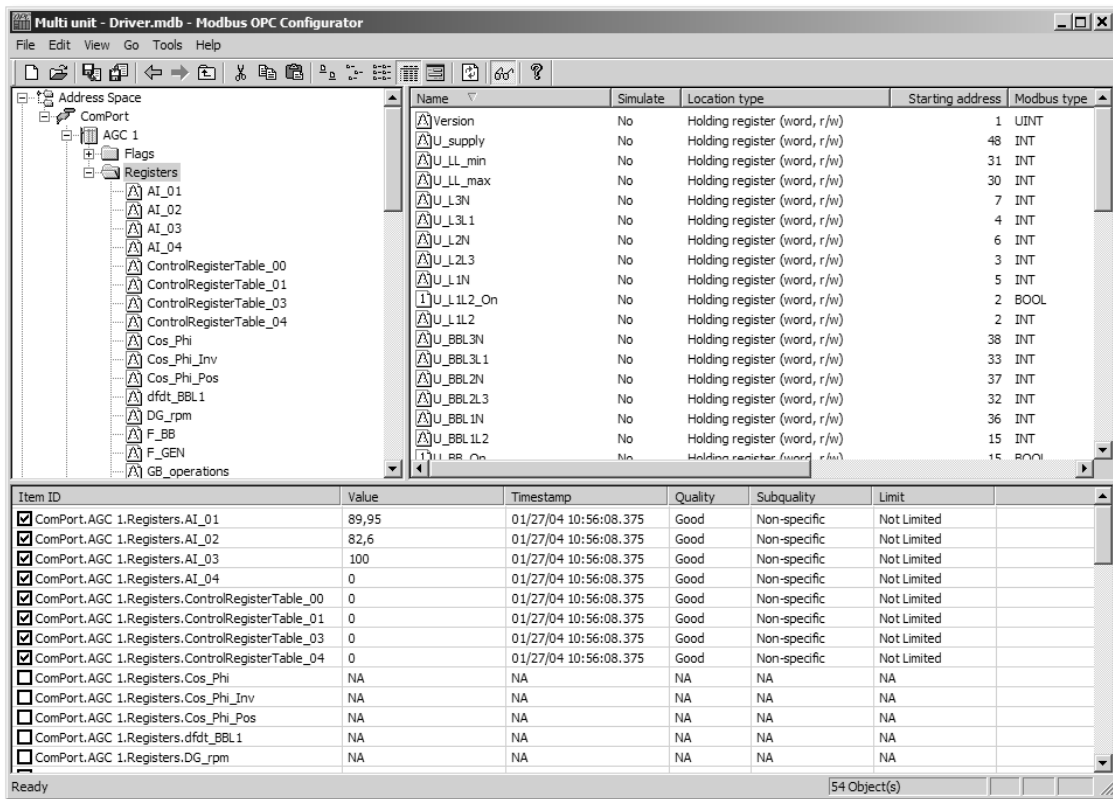
- **Location type:** Location type is a type of register in the device. The device registers are divided into Coils, Inputs, Input Registers and Holding Registers. This table explains the name conventions used:

	Read Only	Read / Write
1 bit	Input	Coil
16 bit	Input Register	Holding Register

- **Modbus type:** The location type (device data) will be understood as Modbus type (OPC data type). Modbus data type also depends on the location type selected. Example: Coil or Input (1 bit) device data type could be Modbus BOOL only. When selecting Modbus string type, the user has to specify the data length (how many bytes will the string be represented by).
- **Starting address:** This value specifies the data item address (register number) in the device data space. With the UINT Modbus type it is possible to extract bits from the register and use them as a Boolean or an integer value (this functionality is read only). The user can specify a group of count adjacent bits inside a word starting with Bit #. In this way it is possible to use a register for several separate data items.
- **Use conversion:** To get the data value converted according to a prescribed form, choose one of the predefined or user defined conversions. See the chapter 'Conversions' for more details.
- **Simulation:** To test the client functionality, choose a Simulation Signal from the Signal drop-down menu and check the Simulate check box. See the chapter 'Simulation signals' for setting of the simulation signal. All levels in the Address space (port, device, folder, data item) support the process of simulation (Simulate check box). The parent list in the tree is superior, has higher priority when deciding to simulate the data item or not. In other words, the data item is simulated, if it has a Simulation checked itself, or if any of its parents has Simulate checked (it may be simulated even if its Simulate check box stays unchecked).
- **Manual:** If checked, the data item will provide constant parameter value, because manual setting is of the highest priority. The changes in the configuration take effect only when the server reloads the configuration (on start-up).
- **Generate alarms:** Check the Generate alarms box to make the server generate alarms based on the data item value. The message prefix parameter is the text of the message for this data item; it will be followed by the text configured for a particular alarm type. The second part of the alarm message will contain Message body string (see the chapter 'Alarm definitions' below). The server allows predefinition of any number of alarm definitions (templates). You can then combine one of them with the specific tags.

