1MRS751904-MEN

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Relay Mimic Editor Configuration

Configuration Guide

We reserve the right to change data without prior notice.

Notice 1

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Notice 2

This document complies with the program revision 2.0.0.

Notice 3

Additional information may be found in the Release Notes.

Trademarks

LIB 500 manuals

LIB 500 Configuration Manual	1MRS751880-MEN
LIB 500 Operator's Manual	1MRS751885-MUM

LIB 510 manuals

LIB 510 Configuration	1MRS751886-MEN
LIB 510 MV Process Configuration	1MRS751887-MEN
LIB 510 MV Process Operator's Manual	1MRS751891-MUM
LIB 510 Operator's Manual	1MRS751888-MUM

SMS 510 manuals

SMS 510 Installation and Commisioning	1MRS751897-MEN
SMS 510 Operator's Manual	1MRS751898-MUM

CAP 505 manuals

CAP 505 Installation and Commissioning	1MRS751901-MEN
CAP 505 Operator's Manual	1MRS751902-MUM
Relay Configuration Tool Tutorial	1MRS751903-MEN
Relay Mimic Editor Configuration	1MRS751904-MEN
Relay Configuration Quick Start Reference	1MRS751905-MEN
SPTO Configuration Tool	1MRS751906-MEN
Protocol Editing Tool Operator's Manual	1MRS751982-MUM

CAP 505/LIB 510/SMS 510 common manuals

Tools for Relays and Terminals	1MRS752008-MUM

CAP 505/SMS 510 common manuals

SM/Gateways Configuration	1MRS751870-MEN

Contents:

1. Introduction

About this chapter

This chapter describes the Relay Mimic Editor in general.

1.1. The Relay Mimic Editor window

The Relay Mimic Editor is used to create graphical mimic pictures, which can be sent to the relays. The mimic pictures do not have only a background image, but also dynamic objects and data points. Also LED indications and alarm LED texts can be defined.

The Relay Mimic Editor has a drawing area for creating the mimic pictures. The mimic pictures are viewed on the drawing area with the background image and dynamic objects. The size of the drawing area is 128 x 136 pixels which corresponds to the man-machine interface/mimic display in a relay terminal. The only possible colors at the moment are black and white.
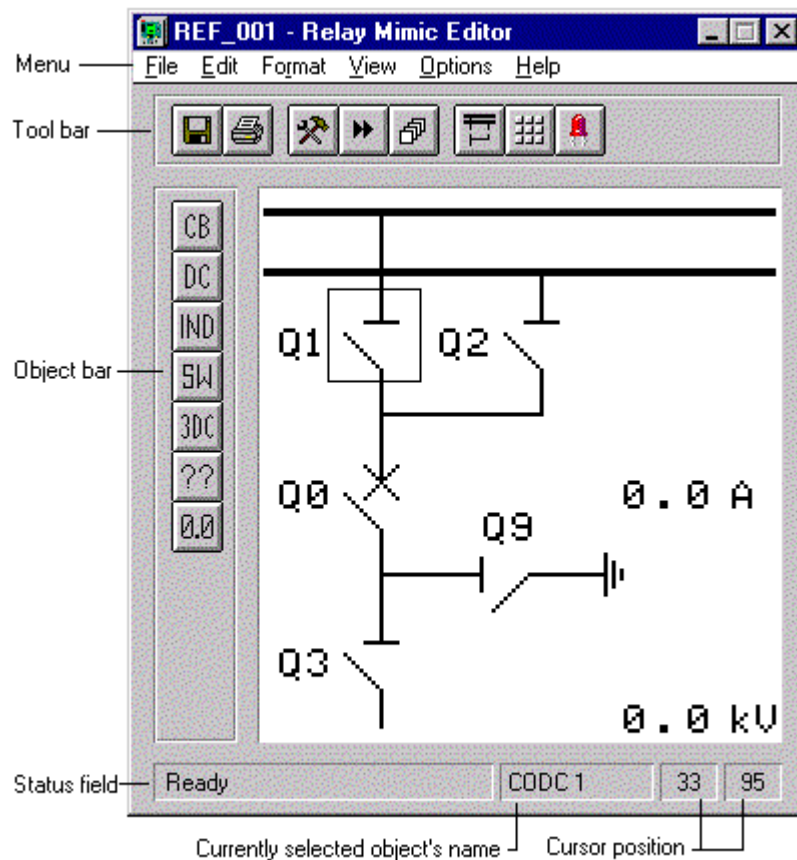

Fig. 1.1.-1   The Relay Mimic Editor window

1.2.   Graphical user interface elements

1.2.1.   Menus

The Relay Mimic Editor has the following menu structure:

- File
- Edit
- Format
- View
- Options
- Help

1.2.1.1. **Menu commands**

The menu commands are explained in the following tables.

Table 1.2.1.1-1   File menu commands

Command	Explanation
New …	Creates a new empty mimic picture replacing the current one. You can revert to the original picture by exiting the editor as long as you have not saved the new one.
Save	Saves the device object's mimic picture to disk.
Import …	Imports a mimic picture previously stored on a disk. To apply the imported mimic picture to the current device object, you must save the it once.
Export …	Exports the mimic picture to disk. The mimic picture of a device object is always stored with the filename 'MIMIC.BIN' in the 'MIMIC' subdirectory of the object's home directory. For example: 'E:\CAP505\PRJ\SOST\OBJ0001\MIMIC\MIMIC.BIN'. **Note!** After an export operation, the editor returns to display the device object's mimic picture, not the one you have exported.
Print Setup...	Opens a standard Print Setup dialog box.
Print Mimic...	Prints the mimic picture just like currently shown on the drawing area. The comment text is also included, if defined in the options.
Print Dynamic Objects...	Prints the definitions and icons for the dynamic objects and data points of the current mimic picture.
Exit	Exits the Relay Mimic Editor. The changes can be either saved or discarded at this point.

