Vision5

VISION5

USER MANUAL

ver1 release1

USER GUIDE

Vision5

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General description

VISION5 is the system monitor and setup tool, produced by Magneti Marelli for an easy and flexible real time access to the ECU calculations; all the functions useful for handling the car setup are also included, thus providing a complete environment for the control of the electronic units which constitute the car network.

VISION5 is intended for use both in a SW laboratory for embedded SW debug and at the race track for control and configuration purposes.

The physical connection between the PC and the ECU is possible thanks to different links: Ethernet and CAN will be available.

A Magneti Marelli proprietary protocol (MTP) will be implemented for a fast and reliable PC-ECU link: MTP allows an access to each µP of the ECU and supports Multi-Box and Multi-PC interconnections.

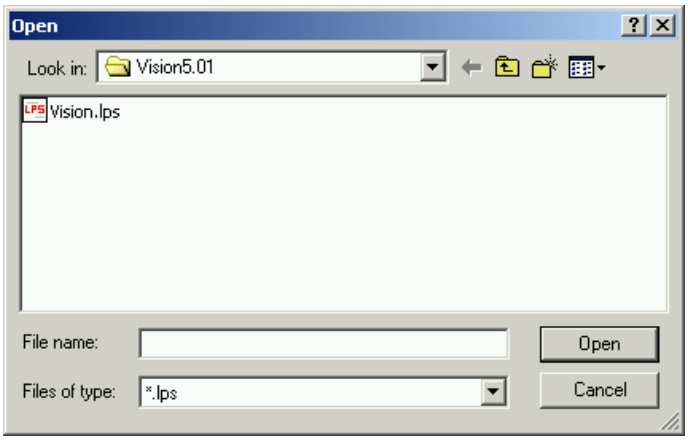
Menu File

File/New configuration

FILE/
NEW CONFIGURATION

To create a new configuration select *File/New configuration* or click on the *New configuration* button.

When Vision5 is first run, you are requested to open a valid .LPS file.



The Vision configuration file (.CFG) contains the screen layout prepared for the interaction with the ECU; different configuration files can be easily created by the end user, according to his preferences.

A configuration file (.CFG) is based on the objects hierarchy: *Page/Window/Channel*.

Different pages can be browsed, each containing different kind of windows; a window contains one or more channels.

EDIT/ADD/
CREATE PAGE

To create a page, select *Edit/Add/Create Page* or the *New page* icon in the main toolbar. In *System/Options/Miscellaneous* you may select the name of the page that will be the first one opened when the configuration is loaded.

EDIT/ADD/
CREATE WINDOW

Once you have created the page, you can create the windows. To create a new window, select *Edit/Add/Create Window* or press the *New Window* button.

You can insert channels in a window, once you have loaded the *.CLL* file (see *System/Channel Library*) and created the *Vision Channel List* that define the various channel available to the operator (for more details see *System/Channel List*).

To insert a new channel in a window, open *Vision Channel List* (if it is not already open) and drag&drop one or more channels to a Vision window. The channel type may be defined before inserting it and the channel may be positioned in the window using the mouse. The *Vision Channel List* can remain

open also while the link is ON, because run-time modifications of the layout are possible.

SYSTEM/CONFIGURATION PROPERTY

The setup window will be similar to the picture shown below:

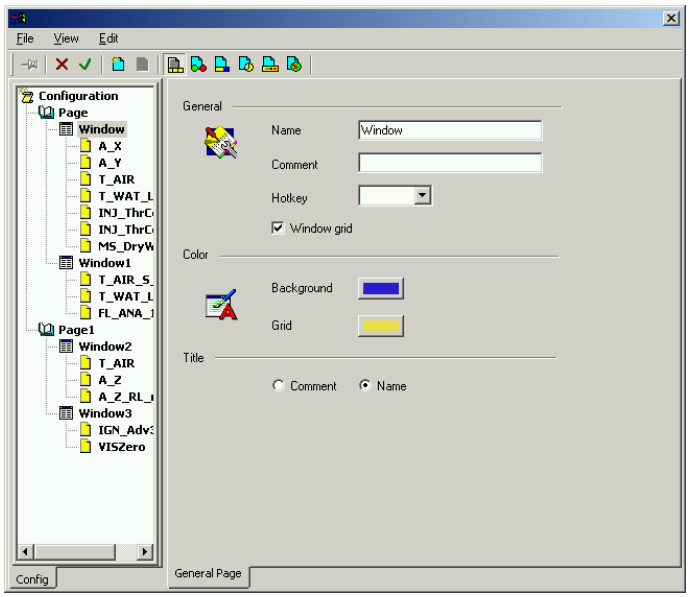


Figure 1 Configuration setup

It contains a representation of all the CFG resources in a tree-like structure; when an object is selected, then it becomes possible to edit all its properties (for more details see *System/Configuration Property*).

File/Open

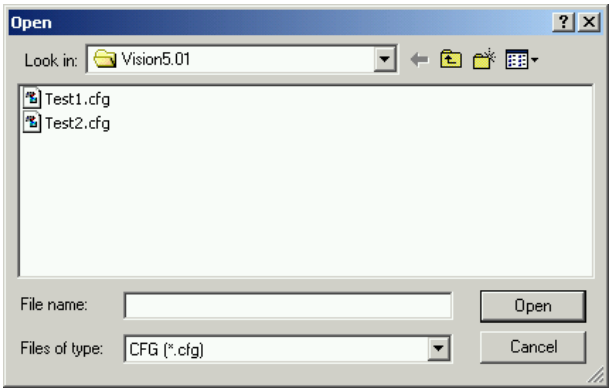
In order to communicate with the electronic device, you must load a configuration file (*.CFG) that calls the file selection panel.

Furthermore, you may specify the name of a file to be loaded automatically. (TBC)

Note: Vision5 can open *.CFG files generated with Vision4. In this case the opened files are modified (new format) and they cannot be more open with Vision4.

FILE/OPEN

The *File/Open* menu opens the panel for selecting *.CFG files, starting from the current directory. This panel allows you to browse through the directories.



File/Save configuration

FILE/SAVE CONFIGURATION

Saves the file currently being edited.

File/Save configuration as

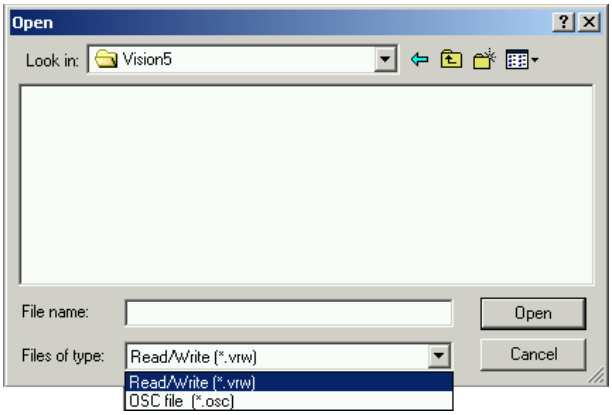
FILE/SAVE CONFIGURATION AS

Opens a panel for selecting a *.CFG file. You may save the file using an existing name or a new name, in any directory on your system.

File/Open Window

FILE/OPEN WINDOW

This command opens the panel for selecting *Read/Write* (*.vrw) and *OSC file* (*.osc) files, starting from the directory defined in the *System/Options/Directory path*. This panel allows you to browse through the directories.



File/Save Window

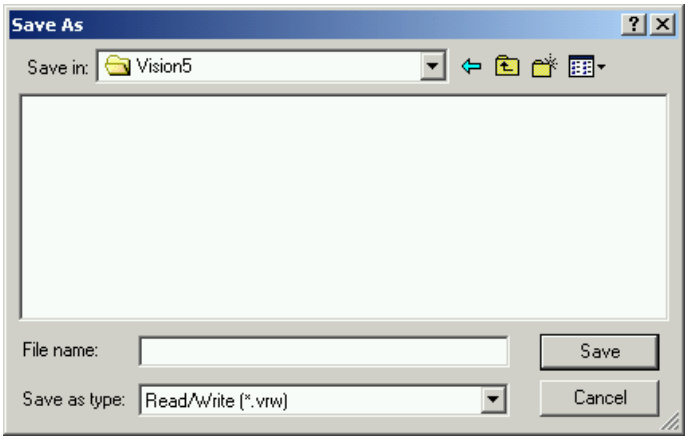
FILE/SAVE WINDOW

Save Window command allows you to save a .vrw, .osc file, depending on the context.

File/Save Window As

FILE/SAVE WINDOW AS

Opens the file selection panel starting from the directory defined in the *System/Options/Directory path*.



Save Window as allows you to save a .vrw, .osc file, depending on the context.

File/Print setup

Print graphic 3D.

File/1,2,3,4

Lists the last 4 opened files. Double click on the file to open it directly.

File/Exit

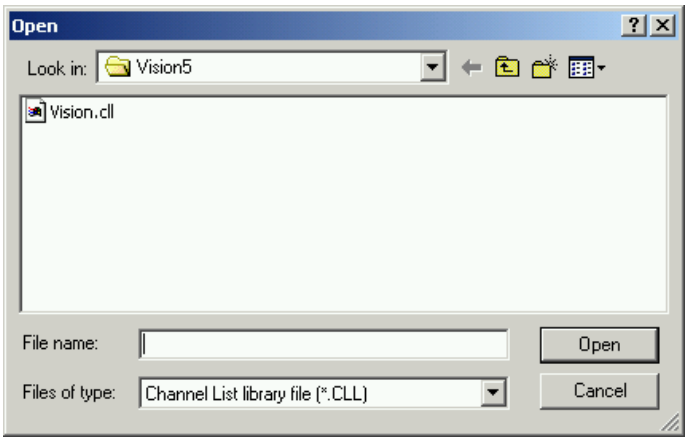
Terminates the program. If a file is currently being edited, Vision offers to save it.

Menu System

System/Channel Library

SYSTEM/CHANNEL LIBRARY

To load a *Channel List Library* (*.CLL) select *System/Channel Library* or click on the *Channel Library button* .



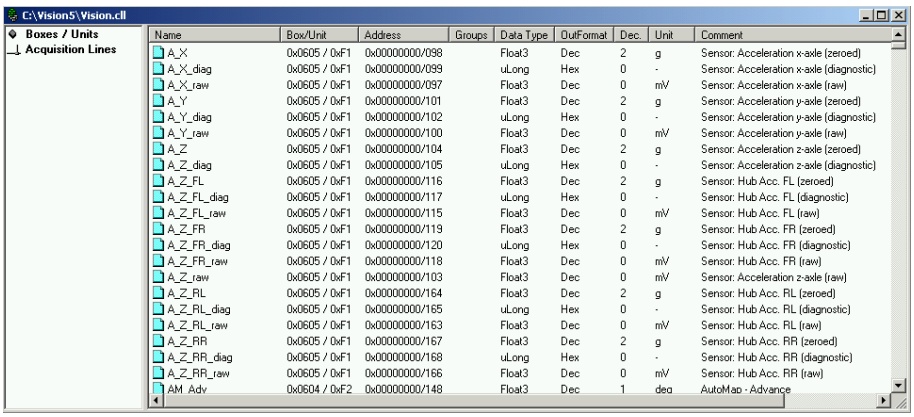


Figure 2 Channel Library (*.CLL)

VISON uses .CLL files to copy the channels created by SYSFILES. Channels can be copied from the *Channel Library* to the *Vision Channel List* by dragging them with the mouse (to do this, *Vision Channel list* must be in not dockable mode).

System/Channel List

Displays the list of channels available for each destination ECU in the electronic unit. The main attributes are the *Name* (string), the *Address* (relative or absolute), and the size of the *Size* variable. Each line defines the structure of one variable on the electronic unit and its linearization and display attributes. Other settings exist in the fields of certain windows that may modify these default values.

The channel list is limited to 1024 channels to which the 24 channels Read/Write are added for a total of 1048.

The address may be declared in one of two ways:

- The first method uses a relative index in the channel list (*static table*) provided by the electronic unity. At connect time, VISION receives the *absolute address* and *size of the variable* for each channel via this table. The program thereby overcomes any mapping changes due to modifications in the version of the electronic unit software.

- The second method provides the *absolute addres***s** and the *size of the variable* in the channel list. This method should only be used for channels whose address in the electronic unit never changes.

Except for special cases, all the variables used must first be declared in the channel list, then inserted into the windows. These various settings may be modified later.

A field displays the status of the communication:

"**.**" channel not used; variable not refreshed by the electronic unit;
"**?**" channel not accessible to the electronic unit; check the addressing mode;
"**X**" channel used and refreshed by the protocol.

SYSTEM/CHANNEL LIST

To display the currently defined channels, select *System/Channel List* or click on the *Channel List* button.

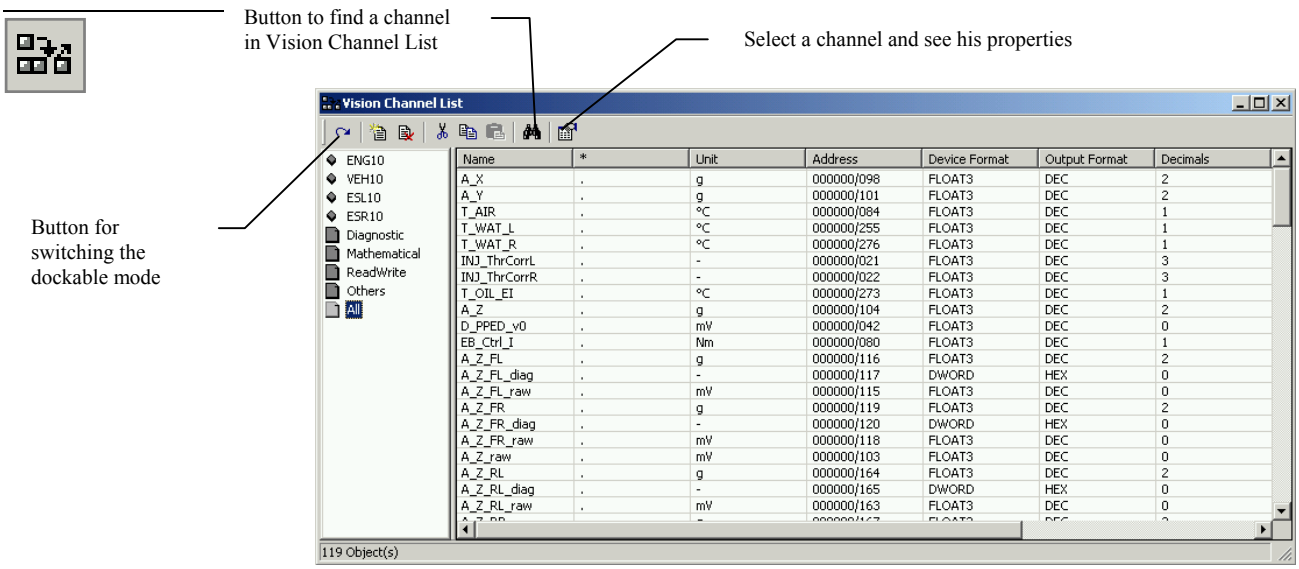


Figure 3 Vision Channel List

The list of the channels can be ordered (for name, type of channel, groups, etc.) or filtered (only the channels of a Box-Unit, only the mathematical channels, etc.).

The browser can remain opened during all the work session: in this way the user can add quickly the channels to be elaborated dragging the labels selected on a window.

To open the configuration panel, double click on the channel.

General

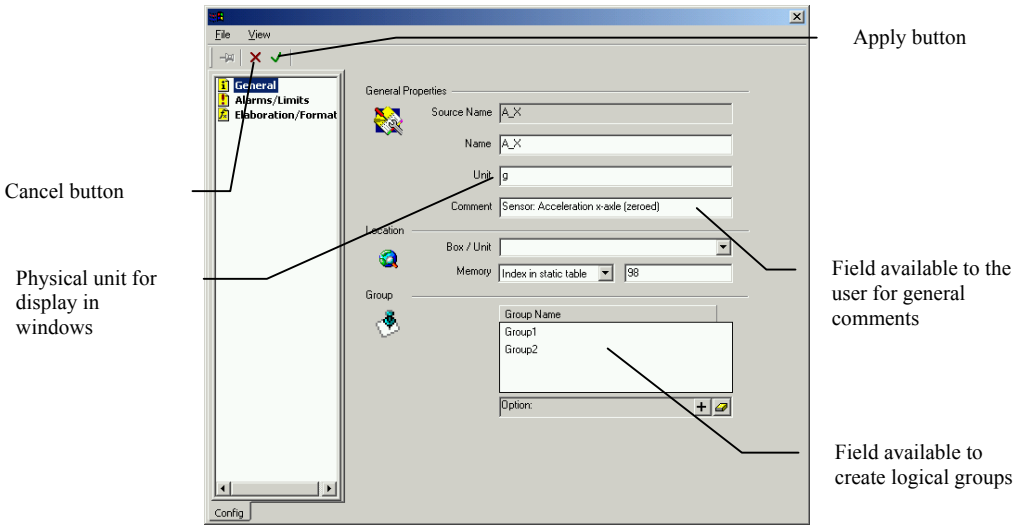


Figure 4 Configuration panel-General

Location/Memory

Index in static table

Indicates the index in the *Static table* (starting from 0). The maximum index depends on the electronic unit software. If the index is greater than the table size, the channel will not be received.

Absolute address

Absolute address of the channel in the ECU memory space. If the address is invalid, the channel will not be received.

Group

The channels can be filtered by means of definite logical groups in the Vision Channel List. (Example: channels for the analysis of the engine, diagnostic, etc.). A channel can belong to several groups.

To enter a new group, select , insert the name of the group, press Enter and then apply button. When you open the configuration panel of a channel for

which you have not yet defined some groups, to select a group already existing, click on , select the wished group and then the apply button.

To remove a group, select it, click on and then press the apply button.

Alarms/Limits

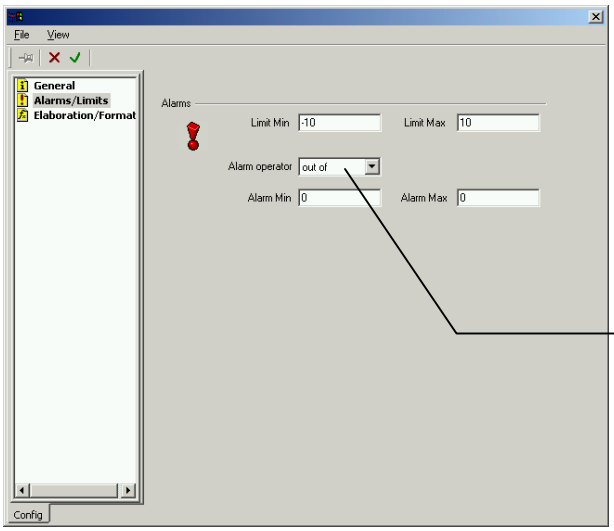


Figure 5 Configuration panel-Alarms/Limits

Alarms/Limit Min, Alarms/Limit Max

Minimum and maximum values that the variable theoretically never reaches; values equal to or exceeding these limits are displayed in a colour defined by the user in the configuration properties of the channel.

Alarms/Alarm Min, Alarms/Alarm Max

Minimum and maximum acceptable values for normal operation of the product; values equal to or exceeding these limits are displayed in a colour defined by the user in the configuration properties of the channel.

Elaboration/Format

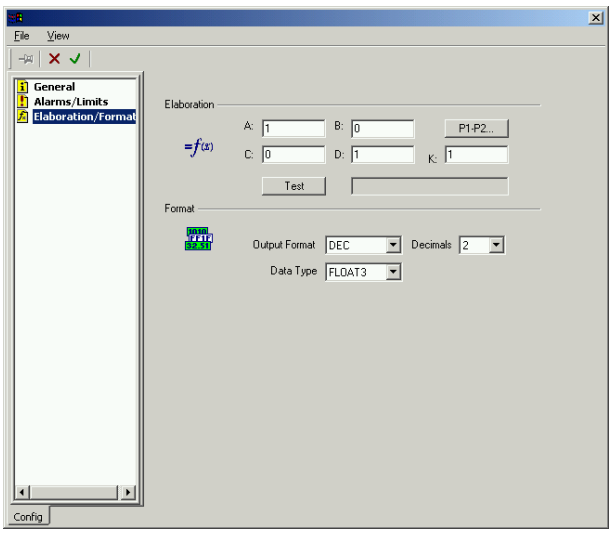


Figure 6 Configuration panel-Elaboration/Format

Before being displayed, values read in the electronic unit are converted using a set of coefficients that apply a unitary conversion by default. You may use coefficients in the channel list for the entire configuration, or replace these coefficients with values taken directly from the definition in the display window.

When returning values to the electronic unit, the reverse transformation is applied.

Elaboration/A, B, C, D, K

Coefficients used to convert data read in the electronic units to physical sizes using the following formula:

x'= K*(x * A + B)/(x * C + D)

where x = value read and x' = converted value to be displayed.

Elaboration/Test

To open a panel for verifying the linearization formula, click on the *Test* button.

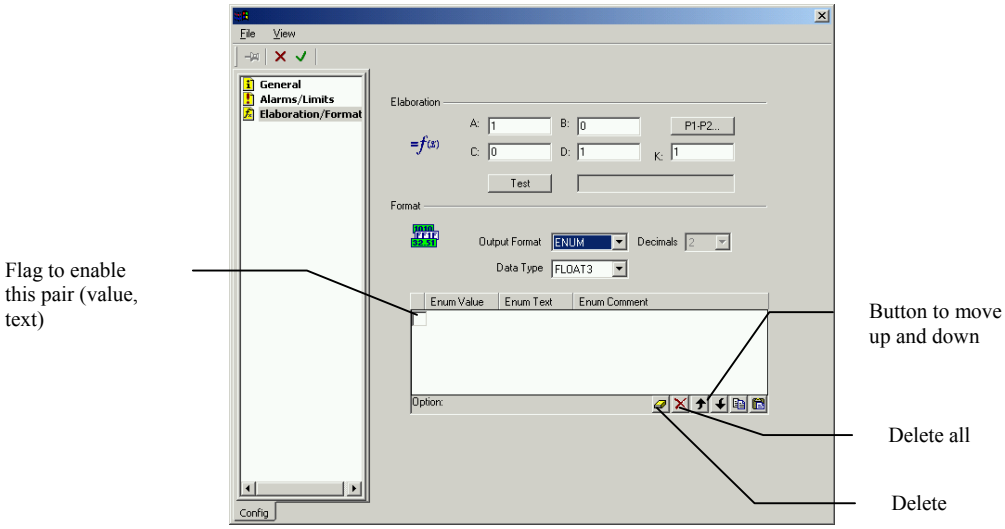
Elaboration/P1-P2

To open a panel for calculating A and B for simple transformations providing two points (X1->Y1; X2->Y2), click on *P1-P2* button.

Format/Output Format

Display format, depending on the desired output: DEC (decimal), HEX (hexadecimal), FLOAT (scientific), ENUM (associated text with each value).

If you select ENUM format, you open a panel for editing the pairs: value and text.



This type of display replaces values with text. You create a list including all the possible pairs (value, text) either for the channel list, or for the local field in a window (Display Field - Custom).

The value must be exactly equal to the result of the conversion. (Therefore it is preferable to avoid the use of conversion coefficients.) The text cannot contain more than 9 characters, and if necessary will be truncated to the width of the window's field. If the value does not match any values in the list, the system displays "**<?>**".

***Enum Value**: v*alue to compare with the channel's converted value

Enum Text: text to display

***Enum Comment**: g*eneral comments, available to the user

To save the changes and close the window, click on apply button.

Format/Decimal

Specify the number of digits to be displayed.

Format/Data Type

Type of Data: BYTE, WORD, DWORD, SBYTE, SWORD, SDWORD FLOAT3, FLOATX.

System/Configuration Property

Configuration

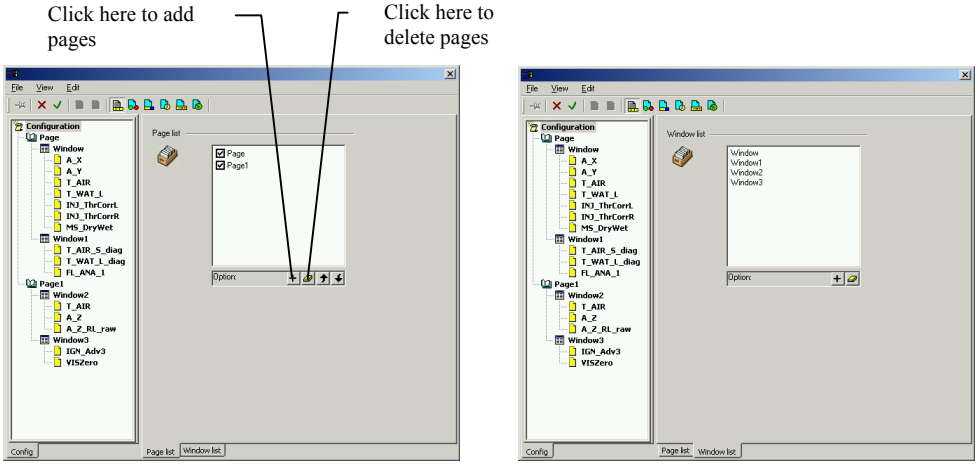


Figure 7 Configuration Property-Page List

Figure 8 Configuration Property-Window List

SYSTEM/CONFIGURATION PROPERTY/CONFIGURATION

These two windows show the list of the *pages* and the *windows* contained in the .CFG configuration.

Page

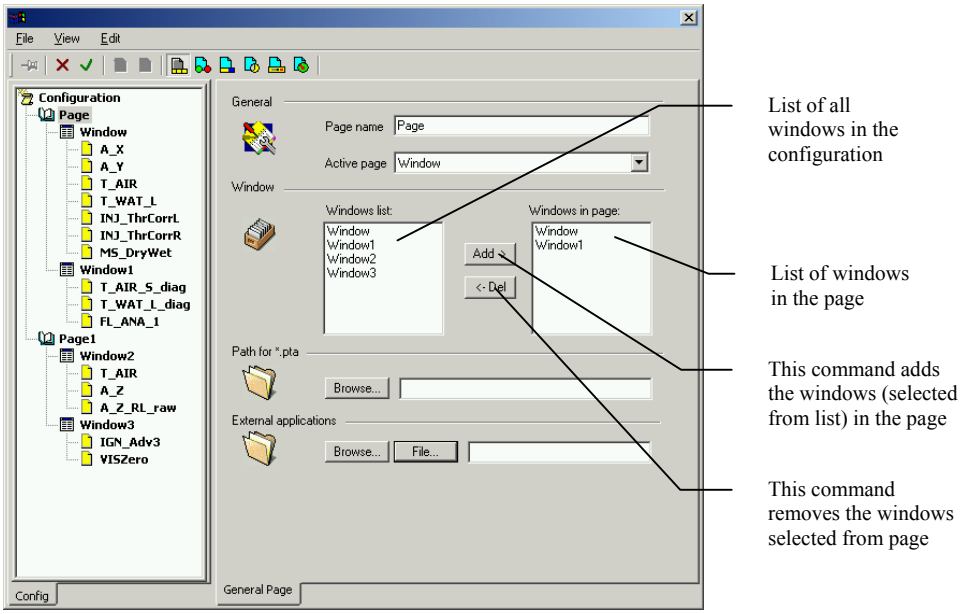


Figure 9 Page configuration-General Page

SYSTEM/CONFIGURATION PROPERTY/PAGE

Page/Path for *.pta

You can use *Browse* button to select the path to access the .PTA map files.

Page/External applications

Sets the access path for .XLS (Excel) files and can also define the file as well.

Window

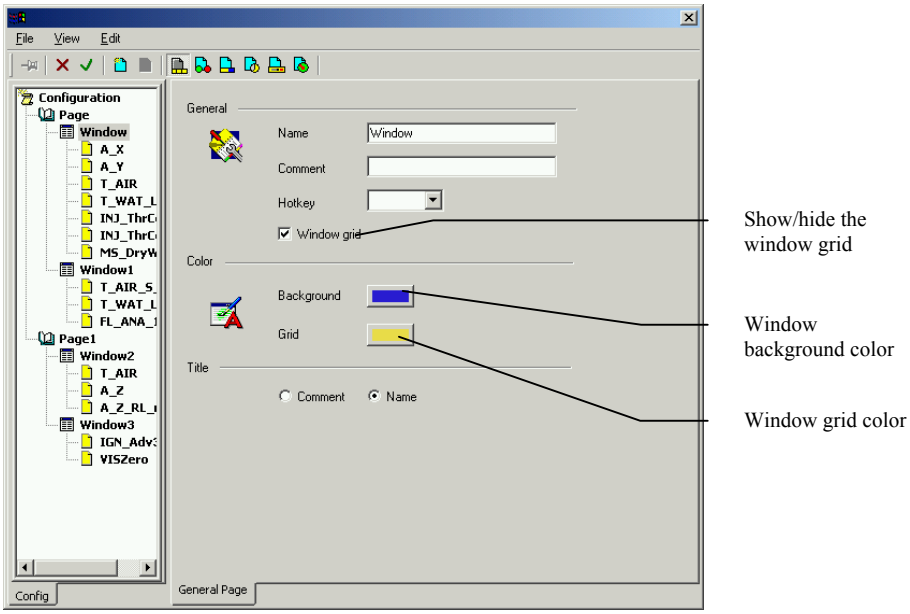


Figure 10 Window configuration-General Page

General

SYSTEM/CONFIGURATION PROPERTY/WINDOW

The *Name* field identifies the name of the window for the defined pages.