A very useful feature is the Monitor view, which can be shown or hidden, selecting the menu

'View>Monitor view' or pressing F12 or clicking the button . This view allows you to see the actual values of the tags you have defined in a folder or right under a device, and a device has to be connected to your computer in order to make use of this feature. When the Monitor view is activated, the configurator window will look like this:

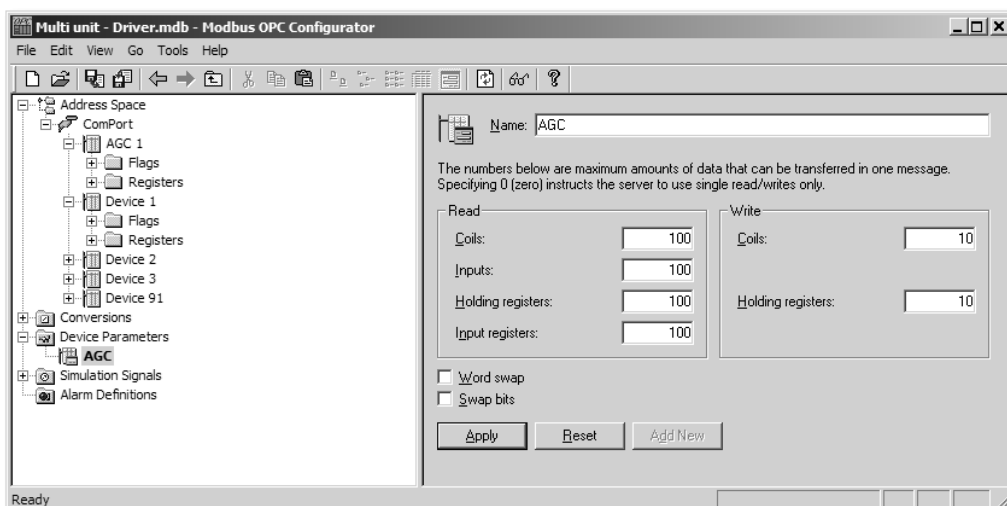


Each register or flag monitoring can be enabled or disabled according to the state of the checkbox in the column Item ID (checked or unchecked). You can also use the context menu to enable or disable monitoring of the items in a single step.

Note that the value displayed in the column Value actually includes the conversion you may have defined for this tag. For that reason it has to be understood as the final value.

Device parameters

The Device parameters directory contains the list of custom device types. Device parameters influence the behaviour and performance of the server for the device.



The numbers in the device parameters dialog indicate the maximum amount of data that can be transferred in one message. If the value is set to zero, this will force the server to use single read/write messages only.

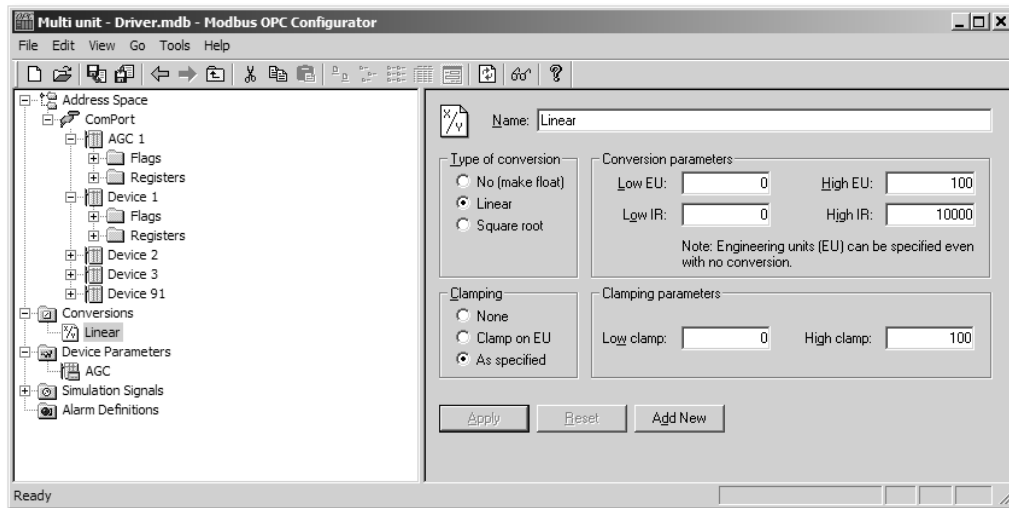
The server also allows configuration of the following additional properties for each device type:

- **Word swap:** Swaps the first word with the second when reading/writing DINT, UDINT or float values.
- **Reverse bits:** Reverses the order of bits in word-sized values (least significant bit becomes the most significant bit).

General features

Conversions

You can make the server convert device data values simply by setting the following properties:



- **Type of conversion:** There are two types of units:
 - EU engineering unit (client scale)
 - IR instrument range (device scale)

No conversion converts the data into float data type, but does not change the value itself. Linear or square root conversions keep a linear or square root relation between EU and IR.

- **Conversion parameters:** Note that the definition of range limits helps some client applications and makes sense, even when no conversion is specified.
- **Clamping:** If clamping is on, the data value will be limited to its High clamp/EU value when it exceeds the upper limit, and similarly with Low clamp parameter.

Simulation signals

A wide range of simulation signals is provided. You can select from them in the Type group of radio boxes.

Read Count is incremented by one each time the item is read (Write Count increments when the item is written). Random generates random value within the Amplitude range starting with Position. Ramp, Sine, Square, Triangle and Step are periodical signals. Their time behaviour is influenced by Period and Phase parameters. Period specifies the signal frequency, while Phase moves the signal origin on the time axis.

Square and Triangle signal types have one more parameter: Ratio. Ratio defines the Triangle signal steepness or Square signal H/L proportions. The # of steps parameter of the Step signal defines a number of steps the signal amplitude will be divided into.

Alarm definitions

Alarm definitions are divided into two alarm template types: Digital and Limit (analogue) alarm definition. Digital alarm can be defined for a data item of BOOL type only, while the Limit alarm definition is for the rest except String data type.

Digital alarm definition

The update rate parameter defines the frequency of checking the data item value, and possibly responding with sending the alarm message.

The user can request the alarm when the value is equal to TRUE or FALSE, define the Message body that carries the information, and Severity, which is the alarm message importance. The Severity value ranges from 0 to 1000.

Checking Return to normal will generate a separate alarm message when the data item gains the opposite value.

Req. Ack. tells the client that the alarm requires an acknowledgement. Then the alarm message can not only be sent, but also acknowledged, etc.