Table 1.2.1.1-2   Edit menu commands

Command	Explanation
Insert Object->	
COCB	Opens a dialog box for inserting a dynamic COCB object to the mimic picture. See "COCB object (circuit breaker)" on page 8.
CODC	Opens a dialog box for inserting a dynamic CODC object to the mimic picture. See "CODC object (Disconnector)" on page 9.
COIND	Opens a dialog box for inserting a dynamic COIND object to the mimic picture. See "COIND object (indication)" on page 10.
COSW	Opens a dialog box for inserting a dynamic COSW object to the mimic picture. See "COSW object (on/off)" on page 10.
CO3DC	Opens a dialog box for inserting a dynamic CO3DC object to the mimic picture. See "CO3DC object (3-state disconnector)" on page 9.
MMITEXT	Opens a dialog box for inserting a dynamic MMITEXT object to the mimic picture. See "MMITEXT object (dynamic point for texts)" on page 11.
MMIDATA	Opens a dialog box for inserting a dynamic MMIDATA object to the mimic picture. See "MMIDATA object (dynamic point for numbers)" on page 11.
Edit Object	Allows to edit the currently selected dynamic object by opening the dialog box through which the object initially was created.
Delete Object	The selected dynamic objects are removed. The removal is confirmed.
Select Next Object	Selects the next dynamic object according to the defined selection priority.
Show Next Icon	Shows the next icon of the currently selected dynamic object.

Table 1.2.1.1-3   Format menu commands

Command	Explanation
Background Image	Opens the image editor for editing the mimic picture's background image. See chapter "Image editor" on page 16.
Icons	Opens the Icons dialog box for defining the current icon set. See chapter "Icons" on page 12
Alarm LED Texts	Edits the alarm LED texts. See chapter "Alarm LEDs" on page 15
Comments	Opens a dialog box for editing the mimic picture's comment text.

Table 1.2.1.1-4   View menu commands

Command	Explanation
Display Object Borders	A toggle switch for displaying or hiding the object borders on the drawing area.
Refresh	Redraws the drawing area.

Table 1.2.1.1-5   Options menu commands

Command	Explanation
Include Comments to Printout	Toggle switch for including or excluding the optional comment text into/ from the mimic picture printout.

Table 1.2.1.1-6   Help menu commands

Command	Explanation
About Mimic Editor	Displays the version information of the Relay Mimic Editor.

1.2.2.   Tool bar and object bar

A short description of each tool bar and object bar button is shown in the following two tables. These descriptions can be viewed in the Relay Mimic Editor by resting the mouse pointer on any of the buttons for a short period of time. The description of the button appears in the status field of the status bar. These buttons are shortcuts

to the corresponding menu commands.

Table 1.2.2-1   Tool bar buttons

Button	Explanation
🖫	Saves the mimic picture to disk.
🖨	Prints the mimic picture.
⚒	Edits the selected dynamic object.
▸▸	Selects the next dynamic object.
🗗	Shows the next icon of the currently selected dynamic object.
🗟	Edits the background image.
⊞	Opens the 'Icons' dialog box for editing the icons and working with the icon library.
🔔	Opens the 'Alarm LED Texts' dialog box for editing the alarm LED texts.

Table 1.2.2-2   Object bar buttons

Button	Explanation
CB	Circuit breaker object
DC	Disconnector object
IND	Indication object
SW	On/Off object
3DC	3-state disconnector object
??	Dynamic point for texts
0.0	Dynamic point for numbers

Dimmed tools on the object bar indicate that the maximum number of objects have been applied. Likewise, a tool bar button is enabled only if the tool is applicable to

the currently selected object.

1.2.3.   Status bar

The following table explains the Relay Mimic Editor's status bar items.

Table 1.2.3-1   Status bar items

| Status bar item	Explanation
Status field	Displays status information.
Selected object	Displays the name of the currently selected object.
Cursor position	Displays the mouse cursor co-ordinates on the drawing area.

1.2.4.   Drawing area

On the drawing area, dynamic objects and data points are displayed on top of the background image. The dynamic objects can be selected and moved around on the drawing area. The grid step is 8 pixels in both X and Y-direction when moving dynamic objects. Double-clicking a dynamic object opens the edit dialog box for the
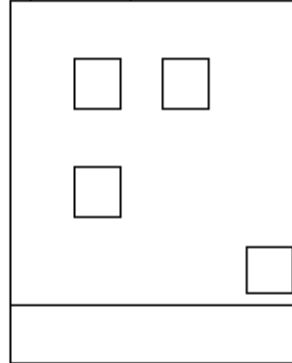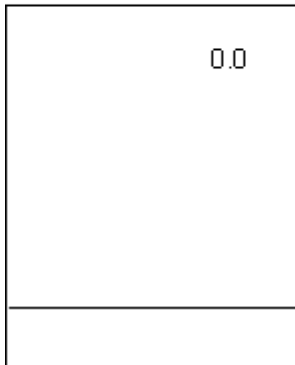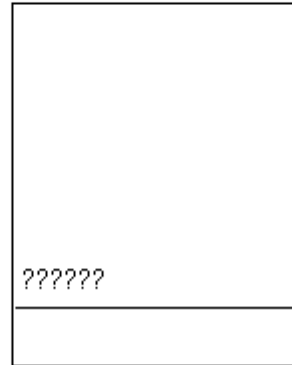
object.
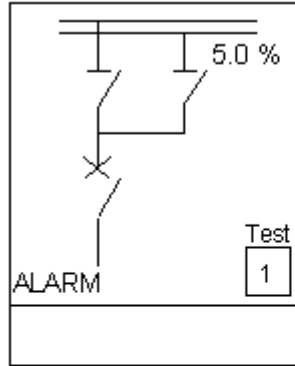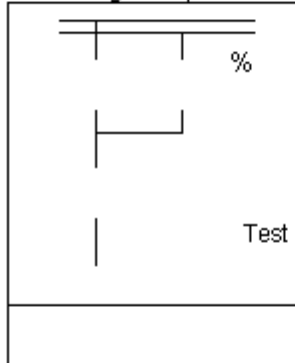
Fig. 1.2.4.-1   Dynamic objects and data points on the drawing area

2. Dynamic objects

About this chapter

This chapter describes the dynamic objects and their configuration.

2.1. General

A relay terminal's mimic view displays a dynamic object if it has been configured using the Relay Mimic Editor. The object can be selected if control position is in local mode. All four states and the object selection order (priority) can be configured in the Relay Mimic Editor.

The object name defines the correspondence between the actual function block and the Relay Mimic Editor image. The logical behaviour is defined in the IEC 61131 configuration while the component outlook is defined in the Relay Mimic Editor. The component name is the link between the two configurations.

The selection order is determined by the priority number. Objects with the smallest selection priority number will be selected first. If the selection priority is set to zero, the object cannot be selected from the local man-machine interface (MMI). Typically zero is the default value for indication objects.

The indication connection is a graphical feature used to visualise the selection of a control object in an indication object. Selection of a component with a connection to certain indication components activates also simultaneously the selection of the indication object. The selection is not affected by the indication configuration priority. Notice, however, that the correct logical connection (state of the object) always depends on the IEC 61131 configuration and the function of the indication object cannot be controlled via the mimic.

