



## Tool for network analysis

# VISION

Vision is a high-grade tool for analysis of electricity networks. Vision can be used to carry out load flow calculations, short-circuit calculations, fault analyses and reliability analyses. Also the proper working of your protection can be simulated and selectivity analysis can be carried out. Vision can be used for planning, design and operation of electrical transmission, distribution and industrial networks.

Vision consists of software, a PC key or network key (not for the demonstration version) and this short introduction.

### Introduction

Vision is designed for both frequent and occasional users. To ensure a high degree of familiarity, the functionalities offered by Windows were used as much as possible in development. All general functions associated with this are therefore not described in this introduction.

However, Vision has a number of specific features and functions which are necessary to be able to work with Vision. This introduction describes the installation procedure as well as the key features and functions.

### Installation

The Vision installation procedure is as follows:

- place the CD-ROM in the computer
- start the program **Setup.exe**
- plug the PC- of network key in the computer parallel socket and install the driver from the CD-ROM (this is not necessary for the demonstration version)

### Start

Click the Windows Start button and choose **Programs|Vision**. When working with the network key, select the option 'Network key' with **Tools|Options|Key**.

### Network representation

The network is represented in a one-line diagram comprising nodes (busbar systems), branches (cables or transformers, for example) and elements (generators or loads, for example). Nodes are represented by means of a line, square or round symbol.

### Selections

Many editor actions relate to selected components. As a result, selections can be compiled and saved in many different ways. Selected components are shown in the 'selected' colour (default white) (to create: **New|Selection**; to select: **Select|Component**).

### Edit mode and Result mode

The network editor has an Edit mode and a Result mode. The presentation of data and results differs in the two modes. The Result mode is only available after a calculation has been carried out. **View|Edit mode** and **View|Result mode** are used to switch between them.

### Views and Reports

Definition of Views enables the user to determine the presentation of information for themselves in the one-line diagram (to create/change: **Tools|Views**; to select: **View|<View>**). Reports enable the user to compile reports themselves (to create/change: **Tools|Reports**; to print: **File|Report**).

### Type

Addition and modification of network components is supported by component type files. These are files which contain type data for busbar systems, cables, transformers, reactance coils, generators, motors and protections. Before using the component type datafiles the user should choose whether to use the ASCII files (\*.DAT) or the Excel file **Types.xls**. It is preferred to maintain the component type data in either the ASCII files or the file **Types.xls**. Changing the ASCII component type files can be done using any ASCII editor, like Windows Notepad. Changing the **Types.xls** file can be done using Microsoft Excel.

### Options

Vision can be configured by the user via **Tools|Options**. These options enable indication of preferential settings for both the editor and the calculations.

### Help

Extensive support is provided via the help function, which is called up using **Help|Index** or <F1>. The help function contains a description of all editor functions, components and calculations.

Function	Menu	Work area
Add node (busbar)	Click on desired location with left mouse button Choose <b>New Node</b>	Click on desired location with right mouse button Choose <b>Node</b> from pop-up menu
Add element (e.g. generator or load)	Select one node using left mouse button Choose <b>New &lt;Element&gt;</b>	Select one node using left mouse button Click on free work area using right mouse button Choose <b>&lt;Element&gt;</b> from pop-up menu
Add branch (e.g. cable or transformer)	Select <u>two</u> nodes using left mouse button Choose <b>New &lt;Branch&gt;</b>	Select <u>two</u> nodes using left mouse button Click on free work area using right mouse button Choose <b>&lt;Branch&gt;</b> from pop-up menu
Add switch or protection (e.g. fuse or separator)	select <u>one</u> branch or element and <u>one</u> connected node using left mouse button Choose <b>New &lt;Switch or Protection&gt;</b>	select <u>one</u> branch or element and <u>one</u> connected node using left mouse button Click on free work area using right mouse button Choose <b>&lt;Switch or Protection&gt;</b> from pop-up menu
Select	Choose <b>Select Component ... All</b>	Make window using left mouse button or Click on component using left mouse button
De-select	Choose <b>Select Component not, Special, Inverse</b>	Click on component using left mouse button (deselect component) Click on free work area using left mouse button (deselect all)
Change component	Select component Choose <b>Edit Parameters</b>	Click on component using right mouse button (in Edit mode)
Change node length		Move end of node while holding down left mouse button
Increase and reduce view	Choose <b>View Zoom in ... Previous</b>	Make window by pressing Shift + holding down left mouse button (increase)
Centre		Hold down shift and click in work area using left mouse button
Move a component		Move desired component while holding down left mouse button
Move several components		Select components to be moved Move the components using Ctrl + holding down left mouse button
Put bend in branch	Click on the desired location on the branch using the left mouse button Choose <b>Edit Bend</b> Move the desired part of the branch while holding down the left mouse button	Click on the desired location on the branch using the left mouse button Click on the free work area using the right mouse button Choose <b>Bend</b> from pop-up menu Move the desired part of the branch while holding down the left mouse button
Delete components	Select components to be deleted Choose <b>Edit Delete Selected</b>	Select components to be deleted Press <Delete>
Undo	Choose <b>Edit Undo</b>	
Perform calculation	Choose <b>Calculate &lt;desired calculation&gt;</b>	
Present results	Select desired components Choose <b>Results General ... Graph</b>	Click on node, branch or element using right mouse button (in Result mode)