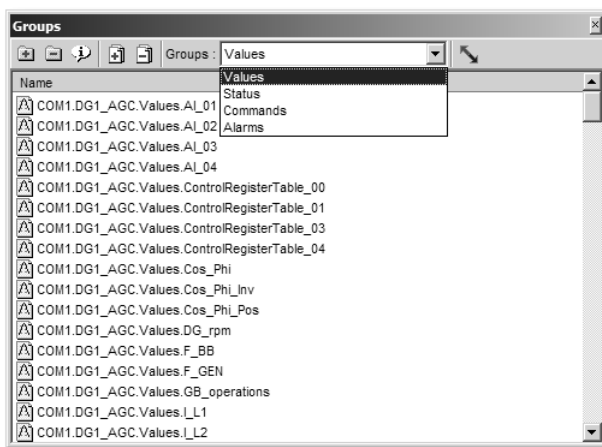
Limit alarm definition

Limit alarm parameters can have subranges within the data item amplitude. Every subrange definition includes a Message body that will be appended to the alarm message, the Severity of the alarm and Req. ack. flag.

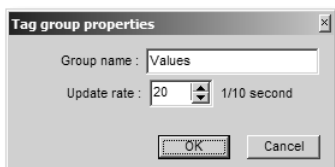
Deadband prevents the server from generating huge amounts of alarm messages and overloading the clients, when the signal oscillates around one of the limits specified. The deadband value extends the limit zone. It results in sending only one alarm message, even if the signal oscillates.

Tag groups

This is where you define which tags should be retrieved from the driver and how often this should happen. This part is essential in the configuration of a project, as it is actually there the link between M-Vision and the driver is defined.

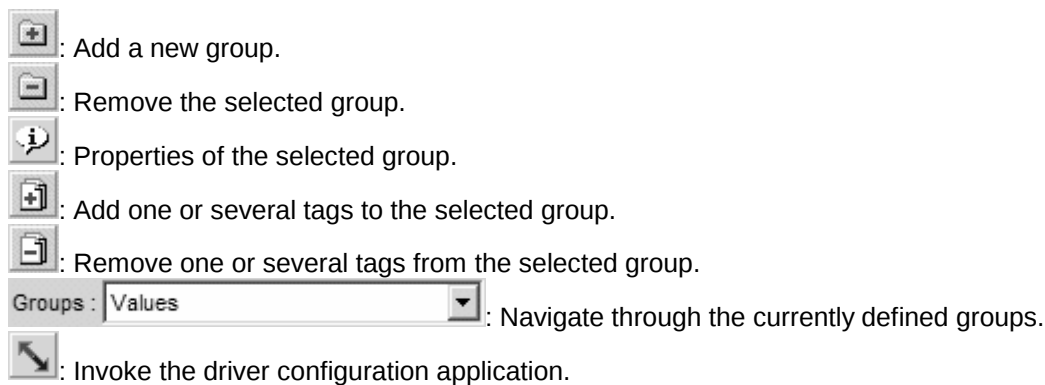


The tags are organised in groups, where each group has its own name and update rate, which can both be freely modified by invoking the property of a selected group.



You can freely choose the name of each group, and the update rate is defined in 10th seconds.

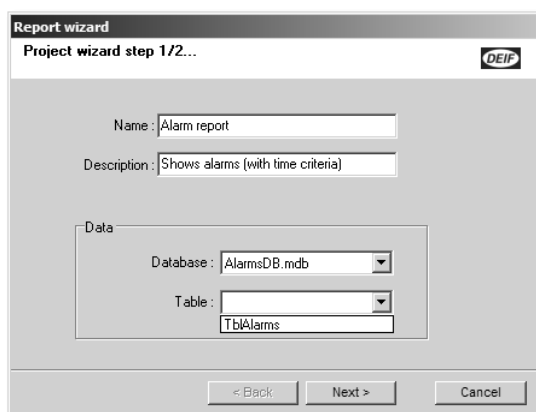
The 'Groups' window has its own toolbar containing the following items:



Reports

New report

The creation of a new report is achieved via the 'New report' wizard.

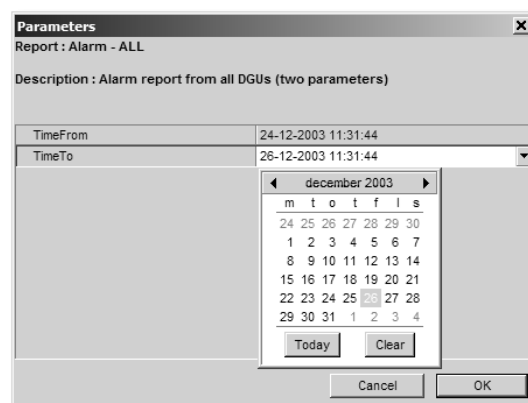


Name your report in the field 'Name' and enter a short description in the field 'Description'.

Choose the database and the table, on which the report is to be based, in the two list boxes 'Database' and 'Table'.

