

WinScope

*PC Software for Monitoring and Archiving
of IL/IG/IS/ID-DCU/ID-Mobile/IGS-NT,
ECON/INCON,
EMCON5/ECON3, RailCon
Controllers' Values*

SW version 2.0, June 2013



REFERENCE GUIDE



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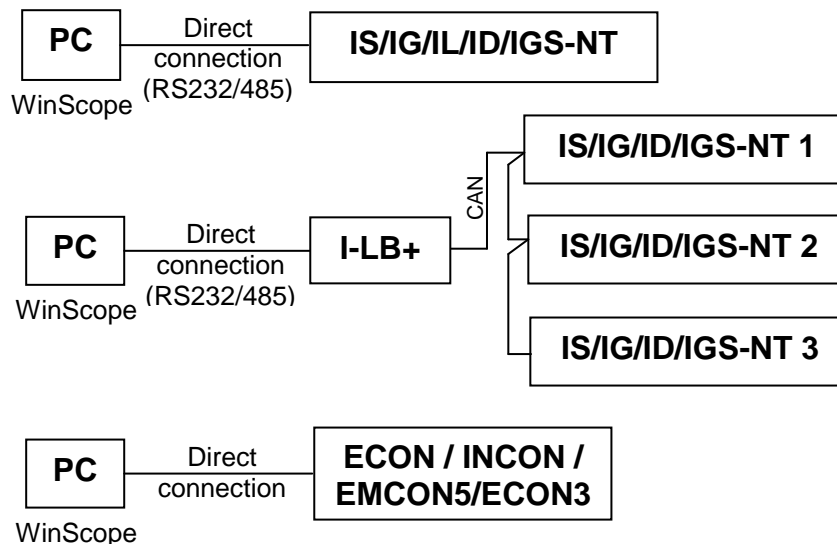
General description

What is WinScope for ?

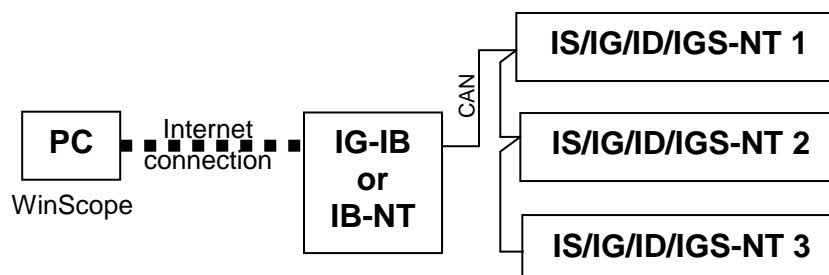
WinScope is a PC tool to be used for monitoring, archiving and viewing trends of parameters and quantities of InteliLite, InteliGen, InteliSys, InteliDrive and Inteli NT controllers. It enables fast and convenient supervision of time behavior of quantities in controllers and therefore easy adjusting of regulator parameters as to perform optimal functionality. WinScope enables adjusting of ECON, INCON, EMCON5, ECON3 and RailCon parameters (consult appropriate User guides). WinScope provides number of graphic functions and thus gives perfect look to the data. It reaches down-to-date requirements in gen-set monitoring and adjusting.

Controllers connection

Direct connection to controller is provided:



Internet connection to controller is provided:



Note1:

Specification of the direct and internet connection can be found in InteliCommunicationGuide.pdf.

Note2:

Only one PC software dependent on COM port can be connected to the controller at once (WinEdit/WinScope/...).

Note3:

Up to 4 PCs can be connected to one IG-IB (Internet Bridge).

Program installation

WinScope program for Inteli-controllers. It is included in ComAp PC Suite package or as separate installation package and is available for download on ComAp WEB. The default directory for installation is ... \Program files\ComAp PC Suite\Tools and can be changed during the installation.

There are actually three levels of licences:

1. **Demo version.** This version works only off-line (without connection to controller) and allows open previously captured data only."
2. **Free version.** This version support connection with only one controller with limitation up to 4 channels. You need to activate it by Activation code. Activation is free and to obtain Activation code just fill questionnaire on our WEB pages - <http://www.comap.cz/questionnaire/winscope/>.
3. **Full version.** To get Activation code for full version, please contact your [distributor](#).