Each valid component state, which is indicated by the binary function block inputs and undefined state(s), has an own icon description that can be freely determined in the Relay Mimic Editor.
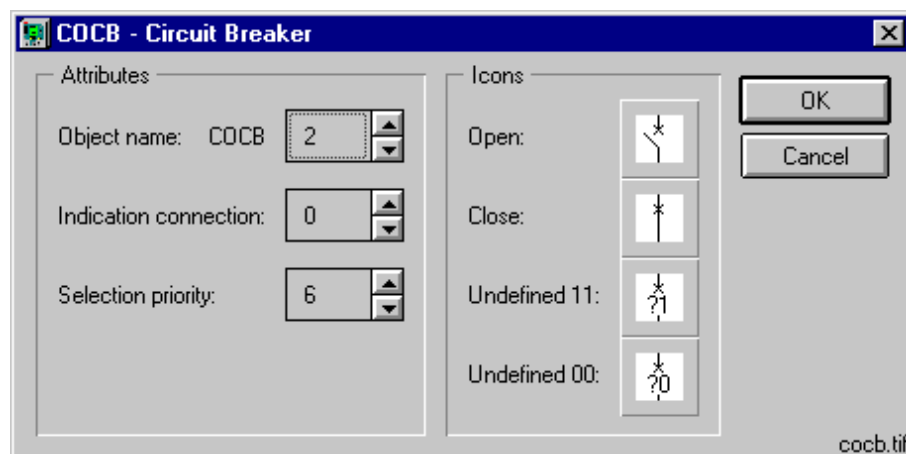
2.2. COCB object (circuit breaker)

Fig. 2.2.-1   The COCB circuit breaker dialog box

The COCB object is an object which can control open and close states of circuit breakers, disconnectors and earth switches. The object takes care of user-defined interlocking logics and has a guaranteed opening and closing pulse length and forced open controls for protection purposes. The object can indicate both remotely and locally open, close and undefined states of the object. The object is mainly intended for CBs and it can thus pass alarm signals based on a built-in condition monitoring features. Maximum number of COCB objects in a mimic picture is two (2).

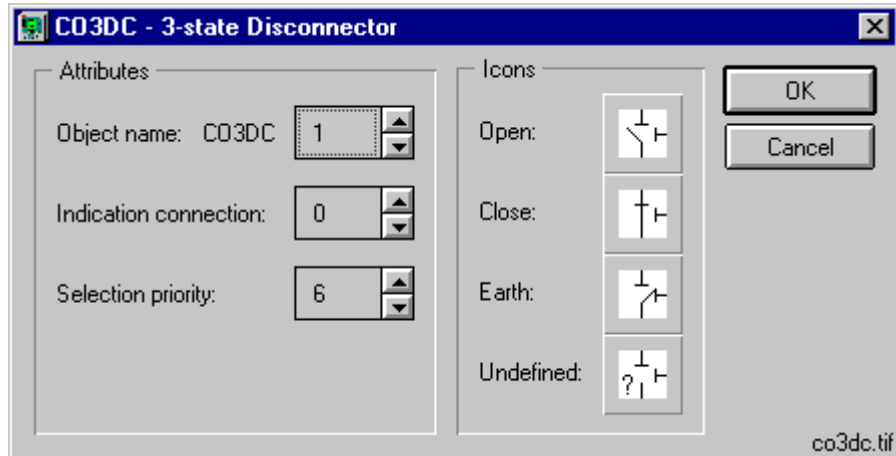## 2.3. CO3DC object (3-state disconnector)

Fig. 2.3.-1   The CO3DC 3-state disconnector dialog box

The CO3DC object is an object which can control open, close and earth states of disconnectors. The object takes care of user defined interlocking logics and has a guaranteed opening and closing pulse length. The object can indicate both remotely and locally open, close, earth and undefined states of the object. The object has operation time measurement as an internal condition monitoring feature. Maximum number of CO3DC objects in a mimic picture is two (2).
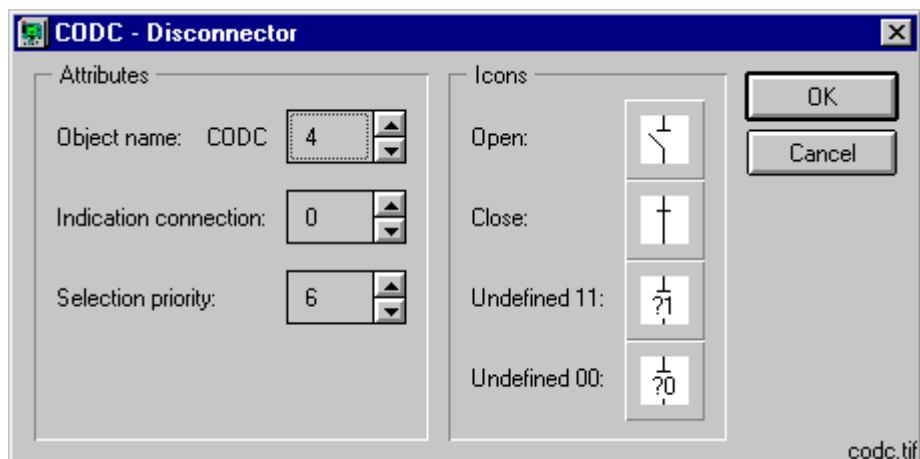
2.4. CODC object (Disconnector)

Fig. 2.4.-1   The CODC disconnector dialog box

The disconnector object controls open and close states of CBs, disconnectors and earth switches (or any other device). The object takes care of user defined interlocking logics and has a guaranteed opening and closing pulse length. The object can indicate both remotely and locally open, close and undefined states of the object. The object has operation time measurement as an internal condition monitoring feature. Maximum number of CODC objects in a mimic picture is five (5).
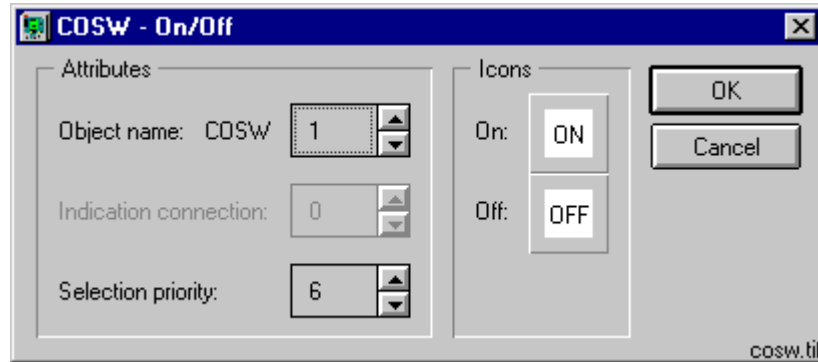
2.5. COSW object (on/off)