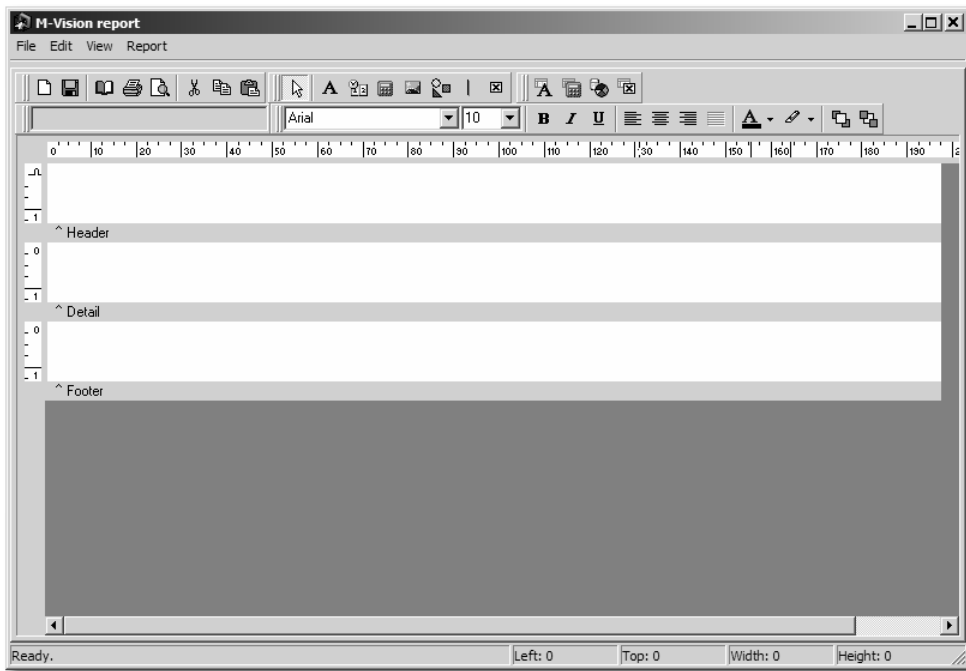


All fields will be available for the report. You can specify whether the end user can have the possibility of defining a date interval for the data to be retrieved via the check box 'Use time criterion'. If you choose to do so, the end user will see the dialog box below when he runs the report at runtime:



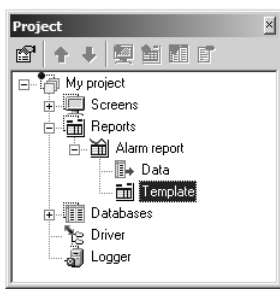
A default SQL query will be created, which can be refined as described later on.

When you are done with this wizard, an empty report layout will be presented, and you can now work on this.



How to use the report designer is described in the chapter Report layout on page 37.

After the addition of this new report, the project window will now look like this:



As it has been briefly presented in the new report wizard, and as we will now see, a report is composed of two separate entities:

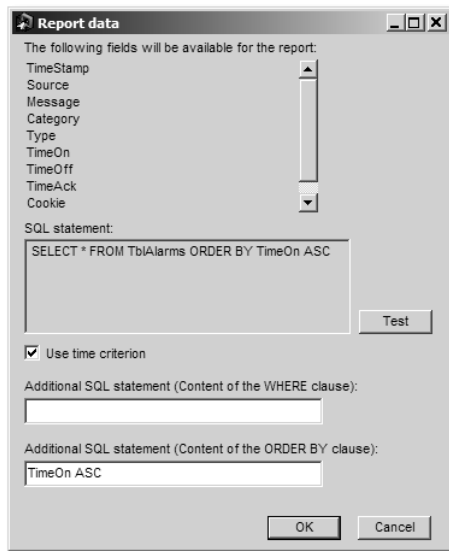
-  Report data: Which data to get and how to get it
-  Report template: How the report should look for the end user at runtime

Report data

The report data is a presentation of the data which will feed the report layout. It is actually an SQL query on the database table the report is based on, which can be customised to fit your needs.

An SQL query is roughly an expression defining what we intend to retrieve from the table and how it should be retrieved. It always has the syntax `SELECT * FROM [Table name here]` and can be enhanced with a 'WHERE' clause (a kind of filter) as well as an 'ORDER BY' clause (sorting of the result of the query). You can freely define the 'WHERE' and 'ORDER BY' clauses.

The SQL syntax is beyond the scope of this document, but if you own Microsoft Access, its help files provide detailed presentation of the SQL syntax. There are also many publications on this matter. You can have a look at the following <http://www.w3schools.com/sql> as well.



The two editable fields allow you to define your own 'WHERE' and 'ORDER BY' clauses, and the query will be shown in 'SQL statement'.

The test button will actually execute the query and report any syntax error.

NOTE:

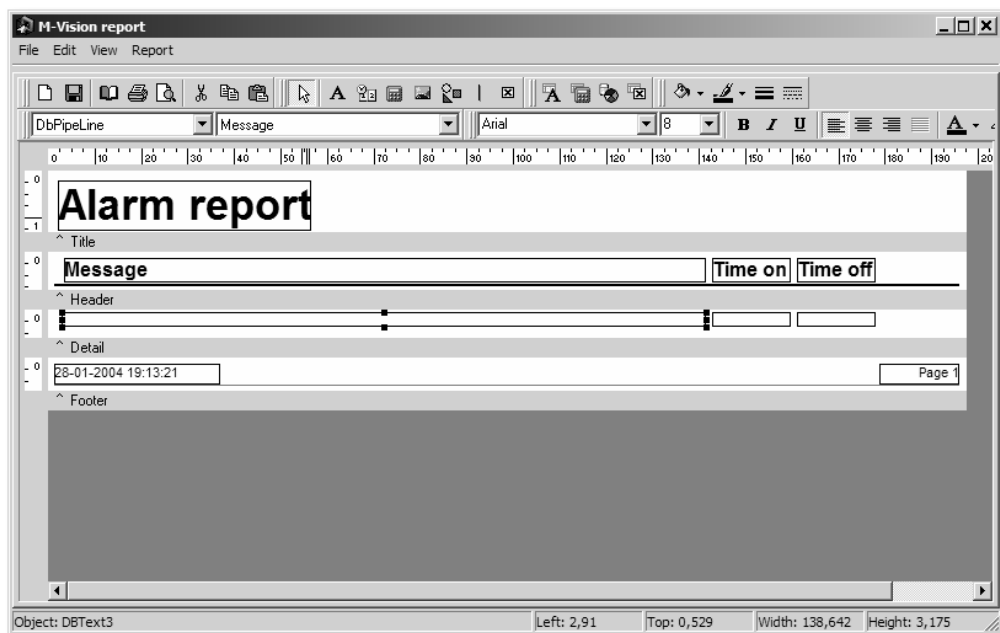
Clicking on 'OK' will also call the query check.