There are actually two ways how to activate WinScope:

1. Using **Activation code** – to obtain activation code for your computer free of charge go to ComAp web page <http://www.comap.cz/index.php?idpg=53> and follow the instructions. This possibility provides limited functionality of WinScope and is available only temporary. Functionality restrictions are:
 - It is possible to connect only to one controller (one controller address)
 - Number of channels (monitored values) is limited to 4
 - It is not possible to use Advanced chart settings (menu Options)
2. Using **Hardware dongle** – This type of activation is no longer available for new installations. If you already have Hardware dongle, you can use it. Installation of Dongle driver is described in Appendix at the end of this document.

Note1:

If you want to run WinScope with hardware dongle but you have previously entered an activation code, go to Help menu -> Activation code and press OK without entering an activation code. This will enable the hardware dongle functionality.



Note2:

If you want to use WinScope with EMCON5/ECON3 or ECON/INCON/RailCon, enter 0 as an activation code.

Getting started

A few recommendations for initial steps:

Step 1: Open connection – choose right controller type and COM/internet bridge IP address

Step 2: If the [Messages window](#) appears with message “Controller#1: No response” check whether the controller has address 1. If you know the address of your controller, open the [Controllers window](#), click on the right number and push the  button. If you don't know the address, you can push the  button. WinScope will try to read configuration of controllers on all addresses.

Step 3: It is recommended to open the [Channels window](#) and set which channels will be displayed.


Step 4: To use your channels configuration in future, you can save it into file.

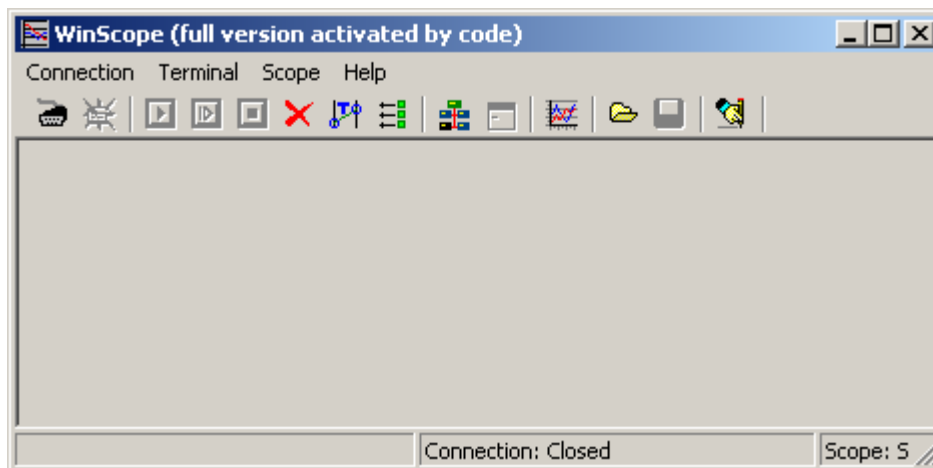
Step 5: To see the quantities trends, open the [Chart window](#) and push the Start scope button. Be aware of the period setting ([Period window](#)). If the required period is too small and the samples are coming with longer period, the background of this window turns red.

Step 6: The total amount of samples that can be viewed is limited by the capacity of data-buffer set in the [Options window](#).

Function description

Start program

Click on Menu *Start* → *Programs* → *WinEdit* → *WinScope*. 



Menu: Connection

Open connection

Invokes [Open connection window](#) to establish communication between PC and controller.


Close connection

Terminates the communication between PC and controller. WinScope can still work off-line.

Load data from file...

Opens Browse window to select requested *.DAT, *.SDT (**S**cope **D**a**T**a file) or *.XML, *.SHN (**S**cope **c**Ha**N**nel file) file.

Save (selected) data to file...

 Opens Browse window to select directory where to save the file. This file can be opened only by WinScope later on.

Export

Opens Browse window to select directory where to save the file. 2 file formats are possible:

.xls – one file is created, each controller has own Sheet for data.

.csv – for each controller is created separate file. Controller number and name is added to file name behind your file name.

Menu: Terminal

Show

Opens the Terminal Window to operate ECON/INCON controllers (see [ECON/INCON Terminal](#)).

Menu: Scope

Start scope

Starts reading data from controller and depicting them in the [Chart window](#). Only the data from selected channels are read.

Start scope in automatic mode

Starts automatic scoping, i.e. the scope will be started/stopped according to limits set for one or more channels. Scope is running while at least one channel limits are reached.