Fig. 2.5.-1   The COSW on/off dialog box

The COSW object is an on/off parameter setting which can be changed both remotely and locally. The parameter setting is non-volatile, i.e. it sustains a device cold boot. For local setting the parameter has a mimic indication icon that can be selected and changed as any controllable object. The parameter setting value cannot be changed by any (direct) logic signals. Maximum number of COSW objects in a mimic picture is four (4).
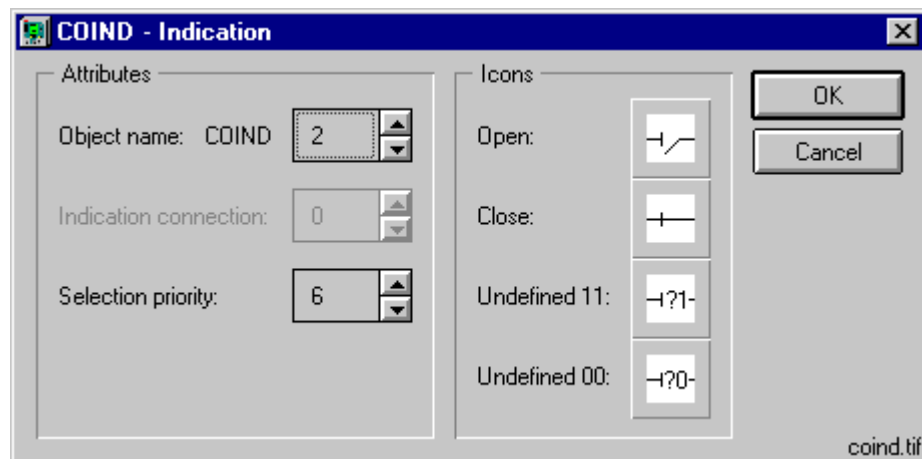
2.6. COIND object (indication)

Fig. 2.6.-1   The COIND dialog box

The indication object is an object which can indicate both remotely and locally open, close and undefined states of the object. Maximum number of COIND objects in a

mimic picture is eight (8).

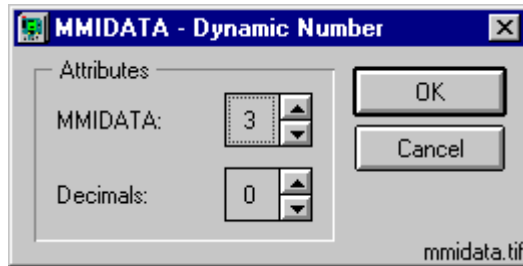## 2.7. MMIDATA object (dynamic point for numbers)

Fig. 2.7.-1   The MMIDATA dialog box

The MMIDATA object is a mimic interface function for dynamic data points that can be used anywhere in the IEC 61131-program for outputting process data to certain mimic locations. Location and presentation is determined in the Relay Mimic Editor. Maximum number of MMIDATA objects in a mimic picture is five (5).

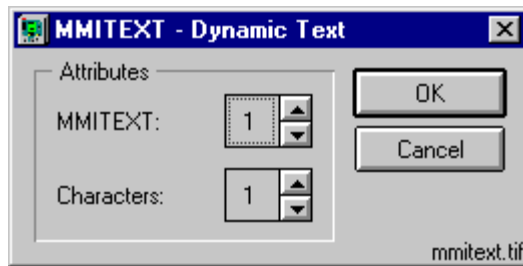## 2.8. MMITEXT object (dynamic point for texts)

Fig. 2.8.-1   The MMITEXT dialog box

The MMITEXT object is a mimic interface function for dynamic data points that can be used anywhere in the IEC 61131-program for outputting process data to certain mimic locations. Location and presentation is determined in the Relay Mimic Editor. Maximum number of MMITEXT objects in a mimic picture is five (5).

3. Icons

About this chapter

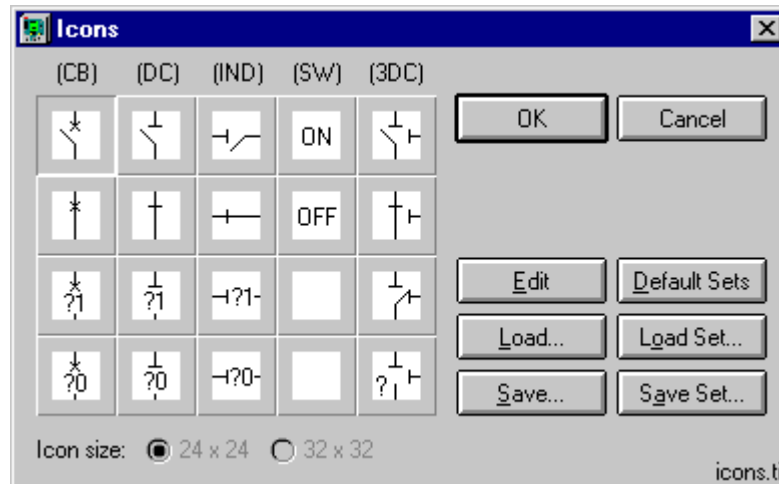This chapter describes the usage of icons in the Relay Mimic Editor.

Fig. 3.-1 Icons dialog box for managing the icons of the Relay Mimic Editor

The Icons dialog box shows up to 20 icons. These icons are arranged and labelled to 5 vertical columns aimed for the different types of dynamic objects. It must be noticed, that this grouping is only a recommendation; the icons may be placed and selected in any order. However, in order to make the default icon selection for the new dynamic objects to function correctly this grouping has to be maintained.

The icon size can be either 24x24 or 32x32 pixels. For dynamic objects, the icon size must be the same for all icons. If you change the icon size, the previous image is cleared. The icon size of an icon which already is in use cannot be changed, but the image of the icon can still be modified.

By default, a new mimic picture contains only empty icons. The easiest way to define the icons is to load one of the default icon sets, or to use possible self-defined sets, like described later in this chapter.

3.1. Editing single icons

A single icon can be modified in two ways: either by starting the image editor by clicking the Edit button (Figure 3.-1), or by importing an existing image by clicking the Load button. See chapter "Image editor" on page 16 for more information on image editing.