The *Comment* field shows the comment that can appear in the window header.

The *HotKey* field assigns a key combination to make a window active (or to temporarily call it in a page).

Title

If *Comment* is selected, Vision writes the content of the *Comment* field in the window title bar.

If *Name* is selected, Vision writes the content of the *Name* field in the window title bar.

Channel

General Page

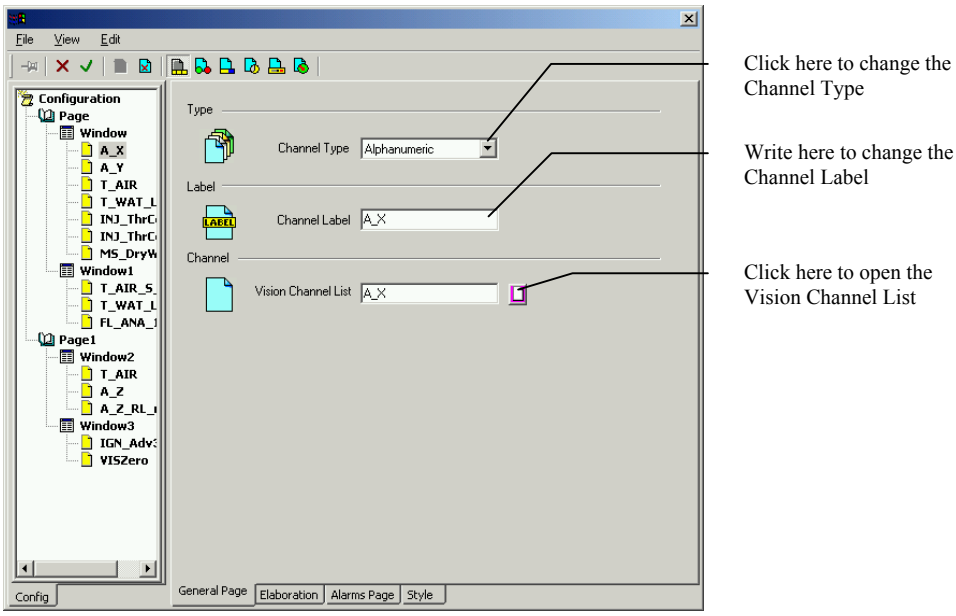


Figure 11 Channel configuration-General Page

When you have opened the *Vision Channel List*, you can import the channels by dragging them with the mouse.

Elaboration

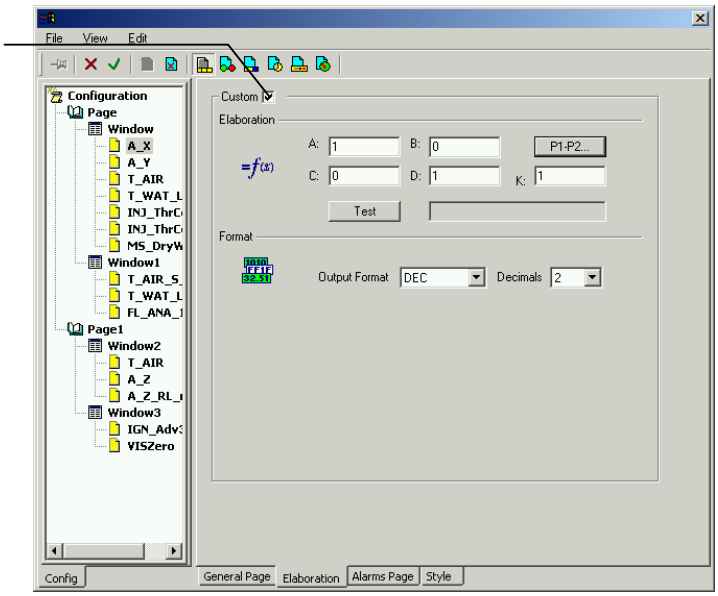


Figure 12 Channel configuration-Elaboration

Before being displayed, values read in the electronic unit are converted using a set of coefficients that apply a unitary conversion by default. You may use coefficients in the channel list for the entire configuration, or replace these

coefficients with values taken directly from the definition in the display window.

When returning values to the electronic unit, the reverse transformation is applied.

Elaboration/A, B, C, D, K

Coefficients used to convert data read in the electronic units to physical sizes using the following formula:

x'= K*(x * A + B)/(x * C + D)

where x = value read and x' = converted value to be displayed.

Elaboration/Test

To open a panel for verifying the linearization formula, click on the *Test* button.

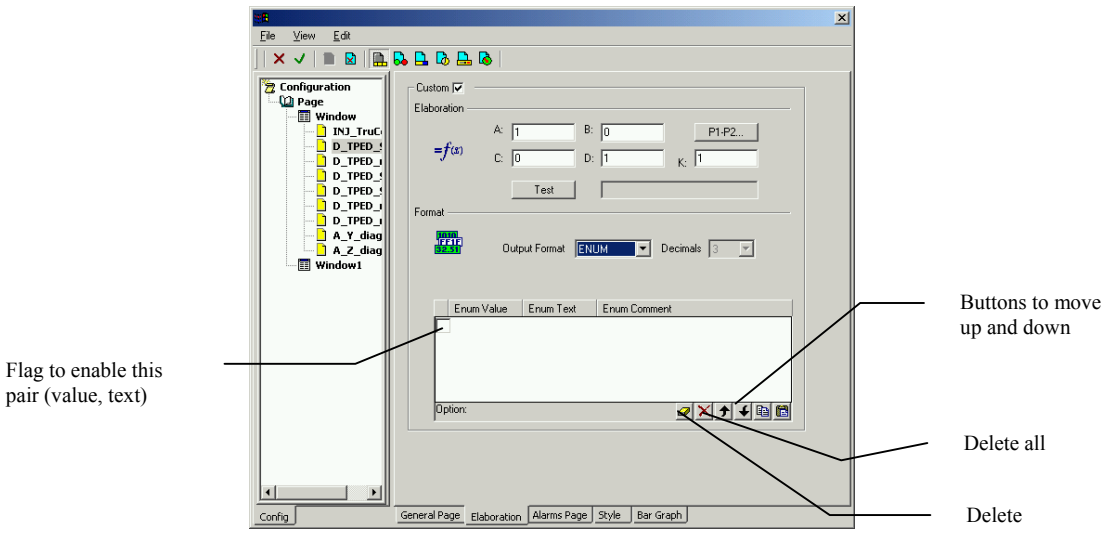
Elaboration/P1-P2

To open a panel for calculating A and B for simple transformations providing two points (X1->Y1; X2->Y2), click on P1-P2 button.

Format/Output Format

Display format, depending on the desired output: DEC (decimal), HEX (hexadecimal), FLOAT (scientific), ENUM (associated text with each value).

If you select ENUM format, you open a panel for editing the pairs: value and text.



This type of display replaces values with text. You create a list including all the possible pairs (value, text) either for the channel list, or for the local field in a window (Display Field - Custom).

The value must be exactly equal to the result of the conversion. (Therefore it is preferable to avoid the use of conversion coefficients.). If the value does not match any values in the list, the system displays "**<?>**".

***Enum Value**: v*alue to compare with the channel's converted value

Enum Text: text to display

***Enum Comment**: g*eneral comments, available to the user

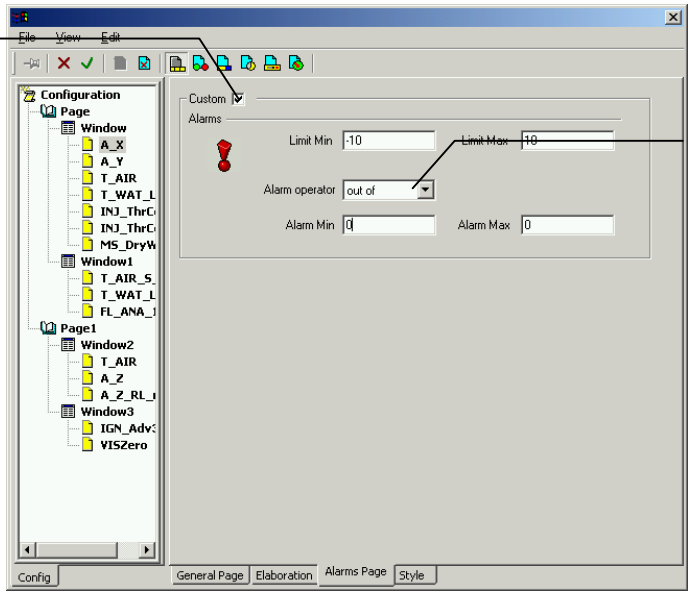
To save the changes and close the window, click on apply button.

Format/Decimal

Specify the number of digits to be displayed.

Alarms Page

Flag to enable this page (Alarms field)



Alarm operators for the alarm range

Figure 13 Channel configuration-Alarms Page

Alarms/Limit Min, Alarms/Limit Max

Minimum and maximum values that the variable theoretically never reaches; values equal to or exceeding these limits are displayed with colours defined by the user in the configuration properties of the channel.

Alarms/Alarm Min, Alarms/Alarm Max

Minimum and maximum acceptable values for normal operation of the product; values equal to or exceeding these limits are displayed with colours defined by the user in the configuration properties of the channel.

Style

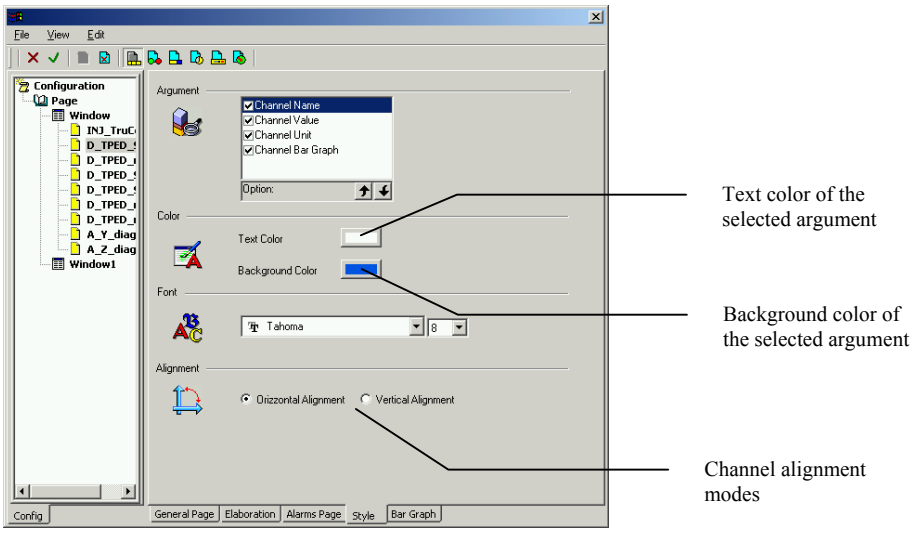


Figure 14 Channel configuration-Style

Argument

It's possible select the channel fields (Name, Value, Unit, etc.) that must be shown in the configuration.

Layout configuration

The setup window allows a flexible layout configuration; two main kind of channel representations are available:

Display mode: the channel is accessible in a read-only way.

Potentiometer mode: the channel is accessible in a read & write way (user value is transmitted to the ECU and written to the target location, if the access rights checked by the ECU are met).

A Vision5 window will contain channels represented as display or potentiometer, according to the user preferences.

In addition to the text representation, the channel in Vision5 can be displayed in a graphical format; bar graphs, gauges, selectors, etc. can be included in the page for a user-friendly interface.

VISION5 allows to create windows with various objects inside the same window:

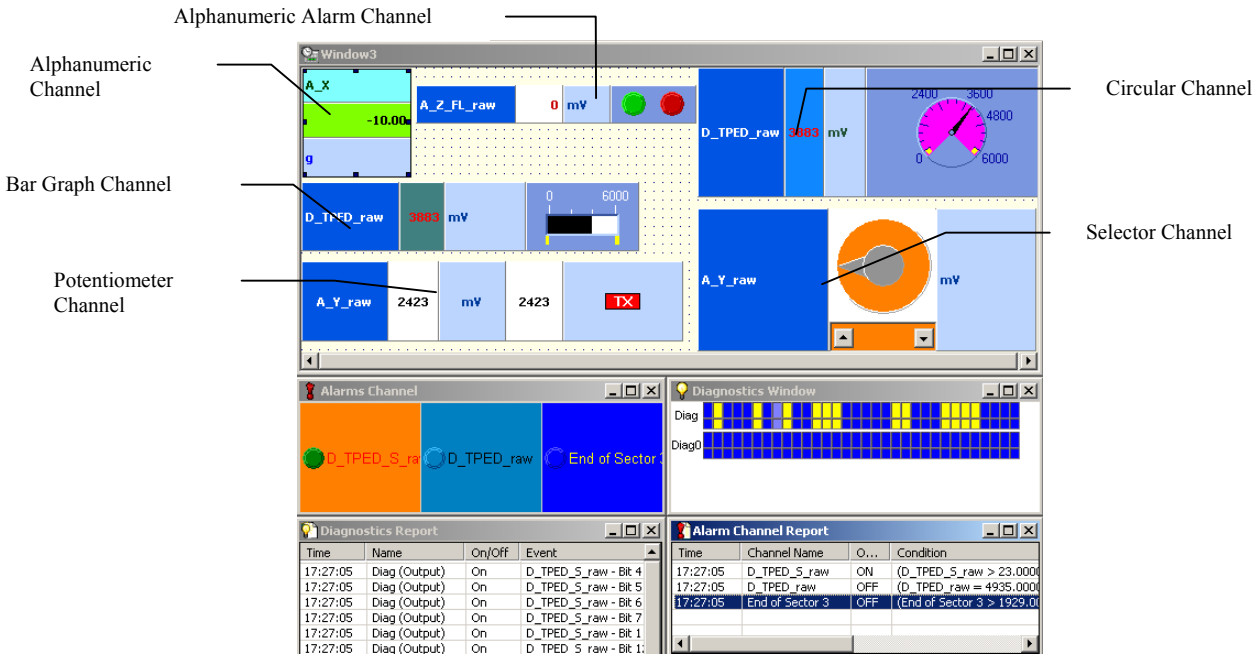


Figure 15 Vision Window

This could be the representation of the new Vision5 window. It will be possible to insert various objects (*Graph Bars*, *Manometers*, *Display Channels*, *Potentiometer*, etc.) inside a single window. Every single channel will be customized from the user as colours, font, dimensions, positions, to make the most flexible the use of the application (click on the channel with the right hand mouse button and select *Modify Channel*). The new grid will help the user align the fields both in vertical and in horizontal and it will be also possible the setting of his dimension.

System/Options

Preferences

SYSTEM/OPTIONS/ PREFERENCES

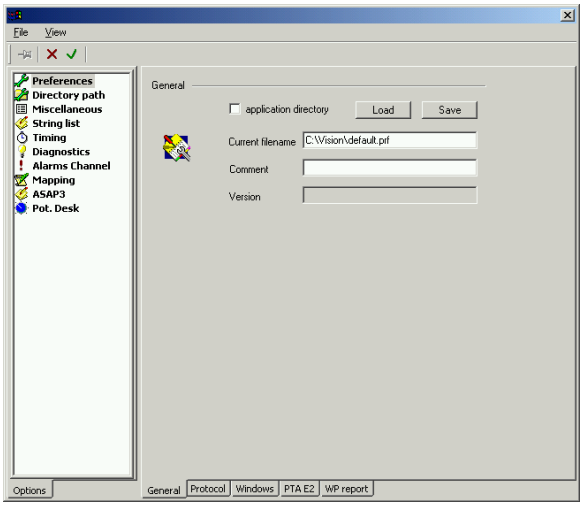


Figure 16 Preferences - General Window

General

These are configuration options for a given workstation or user. You may save and load these options in *.PRF files. At start-up, Vision loads the most recently used preferences file (the name is stored in the Windows/VISION.INI file). If the name does not include a path (the path may be removed by the Application directory option), Vision searches for the file in the directory that contains VISION.EXE.

Most of the parameters may be modified during run-time. Some changes will not become effective until you restart Vision.

If no *.PRF file is specified, Vision opens a file selection panel for loading a valid file, or proposes to create a default.PRF automatically using the default parameters.

The Preferences configuration panel displays a series of tabs. You may select a tab with the mouse or with Ctrl+Tab. Each tab includes choices for a given item.

Application directory

Off: uses an absolute path to locate the .PRF file.

On: looks for the file in the directory where VISION.EXE is located (recommended).

Current filename

Name of the preferences file currently loaded.

Comment

User comments.

Version

Version of the Vision software used to create the file.

Load

Loads a *.PRF file using the file selection panel.

Save

Saves the information in a *.PRF file.

Protocol

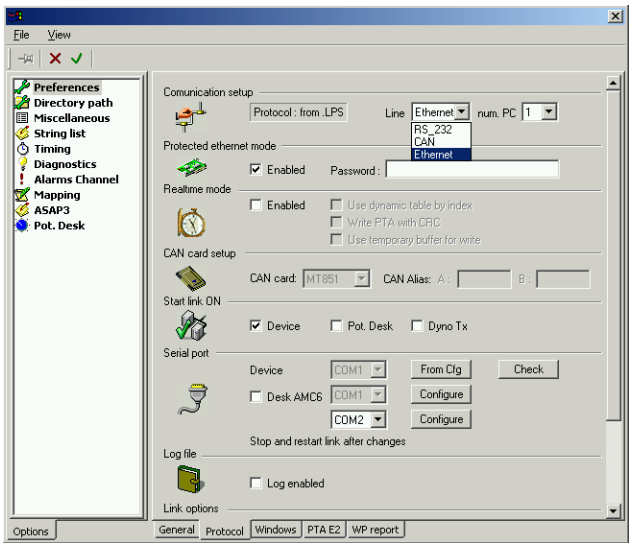


Figure 17 Preferences - Protocol Window

Communication Setup

The protocol (StepX or MTP) is defined in the .LPS file (raw protocol=)

Line

Selects the type of connection:

Serial link/CAN link for the StepX protocol

Ethernet link/CAN link for the MTP protocol

Num.PC

Selects the running number (1 to 4) of the PC in the MTP network.

Protected Ethernet mode

This enables a protection level when changing the alias name for the Ethernet connection. Vision will require a password before changing its destination system.

Password

Password to avoid erroneous change of destination. This is not encrypted since the goal is not security but confirmation.

Realtime mode

Some options work only with specific ECU firmware.

Enabled

Selects a light mode for the protocol allowing to reduce the traffic when used through DST telemetry radio. In particular the "static" address table is not read from ECU.

Use dynamic table by index

Relative channels are inserted in "dynamic table" by index (rather than using the static table for address resolution).

Write PTA with CRC

Each table from PTA is sent with a complementary CRC control .(for radio error detection). Provided that the ECU's firmware accepts these commands.

Use temporary buffer for writes

Tables are sent in a temporary buffer onboard and written in final destination only on specific request.

Can Card Setup

Can Card

Selects the CAN card interface: Marelli-PCMCIA-MT851 or VECTOR CAN-AC2-PCI.

Alias Setup

Optionally gives an alias name for each of the two CAN channels when using the VECTOR card.

Start Link ON

Initial state of the external links.Off: disabled. On: enabled at start-up.

Device

On/Off for communication with the electronic device

Pot. Desk

On/Off for the link with the external potentiometer desk (if the "desk enabled" option is selected).

Dyno Tx

On/Off for the dynamometric bench data acquisition system.

Serial Port

Selects the port for serial link with ECU/AMC Pot Desk/Dyno. Enables to modify the default parameters set in the .CFG.

Log File

When this option (Log enabled) is selected, a VISION.LOG file is created. It's a circular memory buffer in which are stored, in chronological order, the traces of all the writing in the ECU commands (Read/Write, Potentiometer, Hot keys, .PTA files, …).

Link Options

Automatic link-off after time-out. When activating this option (Max time retry link), it is necessary to fill in the value (in seconds) of the trying to connect time-out.

Desk Enabled enables functions related to an external potentiometer desk.

Real time mode

The "Realtime mode", used when working through radio transmission, reduces the protocol load in the following way:

- The "read release info" is not performed, so Vision cannot work with .TAB files

- In the same way, the channels with destinations=E2PROM cannot be attached to a particular processor, and this attachment must be made by using specific keys in the LPS file (see appendix)

- On the other hand, the fact of not using the "read release" command allows to reduce the PC buffer down to 8, allowing protocol recovery even if radio is very poor.

- The static table is not downloaded from each processor, so channel in display/pot windows must be inserted in dynamic table by using absolute addresses. It's possible to use relative channels in display windows by using the option in preferences "Use dynamic table by index" if supported by the ECU firmware.

- The protocol never goes in timeout and the connexion is always accepted, so a particular care must be taken not to connect 2 PCs with the same running number.

- In order to support radio holes, PTA writes are made using an infinite number of retry, the user must decide by himself to kill the process by pressing ESCAPE.

- It's possible to add a CRC control for PTA writes allowing to confirm the correct radio transmission.

- It's also possible to send tables on-board and write to the final destination only on request (this to avoid partial writing in case of radio disconnection during transmission).

Note for table read/write: in realtime mode the PTA tables read or written are made with an infinite number of retry allowing radio holes during PTA transmission without aborting after a partial transfer. (Abort must be made manually by striking ESCAPE if needed).

Windows

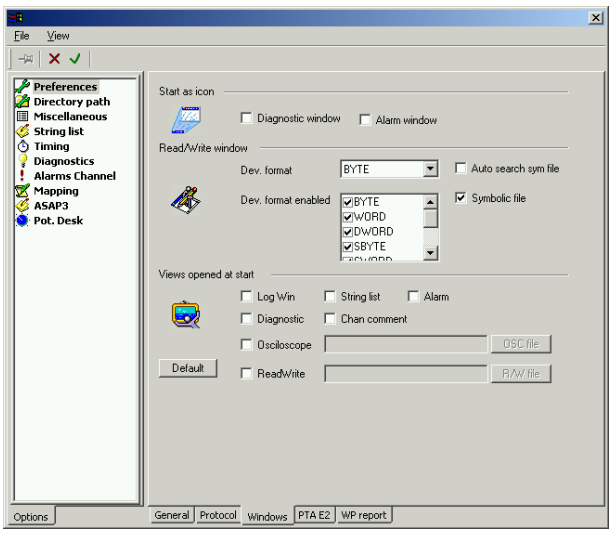


Figure 18 Preferences - Windows Window

Stars as icon

If these boxes are checked, the Diagnostic or Alarm window always starts in the form of an icon if a problem is detected (if not, the window opens as soon as a problem is detected).

Read/Write window

Device format is the default format for the variables in the R/W window.

Dev-format enabled selects the types enabled for the R/W windows. This is the starting list but it can be automatically modified if some new types are found in the SYM files.

Auto search Sym File makes Vision look for the .SYM file whose name is given by the ECU (Info/Unit Release/Symbol File), using the path: System/Options/Directory path/Symbolic.

Symbolic mode allows symbolic representation (instead of the address).

Views opened at start

Initial screen settings, in the View menu.

Log Win

Shows/Hides the protocol debugging window

Diagnostic

Shows/Hides the Diagnostic window

String List

Shows/Hides the String list window

Chan comment

Shows/Hides the popup comment sub-window when mouse pointer is on a field

Alarm

Shows/Hides the Alarm window

Oscilloscope

Shows/Hides the Oscilloscope window. Gives also the name of the file .OSC to be opened at start.

Read/Write

Shows/Hides the Read/Write window

PTA E2

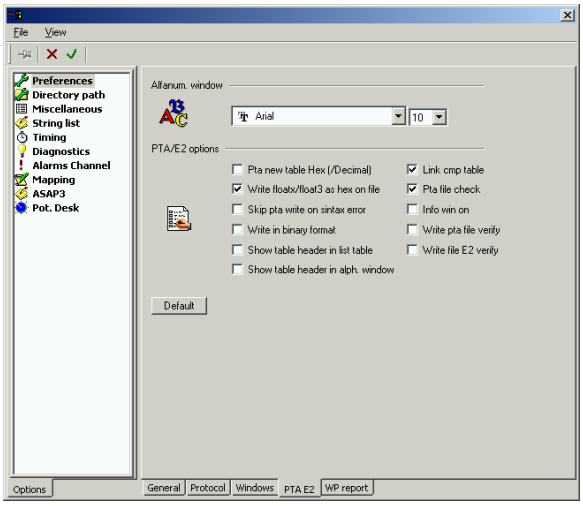


Figure 19 Preferences - PTA E2 Window

Alfanum. window

You can select the character fonts to be used in the alphanumeric window.

PTA/E2 options

Pta new table Hex(/Decimal)

Selects the default format for tables created by the hexadecimal window.

Write float/float3 as hex on file

In ASCII .PTA files: Saves all FLOAT3/FLOATX variables in hexadecimal, to ensure conformity with the data that is read/transmitted. This is the only way to make sure that values read then written back are absolutely identical (rounding errors).

Skip pta write on syntax error

Prevents from writing any of the .PTA file if it contains syntax errors.

Write in binary format

Save .PTA file in a binary/crypted way (quickest). If this flag is disabled, then Vision saves the .PTA file in an ASCII format.

Link cmp table

Graphic compare 2D: automatically compare vectors with same breakpoints.

Pta file check

Performs a coherency test on the break points and addresses when opening each .PTA file. (You may disable this option to save time if the break points and the addresses in the tables no longer vary).

Info Window On

Opens the “Info” window when editing tables (information on variations between the initial and current values).

Write pta file verify

Verifies all writes to .PTA files (*)

Write file E2 verify

Verifies all writes to .TAB files. (*)

(*) Most electronic devices perform their own write verification; you may save time with no risk by not performing this verification

WP report

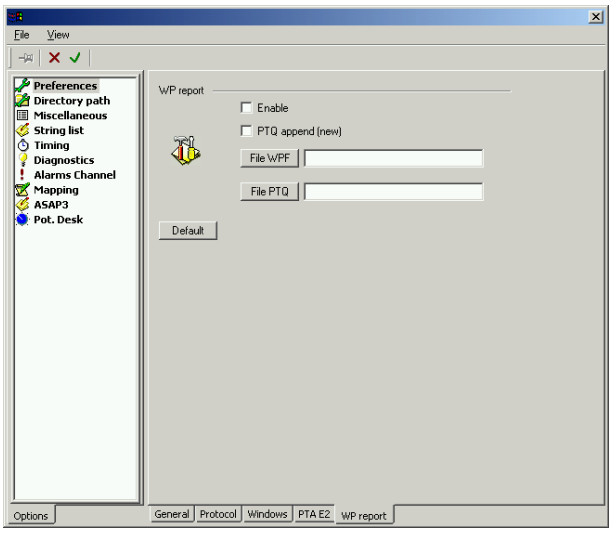


Figure 20 Preferences - WP report Window

Enable

Automatically starts a WPR (Work Point Report) session.

PQT Append (new)

Adds new sessions to the end of the file if checked (erases the file before restarting if not checked)

File WPF

Selects the .WPF file.

File PQT...

Selects the .PQT file.

Directory path

SYSTEM/OPTIONS/
DIRECTORY PATH

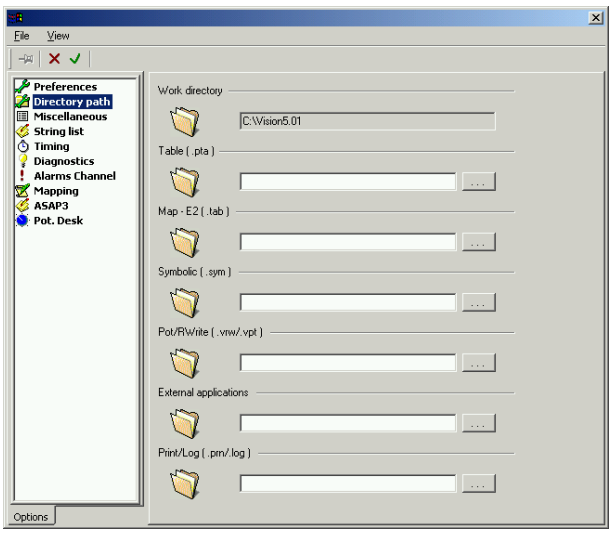


Figure 21 Directory path Window

Default path names where VISION looks for miscellaneous files when opening or saving files. VISION shows the contents of the specified directory when loading or saving files. You can change these paths from VISION. If a field is empty or invalid, VISION uses the directory containing the .CFG file. You may enter a path directly using the keyboard, or by using the *Path* button. Paths may be absolute or relative.

Work directory (read-only)

Displays the name of the directory containing the .CFG file, which is the default directory.