Stop scope

Stops reading data from the controller and depicting them in the [Chart window](#).

Clear data

Clears all data displayed in the Chart window.

Channels

Opens the [Channels window](#).

It enables to select channels that are displayed in the [Chart window](#), add and remove channels, edit channels, save and load channels configuration.

Enables to set automatically the ECON/INCON channels.

Controllers

Opens the [Controllers window](#).

Enables reading of configuration from the current controller.

Period

Opens the [Period window](#).

Enables adjusting of time period between samples read or sent from the controllers.

Shows statistic information about read samples, e.g. total number of samples, last period, average period etc.

Chart

Opens the [Chart window](#).

Shows time trends of quantities selected in the [Channels window](#).

All quantities are displayed on the right side of the window including units and optionally some other information about the value of quantity in selected time moment or time difference between two selected times.

Setpoints

Opens the [Setpoints window](#).

Enables change setpoints directly from WinScope without starting IntelliMonitor or GenConfig.

Options

Opens the [Options window](#).

Select language...

The WinScope application can be localized to the customer's native language using some of localization tools available on the market. If a localized version of WinScope is present in the directory of the WinScope application, the language of this localization will be shown in the selection window and the user can switch between english and localized versions.

There are more localization tools available on the market, see for example www.localizator.com (freeware) or www.lingobit.com (commercial software).

Note:

Each new version of WinScope has to be localized again.

Menu: Setpoints

This Menu item is available only when Setpoints window is opened.

 **Read all setpoints from controller**

All setpoints are read from controller.

 **Write all setpoints to controller**

All current setpoints are written into EMCON5 controller.

 **Load setpoints from file**

Previously saved EMCON5 setpoints are opened. Values are imported into actual values, but they are NOT written into controller.

 **Save all setpoints to file**

Current setpoints can be saved to file for later use. Data can be opened off-line or opened as alternative setpoints. File extension is .EMS (**EM**con5 **S**ettings)

 **Open alternative setpoints**

Previously saved data are opened and displayed together with actual values.

 **Import alternative setpoints and write to controller (CTRL+A)**

All alternative setpoints are imported to actual values and written to controller.

 **Import selected alternative setpoint and write to controller (CTRL+W)**

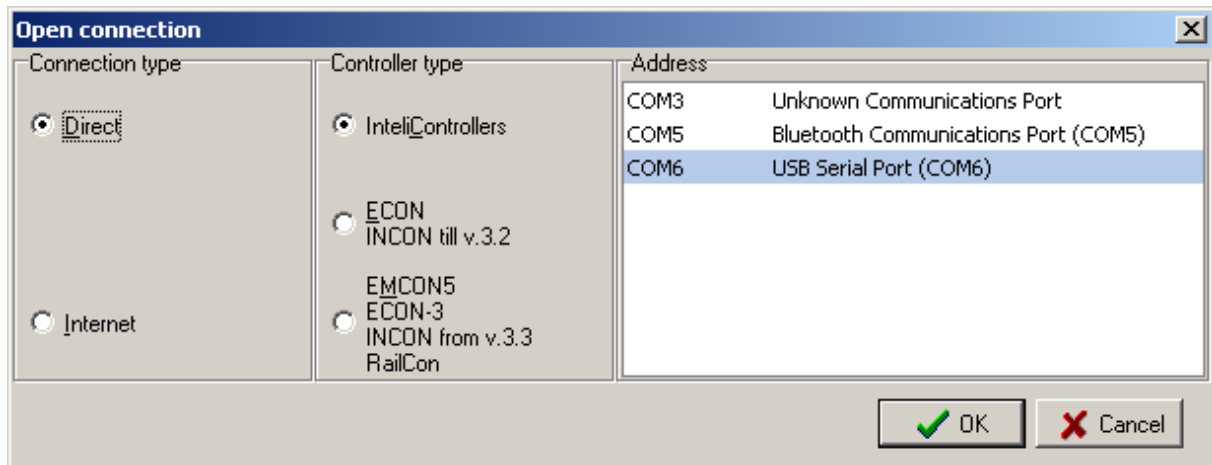
Selected alternative setpoint is imported to actual value and written to controller.

 **Export setpoints to text file (report)**

Current setpoints are exported to text file.