The check box 'Use time criterion' defines whether the end user can specify a time interval manually when he/she runs the query at runtime as described previously.

Report layout

The philosophy behind the report designer is actually quite similar to the screen designer. A report is based on a set of predefined components which can be either static or dynamic, e.g. linked to a database field. An extensive description of the features provided by the report designer as well as the report components can be found below.

Once data have been selected you can begin designing your report. This is done by creating a layout, which is a combination of objects that describe how the document should look.



The report designer contains a layout, which will be applied to the data it will be fed with at runtime.

The white rectangular areas with the grey bars below are called bands.

This report has a Header, a Detail and a Footer band. When the report designer generates a document from this layout, the objects in the Header band will appear at the top of each page. The objects in the Footer band will appear at the bottom of each page, and the objects in the Detail band will be repeated down the page until no more page space is available, at which point a new page will be started. The Detail band prints once for each row of your data selection. This is how a document is created from the layout. You can generate a different document from the same layout simply by changing your data selection. Notice the grey rectangular area below the

white space of each band. This area can be dragged, allowing you to redefine the height of the band.

Component palette toolbars

These toolbars are used to create new components. To create a component, click on the icon and then click in the white space of a band. There are two component toolbars: Standard and Data. Use the Standard components to create text, lines, shapes etc. Use the Data components when you want to display the data from a database.

Standard component palette

To access this toolbar, select the View | Toolbars | Standard Components menu option from the Report Designer main menu. This toolbar will assist in creating the most commonly used report components.



Label

Displays text. Assign the Caption property to control the text value. You can have the label resized automatically to fit a changing caption if you set the AutoSize property to True.



System variable

Displays common report information such as page number, page count, print date and time, date and time. The type of information displayed is controlled by the VarType property. The format is controlled by the DisplayFormat property.



Image

Displays bitmaps and Windows metafiles in reports. Assign the Picture property of this component in order to place an image in your report. Use the Report Designer's built-in picture dialog to load images at design-time.



Shape

Use this component to print various shapes (squares, rectangles, circles, ellipses). Set the Shape property to select a type of shape. Use the Brush and Pen properties to control the colour and border respectively.



Line

Displays single and double lines (either vertical or horizontal.) Set the Style property to control whether the line is to be single or double. Set the Weight property to control the line thickness in points. Set the Position property to control whether the line is vertical or horizontal.



Check box

Displays a check box using the WingDings font.

Data component palette

To access this toolbar, select the View | Toolbars | Data Components menu option from the Report Designer main menu. This toolbar will assist in creating data-aware report components.



Data text

Used for displaying values from all types of database fields. Use the DisplayFormat property to format the value.



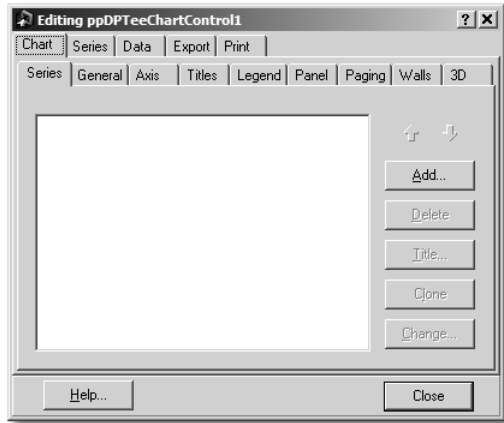
Data calculations

Used for simple database calculations (Sum, Min, Max, Count and Average). The value can be reset when a group breaks using the ResetGroup property.

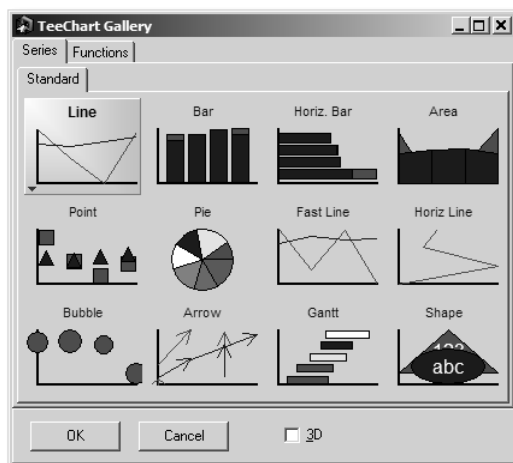


Data chart

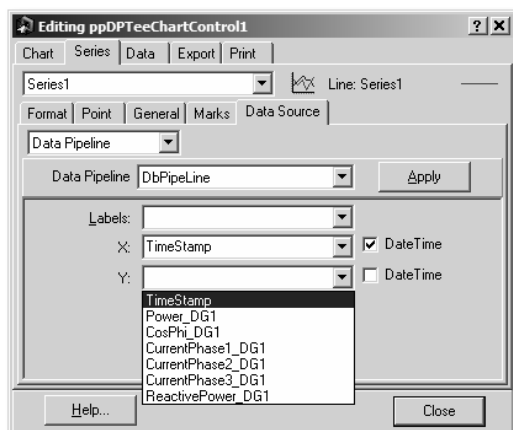
Allows data-aware charts to be placed within a report. Once you have placed a chart on a report layout, you can then add one or more series via its property editor by selecting the item 'Edit chart...' in the context menu. In order to add a series to the chart, proceed as follows:



1. Property editor of a chart. This chart does not have any series yet. Click on 'Add...' to do it.



2. Choose the series type from the gallery and click on 'OK'.



3. The series has to be linked to the underlying database. You have to define the fields, which will be plotted as X and Y value.