Table (.pta)

Name of the directory containing the partial tables, *.PTA

Map-E2 (.tab)

Name of the directory containing the E2PROM images, *.TAB.

Symbolic (.sym)

Name of the directory containing the symbol files (*.SYM).

Pot/Rwrite (.vrw/.vpt)

Name of the directory containing the data files for the READ/WRITE (*.VRW), Potentiometer (*.VPT).

External applications

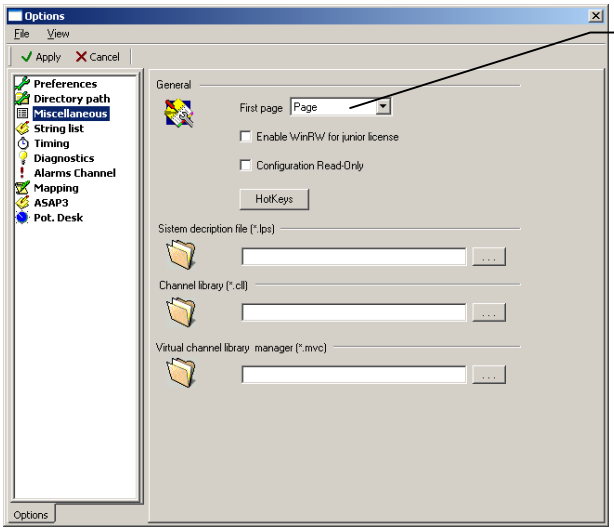
Name of the directory containing externals applications that may be started from the Tools/Run generic application menu (*.BAT, *.COM, *.EXE) without leaving VISION. For example: flash EEPROM monitor.

Print/Log (.prn/.log)

Name of the directory containing the log files (*.LOG), or print files (*.PRN).

Miscellaneous

SYSTEM/OPTIONS/ MISCELLANEOUS



Default Page used for .CFG first open

Figure 22 Miscellaneous Window

First page

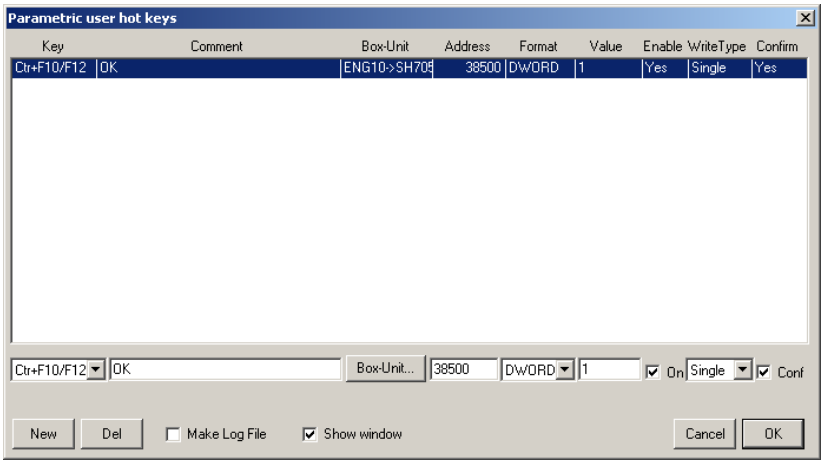
You may select the name of the page that will be the first one opened when the configuration is loaded.

HotKeys

You may reserve a few keys on the personal computer to send a value to a specific address of one ECU from the electronic device. This to increase speed, for repetitive tasks or to switch operating modes.

You can define the address, the value and the destination ECU in the .CFG file. Each hot key can be individually set: activated or not, write the value a single time or in “repeat mode”, and require or not a confirmation before actually writing the data.

To access this information under Vision, use the *System/Miscellaneous/HotKeys* menu command.



The following keys are programmable:

Ctrl+Shift+0..9, Ctrl+Shift+A..Z, Ctrl+F7, Ctrl+F8, Ctrl+F9 or *F11, Ctrl+F10* or *F12, Alt+X.*

Two keys F11 and F12 are always visible on screen via the text *user1* and *user2*.

Once the programmable key associated command is executed, a feed-back message is displayed in the status bar (in green if all is OK, or in red if something went wrong). If the option *Make Log File* is active, a *HOTKEYS.LOG* file is created (in the directory where Vision.exe is), and it keeps track of all the programmable keys operations.

If the *Window Information* option is activated (flag *Show*), the list of hotkeys used appears in that window. It can be especially useful to follow the hot keys in "repeat" mode [to stop the repeat sequence, use *Alt+End* (it works even if the info. Window is not opened)].

When defining the hot keys, it is possible to associate several different writing commands to the same hot key. For hot keys with confirmation, a small window describing the command about to be executed appears, and a waits for validation (for hot keys in "repeat mode" as well, this confirmation is only asked once). For hot keys without confirmation, the small window appears just for one second, giving infos. on the command being executed (comment and type of repetition used).

System description file (.lps)*

You can use the button to select directly the default .LPS file.

Channel library (.cll)*

You can use the button to select directly the default .CLL file.

Virtual channel library manager (.mvc)*

You can use the button to select directly the default .MVC file.

String List

SYSTEM/OPTIONS/ STRING LIST

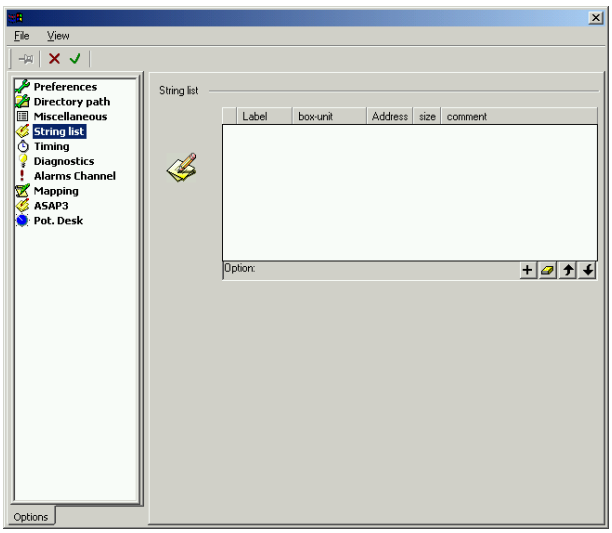


Figure 23 String list Window

Opens a panel for configuring the character strings to be read in the electronic unit when the *INFO/RELEASE TEXT* function is called.

Displays a certain number of strings read from the electronic unit in ASCII format. These strings may have been written by transmitting a .PTA file, or may exist in the electronic unit code.

The panel displays the list of strings created and configured. You must enter the destination, the address and the size of the string to read, in bytes.

Timing

SYSTEM/OPTIONS/ TIMING

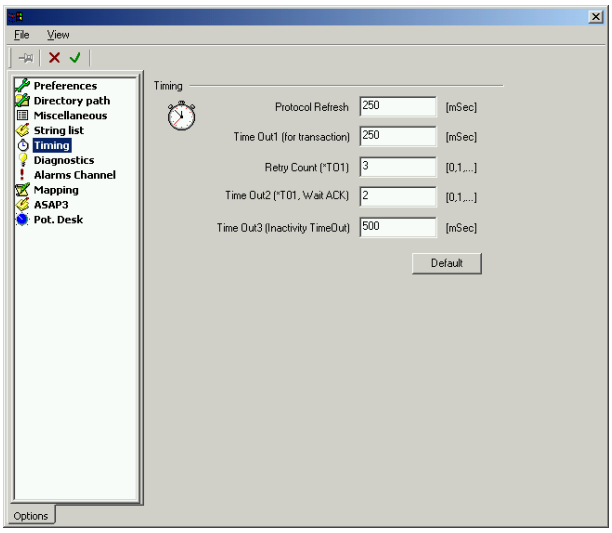


Figure 24 Timing Window

Protocol Refresh

The maximum time allowed for each data read and screen refresh cycle. Too large a value makes the display too slow, while too small a value cannot be applied if it overloads the electronic unit (frame too large). There is also a risk that the PC cannot refresh its graphics fast enough. Start with a low value, and increase it progressively. (For example: 100 to 250 ms).

Time Out 1 (for transaction)

Maximum wait time for a basic task before performing a retry. If this value is too low, frequent communications errors may occur depending on the load of the connected electronic unit.

*Retry Count (*TO1)*

This is the maximum number of retries for an unsuccessful command before completely resetting communications.

*Time Out 2 (*TO1, Wait ACK)*

This is a multiplier of Time Out 1 used to prolong the wait time if the electronic unit has not finished its basic task, but signaled the PC with a "Wait ACK" message (writing to E2PROM, internal transfer between processors, etc.).

Time Out 3 (Inactivity Timeout)

This is the maximum period of silence on the line. Beyond this time, the system supposes the electronic unit has stopped and resets communications.

Default

Restores a set of commonly-used values that enable correct operations on most systems.

Diagnostics

SYSTEM/OPTIONS/ DIAGNOSTICS

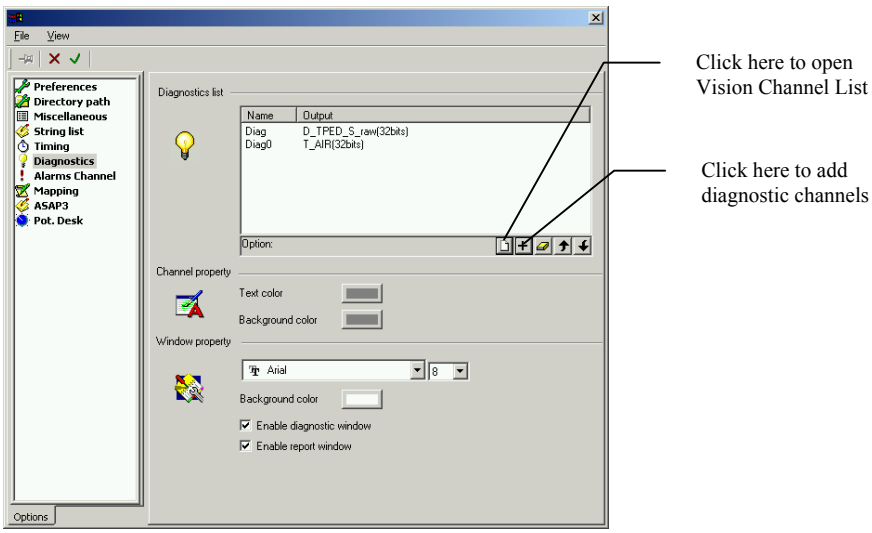


Figure 25 Diagnostics Window

The diagnostics display features provide tools that should improve and simplify the handling and interpretation of the diagnostic channels.

Diagnostics can be sent to Wintax both as single or multiplexed channels.

The single channel status byte or word contains the diagnostics information that can be interpreted as a bitmap or number. The word can be split into groups of bits that can be interpreted independently. The diagnostic channels can be multiplexed adding numerical channels.

Each configuration can be saved as a separate file in order to provide a higher configuration flexibility.

Each group of bits can be configured by defining the type of representation (Numeric or Bitmap). For Bitmap representation, each bit can be configured specifying the bit logic, the led colours, a comment text. For Numeric representation it is possible to choose the format of the numerical datum.

The diagnostics are displayed in the configured windows:

The error message is displayed by positioning the mouse on the LED. (See *Diagnostic Set*).

Alarms Channel

SYSTEM/OPTIONS/ ALARMS CHANNEL

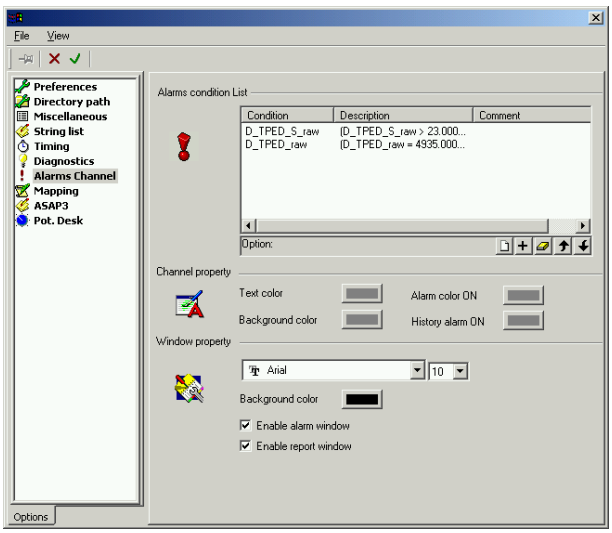


Figure 26 Alarms Channel Window

For each channel from the channel list, limits and alarm levels can be defined. When reached, these limits or alarms change the colour in which the channel is displayed (in display type windows). The alarm window enables to group them efficiently and associate conditions and text with them. (See *Alarm Set*)

Mapping

SYSTEM/OPTIONS/ MAPPING

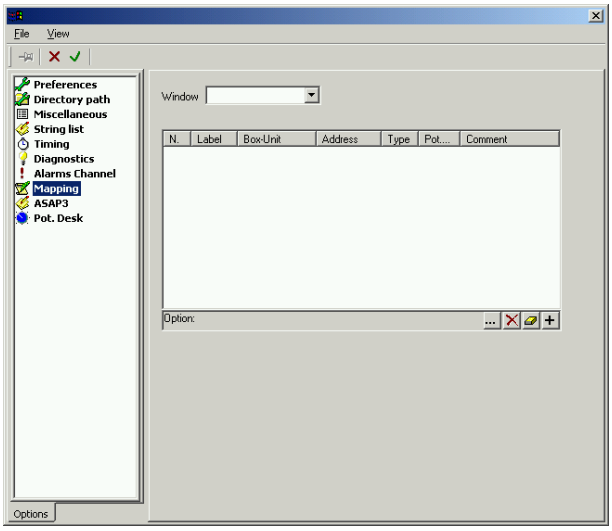


Figure 27 Mapping Window

The mapping functions let you directly write potentiometer corrections to the cartographies contained in the electronic unit. This requires a Potentiometer window to which the mapping functions will be attached.

ASAP3

SYSTEM/OPTIONS/ ASAP3

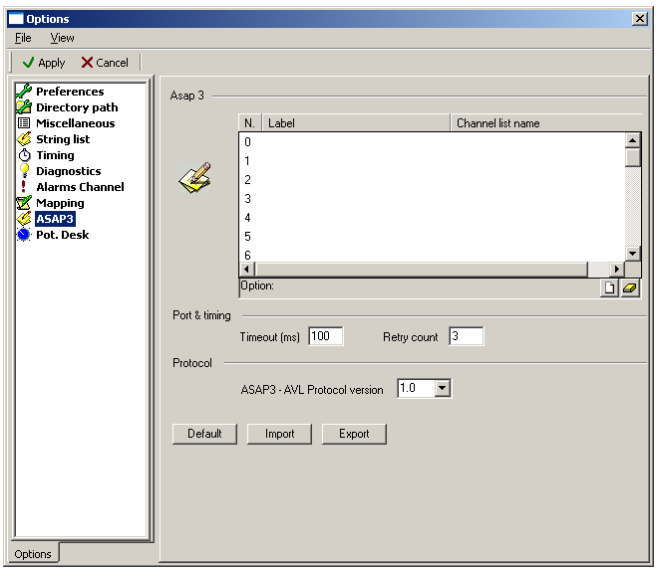


Figure 28 ASAP3 Window

The dynamometric bench acquisition system can request data from VISION (up to 40 channels). A table (saved as an .AVL file) is created to associate each channel for the dyno. with a channel from the channel list.

Vision allows you to send data to a dynamometric bench data acquisition system using the ASAP3 protocol.

You define the channels to read in the electronic device. These are sent to the dynamometric bench in converted format at each refresh cycle. You must tell Vision the name to associate with the channel so it may be recognized by the bench's data acquisition system. The system can be activated only if the parameters are correctly programmed.

Note for the serial port:

- You must use a dedicated serial port. We suggest you configure a different interrupt level for each serial port. For example:
- COM1, IRQ4, 19200 link with the electronic device
- COM2, IRQ3, 9600 link with the dynamometric bench
- COM3, IRQ5, 9600 link with external potentiometers

Connection with the dynamometric device may be stopped (the DYNO icon is red) or active (the DYNO icon is green). Communications may be started automatically by the *System/Options/Preferences/Protocol*.

When the DYNO protocol starts, the device sends to Vision a list of channels to be sent. Vision then compares this list with the table, and authorizes the start of

data transmission (the negotiation phase between the two systems may require up to forty seconds).

Label

Name of the channel as recognized by the dynamometric bench acquisition system.

Channel list name

Channel from the channel list.

This button modifies the 40 possible channels. It opens a panel for configuring the channel of the dynamometric bench system and for assigning a channel from the channel list. Equivalent to double-clicking on the channel.

Time-out

Specifies the amount of time the protocol waits during communications with the dynamometric bench. Too long a time may interfere with the dialog with the electronic unit, while too short a time may inhibit communications with the dynamometric bench.

Retry count

Specifies the maximum number of retries before switching to other tasks.

Default

Creates a default name for the *.AVL file.

Import and Export

Use of the *Import* and *Export* buttons allow you to manage an ASCII file with extension .DYN.

Pot.Desk

SYSTEM/OPTIONS/ POT.DESK

This panel lets you configure the functions associated with the external potentiometer desk. It is connected to the PC through a serial line, and lets you modify certain operating parameters using rotary dials. The results are identical to using the fields in a potentiometer window, but this is must faster to adjust because it does not require you to use the keyboard. The data from the potentiometer desk is sent to the "new value" field of a potentiometer channel from the channel list.

The potentiometer desk (AMC6 with 6 potentiometers) is connected either on a second serial port or on the main link between the ECU and the PC.

The value received by the desk is stored in one byte (0 - 255). First this value is converted to adjust the sensitivity of the rotary dial. The result is then written to the new value field. The data sent to the electronic unit will undergo the reverse transformation of the linearization of the channel in the channel list (or locally if the parameters are replaced by a field in the window).

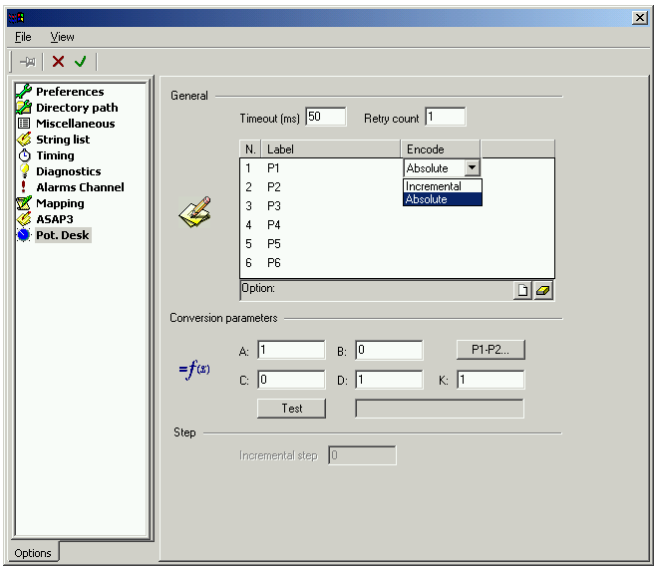


Figure 29 Pot.Desk Window

Global authorization for external potentiometers is performed through VISION in the preferences file.

Time Out: time out for attempts to connect with the potentiometer desk (100 ms recommended).

Retry Count: number of times each command is attempted before reset.

Encode: selects the protocol potentiometer desk in use.

Potentiometer Channel

P1, P2, P3, P4, P5, P6: names of the channels associated with the various rotary dials on the external desk.

This icon displays the channel list for selecting a channel associated with the currently selected dial.

Conversion Parameters: displays the configuration panel for converting between the currently selected external potentiometer and the selected channel. (the value between 0 and 255 from the pot. desk is converted into the appropriate value to write in the channel).

System/Virtual Channel

SYSTEM/VIRTUAL CHANNEL

Maths channels window

This window shows virtual channels resulting of some user-defined functions applied to normal acquired channels.

Select *System/Virtual channel* to open the editor.

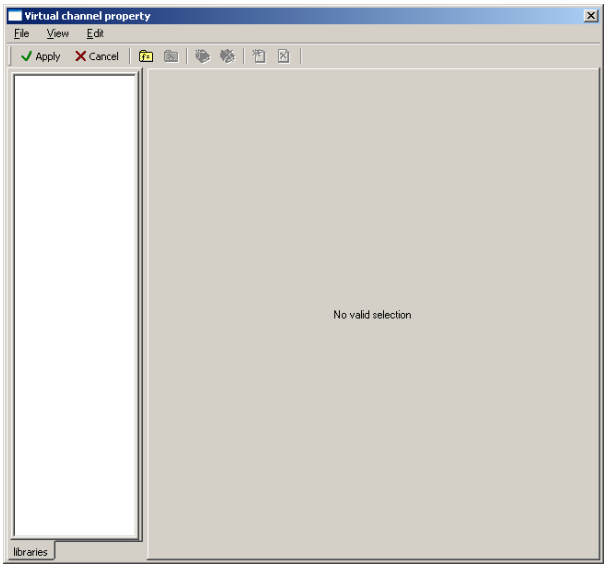
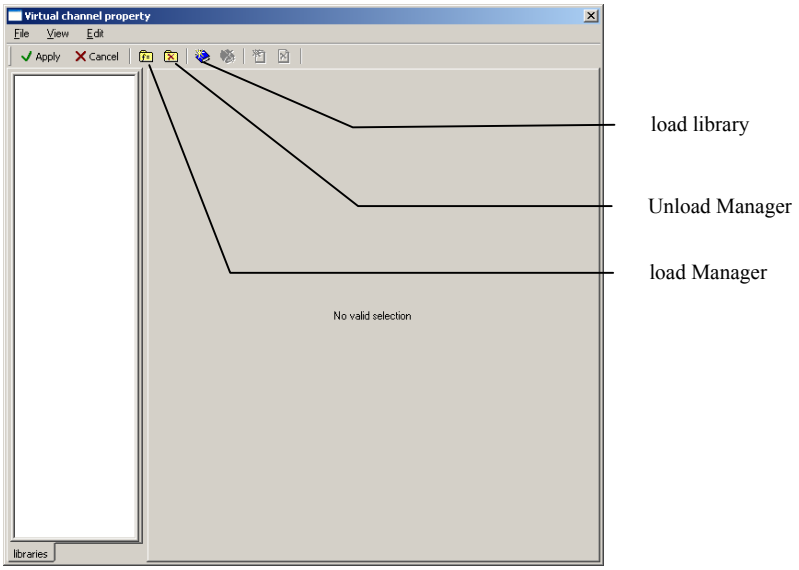


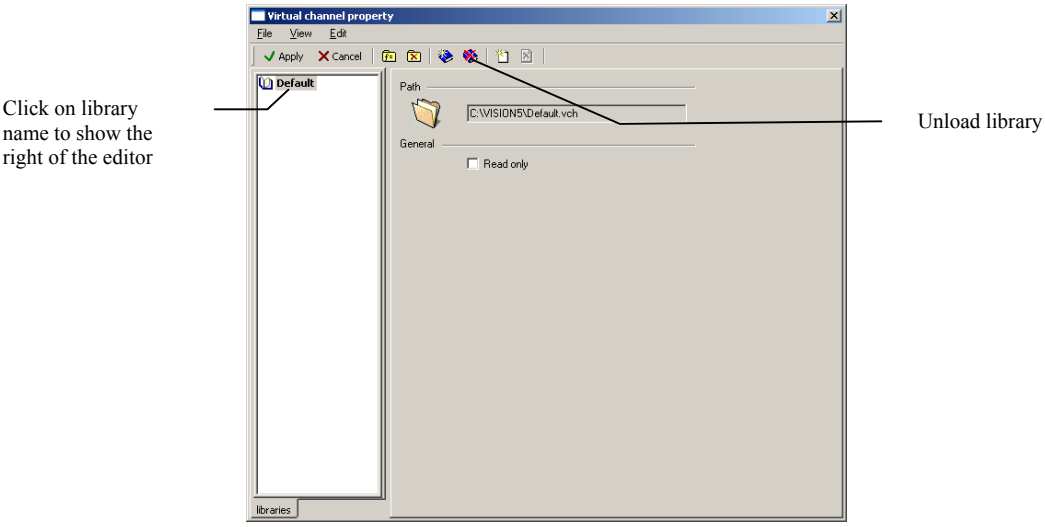
Figure 30 Virtual channel property

Select *File/load Manager* from the editor menu or select the icon and load or create *.MVC files.



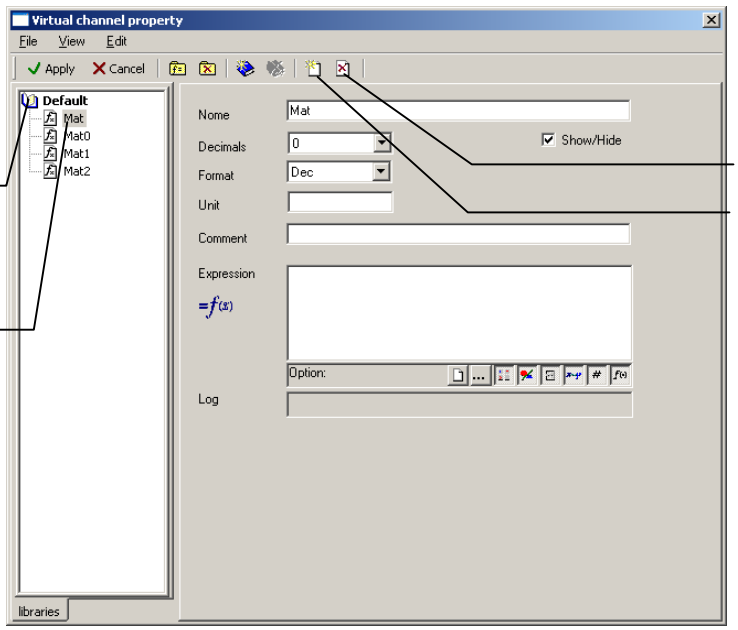
Select *File/load library* from the editor menu or click on the icon and load or create one or more VCH files. The libraries which are currently loaded are listed on the left of the editor window.

The path for the highlighted library is shown on the right. Use the *read only* flag to prevent entries in the library from being modified.



To remove a library from the list simply select *File/Unload library* or click on icon.

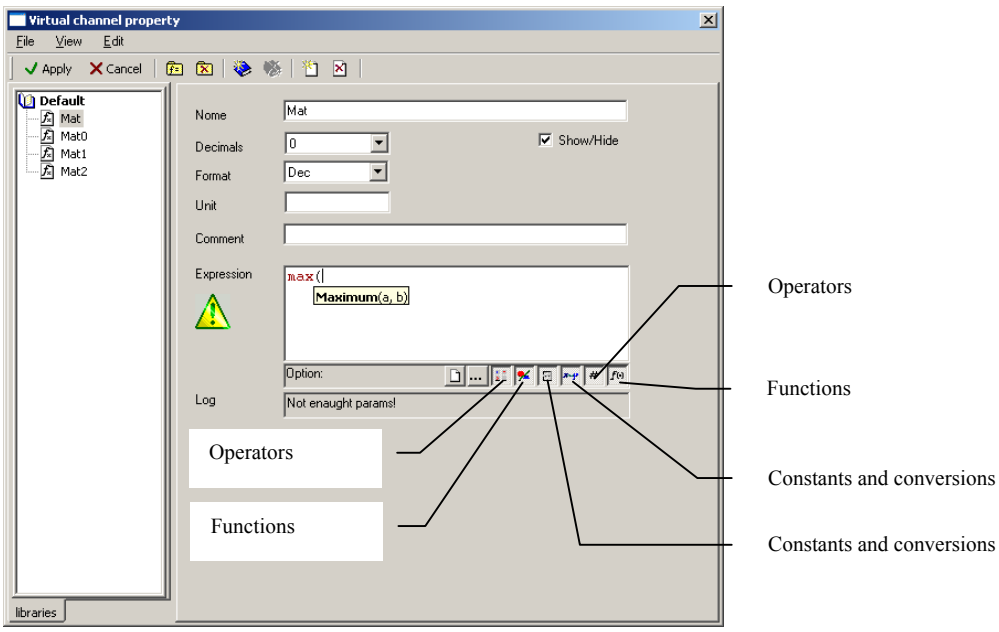
To create virtual channels select *Edit/Add Channel* or click on the icon .



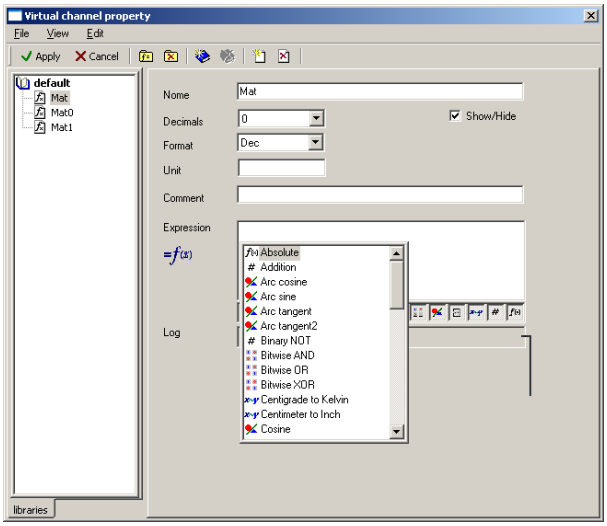
A new entry with a default name will be created and the editor will show the fields needed to define the maths expression.