To be able to import icon images, there have to be some appropriate images exported first. Valid images are all the exported single icons (by the Save button), all the images of the saved icon sets, and all the images of the default icon sets. The only restrictions for importing the images are these two things: the original images are saved from this same dialog box, and the extension of the image file name is '.mic'.

The selected icon can be saved to any folder on the disk with any name, as long as the file name extension is '.mic'. The default folder for the own saved images is the

'\Library\User' folder under the folder of the Relay Mimic Editor.

3.2. Icon sets

To support different needs and standards for the representations of the dynamic objects, different icon sets can be created and used. An icon set means simply the group of all of the 20 icons.

An own icon set can be saved by the 'Save Set' button to any folder on the disk, but only with the fixed names 'Icon_01.mic' ... 'Icon_20.mic'. The default folder for the own saved icon set is the '\Library\User' folder under the folder of the Relay Mimic Editor, but it must be noticed, that due to the fixed file names only one set can be saved to one folder. Therefore it is recommended to create and use new subfolders.

A saved icon set is taken into use simply by clicking the 'Load Set' button, and then selecting the folder containing the desired set. Hint: the icon sets (also single exported icons) can be moved between different workstations simply by copying the '*.mic' files to any folder on the other workstation.

There are also default icon sets supplied with the tool. These sets cannot be modified by the user. A default set at a time can be loaded by clicking the 'Default Sets' button:
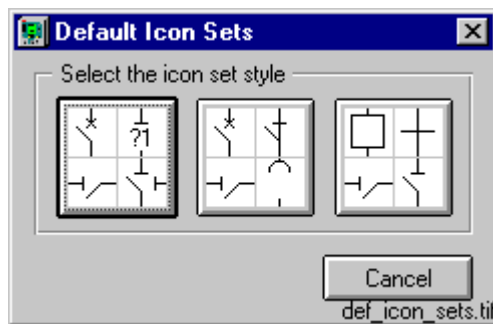

Fig. 3.2.-1   The dialog box for selecting a default icon set to be used. Just click an icon to take the icon set into use.

3.2.1. Default icon sets

The three default icon sets supplied at the moment with the Relay Mimic Editor are
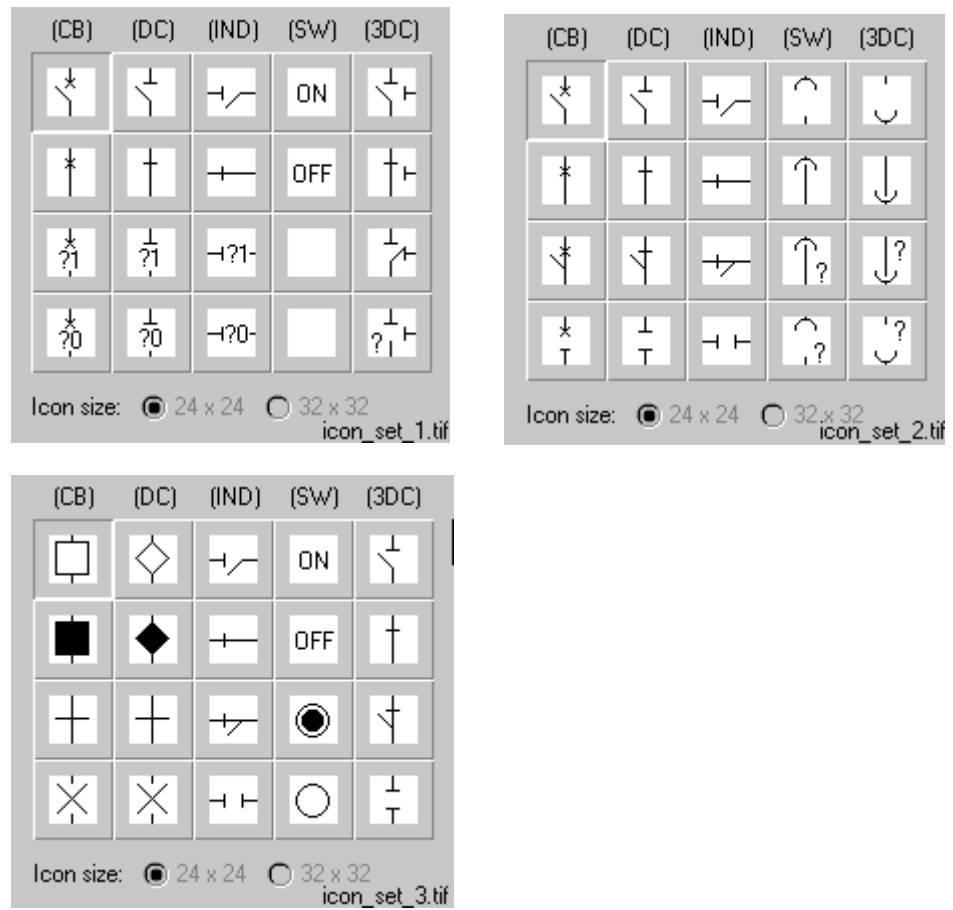
shown below:

Fig. 3.2.1.-1   The default icon sets

4. Alarm LEDs

About this chapter

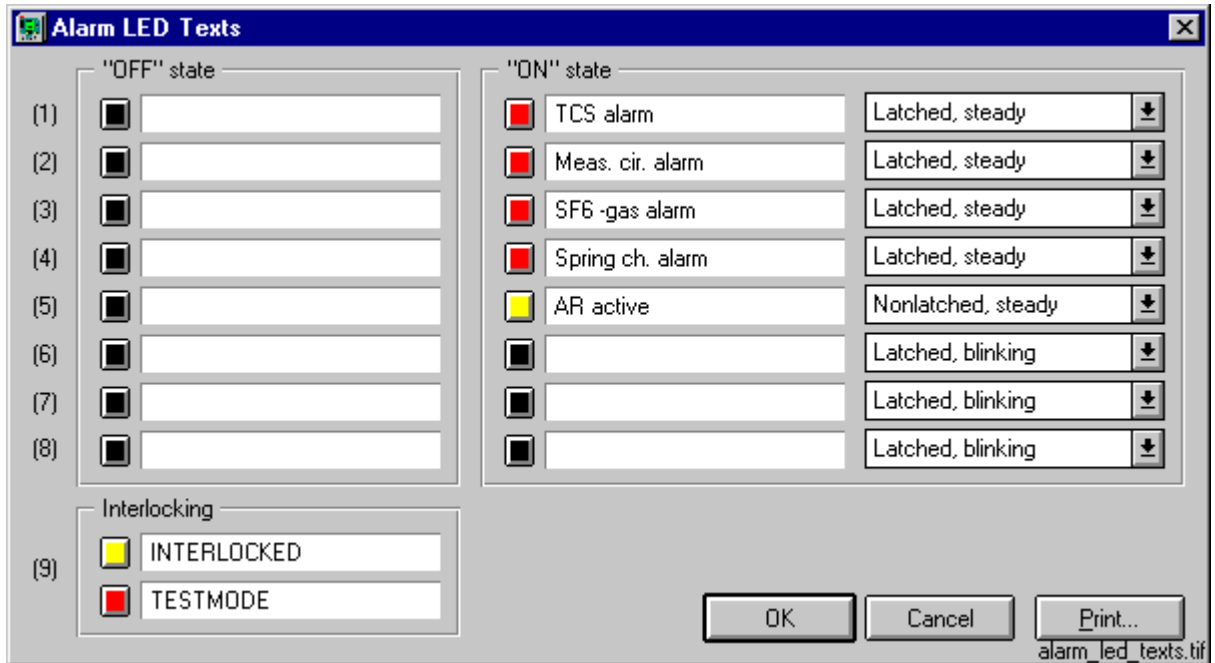This chapter describes the Relay Mimic Editor's alarm leds.

Fig. 4.-1 The dialog box for editing alarm LED legends

REF 54x terminals have alarm LEDs 1 through 8, all of which are freely programmable. Alarm LED No. 9 is the interlocking LED.

On the left side of the legends are buttons, which indicate the color of the LED. The color of any LED, other than the interlocking LED, can be changed by pressing the button repeatedly. The LED color can be one of the following:

- black
- red
- green
- yellow

The LED mode switch controls how the LED acts when an alarm occurs. The LED mode can be one of the following:

- nonlatched and steady
- latched and steady
- latched and blinking

The LED configuration can also be printed by clicking the 'Print...' button.

5.   Image editor

About this chapter

This chapter describes the Relay Mimic Editor's image editing capabilities.

5.1.   Features

The image editor is used for drawing background images and images of the icons. It has basic features for editing bitmaps. The following features are found in the editor:

• Static texts using scaleable fonts.

• Horizontal, vertical and diagonal lines can be drawn freely with varying thickness.

• Scaleable filled or clear circles.

• Scaleable filled or clear rectangles.

• The Pencil tool for freehand pixel-by-pixel drawing by clicking the mouse. Odd-numbered drawings of a pixel draw the pixel with the current foreground color, while even-numbered draw the pixel with the current background color.

• Cut, copy and paste, it is also possible to copy an icon and paste it to another.

• Zooming.

• Flip and rotate a selected area of the image.

• Flexible Undo, allows to revert to the image that was opened into the editor.

• Flexible Redo, allows to redo any Undo-operation.
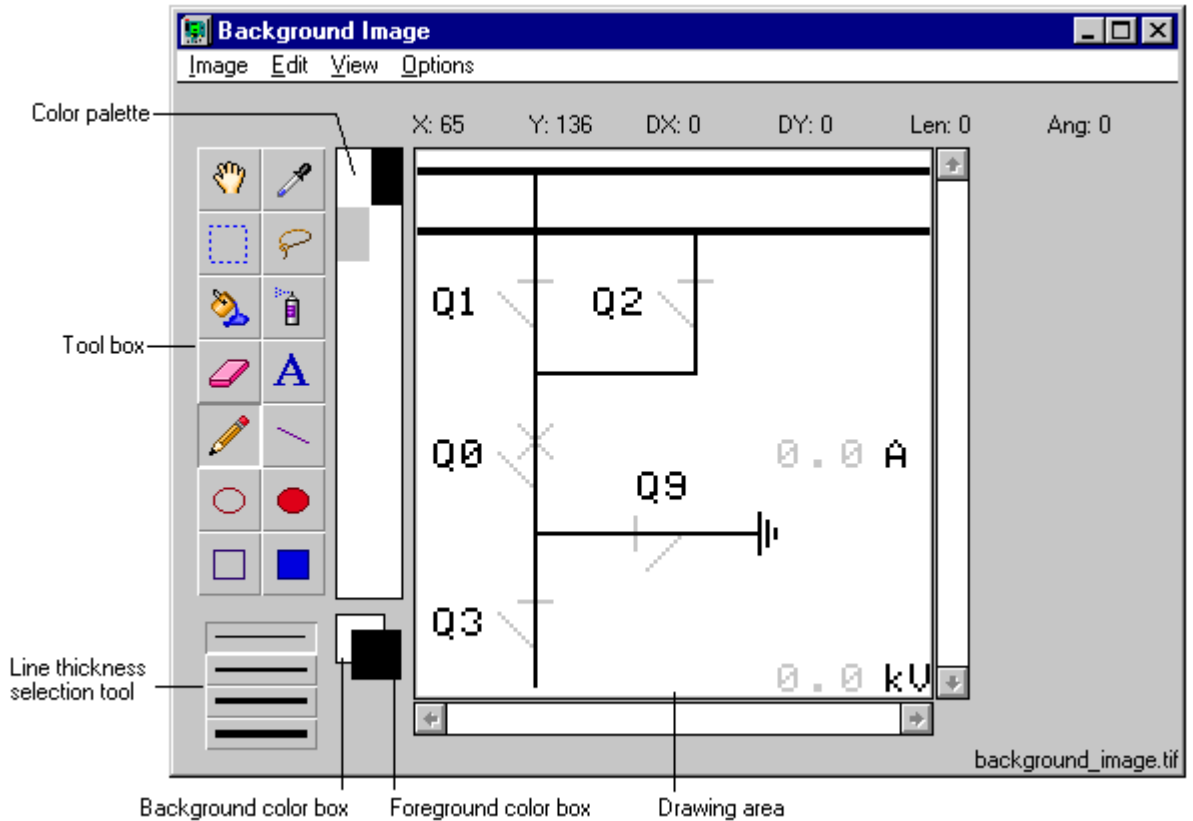
5.2. Editing images

Fig. 5.2.-1   Editing the background image of a mimic picture

The icons of the dynamic objects are shown on the drawing area of the image editor with the grey color. Although it is possible to select and use also the grey color for drawing in the image editor, this is not recommended. When the background image is saved, all the grey color is removed from the image. Thus only the black color is recommended for drawing the background image. It is also possible to rub off the icons of the dynamic objects in the image editor. This of course has no effect on the actual dynamic objects, and the drawing area can be redrawn by saving the background image from the menu item 'Image - Update'.