If you select a Date/Time field as X value, if the check box Date/Time is checked, then the labels on the X or Y axis will be formatted as Date/Time values. This is done automatically when you select a Date/Time field.



Data check box

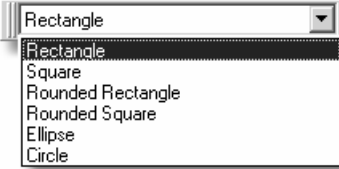
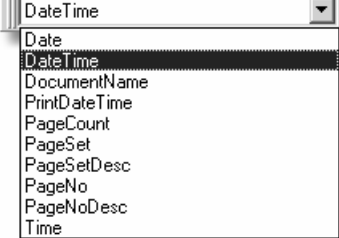
Displays a check box based on the value of the field specified in the DataField property. Can be used with a Boolean field (or any other type of field via the BooleanTrue or BooleanFalse properties).

Other toolbars

Edit toolbar

To access this toolbar, select the View | Toolbars | Edit menu option from the Report Designer main menu. This toolbar will assist in setting the most important property or properties for the currently selected component. For example, when a static label component is selected, an edit box appears which allows you to set the Caption property. When a Data label component is selected, two drop-down lists appear which allow you to set the DataField to be linked to.

Below a few examples:

Nothing selected	
Data component selected	 This configuration allows the data pipeline and data field for the component to be set. The drop-down list to the left shows the data pipeline. The drop-down list to the right shows the field name.
Label component selected	 Here a label component has been selected in the Report Designer. The Edit toolbar displays an edit box from which the label's caption can be set.
Shape component selected	 Here a shape component has been selected in the Report Designer. The Edit toolbar displays the different shape types.
Line component selected	 This configuration allows you to move the line to the top, bottom, left, or right within the line's selection handles.
System variable	 You can choose which system variable should be used. These variables only receive a value, when the report is run (runtime).

Format toolbar

To access this toolbar, select the View | Toolbars | Format menu option from the Report Designer main menu. This toolbar will help set the font and colours. It will also help layering the components via the 'Bring to front' and 'Send to back' commands.



- **Font name:** Selects the font name for textual components. Use TrueType fonts (indicated by an icon) when possible, these render well on both the screen and printer. If you are using a dot matrix printer, the print driver may supply printer fonts (indicated by an icon), which you can use to speed up the printing of the report. Finally, fonts that have no icon to the left of the font name are screen fonts and should not be used in reports where WYSIWYG is required.
- **Font size:** Selects the font size. You can also type in this box to set the font size exactly.
- **Bold:** Sets the font to bold.
- **Italic:** Sets the font to italic.
- **Underline:** Sets the font to underline.
- **Left justify:** Left justifies the text in the component.
- **Center:** Centers the text in the component.
- **Right justify:** Right justifies the text in the component.
- **Font color:** Sets the font colour.
- **Highlight color:** Sets the background colour of the textual component.
- **Bring to front:** Brings the component to the front. The components in the front print last, and the components in the back print first. Use the Report Tree to see the exact layering of components within the band.
- **Send to back:** Sends the component to the back. The components in the front print last, and the components in the back print first. Use the Report Tree to see the exact layering of components within the band.

Align or Space toolbar

To access this toolbar, select the View | Toolbars | Align or Space menu option from the Report Designer main menu. This toolbar will help position components relative to one another and relative to the band in which they appear.



- **Align left edges:** Aligns a group of components with the leftmost position of the component that was selected first.
- **Align horizontal centers:** Centers a group of components based on the horizontal center of the component that was selected first.
- **Align right edges:** Aligns a group of components with the rightmost position of the component that was selected first.
- **Align top edges:** Aligns a group of components with the topmost position of the component that was selected first.
- **Align vertical centers:** Aligns a group of components based on the vertical center of the component that was selected first.

-  **Align bottom edges:** Aligns a group of components with the bottommost position of the component that was selected first.
-  **Space horizontally:** Spaces a set of components based on the leftmost position of the first component selected and the rightmost position of the last component selected.
-  **Space vertically:** Spaces a set of components based on the topmost position of the first component selected and the bottommost position of the last component selected.
-  **Center horizontally in band:** Centers a component horizontally within a band.
-  **Center vertically in band:** Centers a component vertically within a band.

Size toolbar

To access this toolbar, select the View | Toolbars | Size menu option from the Report Designer main menu.



-  **Shrink width:** Determines the minimum width of all the selected components, and then sets the width of the components to that value.
-  **Grow width:** Determines the maximum width of all the selected components, and then sets the width of the components to that value.
-  **Shrink height:** Determines the minimum height of all the selected components, and then sets the height of the components to that value.
-  **Grow height:** Determines the maximum height of all the selected components, and then sets the height of the components to that value.

Nudge toolbar

To access this toolbar, select the View | Toolbars | Size menu option from the Report Designer main menu.



-  **Nudge up:** Moves all selected components one pixel up.
-  **Nudge down:** Moves all selected components one pixel down.
-  **Nudge left:** Moves all selected components one pixel to the left.
-  **Nudge right:** Moves all selected components one pixel to the right.

Draw toolbar

To access this toolbar, select the View | Toolbars | Draw menu option from the Report Designer main menu. This toolbar will help set the colours and borders of the components.



-  **Fill color:** For shapes, lines and region components only. Sets the Brush.Color property. To set the colour of a textual component, check the Highlight Color action of the Format toolbar.
-  **Line color:** For shapes, lines and region components only. Sets the Pen.Color property.
-  **Line thickness:** For use with a Line component only. Sets the Weight property.
-  **Line style:** For use with a Line component only. Sets the Pen.Style property.