Click inside the *Expression* pane and begin typing. Note that you do not have to type and equals sign at the start of the expression.

As you type an expression the editor will prompt for function arguments when you type an open bracket.



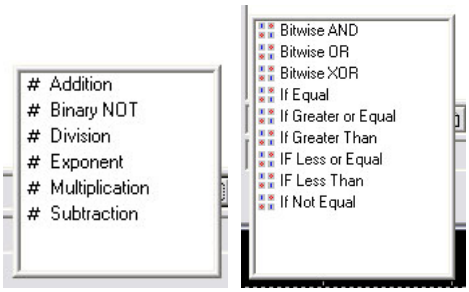
To see a list of available functions and operators click on the ... button and select from the drop down list. The functions and the operators that you find in this list can be chosen selecting the relative icons.



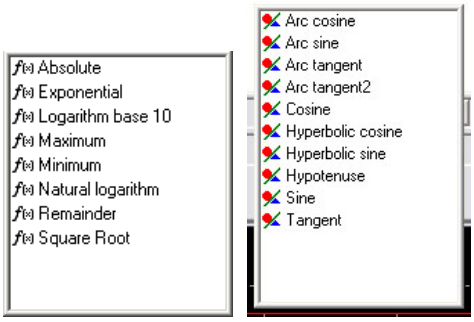
Use the *Show/Hide* flag to define whether an expression is to be displayed in the *Vision Channel List* (*System/Channel List*) (you may want to hide intermediate expressions).

Functions included

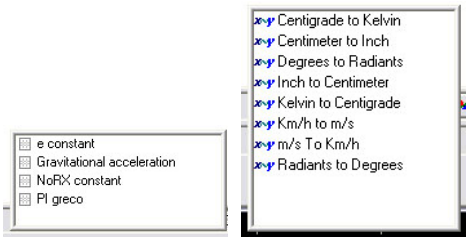
Operators



Functions



Constants and conversions



Displaying maths channels

Maths channels are displayed in the *Vision Channel List* under the *Mathematical* field (in not dockable mode) or under the tab (in dockable mode).

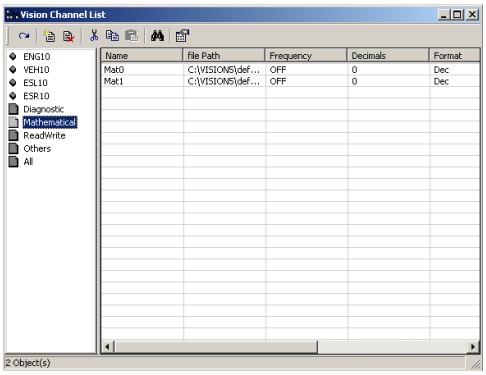


Figure 31 Vision Channel List (not dockable)

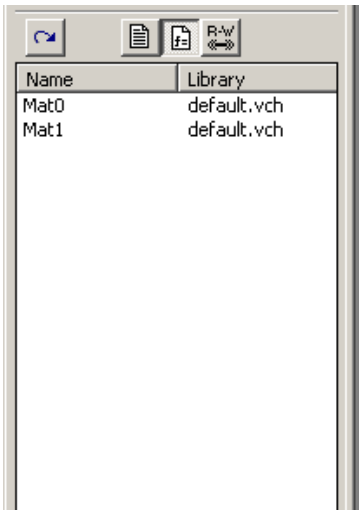


Figure 32 Vision Channel List (dockable)

Menu View

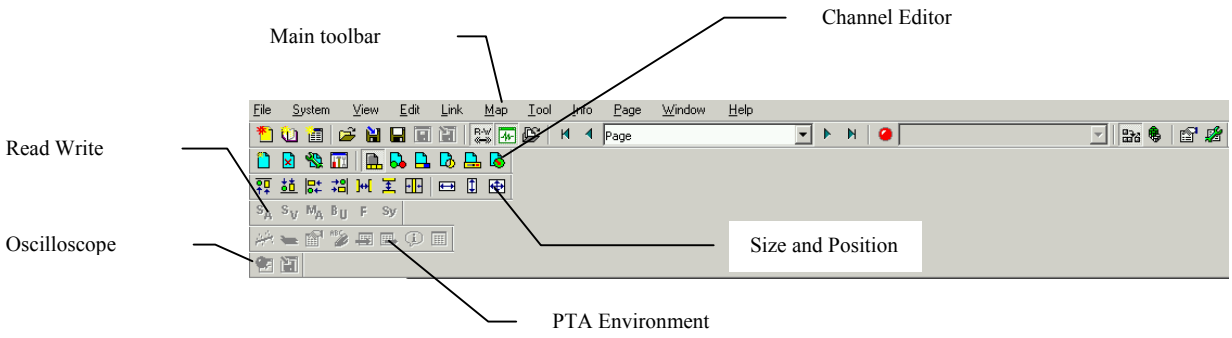
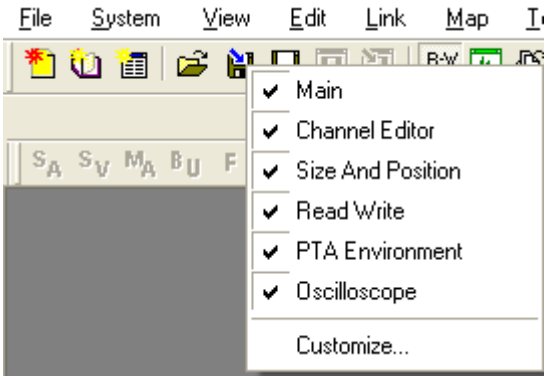


Figure 33 Toolbars

View/Toolbar

VIEW/TOOLBAR

Click on *View/Toolbar* menu to view the complete list of *Toolbars*.



From this dialog you can choose which toolbars show.

View/Toolbar/Customize

If you select customize, the window will be similar to the picture shown below:

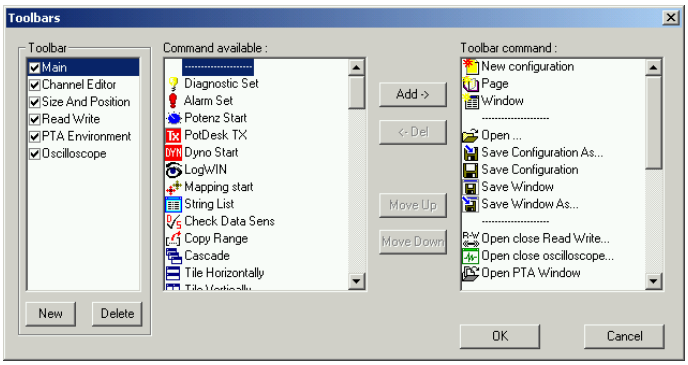


Figure 34 Setup Toolbars

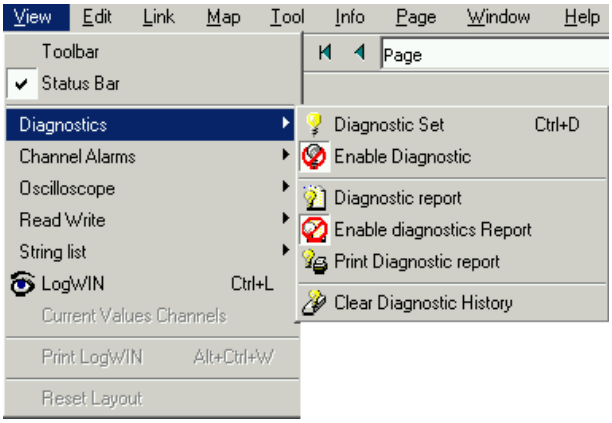
This option allows you to define, edit and enable customized Toolbars from the list of menu commands (for more details see *Tool/Customize Toolbars*).

View/Status Bar

VIEW/STATUS BAR

Show/Hide the *Status Bar*. Run-time status information and error messages are shown at the bottom of the screen.

View/Diagnostics



Diagnostic Set

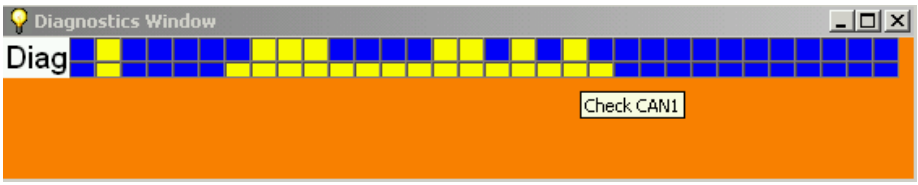


Figure 35 Diagnostic Set Window

VIEW/DIAGNOSTICS/ DIAGNOSTIC SET

The Diagnostic window displays the currently active messages describing the status of certain bits contained in bytes in the electronic device. A message may be assigned to each bit.

For the setup, double click on the channel and the System/Option/Diagnostics window is opened. (See *System/Options/Diagnostics*).

If the window is not displayed on the screen when the bit appears, the window is opened automatically (if the window is enable). To enable/disable the *Diagnostic Set* click on *View/Diagnostics/Enable Diagnostic* or use the flag in *System/Options/Diagnostics*.

You may move and resize the window during a session. Size and position are saved automatically.

It is possible to add some channels with the right hand mouse button (the browser of the channels is opened) and to drag them through the window.

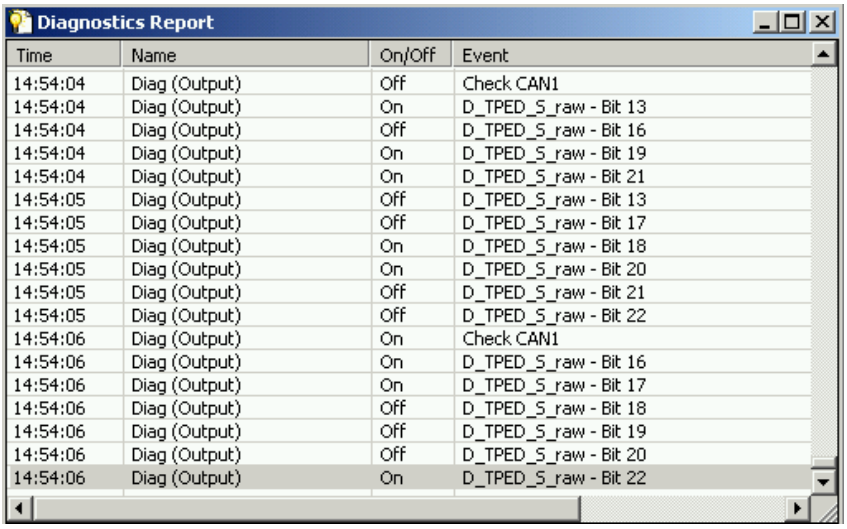
In the Preferences there is the option to display this window directly as an icon: *System/Options/Preferences/Windows/Start as icon* (in this case the window is not opened automatically when a problem occurs). In the *System/Options/Preferences/Windows* there is also the possibility to display this window opened at the start.

The "Start as icon" option has priority over that "*Views opened at start*".

Diagnostic Report

VIEW/DIAGNOSTICS/ DIAGNOSTIC REPORT

This window indicates the chronological order of the appearances (ON) and disappearances (OFF) of problems.



Diagnostics Report

Time	Name	On/Off	Event
14:54:04	Diag (Output)	Off	Check CAN1
14:54:04	Diag (Output)	On	D_TPED_S_raw - Bit 13
14:54:04	Diag (Output)	Off	D_TPED_S_raw - Bit 16
14:54:04	Diag (Output)	On	D_TPED_S_raw - Bit 19
14:54:04	Diag (Output)	On	D_TPED_S_raw - Bit 21
14:54:05	Diag (Output)	Off	D_TPED_S_raw - Bit 13
14:54:05	Diag (Output)	Off	D_TPED_S_raw - Bit 17
14:54:05	Diag (Output)	On	D_TPED_S_raw - Bit 18
14:54:05	Diag (Output)	On	D_TPED_S_raw - Bit 20
14:54:05	Diag (Output)	Off	D_TPED_S_raw - Bit 21
14:54:05	Diag (Output)	Off	D_TPED_S_raw - Bit 22
14:54:06	Diag (Output)	On	Check CAN1
14:54:06	Diag (Output)	On	D_TPED_S_raw - Bit 16
14:54:06	Diag (Output)	On	D_TPED_S_raw - Bit 17
14:54:06	Diag (Output)	Off	D_TPED_S_raw - Bit 18
14:54:06	Diag (Output)	Off	D_TPED_S_raw - Bit 19
14:54:06	Diag (Output)	Off	D_TPED_S_raw - Bit 20
14:54:06	Diag (Output)	On	D_TPED_S_raw - Bit 22

Figure 36 Diagnostics Report Window

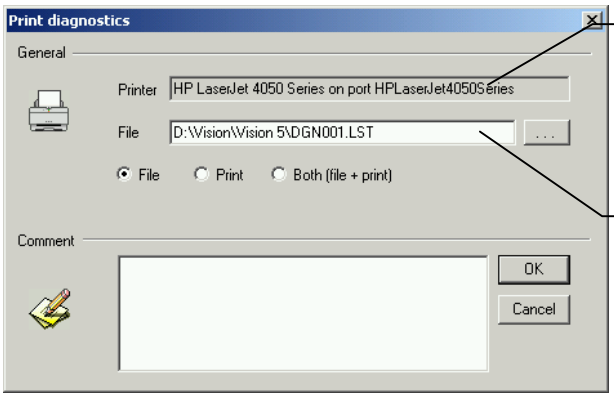
The message displayed contains the *Name*, the *Event* that caused it, a field for the condition *ON* or *OFF* and the *Time* at which the Diagnostic appeared (ON) and disappeared (OFF).

This window opens automatically when a new diagnostic appears (if the window is enable). To enable/disable the *Diagnostics Report* window click on *View/Diagnostics/Enable Diagnostics report* or use the flag in *System/Options/Diagnostics*.

Print Diagnostic Report

VIEW/DIAGNOSTICS/ PRINT DIAGNOSTIC REPORT

It can be saved and printed with *Print Diagnostics Report*.

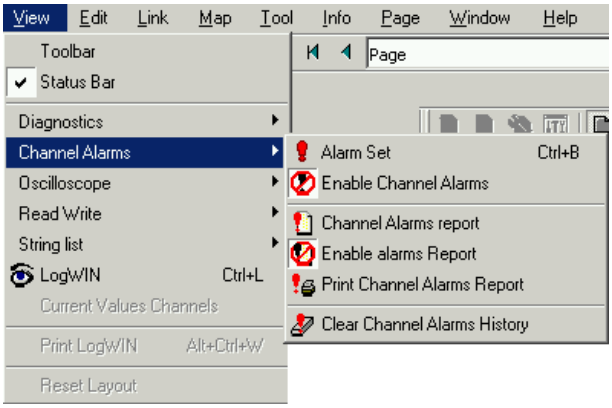


Print Diagnostics Report window

Save on file Diagnostics Report window

To clear the *Diagnostic Report* window select *View/Diagnostics/Clear Diagnostic History*.

View/Channel Alarms



Alarm Set

VIEW/CHANNEL ALARMS/ ALARM SET

It is very similar to the Diagnostic window. It displays various colours when a channel (from the "Channel List") reaches a value set as an alarm level. The alarm can also be conditioned by other channels (it is displayed only if fits conditions depending on the value of other channels). For the setting of the levels and conditions, double click on the Alarm Channel and the *System/Option/Alarms Channel* window is opened or see *System/Options/Alarms Channel*.

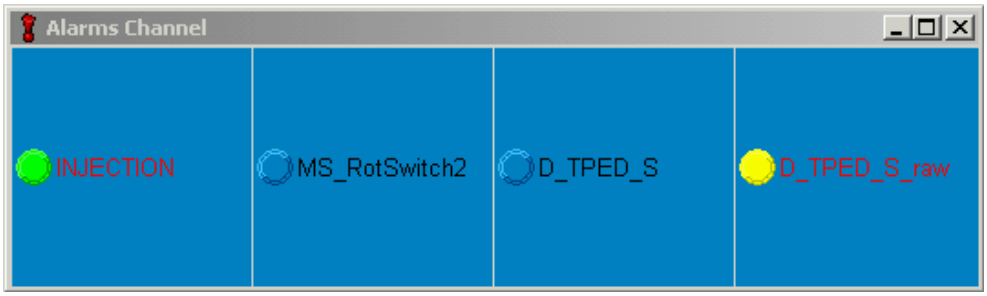


Figure 37 Alarms Channel Window

This window opens automatically when a new alarm appears (if the window is enable). To enable/disable the *Alarm Channel* window click on *View/Channel Alarms/Enable Channel Alarms* or use the flag in *System/Options/Alarms Channel*.

It is possible to add some channels with the right hand mouse button (the browser of the channels is opened) and to drag them through the window.

You may move and resize the window during a session. Size and position are saved automatically.

In the *System/Options/Preferences/Window* there is the option to display this window directly as an icon (in this case the window is not opened automatically when a problem occurs) or to display this window opened at the start.

The "*Start as icon*" option has priority over that "*Views opened at start*".

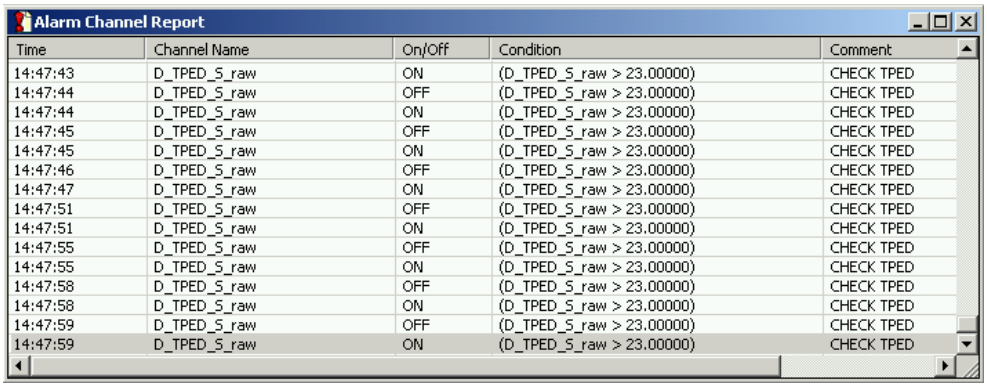
Channel Alarms Report

VIEW/CHANNEL ALARMS/ CHANNEL ALARMS REPORT

Each alarm occurrence generates two messages in the "Alarm Channel Report" window (one when it appears (ON) and one when it goes (OFF)).

The message displayed contains the *Channel Name*, the *Condition* that caused it, a text (*Comment*), a field for the condition *ON* or *OFF* and the *Time* at which the alarm appeared (ON) and disappeared (OFF).

This window opens automatically when a new alarm appears (if the window is enable). To enable/disable the *Alarm Channel Report* window click on *View/Channel Alarms/Enable alarms Report* or use the flag in *System/Options/Alarms Channel*.



Alarm Channel Report

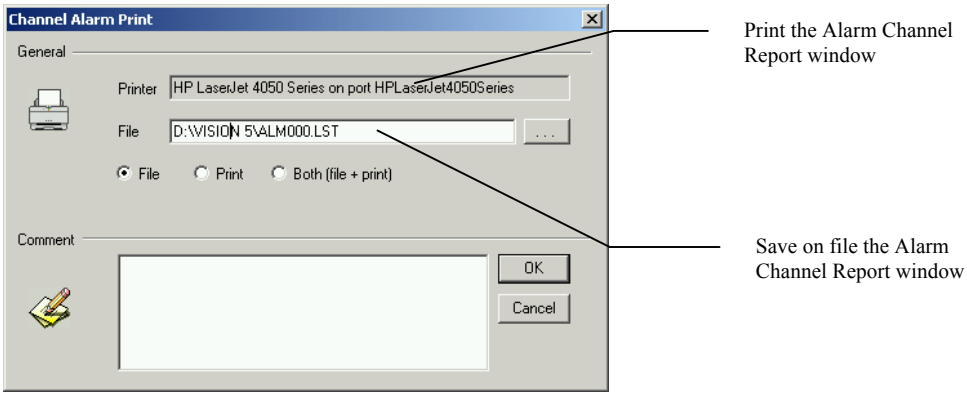
Time	Channel Name	On/Off	Condition	Comment
14:47:43	D_TPED_S_raw	ON	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:44	D_TPED_S_raw	OFF	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:44	D_TPED_S_raw	ON	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:45	D_TPED_S_raw	OFF	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:45	D_TPED_S_raw	ON	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:46	D_TPED_S_raw	OFF	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:47	D_TPED_S_raw	ON	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:51	D_TPED_S_raw	OFF	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:51	D_TPED_S_raw	ON	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:55	D_TPED_S_raw	OFF	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:55	D_TPED_S_raw	ON	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:58	D_TPED_S_raw	OFF	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:58	D_TPED_S_raw	ON	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:59	D_TPED_S_raw	OFF	(D_TPED_S_raw > 23.00000)	CHECK TPED
14:47:59	D_TPED_S_raw	ON	(D_TPED_S_raw > 23.00000)	CHECK TPED

Figure 38 Alarm Channel Report Window

Print Channel Alarms Report

VIEW/CHANNEL ALARMS/ PRINT CHANNEL ALARMS REPORT

It can be saved and printed with *Print Channel Alarms Report*.



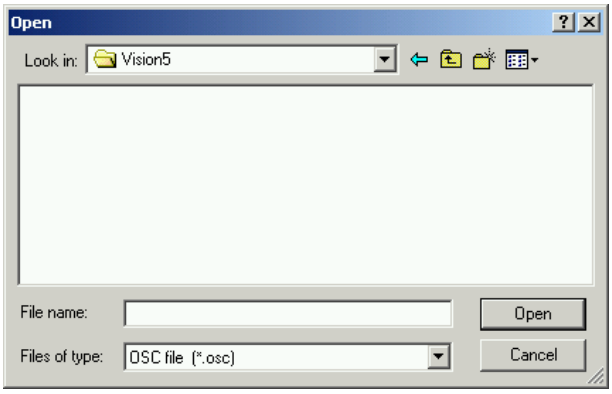
To clear the *Alarm Channel Report* window select *View/Channel Alarms/Clear Channel Alarms History*.

View/Oscilloscope

Open Close Oscilloscope

VIEW/OSCILLOSCOPE/OPEN CLOSE OSCILLOSCOPE

The menu opens the panel for selecting *.OSC files, starting from the current directory. This panel allows you to browse through the directories.



The oscilloscope window allows to show graphically the evolution of up to 16 channels. This may be useful, for example, to show a motor starting procedure with RPM, oil pressure and temperature. It's also possible to use it as a small real-time acquisition system, the data may be saved in the Magneti Marelli .DTX format (*View/Oscilloscope/Save DTX As*) in order to analyse them later with the Wintax tool.

The Vision refresh time may be modified run-time when the oscilloscope window is active. The new refresh time is read from the oscilloscope configuration .OSC and replaces the one described in .CFG. This value may be set to a minimum of 10 ms allowing data acquisition up to 100 Hz. After closing the oscilloscope link, Vision returns to it's normal refresh time.

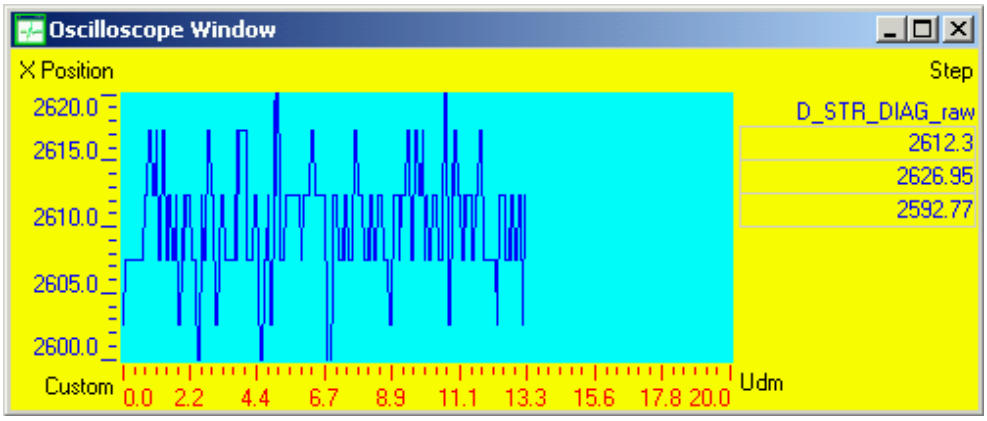


Figure 39 Oscilloscope Window

It is possible to add some channels with the right hand mouse button (the browser of the channels is opened) and to drag them through the window.

To save the oscilloscope configuration file .OSC, select *File/Save Window As*.

For the setup, double click on the channel or on the Oscilloscope window or use the right hand mouse button and select *Modify Graph*.

The Windows gives for each channel the current value as well as the max/min value.

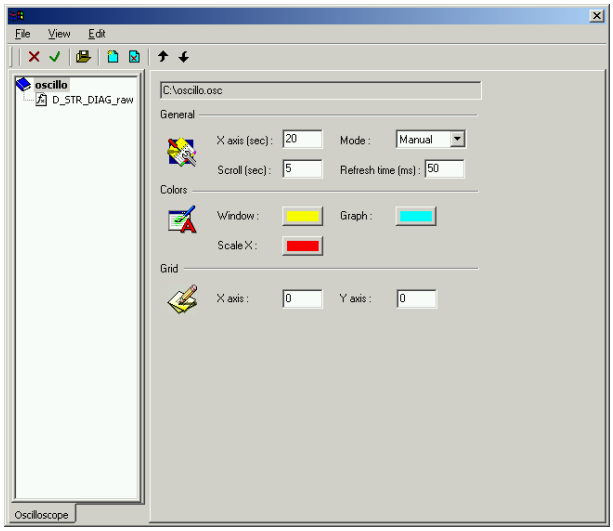


Figure 40 General Setup Window

X Axis: defines the oscilloscope Time/Div (min 2s, max 300s).

Scroll: defines the time to shift when graphs reach the right end of the window.

Mode: allows to show curves in Parallel, Overlay or in an user defined lay-out (Manual).

Refresh Time: data refresh time to be used when the oscilloscope window is active.

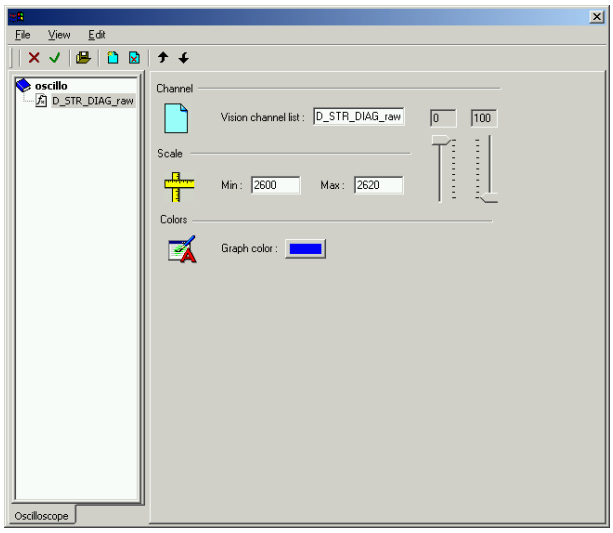


Figure 41 Channel Setup Window

The user may define a list of 16 channels to be displayed, other buttons allow to manage the list of channels.

Pressing the ADD button opens the Channel select window. User may select a channel in the channel list, then choose a color for the graph.

The scale Min/Max values take the channel "limits" found in channel list and may be modified. The Box Min/Max scale give the channel graph's size on screen in manual lay-out mode.

Link/Oscilloscope Link

LINK/OSCILLOSCOPE LINK

The *Link/Oscilloscope Link* function allows to start/stop the acquisition. When stopping Vision ask to save the data, user must then choose a name for the output .DTX file.

To activate the Oscilloscope link, the Device Start function (select *Link/Device Start*) must be active and an oscilloscope window must be open. (See *Link/Oscilloscope Link*)

Click on *File/Save Window As* or button to save the oscilloscope window without exiting from the acquisition mode.

View/Read Write

VIEW/READ WRITE/OPEN CLOSE READ WRITE

The Read/Write window allows you to edit certain variables accessible in the memory of the connected ECU. Addressing is performed by providing an address and a format. The value read appears in the *Current Value* field on the left. You may enter a new value in the *New Value* field on the right, if the ECU authorises writes.

You may move from one field to the other using the mouse or the Ctrl + ↑,↓,→,← keys. The active field includes two spin button. When you must choose a field, the cursor moves to the address field. Use the *Tab* key to switch between the address and the value field.