The figure below illustrates editing of an icon image with the image editor. Compared to background image editing, the editor appears identically, except for the

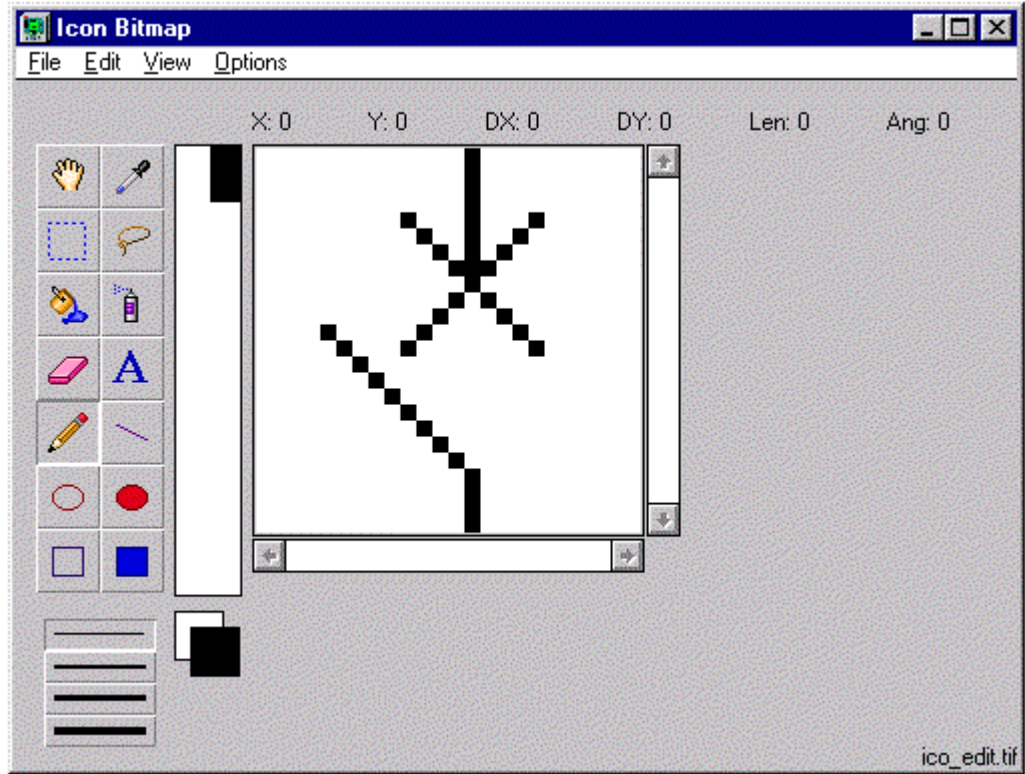drawing area size, which is smaller when editing icon images.

Fig. 5.2.-2   Editing an icon image

5.3. Image editor menus

Table 5.3.-1 Menus and menu commands of the image editor

Menu	Command	Explanation
Image		
	Update	Saves the image to the mimic picture and redraws the drawing area (image editor is not closed).
	Save and Close	Saves the image to the mimic picture and closes the image editor.
	Close without Saving	Discards the unsaved changes and closes the image editor.
Edit		
	Undo	Undoes the last action.
	Redo	Redoes the last undone action.
	Cut	Copies the current selection to the internal clipboard and clears the current selection.
	Copy	Copies the current selection to the internal clipboard.
	Paste	Pastes the contents of the internal clipboard into the image.
	Clear	Clears the current selection.
	Rotate	Rotates the current selection 90 degrees counter-clockwise.
	Flip Horizontally	Flips the current selection horizontally.
	Flip Vertically	Flips the current selection vertically.
View		
	Magnify Bits	Toggles on or off the magnification of the bits on the drawing area.
	Show Grid	Toggles on or off the grid for the black colored bits on the drawing area.
	Zoom In	Increases the magnification of the bits.
	Zoom Out	Decreases the magnification of the bits.
	Preview Window	Toggles the visible state of the preview window for the drawing area.
Options		
	Draw from Center	Toggles the draw center option. When set, the first mouse click after starting to draw a line, ellipse or rectangle defines the center of the element. When unset, the end/corner of the element is defined first.
	Font...	Opens the font chooser to allow you to change the active font.

5.4. Image editor tool box

Table 5.4.-1 Tool box items of the image editor

Button	Tool name	Explanation
	Hand	Moves the visible part of the image when an oversize image is on the drawing area. Select and drag the oversize image with the Hand Tool to its new position.

Table 5.4.-1 Tool box items of the image editor

	Dropper	Replaces the current foreground and background color with a color that is selected from the image. To select a new foreground color, either click with the left mouse button (or SHIFT + right mouse button) on any color on the drawing area. The color you pick up is displayed in the foreground color box. To select a new background color, use the right mouse button or CTRL + left mouse button, the background color box indicates the selected color.
	Selection	Selects a rectangular area. Select the area by clicking the Selection tool and holding the mouse button down while dragging the pointer from one corner of the area to the opposite corner. To select the whole drawing area, double-click the tool.
	Lasso	Selects an area, which does not have to be rectangular. Choose the area by clicking the Lasso tool and then holding the mouse button down while dragging the pointer from the beginning point of the area to the end point.
	Fill	Fills an area with the foreground color.
	Spray Can	Draws with the foreground color using a spray pattern.
	Eraser	Erases the image. Drag the eraser over the area you want to erase. Press the Shift key before erasing to constrain the tool horizontally or vertically. To erase the whole drawing area, click the drawing area and then double-click the eraser.
	Text	Allows you to type text and place it in the image. Click the Text tool and then the drawing area. The dialog box appears. Type the text and click OK. The font style can be changed by choosing Font from the Options menu.
	Pencil	Draws one pixel at the time, using the foreground color by default.
	Line	Draws straight lines. Hold the Shift key down during the dragging to constrain the line horizontally, vertically or to a 45-degree angle.
	Ellipse	Draws an ellipse. Hold the Shift key down during dragging if you want to form a circle.
	Filled Ellipse	Draws an ellipse filled with foreground color. Hold the Shift key down during dragging if you want to form a circle.
	Rectangle	Draws a rectangle. Hold the Shift key down during dragging if you want to form a square.
	Filled Rectangle	Draws a rectangle filled with the Foreground color. Hold the Shift key down during dragging if you want to form a square.