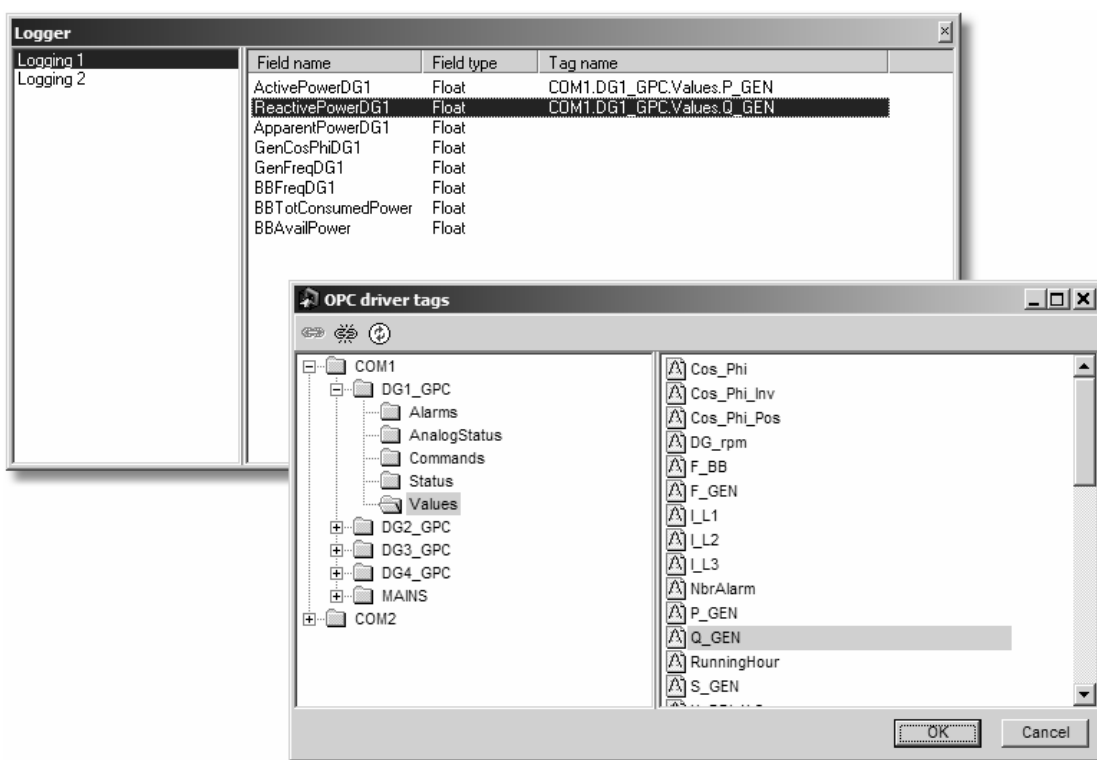
Data logger

You can access the data logger configuration by double clicking on the item  **Logger** on the project window.

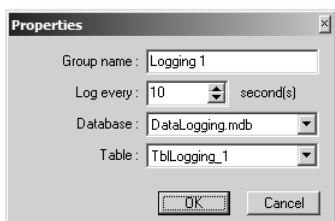
The configuration of the data logger is highly dependent on the databases you have included in your project ('Databases' subdirectory of your project).

When you add a database to the active project, M-Vision designer will inspect this new database and create as many new groups as the number of tables found. You can either use a single database with several tables (recommended, because it is easier to maintain) or several databases with one or several tables. It is important to note that all databases located in the 'Databases' subdirectory of your project will be used for logging purposes, except of course the alarm database, which is used by and linked to the alarm module only.

An example of a configuration of the logger groups is shown below:



In order to access the properties of a logging group, you have to double click on its name on the left side of the 'Logger' window. The following dialog box will then be displayed:



You can rename the group via the 'Group name' field.

The logging periodicity is defined by the edit field 'Log every' and is expressed in seconds.

The two fields 'Database' and 'Table' are for visualisation only.

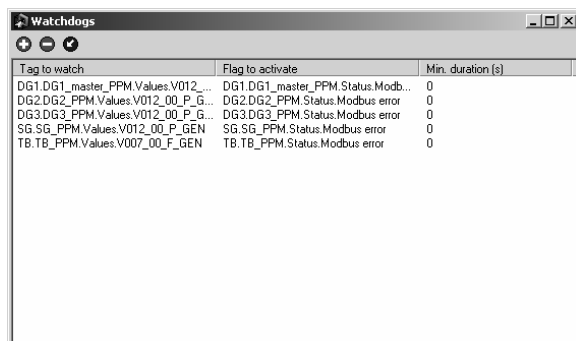
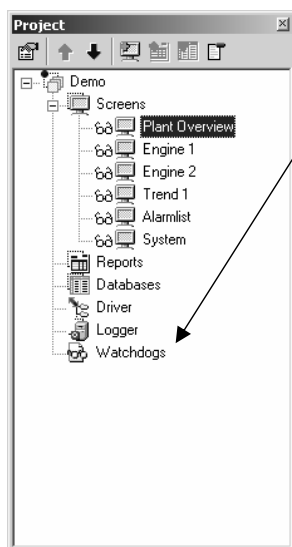
When a group is selected on the logger configuration window, the list of the fields from the database table are shown in rows with their types (integer, float, Boolean etc.). To create a link between a table field and a driver tag you have to double click on the element and select the appropriate tag as shown in the previous snapshot.

A logging database can be created easily in Microsoft Access, and the logging tables must contain at least a Date/time field called 'TimeStamp'. This field will be used to time stamp each new record posted to the table.