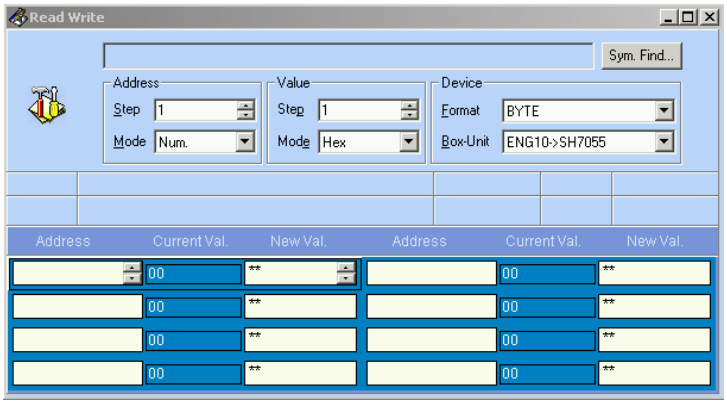


Figure 42 Channel Setup Window

If the window is closed, the addresses and values are erased. To temporarily close the window but keep the contents, you must iconize the window.

Creating a field

Select *Device Format* to modify the type of the variable to be read, sets the available types in *System/Option/Preferences/Windows/Dev. format enabled*.

You may change the default destination Box-Unit using the *Device Box-Unit* list. Enter an address in the *Address* field and confirm by pressing Enter. If the electronic device accepts the address, the value read is displayed in the *Current Value and New Value* fields. If the addressing is incorrect, the text "? *ADDRESS*" appears in the *New Value* field.

If the address field is empty the *New Value* field displays "**". If the address is correct but the electronic device does not return any data, *New Value* displays "NO-RX".

Once you have correctly established the channel, you may copy the selection to the empty field located immediately after the current field by pressing *Ctrl+Pg-Down*, then modify the address using the *Up/Down* arrows. Confirm the address with the *Enter* key.

By default, data is displayed in hexadecimal format. For FLOATX/FLOAT3 fields the data is displayed in scientific calculator mode. The hexadecimal values may be displayed in a decimal way using the *Val.Mode* box.

Changing a value

To change the value to be sent, select the *New value* field using the mouse, or use the *Tab* key to switch between the address and data fields. You may modify the value from the keyboard followed by the *Enter* key, or using by the modification keys (*Spin, Up-Down arrows, Pg-Up, Pg-Down*). In the latter case the value is sent at each modification, which is equivalent to co*ntinuous transmission*.

The *Up/Down* keys change the value by +/-1. The *Pg-Up* and *Pg-Down* keys and the *spin* keys modify the value by one step (*Step Val.*). You may change the step by selecting the *Step Val* field with the F3 function key, then modifying the value (decimal value) from the keyboard or with the *spin* buttons. Press *Enter* to return the cursor to the *New value* field.

Changing an address

You may change the address when the field is selected, either from the keyboard followed by the Enter key or by using the modification keys. In the latter case, the address is modified every time you press a key, which is equivalent to continuous transmission.

The *Up/Down* keys change the address to the next value (depending on the address mode for the processor used). Use the *Pg-Up/Pg-Down* and the *spin* keys to modify the address by +/-1 STEP (decimal value).

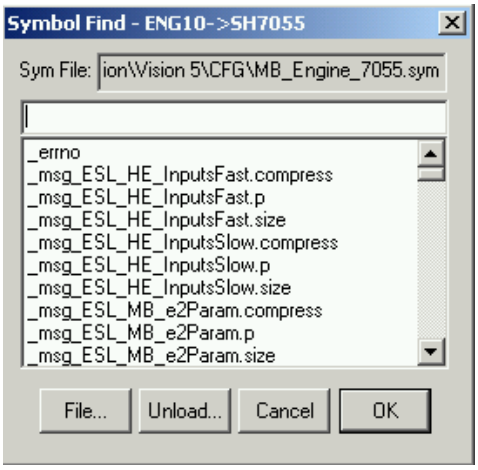
Read/Write window data file

All the addresses and values in the window may be saved to a file (*.*VRW*) using the *File/Save Window As* command. The *File/Open Window* command loads the window for the file selected. If you call this function while the RW window is active, the default file type is *.*VRW*; otherwise you must select the *.*VRW* extension in the list of file types.

When loaded, the window is restored to the size that was saved, and uses the saved contents of the address and value fields. Vision requests a confirmation before sending these values to the electronic device.

Selecting a *.SYM file

A *.SYM file allows you to select an address and a type of variable from a variable name. The *Sym Find* button opens the file selection panel if no file was loaded previously. You may enter the variable name from the keyboard or select a name from the list displayed by pressing the button to the right of the data entry field. When the list is displayed, press the first few letters of the name of the variable to access it directly. After selecting a name, press *Enter* to confirm your selection and transfer the address and the type to the current field. Press *Enter* again to send the request to the electronic device. The *File* button allows you to open another symbol file.



To filter the list of available variable names, it is possible to use the specific characters "?" (standing for "any character") and "*" (standing for "a string of characters", even an empty one).

If the *Symbolic Mode* flag, in the preferences, is activated (see *System/Options/Preferences/Windows*) the hexadecimal address is replaced by the variable's name. It is possible to toggle from the symbolic to the hexadecimal mode by using the *Addr.Mode* selection box.

The default .SYM file can be automatically looked for by Vision if the option *Auto search Sym file* is activated (see *System/Options/Preferences/Windows*). The name of the Sym file is sent by the ECU (it can be seen in the *Symbol File* field in the *Info/Unit Release* menu). Vision then looks for this file (with the .SYM extension) in the PC, starting with the path described in *System/Options/Directory path :Symbolic(.sym)* (or by default in the directory containing the .CFG file currently in use), and then in a sub-directory named after the ECU's software version (which can be seen in the *Release* field of the Info/Unit Release menu). If the file can't be found in the "*Release*" directory (or in the sub-directories within), Vision goes back one step up the directory, in the initial directory.

This allows to have a different symbol file associated with each ECU software version.

There are a few types of buttons that help the user:

SA= switch step address to address editor

SV= switch step value to value editor

MA= switch mode address

BU= Change the Box-Unit

F= change the Format

SY= load symbolic file

View/String List

VIEW/STRING LIST

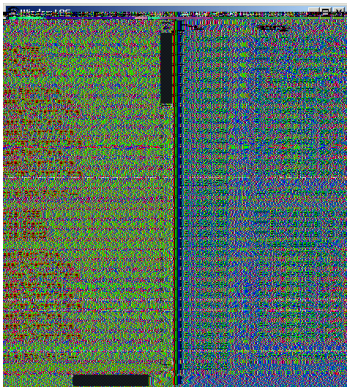
This window allows you to display character strings in ASCII format. These strings are read at any address, and may be programmed from the various microprocessors contained in the Box/unit list.

Use the *System/Options/String list* menu command.

View/Log Win

VIEW/LOGWIN

More detailed monitoring is available by calling the *LOG WIN* window from *View/LogWin*, or by pressing *Ctrl+L*. This window slows down the protocol, and should only be used for debugging purposes.



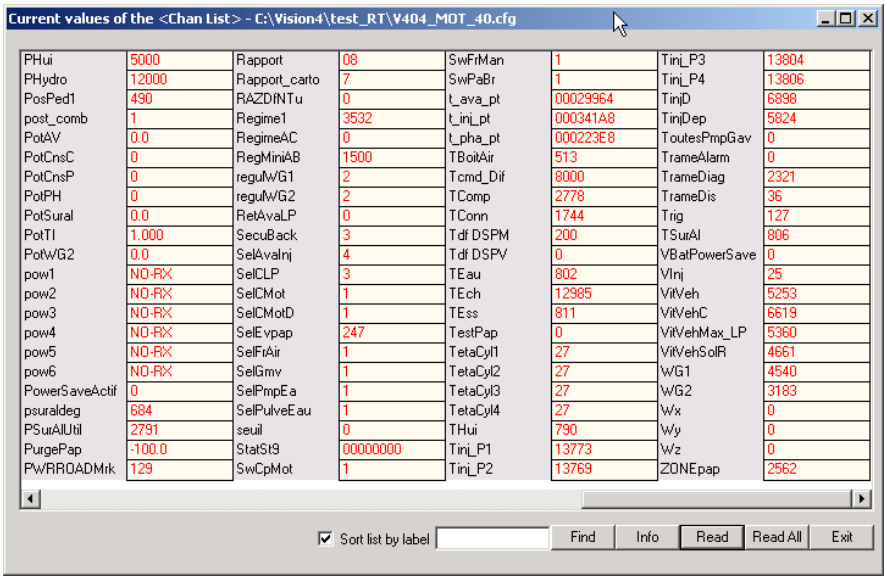
View/Current Values Channels

All channels window

VIEW/CURRENT VALUES CHANNELS

This window shows the values of all the channels from the Vision channel list.

Select *View/Current Values Channels*.



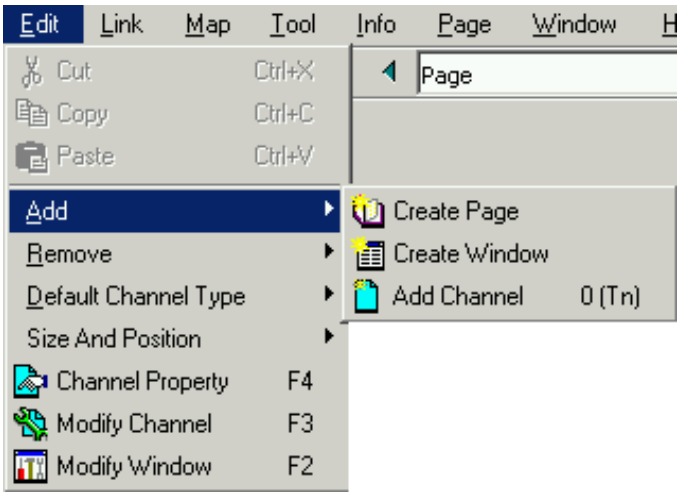
PHui	5000	Rapport	08	SwFrMan	1	Tinj_P3	13804
PHydro	12000	Rapport_carto	7	SwPaBr	1	Tinj_P4	13806
PosPed1	490	RAZDfNTu	0	t_ava_pt	00029964	TinjD	6898
post_comb	1	Regime1	3532	t_inj_pt	000341A8	TinjDep	5824
PotAV	0.0	RegimeAC	0	t_pha_pt	000223E8	ToutesPmpGav	0
PotCnsC	0	RegMiniAB	1500	TBoitAir	513	TrameAlarm	0
PotCnsP	0	regulWG1	2	Tcmd_Dif	8000	TrameDiag	2321
PotPH	0	regulWG2	2	TComp	2778	TrameDis	36
PotSural	0.0	RetAvaLP	0	TConn	1744	Trig	127
PotTI	1.000	SecuBack	3	Tdf DSPM	200	TSurAI	806
PotWG2	0.0	SelAvaInj	4	Tdf DSPV	0	VBatPowerSave	0
pow1	NO-RX	SelCLP	3	TEau	802	VInj	25
pow2	NO-RX	SelCMot	1	TEch	12985	VitVeh	5253
pow3	NO-RX	SelCMotD	1	TEss	811	VitVehC	6619
pow4	NO-RX	SelEvpap	247	TestPap	0	VitVehMax_LP	5360
pow5	NO-RX	SelFrAir	1	TetaCyl1	27	VitVehSolR	4661
pow6	NO-RX	SelGmv	1	TetaCyl2	27	WG1	4540
PowerSaveActif	0	SelPmpEa	1	TetaCyl3	27	WG2	3183
psuraldeg	684	SelPulveEau	1	TetaCyl4	27	Wx	0
PSurAlUtil	2791	seuil	0	THui	790	Wy	0
PurgePap	-100.0	StatSt9	00000000	Tinj_P1	13773	Wz	0
PWRROADMrk	129	SwCpMot	1	Tinj_P2	13769	ZONEpap	2562

All the channel values are read once. The user may then select a channel and use the "read" button to refresh the channel value, or use the "read all" button to update all the list.

MENU EDIT

EDIT/ADD

Edit/Add



Create Page

To create a new page, select *Edit/Add/Create Page* or the *New Page* icon in the *main* toolbar.

Create Window

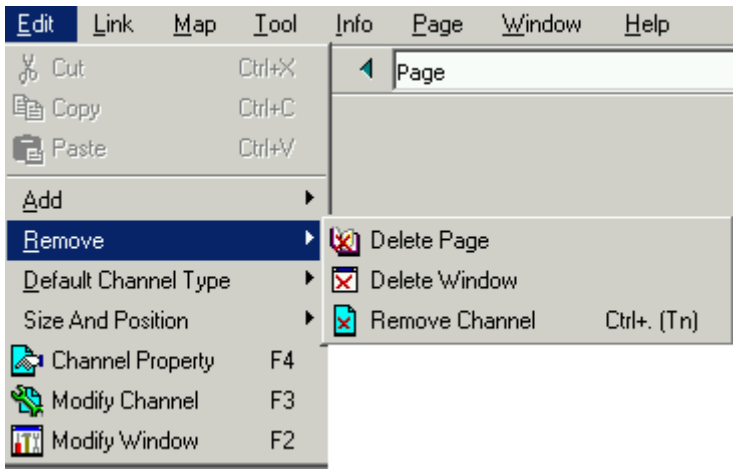
To create a new window, select *Edit/Add/Create Window* or the *New Window* icon in the main toolbar.

Add Channel

To add channel select *Edit/Add/Add Channel* or the *Add Channel* icon in the *Channel Editor* toolbar. You can insert channels in a window, only if you have loaded the .CLL file (see *System/Channel Library*) and created the *Vision Channel List* that define the various channel available to the operator (see *System/Channel List*). To insert a new channel in a window, open *Vision Channel List* and drag&drop one or more channels to a VISION window. The channel type may be defined before inserting it and the channel may be positioned in the window using the mouse. The *Vision Channel List* can remain open also while the link is ON, because run-time modifications of the layout are possible.

Edit/Remove

EDIT/REMOVE



Delete Page

To delete the selected page click *Edit/Remove/Delete Page*.

Delete Window

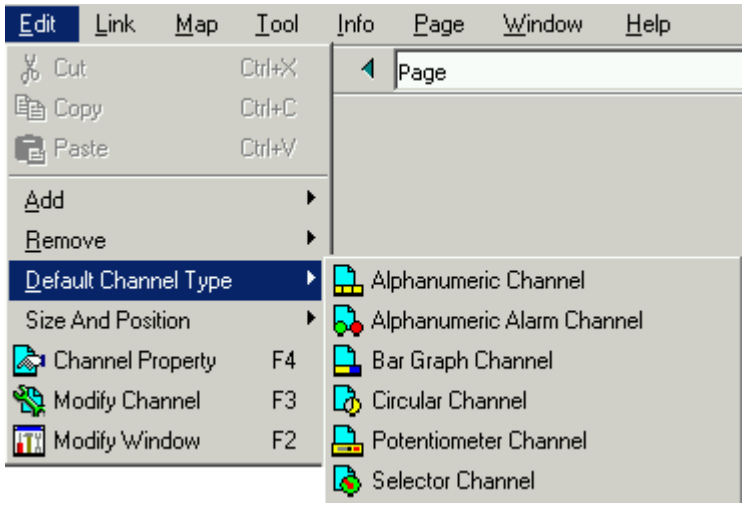
To delete the selected window click *Edit/Remove/Delete Window*.

Remove Channel

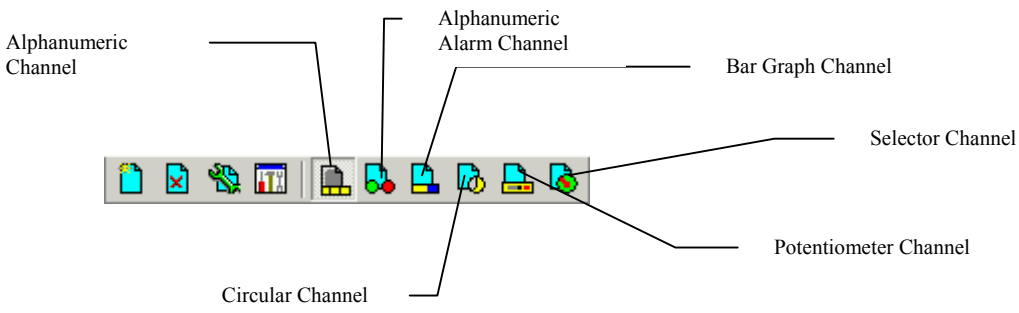
To remove the selected channel choose *Edit/Remove/Remove Channel* or the *Remove Channel* icon in the *Channel Editor* toolbar or click on the right hand mouse button and select *Remove Channel*.

Edit/Default Channel Type

EDIT/DEFAULT CHANNEL TYPE



It is possible choose the channel type which will be inserted by default in the window. The default channel type can be also select from the Channel Editor toolbar.



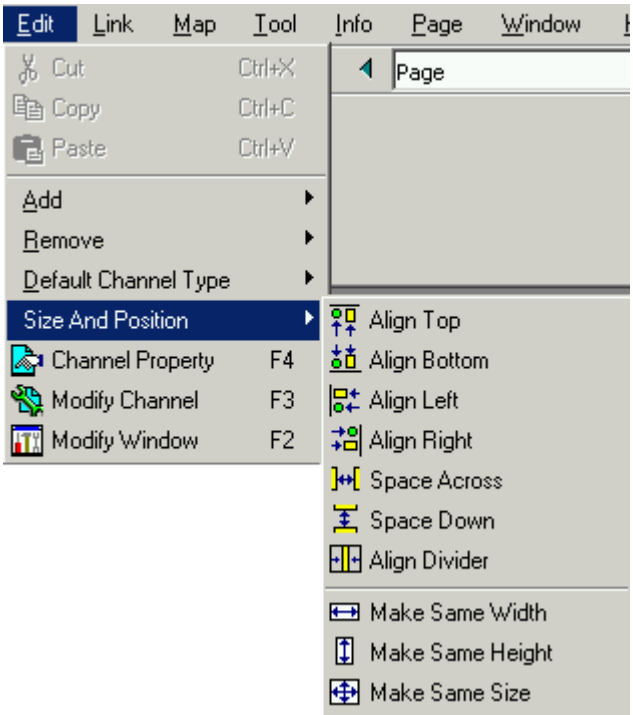
To modify the type of channel which is in a window, click on the right hand mouse button and select *Modify Channel Type*.

For more information see *Layout configuration tool*.

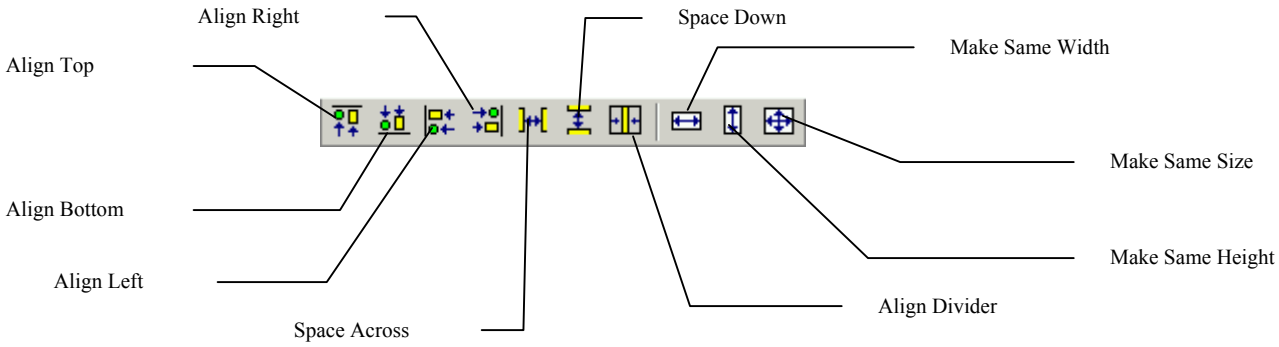
Edit/Size and Position

EDIT/SIZE AND POSITION

The commands are referred to two or more channels in the same window. To select the channels use the Ctrl key. Commands refer to the dominant channel.



Vision allows the user to use these commands selecting them also from the *Size and Position* toolbar.



ALIGN TOP Align the top edges of the selected channel with the domination channel

ALIGN BOTTOM Align the bottom edges of the selected channel with the domination channel

ALIGN LEFT Align the left edges of the selected channel with the domination channel

ALIGN RIGHT Align the right edges of the selected channel with the domination channel

SPACE ACROSS Set to zero the horizontal spaces between the selected channels

SPACE DOWN Set to zero the vertical spaces between the selected channels

ALIGN DIVIDER Align the selected channel dividers with the dominant channel

MAKE SAME WIDTH Resized the selected channel to have the same width as the dominant channel

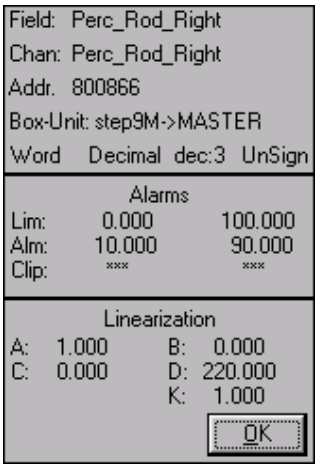
MAKE SAME HEIGHT Resized the selected channel to have the same height as the dominant channel

MAKE SAME SIZE Resized the selected channel to have the same size as the dominant channel

Edit/Channel Property

EDIT/CHANNEL PROPERTY

To display information on the channel, double-click on the field or select *Edit/Channel Property* or click on the right hand mouse button and select *Channel property*.



Edit/Modify channel

EDIT/MODIFY CHANNEL

To modify the channel properties select *Edit/Modify Channel* or the *Modify Channel* icon in the *Channel Editor* toolbar or click on the right hand mouse button and select *Modify Channel*. (See *Channel* section)

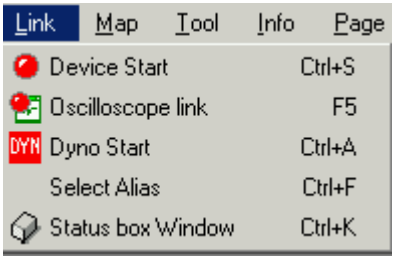
Edit/Modify Window

EDIT/MODIFY WINDOW

Edit/Modify Window

To modify the window properties select *Edit/Modify Window* or the *Modify Window* icon in the *Channel Editor* toolbar or click on the right hand mouse button and select *Modify Window*. (See *Window* section)

MENU LINK

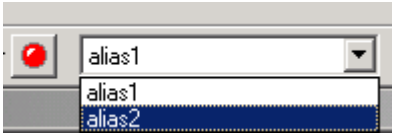


Link/Device Start

LINK/DEVICE START

Enabling the protocol with the electronic device

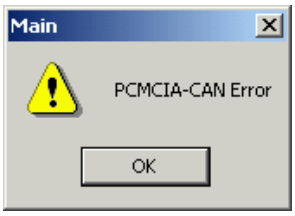
After having loaded a configuration, the user must select the destination *alias* in the combo box of the main toolbar or click on *Link/Select Alias* (if using an Ethernet or vector card). By default Vision initiates the protocol using the last alias used.



Then Vision attempts to start dialog with the electronic device if the connection is validated.

When the connection is off, the button is displayed in red; it becomes yellow when trying to connect to the boxes, and is green only if all boxes requested are connected. Communication is active by default unless defined otherwise in the *System/Options/Preferences*.

Communications are possible if the line port is configured correctly (*System file .LPS* and *Preference file .PRF*). If the settings are correct (Serial/CAN/ETH port, Stepx or MTP protocol, baudrate equivalent to that of the electronic device), and of course if the electronic device is connected and powered on, then the protocol starts. A warning window may appear giving some help about protocols errors. (e.g. if CAN ID are not correctly defined in the file .LPS for this PC-Number).



Link/Oscilloscope link

LINK/OSCILLOSCOPE LINK

To activate the Oscilloscope link, the Device Start function (select *Link/Device Start*) must be active and an oscilloscope window must be open.

The Oscilloscope Link function (select *Link/Oscilloscope Link*) allows to Start/Stop the acquisition. When stopping Vision asks to save the data; user must then choose a name for the output .DTX file.

Click on *File/Save Window As* or button to save the oscilloscope window.

Link/Potenz Start

LINK/POTENZ START

Enabling the connection with the external potentiometer desk.

The external "Potentiometer desk" device is linked to a specific serial port on the PC or on the same as the ECU.

The desk is used to generate values by turning the potentiometers. Values are sent to the *New Value* field (on the right) in a potentiometer window. This is equivalent to entering the values from the keyboard, but is much faster and easier. If the "continuous write" option is chosen, the potentiometer data is sent continually to the electronic device.

Data is received from the potentiometer desk in the form of bytes. They may be converted before being sent to the electronic device in order to give them a scale and a range as required.

If the desk is declared as present (in the *System/Options/Preferences/Protocol/Desk* enabled menu), you may optionally enable serial communications. The icon changes shape depending on the state of this link. By default communications are *Off*. You may enable them automatically from the *preferences* file, or manually using one of the following commands:

Link/ Potenz Start or icon.

Link/Pot Desk Tx

LINK/POTDESK TX

Pot desk, Write continuous and Read only mode

When adjusting the potentiometers, you may need to operate in read only mode. In this mode, data is displayed but is not sent to the electronic device. In this case the Tx button is displayed in red. Transmission is *Off* by default. You may activate it from the *preferences* file or manually using one of the following commands:

Link/PotDesk TX or button.

Link/Dyno Start

LINK/DYNO START

Enabling communications with the dynamometric bench

Vision can transfer information to the data acquisition system of the dynamometric bench. Simply specify a certain number of channels to be sent to the bench. (See *System/Options/ASAP3*). The default serial port (defined in *System/Options/ASAP3*) can be modified in the preferences file (VISION menu: *System/Options/Preferences/Protocol*).

When the program loads the configuration, if the *System/Options/ASAP3* flag is activated, it verifies the presence of the channels requested, then creates the connection.

When starting communications, Vision receives a channel request from the dynamometric bench with its own channel denomination. Vision translates these names into channel names present in the channel list. It sends the converted values to the bench, then switches to the "refresh" phase: data is sent at each request from the dynamometric bench.

In this case the *Dyno* button is displayed in red. By default transmission is *Off*. You may activate it automatically from the preferences file, or manually using one of the following commands *Link/Dyno Start*.

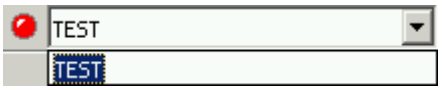
Note: the negotiation procedure between Vision and the dynamometric bench is fairly long. You may monitor this phase using the messages in the status bar.

Link/Select Alias

LINK/SELECT ALIAS

Changing the destination system for Ethernet connection

In Ethernet multi-system environment it's possible to change the destination alias name.



To avoid errors, this change may be protected with password (see *System/Options/Preferences/Protocol*).

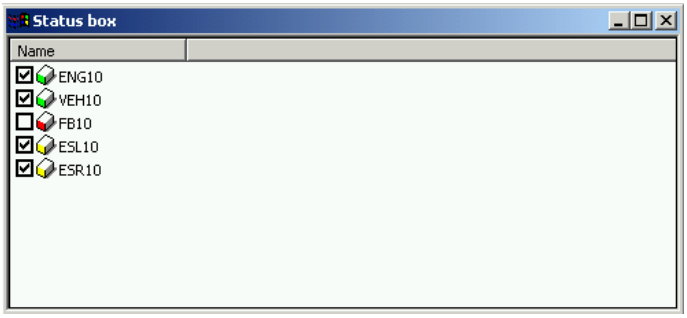
Link/Status box Window

Checking the connection status

LINK/STATUS BOX WINDOW

In multibox environment it's possible to quickly check the connection status of each box. Icons are red when Vision stops the protocol, yellow when trying to connect and green when connected.

All boxes defined in the system file .LPS are in the Status Box window (both with the true flag and with the false flag).



The boxes are red if in the system file .LPS the flag Vision_enable is false.

The boxes are yellow if in the system file .LPS the flag Vision_enable is true and there is a problem with the link. In this case the button is displayed in yellow; it becomes green when the yellow boxes are disabled.

MENU MAP

Map/E2 files (.TAB)

Using E2PROMs

MAP/E2 FILES (.TAB)

Vision can read and write the full contents of the electronic device's E2PROM to and from *.*TAB* files.

Vision can automatically verify the correct programming of the E2PROM by rereading the data for comparison. Select the *Write file E2 verify* option in the *System/Options/Preferences/PTA E2*.

Use the following command *Map/E2 files (.TAB)* to call the menu.