6.   How to make a dynamic object

The making of a dynamic object starts with choosing the type of the object. The type of the object is chosen either by pressing one of the buttons on the object bar or by choosing it from Edit menu's submenu Insert Object. More information about dynamic objects can be found in chapter "Dynamic objects" on page 8.

The next figure shows the configuration dialog box, when making the first dynamic object in the project.
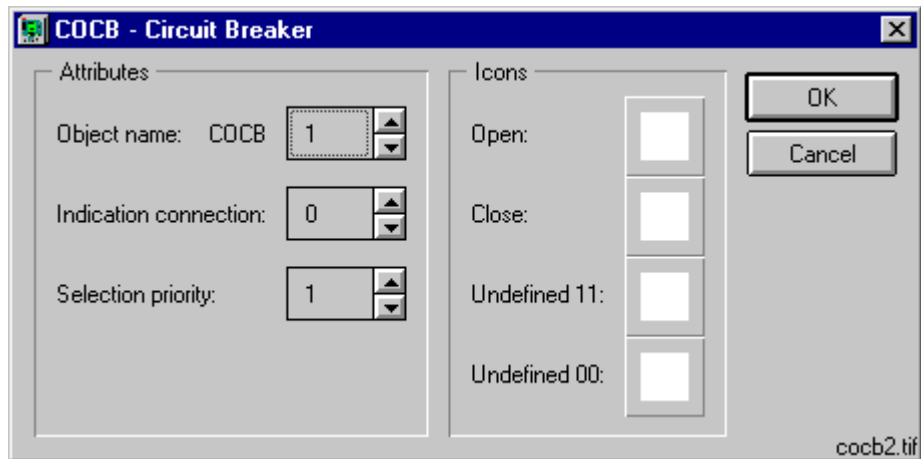

Fig. 6.-1 The dialog box for configuring a dynamic object

The dialog box has some default values. Indication connection is set to zero and object name and selection priority are set to an unused number. All of these attributes are freely editable, but the object name and selection priority.

The default icons for the object type in question are selected from the active icon set. Icons can be changed by pressing the button in the icon palette, if needed. The active icon set will be displayed, see Figure 6.-2. It is possible to select any of the icons for any icon of any object type, regardless of the labels of the icon sets. More information on editing the icons or selecting an active icon set can be found in

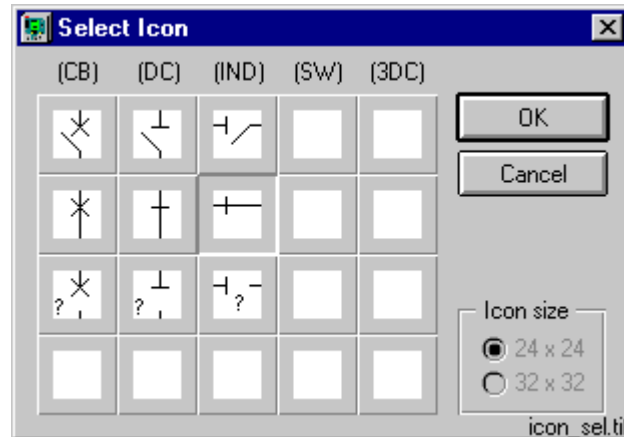chapter "Icons" on page 12.

Fig. 6.-2 The icon selection dialog box

After an icon is selected, select the OK button. The configuration dialog box will be
re-displayed and the selected icon appears in its place. Select the OK button in the
configuration dialog box, when all the icons, you require, are chosen. Next, the
newly created dynamic object appers in the lower left corner of the drawing area. By
default, the open state icon is displayed. The object icon can be dragged anywhere
within the drawing area. The grid step is 8 pixels.

Index

Page

Customer Feedback

About This Chapter

This chapter contains information on how to send customer feedback.

Customer Feedback Database

Customer Feedback is a Lotus Notes database which ABB companies can use to report errors, make improvement proposals and queries related to products manufactured by ABB Substation Automation Oy. The Customer Feedback database is connected to the change management system of ABB Substation Automation Oy, which handles all error corrections and improvements, made to the products.

Please note that the Customer Feedback database is primarily intended for writing reports about released products. If you are using for example a beta release in a pilot project, this should be clearly stated.

Writing A Customer Feedback Report

When writing a Customer Feedback report the following general instructions should be taken into consideration:

- Write the report in English.
- Write only one error report, query or improvement proposal in a Customer Feedback Report.
- If you are reporting an error, try to isolate the error as good as possible. Describe the sequence of events and actions causing the error. If any error messages or other debug information is provided by the system, please write it down. Include also information of the system, e.g. a system diagram, revision information and configuration data.
- If you are making an improvement proposal, try to describe how the improved function should work. Avoid providing solutions. Information about the importance of the improvement, e.g. number of projects that require the improvement, helps us to make the decision whether and when the improvement should be implemented.

To make a Customer Feedback Report, select Feedback Report from the Create menu. This opens an empty Customer Feedback document. Fill out the fields listed below. A question mark next to a field provides help for filling out the field.

1 Subject. This should contain a short description of the issue. A more detailed description can be given in the Description of Feedback field below.

2 Type of Feedback: Comment/Improvement, Query or Complaint/Error.

3 Customer Information.

4 Reporting Information. This should contain detailed information about the product that is handled in the report.

5 The person who you want to send the feedback to and whether you want to get a reply from that person or not.

6 Information related to internal handling of the report (not obligatory).

7 Category.

You can issue the report by clicking the Issue Feedback button. This will send the report to the selected person and change its status to "in progress".

Actions

When ABB Substation Automation Oy receives a Customer Feedback report it is analysed by a sales person or a representative of the technical support. The analyser may ask for additional information in order to complete the analysis. After the report has been analysed, the following actions are taken:

- In case of a clear error the report is moved to the change management system of ABB Substation Automation Oy. In this system the error is analysed in detail and corrected in a future patch release or major release depending on the severity and impact of the error.

- In case of an improvement proposal the report is also moved to the change management system where it is considered as a requirement for future releases.

- In case of a query an answer is provided.

When Customer Feedback reports are handled in the change management system, the outcome can be one of the following:

No Actions	This means that it is decided that the report requires no further action. If for example the problem is caused by a configuration error, it belongs to this category.
Will be implemented in patch/current release	This means that the correction or new feature will be available in the next official program release.
Moved to future release	This means that the new feature will be available in a new program release in the near future.