When creating a table in Access, you simply have to define the fields you want to log your data into, and you must make sure that the field types and size fit the type of tag you intend to link. When you add a new database to your project, M-Vision designer will check for the presence of the field 'TimeStamp' in each table the database contains. If none is found, the database will simply not be added to your project.

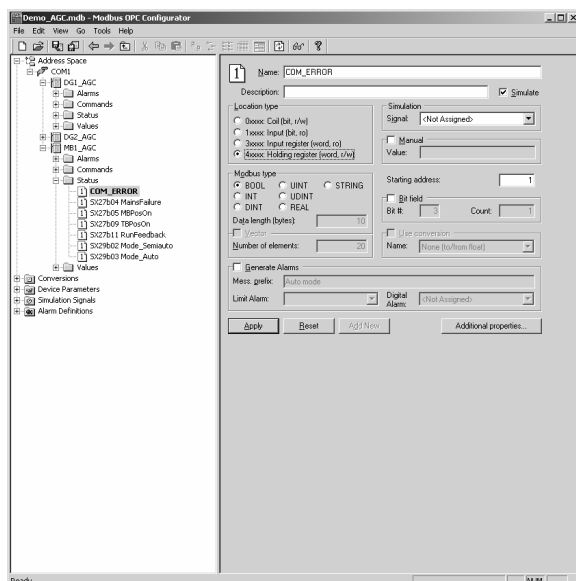
Watchdog

You can access the Watchdog configuration by double clicking on the item  Watchdogs in the project window. Also see below.



First step, if not preconfigured as example, is to add a tag to watch and a tag to write. Enter the desired duration time to eliminate noise on the bus creating unnecessary errors.

When a project is executed and a watchdog error occurs, the defined LED or red box will pop up after the timer has run out. It is possible to see the timer by opening the watchdog in the lower left corner of the screen.

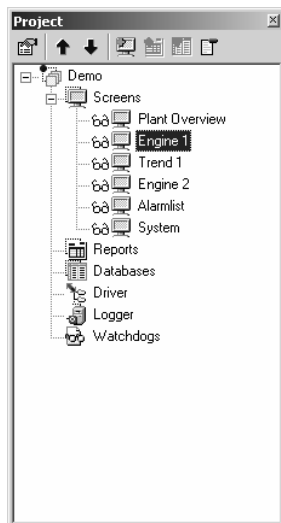


When creating the tag to write, make sure that it is not at bit value but a whole word. The easiest way to do this is to make it a coil or Modbus type Boolean (bool). The tag to write has to simulate, so the box 'simulate' must be ticked off.

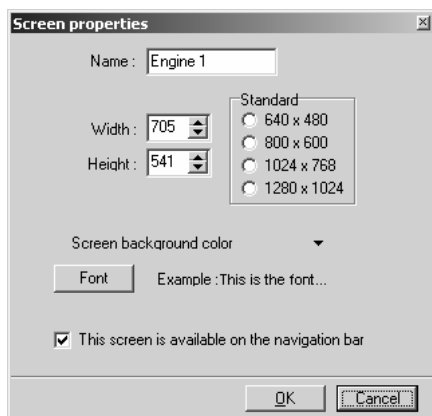
Special features

Screen show/hide on navigation bar

To optimise the user interface, it is possible to make a screen visible or not in the navigation bar. This is mainly done, when an action link is used as short cut to the screen.



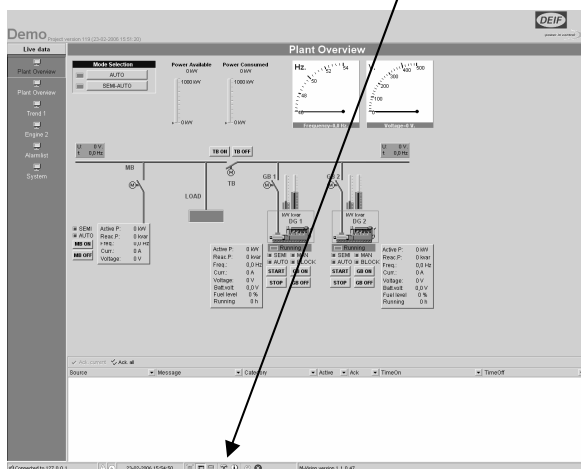
Two functions are available in the project window for choosing screen properties for the desired screen, e.g. engine 1. The function can also be reached simply by right clicking on the desired screen and removing the tick from the box.



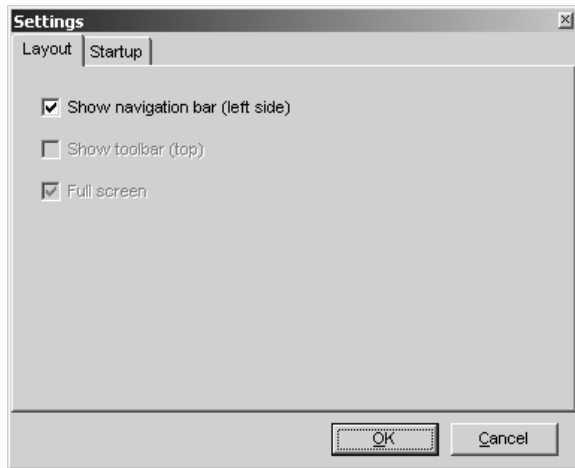
In the screen properties a screen can be removed from the navigation bar by ticking off the box 'This screen is available on the navigation bar'.

Main screen tools

On the main screen there are some basic tools to change the appearance of the main screen. The tools can be displayed by clicking on the hammer in the task bar.



The following window will then pop up.



Here it is possible to hide the navigation bar. The function is sometimes used, when the operator needs all space available on the screen, and all links are made with the action link component.

DEIF A/S reserves the right to change any of the above