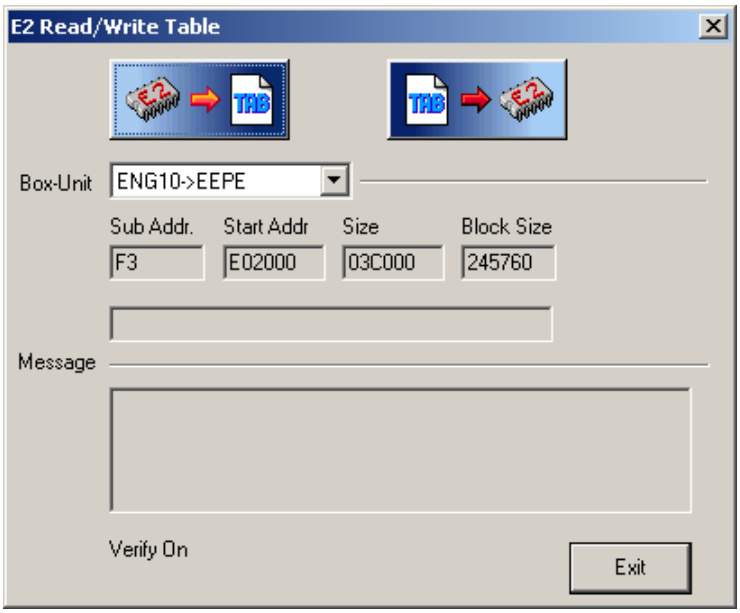


Figure 19 E2 Read/Write to and from

Select the Box-Unit to work with, then perform a *Save*, *Load* operation. Activate icon with mouse or select with TAB then space-bar.

: Save data from E2PROM to file .TAB

: Load data from file .TAB to E2PROM

The *Save* and *Load* icons call file selection panels to create or send a .TAB file, after confirmation. By default VISION treats only file .TAB with specific extension: name_Box_Unit.TAB

Examples: E2PROM table "tst3241" from Box "ENG10" Unit "EEPE" will be saved under the name tst3241_ENG10_EEPE.TAB; at the opening of the selection panel for a *Load* operation, VISION will show only files with extension _ENG10_EEPE.TAB.

The Sub Addr, Start Addr., Size and Block Size give information about the E2PROM access.

These infos are given by the electronic device to VISION.

Sub Addr.	Destination subaddress for the data transfer.
Start Addr (hex)	Base address in the ECU mapping.
Size (hex)	E2PROM image .TAB size to be transferred. The maximum size for .TAB file is 256 Kbyte (Size 0x40000).
Block Size (dec) STEPx: E2_Page_Size MTP: E2_Size	STEPx protocol: The system file .LPS sets the *E2_Page_Size* parameter that indicates the size of the E2PROM page for fast writes (block writes). This depends on the hardware of the electronic device, and is equal to either 32,64 or 128 (default is 64). Improper configuration of this parameter may prevent writing to the E2PROM. MTP protocol: The E2 page size is known from the electronic device and such parameter has not to be known by VISION. VISION works on a single block equal to size.

Map/Open PTA Window

MAP/OPEN PTA WINDOW

Editing map parameters

Vision allows you to work on partial areas of memory. You may receive, modify, send, compare or print areas in the electronic device, located either sequentially or separately in memory. Vision allows you to edit these areas in an easily readable format (the ***.PTA*** file) using an information file that contains the scale and display coefficients along with the data itself. The *.PTA file may act with the electronic device or with an E2PROM image (*.TAB file).

Vision can verify automatically that the data has been written correctly by rereading the destination area and comparing. Select the *Write pta file verify* option in the *System/Options/Preferences/PTA E2*.

Vision displays a series of three screens for the various operations:

File list (first level): includes functions to manipulate files (create, modify, send, receive, etc).

Table list (second level): includes functions concerning one file, or a copy, and the respective tables.

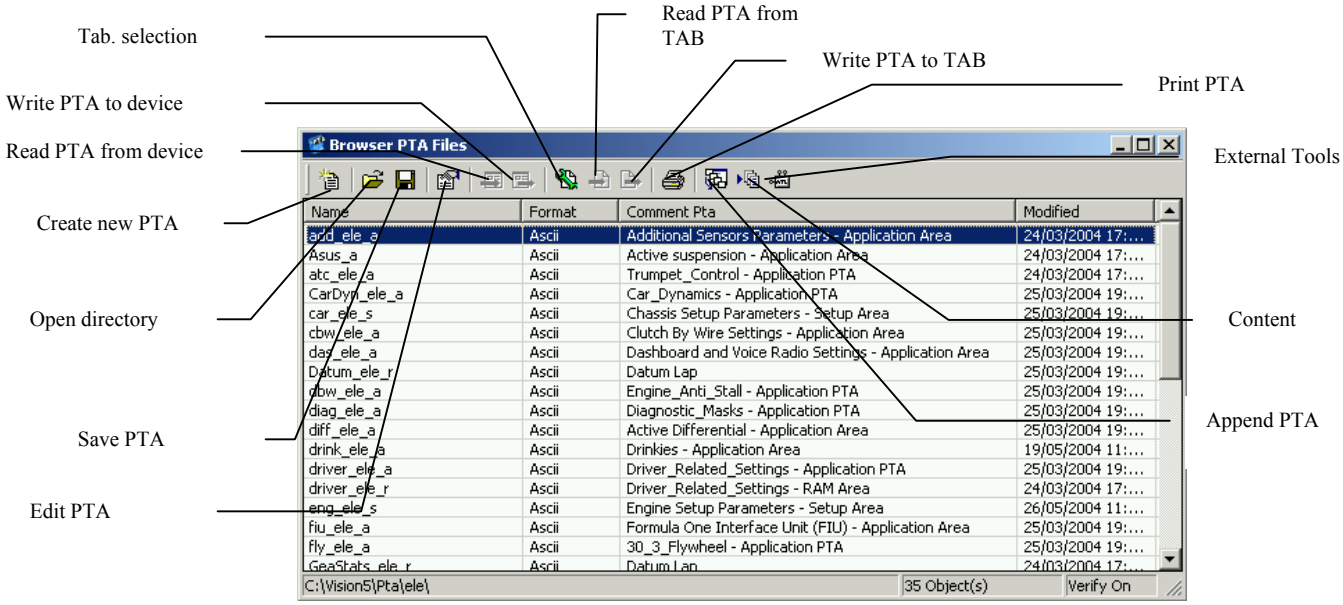
Edit tables (third level): includes an alphanumeric window and a graphics window (2D and 3D) for editing the numerical values and table parameters.

Press the *Esc* key to return to the previous level. The *Table list* screen has its own menu, temporarily replacing Vision's main menu.

You may create or modify *.*PTA* files with an external editor if you prefer. Make sure you follow the rules concerning the PTA file format, and remember that only the built-in editor guarantees coherent, controlled data.

File list

Use *Map/Open PTA Window* command to call the .PTA Map editor.



Vision displays the list of **.PTA* files in the directory specified in the top part of the *System/Options/Directory path/Table (.pta)* window. The default directory can be changed by using the menu, and afterwards, the Map window will always open up in the latest directory used.

Definition: a .PTA file contains an indefinite number of elementary tables. Each of the elementary tables has various properties depending on its requirements: size, type, format, destination, etc. These tables may be modified, read or written from or to an electronic device. Tables are sent in blocks when the file is closed, or table by table when the file is open (edit).

A *header comment* may be associated with each file (it is not sent to the electronic device). This comment is inserted in the header. The first line of the comment is displayed next to the name in the file list window.

You may automatically save the file name in the file itself in order to send it to the electronic device. The following mechanism is used: if the first table in the file is an ASCII file, Vision writes the file name in the table. Only the file name is written (without the .PTA extension), and using the number of characters authorized by the properties of the table. If the Enable flag is set in the table properties, the table will be sent to the electronic device.

When a **.Pta* file is read or written to disk (*Open*, *Save As*), Vision performs a congruency test on the data:

- Tables must not overlap in memory: the start address of one table cannot be located in between the start and end address of another table.
- All the breakpoint tables must have constantly increasing or decreasing values (or equal values).
- The *size* of the breakpoint arrays must be equal to those of the table that point to it.
- Furthermore, the *size* of the tables and breakpoint arrays may be compared to the coherency values (X-coherency) given in a table of size 1.

If incoherent data is found, Vision displays a warning message.

If you choose a file name that already exists when saving the file, Vision asks you to conform. It keeps a copy of the old file with the .PTB extension.

The lower part of the window displays information concerning the current operating mode as well as information on messages.

Extra parameters:

Verify On/Off: this function is used to activate or not the verification during tables writing. This doubles the transfer time (see *System/Options/Preferences/PTA E2/Write pta file verify*).

Managing files

Open directory: allows you to select the directory where the system will start looking for files, starting with the one defined in *System/Options/Directory path*. Select a file using the mouse or the arrow keys. To select more than one file, press the *Shift* key (to select a consecutive series of files) and continue pressing it while you move with the arrow keys or the mouse. You may also select files by holding down the *Ctrl* key while moving with the mouse or the arrow keys (to select files in different parts of the list). See the standard Window s® functions.

Write PTA to device (*): sends the tables of the selected files to the electronic device. (Each table must have its "Enable" flag set in the table properties). This transmission is verified by re-reading the data if this option is selected; see the *Verify on/off* command in *Preferences*. The transmission status is displayed throughout the transmission in the rectangle below the file list. When sending or receiving tables containing more than one item, a progress indicator is displayed in the foreground.

Read PTA from device (*): similar to the *Write* command. Receives data from the electronic device and transfers it to the files selected and to the tables

authorized for transmission (see the "Enable" flag defined in the properties of each table). The reception status is displayed throughout the transfer in the rectangle below the file list.

Write PTA to TAB: writing of .PTA files into the selected .TAB file. More than one file can be selected (with the standard Windows *Shift* and *Ctrl* keys while clicking with the mouse).

Read PTA from TAB: the data are read from the .TAB file and written in the selected .PTA files.

The Box-Unit selection list allows to choose which tables are concerned during read/write operations from/to the selected TAB file to/from selected PTA file(s). If Vision finds in a PTA some tables not belonging to the selected Box-unit, then it will ask to IGNORE and continue or to abort the operation.

Create new PTA: creates a new, empty *.PTA file that will subsequently be filled either with new tables or with tables copied from another *.PTA file.

(*) If some tables found in a PTA belong to a Box-unit unknown or not connected, then Vision will ask to SKIP and continue or to CANCEL the operation.

After a READ operation Vision proposes to save the file under the same name, with confirmation. The saving format (ASCII or binary) is defined in *System/Options/Preferences/PTA E2/Write in binary format*. This choice can be modified when saving the file by modifying the "Save as type field" (see image below).

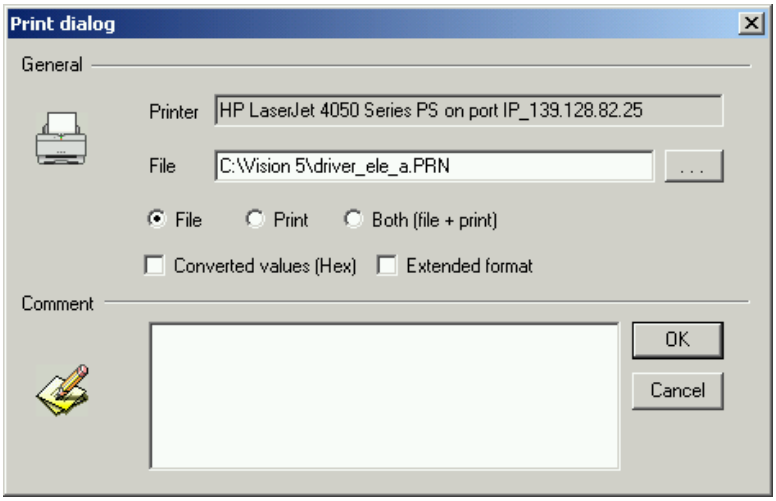
Edit PTA: opens the selected file and moves to the second level (*table list*). This is equivalent to double-clicking on the file name, or pressing *Enter*.

Print PTA: Opens a configuration window for sending the contents of the selected files to the printer or to a disk file. Select the *Converted values (Hex)* option to print the table values in hexadecimal or decimal (converted) format. You may also insert comments that will be added to the file header. The window displays the selected printer. The following screens that follow are standard Windows® printer configuration screens.

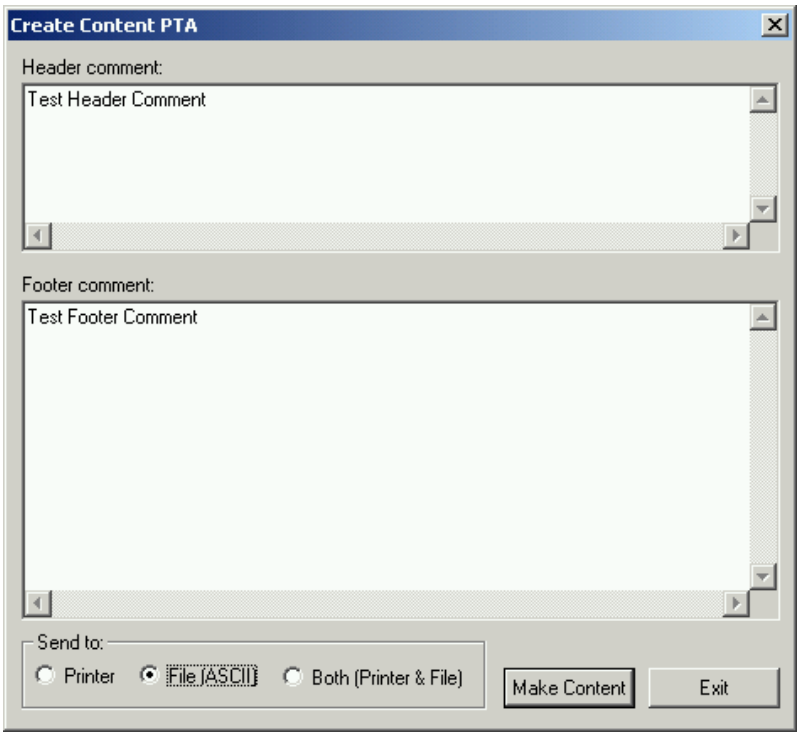
The *Preferences*: *Write Floatx as Hex on file* parameter writes FLOATX data in PTA files in the same hexadecimal notation as in the electronic device, thereby avoiding loss of precision due to scientific notation.

If necessary the values are distributed over several lines depending on the page size (defined in the Windows® Printer Setup or in the *Printer/configuration* menu command). The first line displays the values of the arrays of the column break points or, if they do not exist, the indices between parentheses. The values of the break points for lines appear between square brackets, and the break points of the pages (the Z axis) appear between curly brackets.

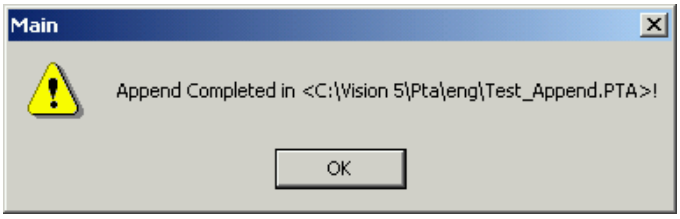
The "*Extended format*" option enables to print the file with all the properties and parameters of each table (which is of course less clear than the normal mode).



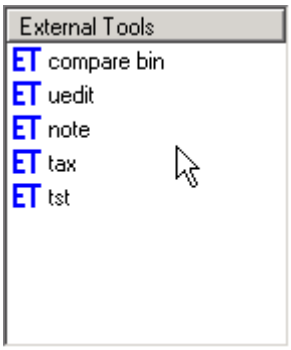
Content: this menu enables to print a map in a compressed format, similar to the table list. Comments can be added at the beginning and at the end of the report. Tables with 2 values or more appear in a reduced form, unless otherwise specified in the table properties (*Content option*). To create the report, click on the "*Make content*" button.



Append PTA: this allows to append a selection of PTA files in a single one.



External Tools: this allows to select some PTA files then call external tools giving the PTA names as parameters. External tools call syntax must be defined using the menu *Tools/External Tools*.



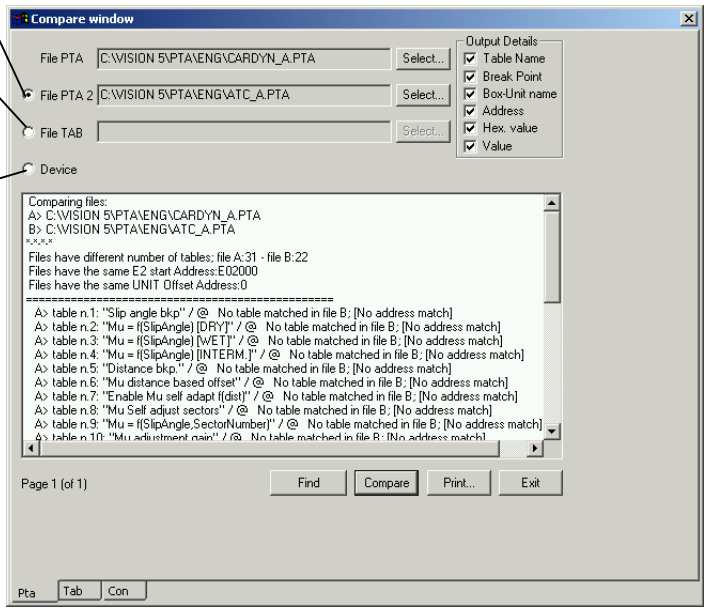
Map/Compare

Compare/Pta

Compare two PTA

Compare a PTA and a TAB

Compare a PTA and the electronic device



MAP/COMPARE/PTA

Select *Map/Compare/Pta* to compare two *.PTA files, a *.PTA file and a *.TAB file or a *.PTA file and the electronic device. Both files to compare have to be selected before clicking on the *Compare* button.

FilePTA/File PTA 2: compare 2 .PTA files. To start the comparison, click the *Compare* button.

File PTA/File TAB: to compare a .PTA file to a .TAB file, select the "*File TAB*" option, and then click the *Compare* button.

File PTA/Device: select the "*Device*" option and press the *Compare* button.

Comparisons are made table by table by uniting the tables using the parameters. If no correspondence is found, the program displays the reason. Tables correspond if they are equal in the following order:

address, ECU, dimensions (X,Y,Z), format, conversion parameters;

the *label* field is ignored.

The results of the comparison are displayed in the output window; you may subsequently transfer them to the disk or the printer (*Print* button). The *Find* button moves to the next difference. To exit the comparison environment, press the *Esc* key or click on the *Exit* button. If the list of messages is long, Vision divides it into pages; searches are only performed in the current page. The comparison result is more or less detailed depending on the options selected in *Output Details*.

Compare Tab

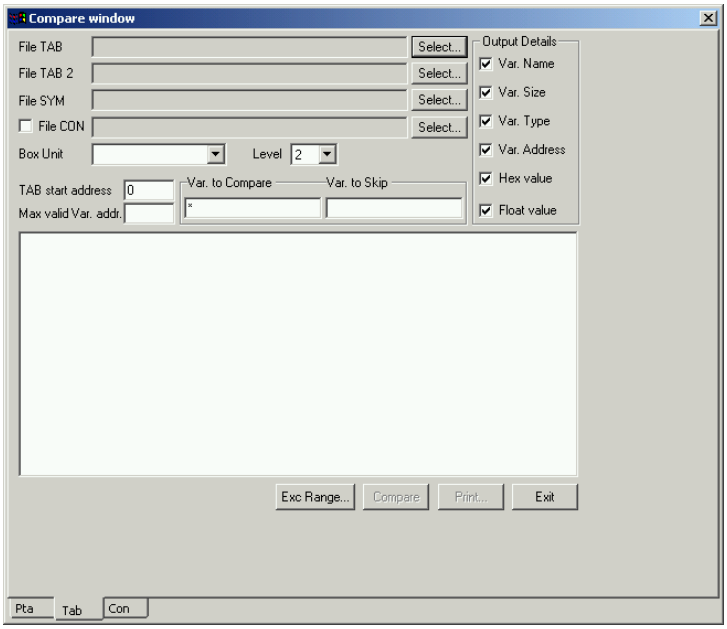
MAP/COMPARE/TAB

Select *Map/Compare /Tab* to open the .TAB files comparison menu. It is necessary select the first .TAB file (File TAB), the second .TAB file (File TAB 2), and the .SYM file (containing the information about the .TAB files content).

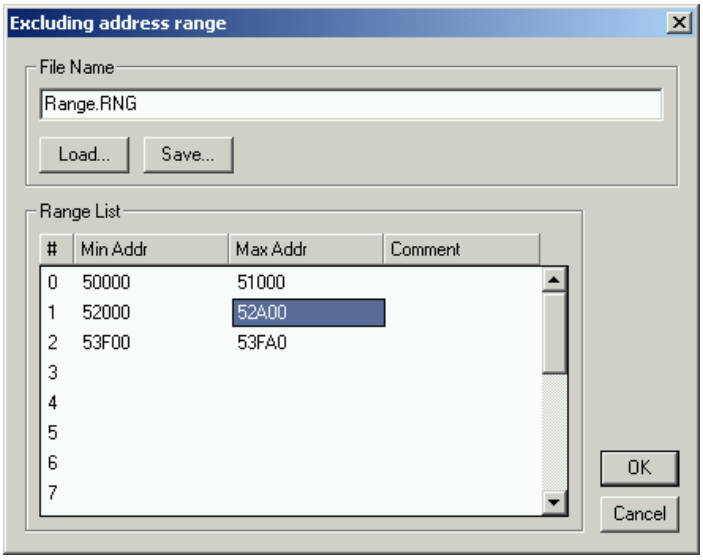
To narrow down the search to some tables only, it is possible to filter the comparison by defining an address zone and restricting the search to tables with a specific name, excluding others. For this name filtering, the "*" character (standing for "any character chain") can be used instead of the beginning, middle or end of the tables' names.

The search results can be displayed with more or less detail depending on the *Output Details* flags selected.

You can also use a "content" .CON file as reference for the names in the result window. To work correctly it's necessary that SYM and CON files are coherent (see menu *Map/Compare/Con*)



The *Exclude Range* menu enables to create or load a .RNG file containing the address zones skipped during the search.



Compare Con

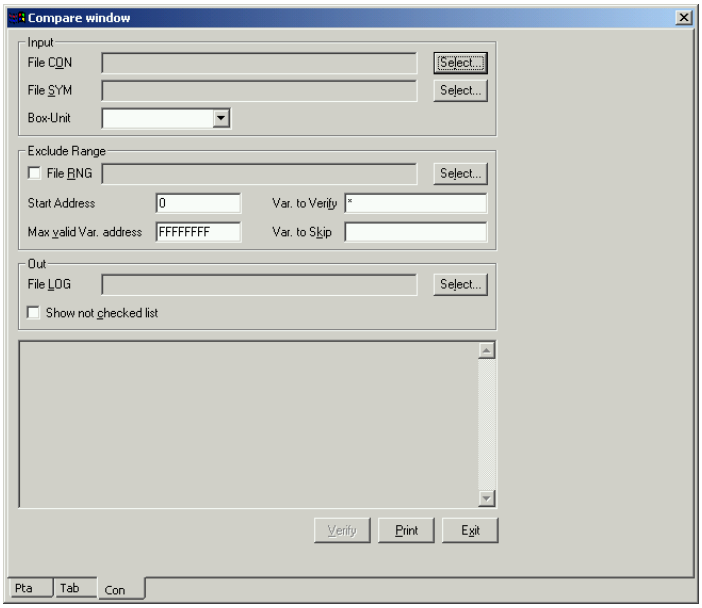
MAP/COMPARE/CON

Check Content allows to compare a table list from a CON file (created with the "Make content" function), with a table list from a SYM file.

Vision checks for table known in the SYM file, and not present in the CON file, and vice/versa. It also checks for duplicate tables with the same address and tables at same address but with a different name.

The user selects the CON file, the SYM file, and the box-unit destination to be checked. User must also give the valid address range and the valid names (* for all) to be checked then strike "Verify".

The result is shown in the window, saved in a file LOG and may be printed.



Map Editor (*.PTA)

Table list

A .PTA file contains tables of values that can be modified, displayed and transmitted to the ECU (or read in it).

Each table in the .PTA file contains a bloc of data (with consecutive addresses) with a specific start address in the ECU. Each table has associated properties, defining all the parameters regarding these data (comments can be added for clarity).

A .PTA file consists of a list of tables and/or group of tables with which various operations can be done (*Transmit, Receive, Copy, Cut, Paste, Delete).*

Empty tables can be inserted in the list, to make it clearer.

A .PTA file can be saved in ASCII format (for external applications).

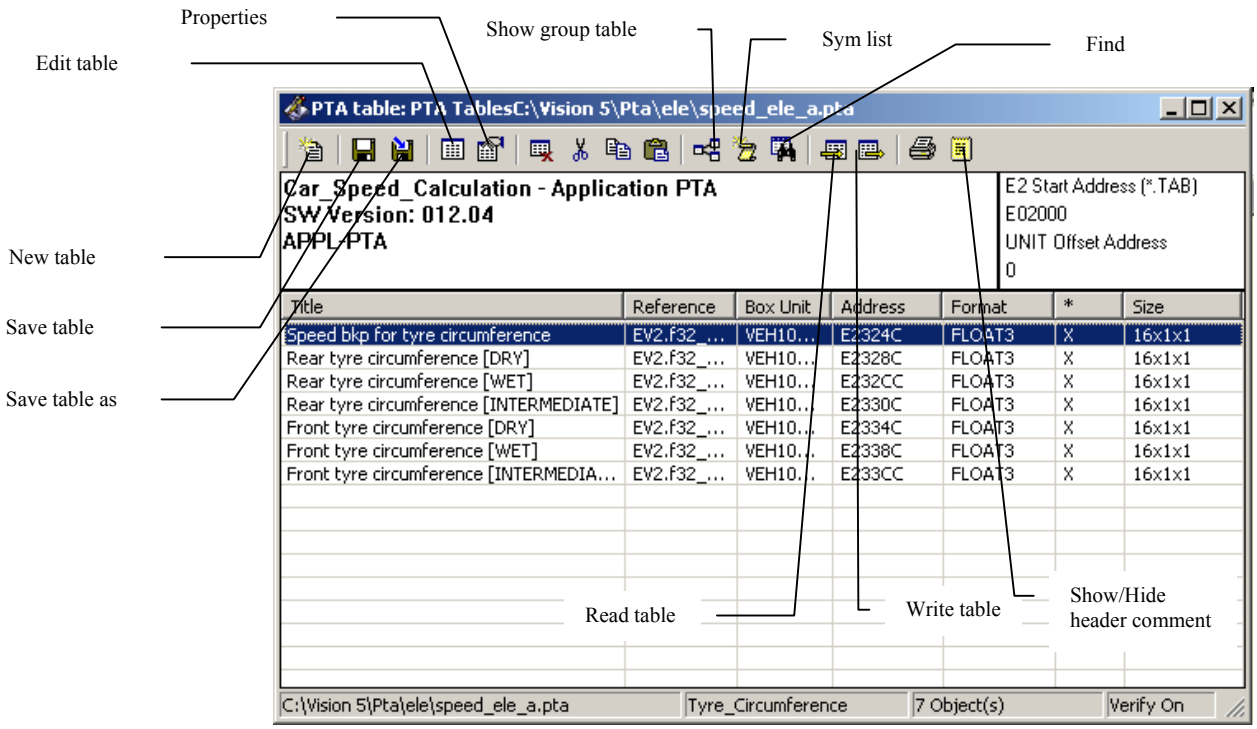
It can also be saved in an encrypted binary format (higher confidentiality and transfer rate).

Users with JUNIOR licences can only access files for their own specific application.

The default saving format (binary/ASCII) can be set in the preference file (PTA/E2 zone).

This choice can be modified when saving the file (with "save as").

The values in the tables can be transferred from/to other Windows applications by using the Copy/Paste command while editing them.



This screen is displayed after having activated the Edit command on the name of a file selected in the list. It displays the list of tables contained in the file. You may select several tables (using standard Windows® commands) which the commands will reference. The information in each table is displayed in the following order in the window:

Name - Reference (name) - ECU - Address - Format - Authorization - Size/Value

The list also includes the names of the groups which can be opened with the usual commands (double-click, "Enter" or "Edit").

New table creates a new table and displays the properties window.

The *Save*, *Save A*s command saves the entire contents of the current file (*Save*) or saves it with another file name (*Save As*).

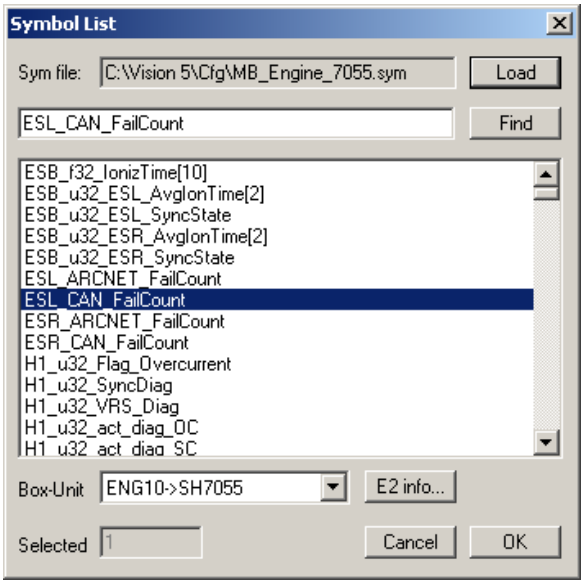
The file can be saved in two different formats: ASCII to use it with other editors (Excel,…) or BINARY which is quicker with Vision. The default format is defined in the file *System/Options/Preferences/PTA E2/Write in binary format*. Junior licences don't have access to the ASCII format.

Edit opens the edit window to modify the data in the selected table. On a group, opens the group list. (See paragraph Table properties).

Properties loads the current table or group properties. Identical to function key F4. (See paragraph Table properties).

The option *Show group tables* displays, for each group, both the group name and, underneath, all the tables it contains.

The *Sym List* command allows to create tables taking information from a SYM file (name, address, type, size). See below:



The user must load a SYM file, select for which Box-unit the tables are created, then select the required labels and strike OK.

The *Find* option enables to search the title/reference fields for a specified chain of characters.

The *Read* command receives data from the electronic device for the selected AND authorised tables. Identical to function key F6.

The Write command sends data to the electronic device from the selected AND authorised tables. Identical to function key F7.

Print prints only the selected tables.

Copy copies the selected table(s).

Cut moves the selected table(s).

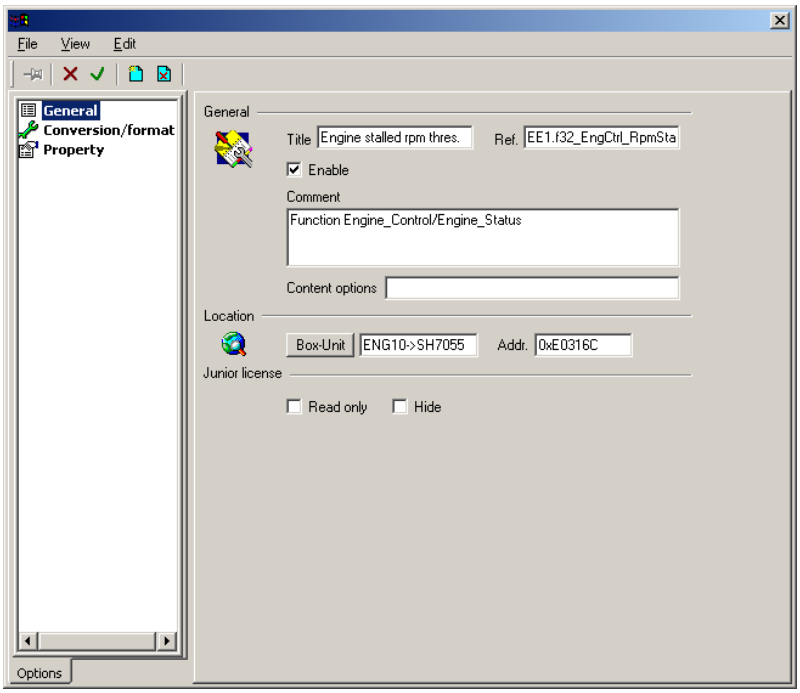
Paste pastes the moved or copied table(s).

Del deletes the selected table(s). When applied to a group, this command erases the group and the tables it contains (asking for confirmation first).

To just delete a group, but not the tables it contains, select it and with the menu table/properties, suppress the "Group" flag. And then delete this empty table.

Table properties

General



Title: identifies the table's user name. All the tables' names must be different within a .PTA file.

Ref.: identifies the table's software name. Must also be a unique name within the .PTA file.

Enable: enables all write functions to the electronic device, and congruency tests. Tables that are not enabled are not included in any **send** or **receive** operations.

Content option: this field is used with the ***Content*** function. The **+WM** option forces the printing of all the values in the table. The text that follows appears in the "notes" column (in the .CON file). And at the end can be added the "@" character followed by a text which will be used as a title for the table.
Example : // +WM *table* f(RPM, throttle) @ Spark Advance Map

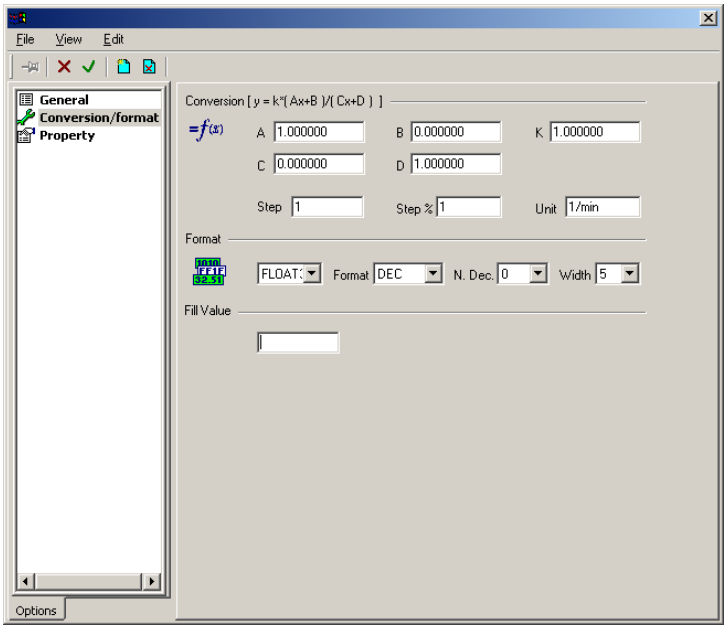
Box-Unit: name of the Box-Unit destination of the table.

Address: absolute address of the table. Must be written in hexadecimal format (the 0x prefix is optional).

Read Only: forbids a user with a JUNIOR licence to modify that table (display and transmission to the ECU are still possible).

Hide: hides the table from a JUNIOR user (the table is still sent when the whole .PTA file is transmitted).

Conversion/format



A, B, C, D, K: value of the parameters used to scale the table using the following formula:

y = ((x * A+B)/(x * C+D))*K

(where **x** represents the value in the electronic device).

The A,B,C,D,K parameters may refer to another table in the file.

Step: Value of the additive step.

Step %: value of the multiplicative step as a percent.

Unit: measurement unit.

Format: data format in the electronic device. Available formats are: *BYTE, SBYTE, WORD, SWORD, DWORD, SDWORD, FLOATX, FLOAT3*.

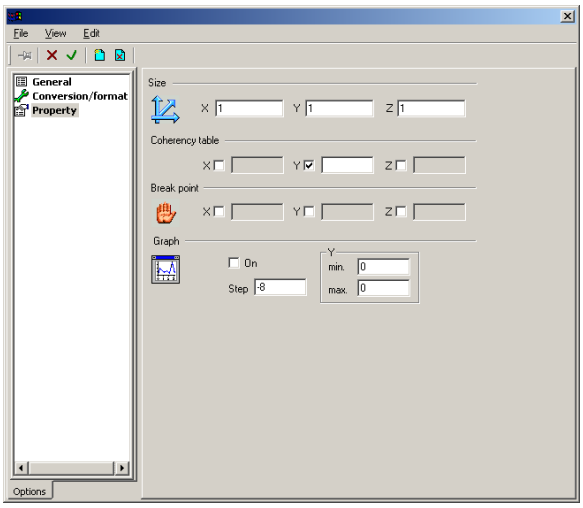
Format: output format for the edit window: *Decimal, Float, Hex*, *ASCII*.

n.Dec: number of digits after the decimal place displayed in the decimal output format.

Width: field width including the sign, the decimal point and the digits.

Fill Value: value used to fill the map when it is created.

Property



Size x, y, z: dimensions of the table along three axes. The maximum dimension of the X-axis is of 256 cells. The maximum overall dimension of the table is 163884 cells (X*Y*Z).

Size coherency tables: name of one of the tables of the current file. The dimensions of this table are 1,1,1; it contains a value that must be equivalent to the dimension of the table (for the coherency test during the file read/write phase).

Break point: allows you to select another table as an array of break points for the various axes (x,y,z). The names displayed are defined in the reference field of each table. You must make sure that the properties of this array are compatible with the table in question. In any case the editor looks for and corrects any incoherence.

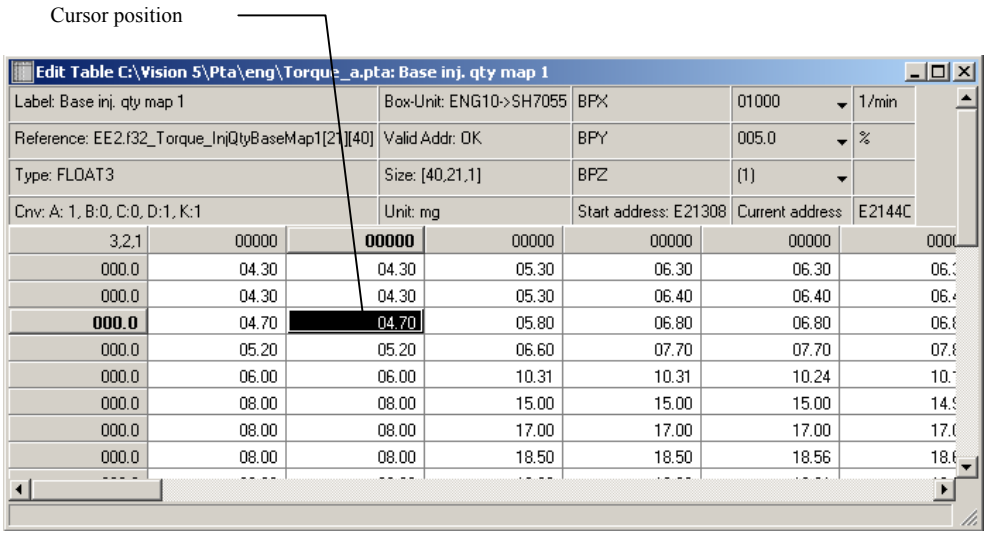
On: check this box to display the 2D graphics window when editing starts.

Y: Min Max: 2D graphics window: scale of the Y axis. If the values are equal, the scale is automatic (in converted units).

Step (+/-Y): if > 0 = step between the divisions of the Y axis (converted unit).

if < 0 = number of divisions of the Y axis.

Editor, Alphanumeric Window



You may access the general Vision commands from the PTA edit window. You may use the window in a generic fashion just like the other windows, with its own title bar and function keys.

The values in the table are displayed in the alphanumeric window, organized in rows and columns. If the table has three-dimensions, you may change the data displayed along the Z axis. If the table is too large to be displayed in a single screen, two scroll bars are displayed allowing you to move around the table. The intersection of the indices indicates the work point.

The reference values for the axes are displayed at the top left. These are either the break points if they have been defined, or increasing numbers between parentheses where (1),(1) represents the cell at the top left.

General information on the table is displayed above the table to the left, and operational information is displayed on the right. Use *Menu/Edit comment* to insert a comment for each line of the table.

To display a one-dimensional graphical image of the current row or column, use the *Map/Graph mode* menu command or *Ctrl-G*.

Use the menu bar or the hot keys to manipulate single values or a set of values The *Step-Control* (right button click on a value in the table) can be helpful.

You may display the table properties panel by pressing *F4* or by double-clicking on the general information.

Map/Data Interpolation

MAP/DATA INTERPOLATION

It performs a linear interpolation on the selected values. The intermediate values are updated using a row, column or block interpolation. Row interpolation uses the values of the first and last line; and Column interpolation uses the values of the first and last column.

Map/Read Table

MAP/READ TABLE

Read table: reads data from the electronic device at the table's absolute address. The system requests confirmation before reading. This key is disabled if there is no communication with box or if the table transmission is not enabled (see *properties, enable flag).*

Map/Write Table

MAP/WRITE TABLE

Write table: writes data to the electronic device at the table's absolute address. The system requests confirmation before writing. This key is disabled if there is no communication with the box or if the table transmission is not enabled (see *properties, enable flag*).

Map/Show/Hide Info

MAP/SHOW/HIDE INFO

Info: displays information about the current field:

- Original value.
- Value before the most recent modification.
- Difference between the 2 values.
- Percent difference between the values.

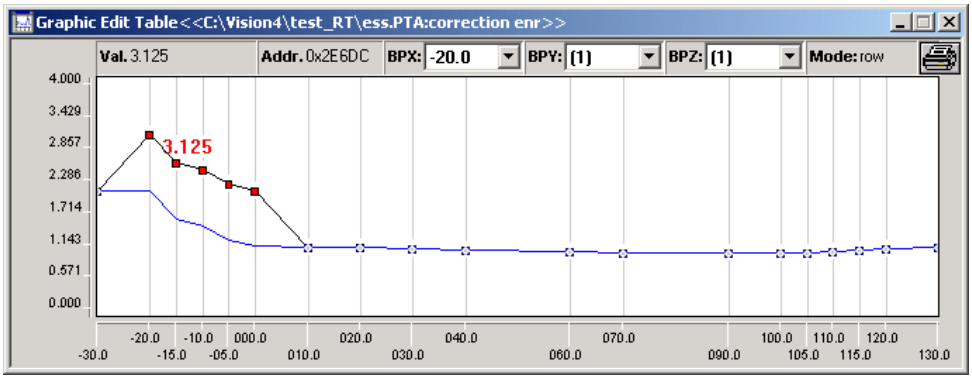
Map/Graph mode 2D

Graphics mode 2D

MAP/GRAPH MODE 2D

You may display the data from one row or on column graphically. The numerical table and the graph are linked. By default the graph is not activated.

For two-dimensional tables, if one row or column is not selected, the program prompts you to choose either a row or column to plot.



Values that are modified change colour at the same time in both display windows. You may perform the same operations in both modes. Selecting all the points in a graphics window is similar to a selection in the numerical window.

Some operations are more complete in graphics mode: when a selected zone is moved, the segment's form is maintained. If one of the points on the segment becomes saturated, any change that attempts to modify the segment's form is prohibited.

A "printer" icon allows to print the current graph.

Map/Compare 2D table

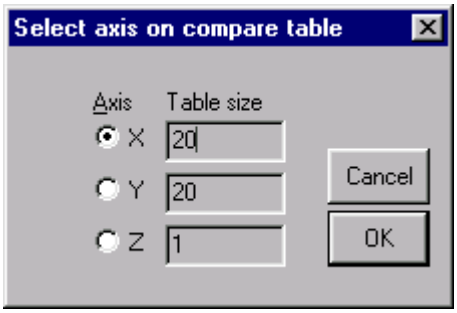
MAP/COMPARE 2D TABLE

You may display an additional curve in the reference (*Refer*) graphics window. This curve cannot be modified. It provides a visual comparison with the table currently being edited (*Edit*).

Furthermore, you may copy points from the reference curve to the table being edited. The two tables must have the same break points (number and values).

Use the following command to display the comparison mode: *Map/Compare 2D table*

First a window opens to select a file, then another one to select the table and finally the axis to be used for the comparison. The comparison plot may come from the same file and the same table as the curve being edited.



If all these conditions are met, a red curve is displayed along with a bar of values associated with that reference curve.

You may select either the curve being edited or the reference curve. The “>” character appears before the word *Edit* or *Refer*. Click in one of the cells in the Edit or the Refer bar to make your selection.

Close the graphics window to exit the compare mode (***Ctrl-G***).

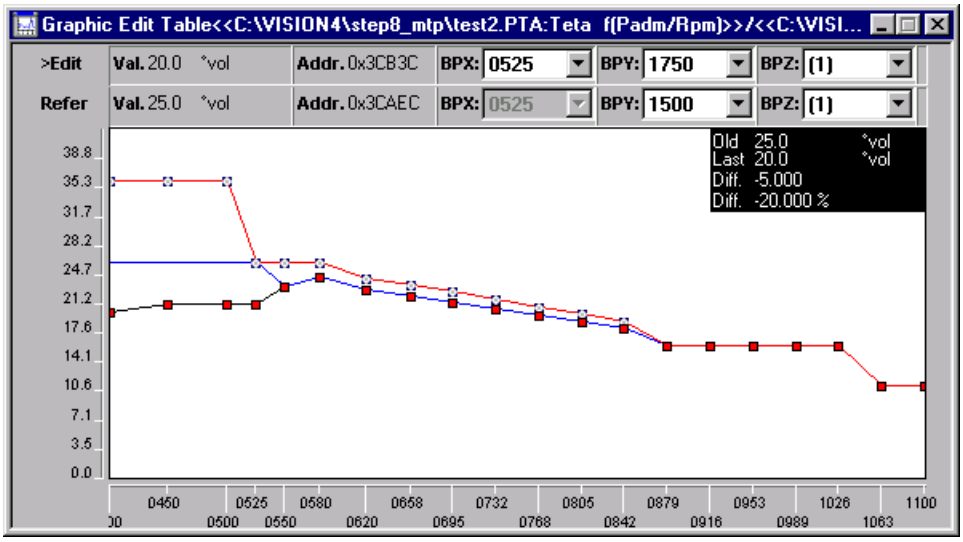


Table being edited: every movement of the current point in a window (text or graphic) appears in the other view.

You may move around both the edit and reference tables using the navigators included in the status bars (BPx , BPy , BPz).

Important note: in *System/Options/Preferences/Pta E2* you may find a flag “*Link cmp table*”. If this flag is set then Vision automatically compares vectors with same breakpoints (selecting another vector in the *edit* table will select the vector with same breakpoint in the *reference* table.)

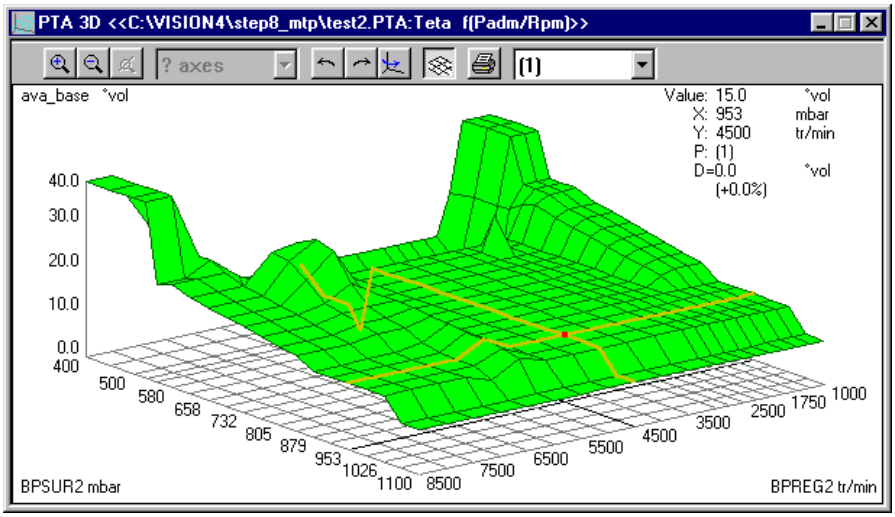
To perform a compare between vectors of the same table this flag should be disabled.

Map/Graph Mode 3D

Graph page

MAP/GRAPH MODE 3D

This window offers a 3D representation of a two dimensions map. To open this 3D editor, use : *Map/Graph mode 3D* and to quit, press *Esc*.



The cursor's position is represented by a red dot at the crossing of two yellow lines. The cursor in the alphanumerical window follows the cursor's position in the 3D window. It is possible to select a rectangular area with the mouse's right button, and apply a value modification by:

- typing a value that fills in the zone
- applying steps with the shortcut *Ctrl + Arrows*

Function Keys Bar

Zoom In

Self explanatory

Zoom Out

Self explanatory

Restore View

Cancels the zooming effects

Rotate Left

Self explanatory

Rotate Right

Self explanatory

Index Invert

Swaps the breakpoints axis to revert the view.

Grid Filled

Selects the aspect of the graph (filled surfaces or transparent grid).

Print Graph

Self explanatory

Select Plane

Enables to select another layer in the Z axis for three dimensions tables.

Map/Compare 3D table

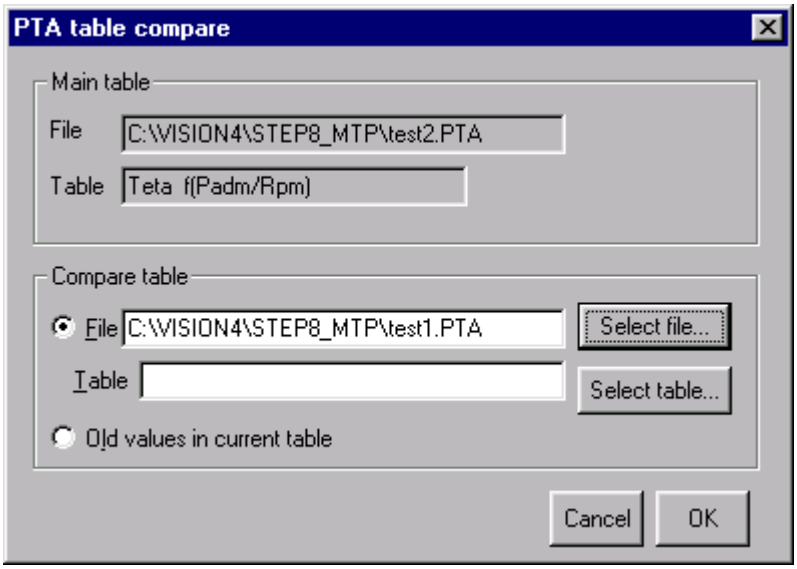
MAP/COMPARE 3D TABLE

A 3D tables' comparison can be visualised graphically. In this representation, it's the difference between the tables that is displayed, with, a display of the values where the cursor is: the value in each table and the difference (absolute & percentage). This comparison is possible only if the tables have the same size (they can have different breakpoints, but then go figure the result of such a comparison…).

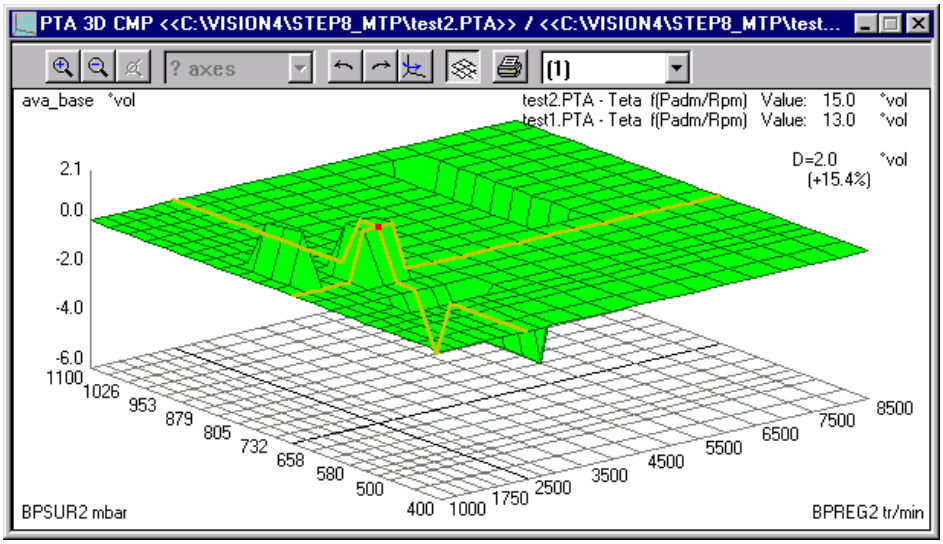
Use the following commands: Map/Compare 3D table

A window opens up, in which can be chosen:

- A table in a .PTA file
- Or the initial values in the current table (to visualise the changes made since the file was opened)



Then the result of the 3D Comparison appears:



MENU TOOL

Tool/Customize Toolbars

TOOL/CUSTOMIZE TOOLBARS

Select *Tool/Customize Toolbars* to open Toolbars window.

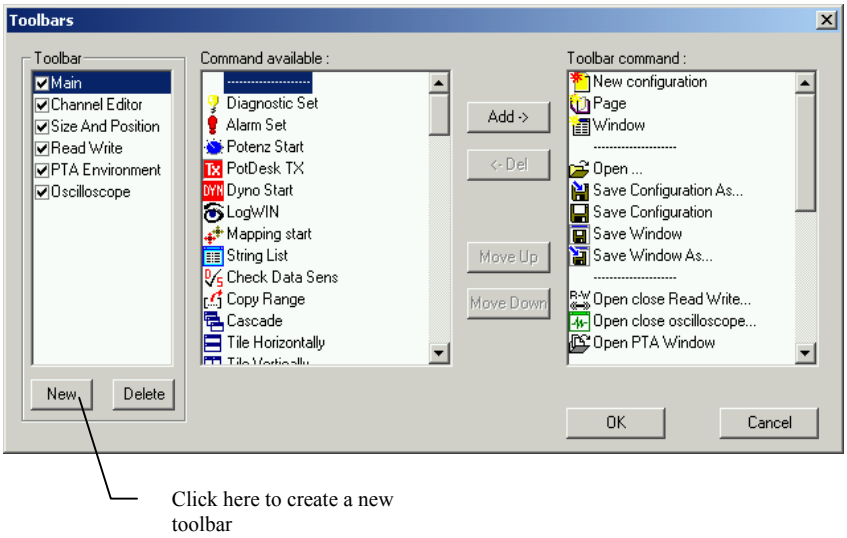


Figure 43 Setup Toolbars

This option allows you to define, edit and enable customized Toolbars from the list of menu commands.

The toolbars are designed to be customized: they may be manually positioned around the edge of the main window or detached as separate windows.

The contents of each toolbar and the position of the buttons may be easily edited and the configuration is associated with the user.

Tool/Customize Accelerators

TOOL/CUSTOMIZE ACCELERATORS

Select *Tool/Customize Accelerators* to open Setup Accelerators window.

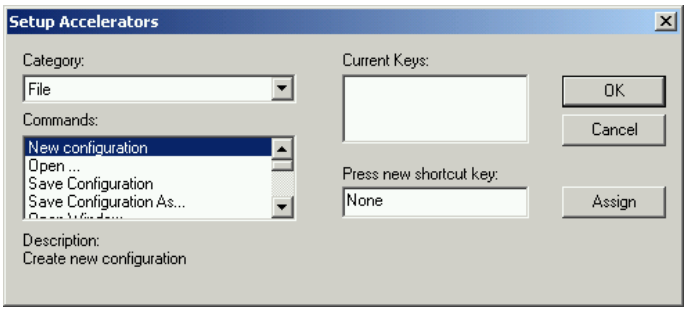


Figure 44 Setup Accelerators

The available commands in the toolbars can be recalled also through sequences of keys or function keys and the configuration of these Hot-Key can be done Run-Time.

Select the "*Category*" and the "*Commands*" and insert the combination of keys in the "*Press new shortcut key*" field; then press "*Assign*" and "*OK*" button.

Work point (Work Point Report)

General remarks

You may save certain parameters corresponding to a given work point. These parameters must be channels defined in the *Channel List*. The description of this report is stored in a *filename.WPF* file, while the report itself is stored in a text file *filename.PQT*.

Data may be stored in this file and/or sent to the printer.

To save the work point, press *Ctrl-Space* or the *Memo* key of the automatic mapping function.

Each new session is added to the end of the *filename.PQT* file (in *append* mode) or replaces the previous file (in *new* mode).

The configuration is performed by the person using Vision, in the *Tools* menu. Use the *System/Options/Preferences/WP report* menu command to modify some of these parameters.

When Vision is started, the preferences file specifies the name of the *.WPF* file to use.

Tool/Work point set

TOOL/WORK POINT SETUP

Call the configuration tool from the main menu: *Tool/Work point setup.*

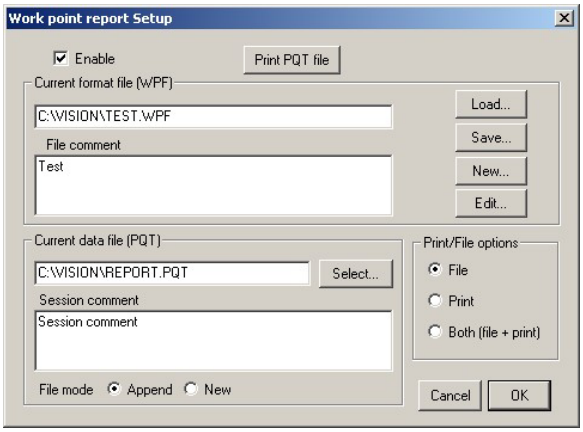


Figure 45 Work point report Setup

Enable: starts the session as soon as Vision is started.

Current format file: name of the *.WPF* configuration file used.

Load: selects another *.WPF* file.

Save: saves the *.WPF* file with a new name.

New: creates a new *.WPF* file.

Edit: modifies the current configuration.

Comment: user comments.

Data file: name of the .PQT file where the records will be written.

Select: selects an existing *.PQT* file from the disk.

Session Comment: comments included in the header of each session.

File Mode:

"Append" mode: adds sessions to the file at the end of the previous session; "New" mode: erases the file before each new session.

Print PQT file: prints the current .PQT file.

Print/File options: allows you to indicate if the report should be sent to a file, to the printer, or to both. The default Windows® printer is used.

Cancel: exits the configuration menu without saving any changes.

OK: exits the configuration menu, saves the *.WPF* file and updates the related choices in the *Preferences* file.

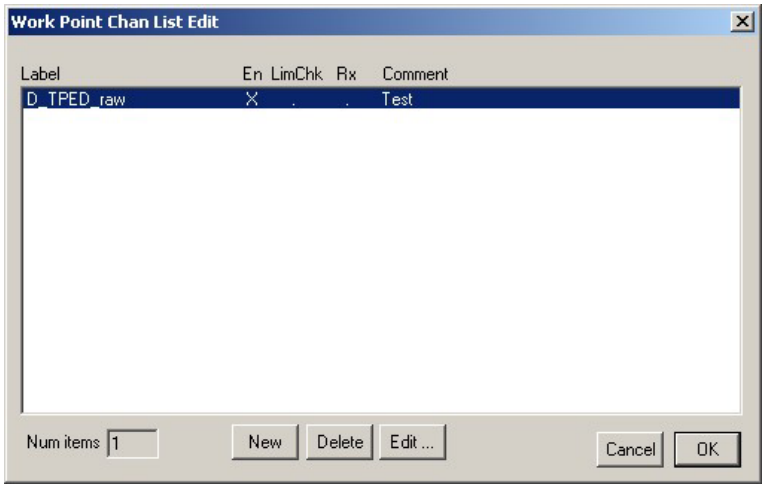


Figure 46 Work point Chan List Edit

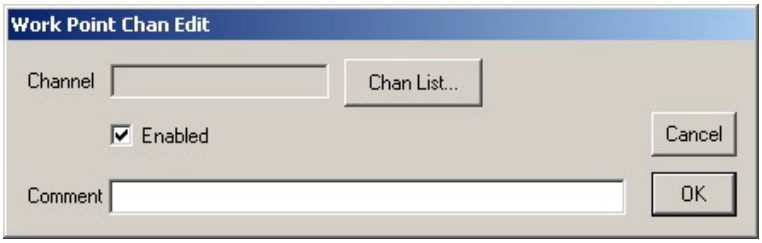


Figure 47 Work point Chan Edit

Channel list:

Channel: channel name.

Chan List: calls the *"channel list"* to select a channel.

Enabled: defines whether the channel should appear in the report.

Limits check: enables the testing of channel limits (for future use).

Comment: user comments.

Cancel: exits the panel without saving any changes.

OK: saves changes and exits the panel.

Tool/Work point on/off

TOOL/WORK POINT ON/OFF

Use the following command from the main menu to start the session: *Tool/Work point on/off.*

When opening or closing a session, Vision asks you to confirm. A confirmation message appears in the status bar. You may enter new comments at the start of each session.

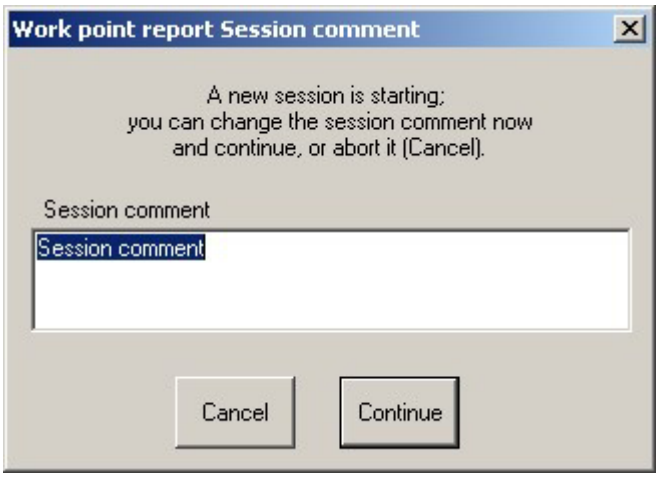


Figure 48 Work point report Session comment

To save the session: *Tool/Work point write*.

The status of the function (On/Off) is indicated in the *Tool-WP On/Off* menu.

If the session has not started when you request to write, Vision proposes to open the session.

A confirmation message is displayed in the status bar every time you save a session.

Tool/Work point print

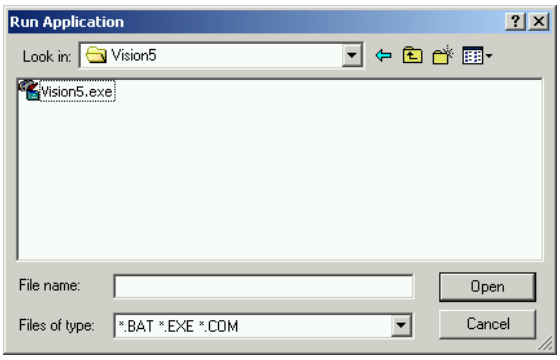
TOOL/WORK POINT PRINT

For the "WORK POINT REPORT" function, you should not print a page for each new work point. Vision sends the data without a page break, and only to a local printer (not to network printers) declared as the default printer under Windows®.

This solution is appropriate for dot matrix printers with continuous paper supplies. For printers with sheet feeders, the pages are only printed when full or when you close the WPR session.

For network printers, you should print the entire file at the end of the session (use the "*Print PQT file*" button in the *Tools/Work Point Setup* menu).

Tool/Run Generic Application



TOOL/RUN GENERIC APPLICATION

Select *Tool/Run Generic Application* to open a panel for selecting a DOS command. Allows to launch an external batch or exe application, prior to execution, Vision stops the protocol with all boxes allowing to release the RS232 or CAN port and makes it available for the external tool.

Tool/Run Excel

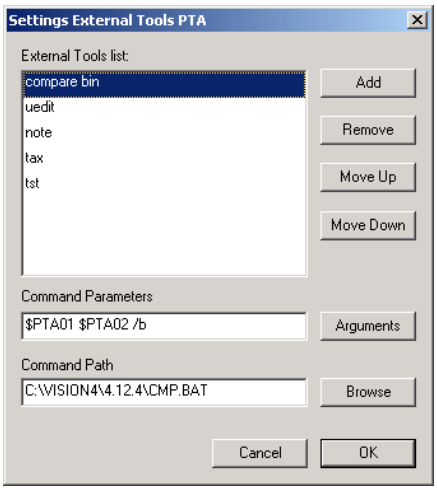
TOOL/RUN EXCEL

Select Tool/Run Excel to start Excel. With each page of the configuration can be associated an Excel .XLS file. (See *System/Configuration Property/Page*).

Tool/External tools

TOOL/EXTERNAL TOOL

This menu allows to define a list (saved in Vision32.ini) of batch calls to external .BAT, .EXE giving as parameters a set of PTA names and modifiers. After that definition these tools may be called from the PTA file list.

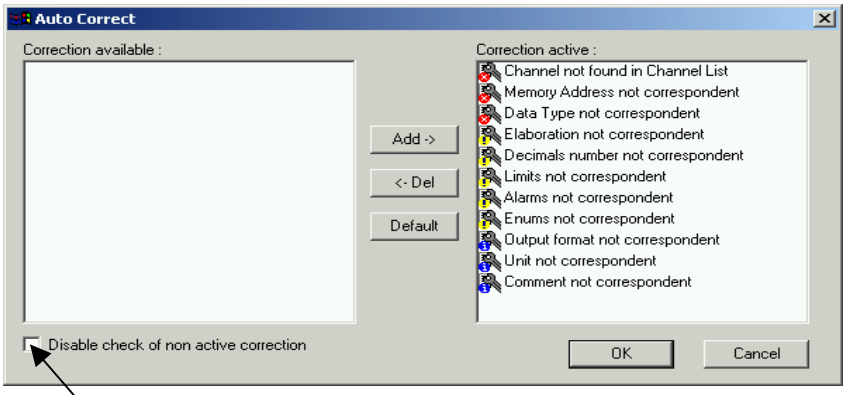


Tool/Option Autocorrect

TOOL/OPTION AUTOCORRECT

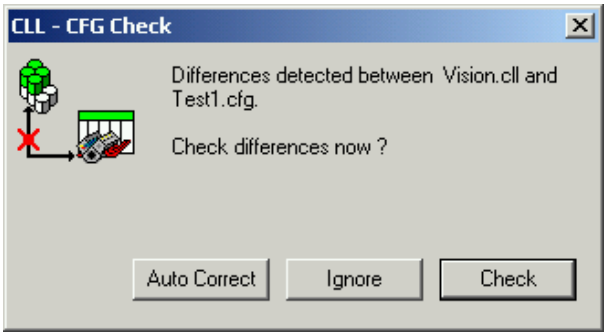
Each time a CFG file is loaded, VISION checks for any incongruities between it and the current CLL file (note: this function can be switched off from the *Tools/Options/General* dialog. In the same way, loading a CLL file will initiate a compatibility check with all the currently open tables.

The *Auto Correct* dialog allows you to define group corrections which should be applied automatically. If a check is not active in the Auto *Correct* dialog it does not mean that the check is not carried out, it will simply require manual confirmation.



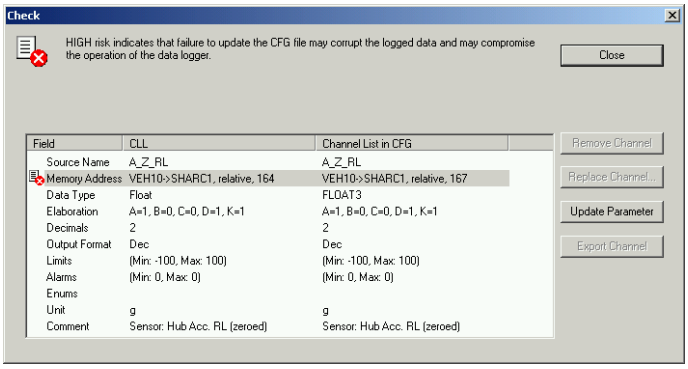
The available conditions (available but not active) are not checked only when the flag (*Disable check of non active correction*) is checked.

Differences between the channels in the CLL library and those in the CFG configuration are highlighted and may be ignored, updated automatically or checked one by one.



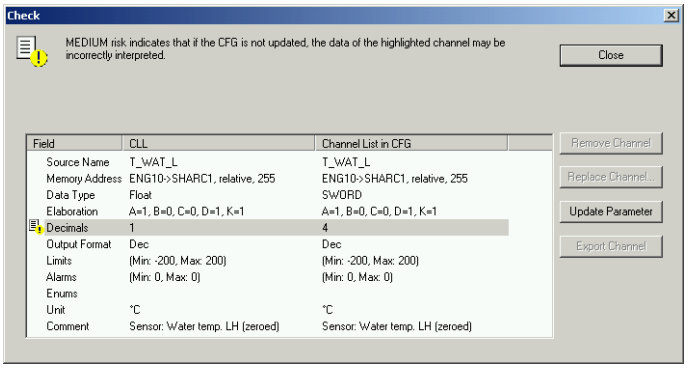
Each difference is classified as *High, Medium* or *Low* risk.

High risk



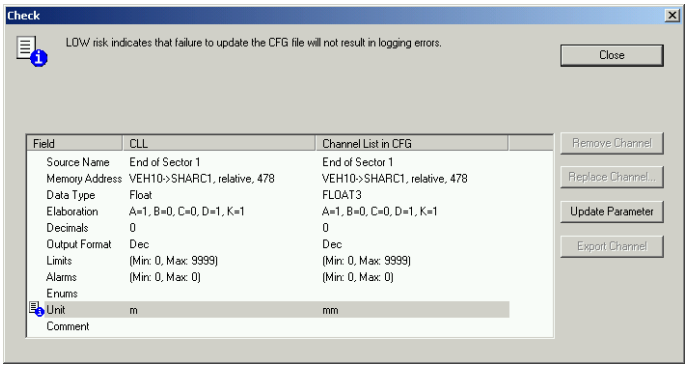
Field	CLL	Channel List in CFG
Source Name	A_Z_RL	A_Z_RL
Memory Address	VEH10->SHARC1, relative, 164	VEH10->SHARC1, relative, 167
Data Type	Float	FLOAT3
Elaboration	A=1, B=0, C=0, D=1, K=1	A=1, B=0, C=0, D=1, K=1
Decimals	2	2
Output Format	Dec	Dec
Limits	(Min: -100, Max: 100)	(Min: -100, Max: 100)
Alarms	(Min: 0, Max: 0)	(Min: 0, Max: 0)
Enums		
Unit	g	g
Comment	Sensor: Hub Acc. RL (zeroed)	Sensor: Hub Acc. RL (zeroed)

Medium risk

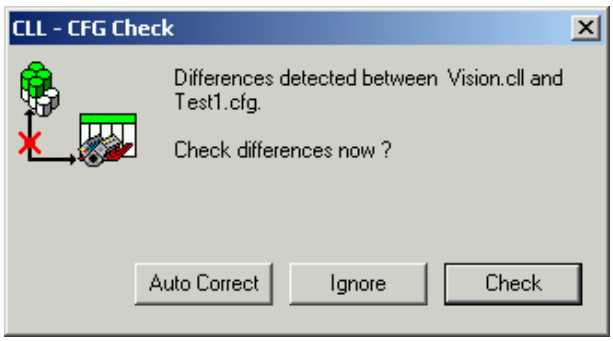


Field	CLL	Channel List in CFG
Source Name	T_WAT_L	T_WAT_L
Memory Address	ENG10->SHARC1, relative, 255	ENG10->SHARC1, relative, 255
Data Type	Float	SWORD
Elaboration	A=1, B=0, C=0, D=1, K=1	A=1, B=0, C=0, D=1, K=1
Decimals	1	4
Output Format	Dec	Dec
Limits	(Min: -200, Max: 200)	(Min: -200, Max: 200)
Alarms	(Min: 0, Max: 0)	(Min: 0, Max: 0)
Enums		
Unit	°C	°C
Comment	Sensor: Water temp. LH (zeroed)	Sensor: Water temp. LH (zeroed)

Low risk



Tool/Check CLL_CFG



TOOL/CHECK CLL-CFG

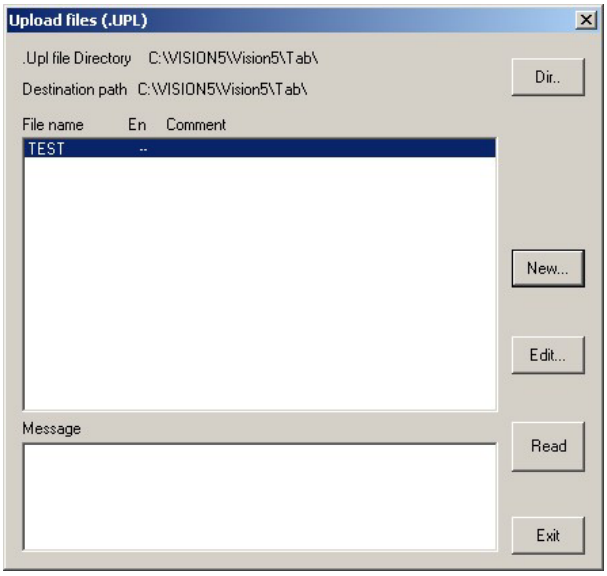
Select *Tool/Check CLL_CFG* command to check immediately the differences between the opened configuration (.CFG) and the selected channel list library (.CLL).

Tool/Upload

TOOL/UPLOAD

The "UPLOAD" function enables to save, in a binary file, a specific memory zone uploaded from the ECU. This function is either used for software scrutineering (by legal authorities) or just to save some diagnostic information saved in the ECU's memory.

The list of the different memory zones to upload and the corresponding file names, is defined in an .UPL file. The directory in which the upload files are saved is the same as the one defined in the path for the .TAB files (binary files containing the whole of the EEPROM).



First page

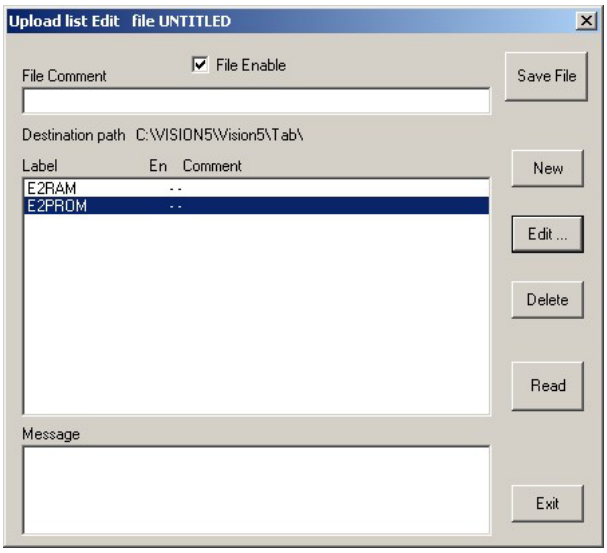
Dir*:* directory change when looking for .UPL files.

New*:* creation of a new.UPL file.

Edit*:* modification of the selected .UPL file, the second page then appears.

Read*:* executes the list of commands contained in the selected file.

Message*:* information about the current operations.



Second Page

File Enable: enables this file to be used with the "READ" key on the first page.

File comment: user's comments can be typed there.

Save File: saves the .UPL file.

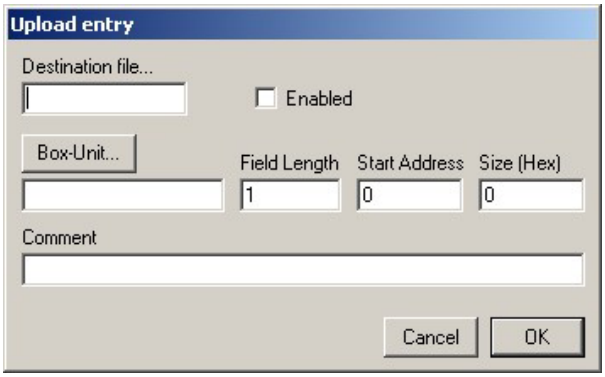
New: creates a new memory bloc description in the list.

Edit: opens the third page to define the bloc parameters.

Delete: suppresses the selected bloc description.

Read: reads the selected (test of the bloc description).

Message: information about the current operations.



Third page

Destination file: file name (*.bin) under which the memory bloc will be saved.

Enabled: enables this bloc to be used with the "READ" key on the first or second page.

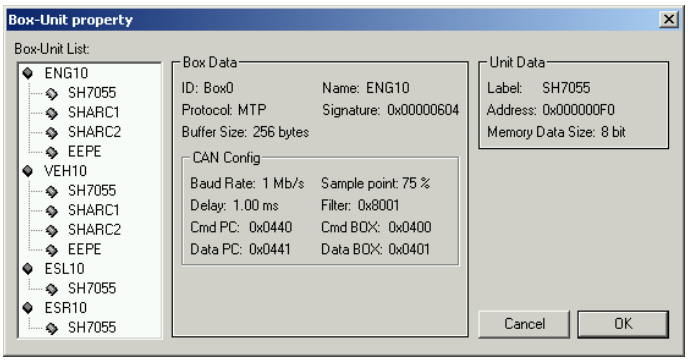
Box-unit: name of the memory in the ECU on which the "READ" command will apply.

Field length: access mode to be used depending on the memory mapping. This value gives the number of bytes to be read in a single instruction. This is necessary for access to some components having special mechanism (dpram) or special mapping (intel-mode, LSB first). This value should be 1 for a 8 bit mapping and 4 for a 32 bit mapping.

Start Address, Size: bloc size (in bytes) and start address.

MENU INFO

Info/Box_Unit



INFO/BOX-UNIT

This list gives information about all ECU's available on the system. Each ECU is one "Unit" (Processor or E2PROM) found in one "box". That information is found in the system file .LPS associated with the configuration file .CFG, they are necessary for Vision to know the protocol parameters allowing Vision to communicate with ECU's.

Box-Unit List	List of Box_Unit couples available.
Box Data	Protocol (MTP or StepX) used to access the selected Box.
CAN Config	CAN parameters: *Delay*, *Baud Rate* and *Sample point* give the hardware configuration used according to the parameters in the .LPS file. *Filter* is the packet filtering for the PCMCIA-CAN card. (Computed automatically in Vision according to the PC-Number and the subsequent CAN-ID used).
Unit Data	Unit access parameters inside box.

Note: VISION the line to be used (CAN,COM,ETH) is found in *Options/Preferences*, VISION-LITE the line is found in LPS file.

Connecting to several destination Box/Unit

MTP protocol: Vision may connect different boxes and refresh variables from different units inside each box Vision maintains active the link with all boxes defined in the system file .LPS with the flag "Vision_enable = true" so may perform simple transfers only with boxes having an active link.

STEPx protocol: configurations only refresh variables with one destination box -- Box0/DA0 in file .LPS. Nevertheless, you may perform simple transfers that may concern several destinations DAn from Box0 only.

The refreshed variables include Display/Pot/Diag/RW/Oscilloscope.

Single transfers include String list, programmable keys and .PTA data files.

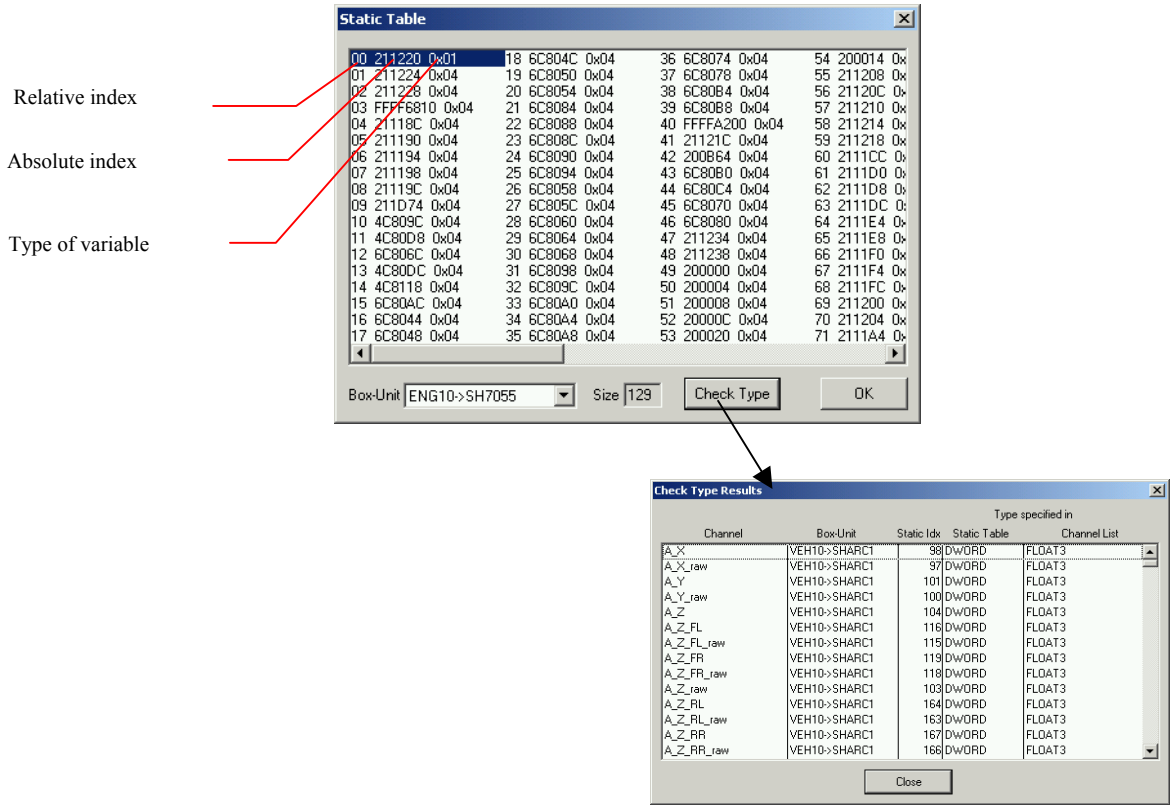
Info/ Static Table

INFO/STATIC TABLE

Gives the list of addresses in the static table of each Box/Unit. This list allows Vision to resolve the effective address of channels defined in the channel list as "relative" channels. With each address Vision receive the type of the variable as defined in the ECU software. By clicking on the "*Check Type*" button Vision may perform a check between the ECU type and the type defined in channel list.

Legal types are:

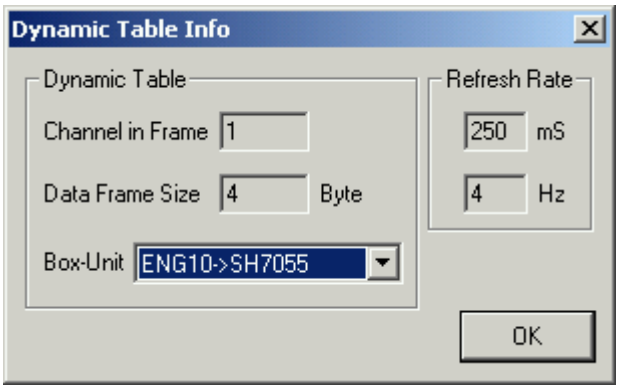
Code hex	Type	Length in byte, automatic value	Comment
1	BYTE	1	Byte
2	WORD	2	Word
4	DWORD	4	Dword
81	SBYTE	1	Signed byte
82	SWORD	2	Signed word
84	SDWORD	4	Signed dword
E	FLOAT3	4	Floating point IEEE 32 bit
F	FLOATX	4	Floating point texas 32 bit



Info/ Dynamic Table

INFO/DYNAMIC TABLE

This menu may give information about the protocol load: total number of channels, and equivalent value in byte, to be refreshed from each box for the actual screen configuration.



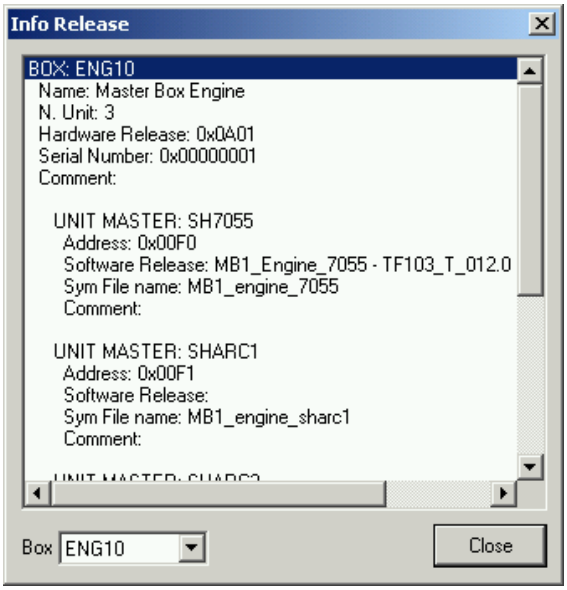
Note about special subaddresses E2PROM: E2PROM are not processors and can not maintain dynamic tables to refresh channels. So all channels referring to these special devices are redirected to the associated processor (information given to Vision through Info/Release).

Info/Dynanometric Bench

INFO/DYNANOMETRIC BENCH

Gives information on how the protocol ASAP has solved the list of channel to be sent to the dynanometric bench system.

Info/ Unit Release



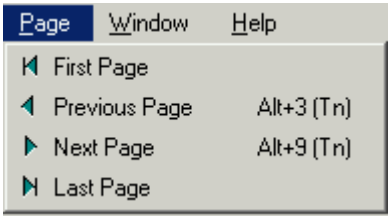
INFO/UNIT RELEASE

After connection to a box, Vision requests a "release structure info" from the box. This window gives the result of that request, this includes general box information and particular unit information.

UNIT MASTER: gives particular information about each processor (Subaddress in box, Software release, Symbolic file). These informations are used in read/write window for the symbolic mode.

UNIT E2PROM: gives particular information about E2PROM eventually attached to a processor (subaddress in box, attachment processor, start address and size). That information is necessary to load/save E2PROM file *.TAB and to redirect E2PROM channels to the attached processor.

Menu Page



Page/First Page

If you select *Page/First Page*, you go to the *First Page*.

Page/Previous Page

If you select *Page/Previous Page*, you display the *Previous Page* in the list.

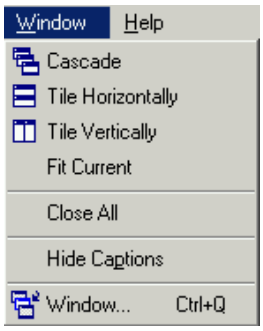
Page/Next Page

If you select *Page/Next Page*, you display the *Next Page* in the list.

Page/Last Page

If you select *Page/Last Page*, you go to the Last *Page*.

Menu Window



Window/Cascade

This function allows you to display the windows in cascade.

Window/Tile Horizontally

This function allows you to tile the windows horizontally.

Window/Tile Vertically

This function allows you to tile the windows vertically.

Window/Fit Current

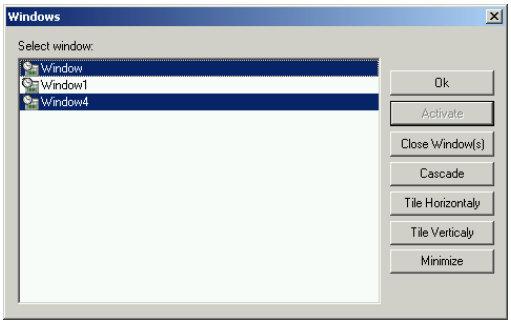
This function allows you to fit the current window.

Window/Close All

This function allows you to close all windows.

Window/Show or Hide Captions

This function allows you to Show/Hide the captions of the windows.

Window/Window

Open the list of all available windows in the page. Use *Shift* or *Ctrl* to perform window multiple selects.