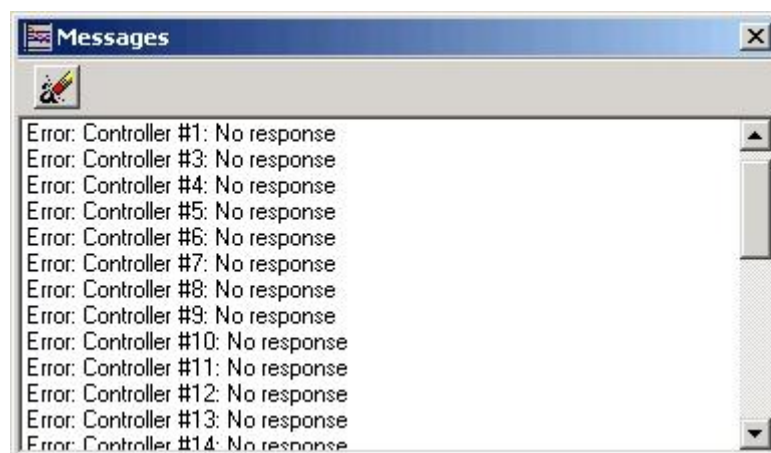
Windows

Open connection window



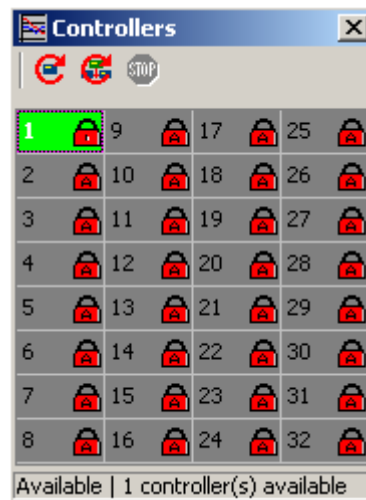
Controller type → select connection to InteliController, ECON/INCON or EMCON5/RailCon controller.
 Address → select to which communication port of the PC the controller is connected

Messages window



Shows error messages while WinScope is trying to connect to the controller or read the configuration from the controllers.

Controllers window



Shows which controllers are available, which have entered valid password or access code.

Toolbar:



... starts reading configuration from one selected controller



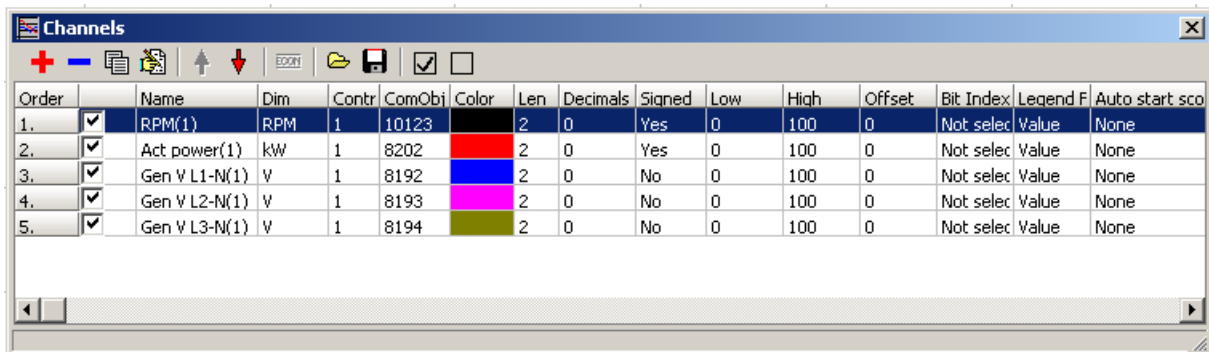
... starts to browse all controller addresses to read configuration



... stops reading configuration from all controllers

For more information about passwords and access codes see chapter [Password and access code](#) and Communication guide.

Channels window














Order	Name	Dim	Contr	ComObj	Color	Len	Decimals	Signed	Low	High	Offset	Bit Index	Legend F	Auto start sco
1.	RPM(1)	RPM	1	10123		2	0	Yes	0	100	0	Not selec	Value	None
2.	Act power(1)	kW	1	8202		2	0	Yes	0	100	0	Not selec	Value	None
3.	Gen V L1-N(1)	V	1	8192		2	0	No	0	100	0	Not selec	Value	None
4.	Gen V L2-N(1)	V	1	8193		2	0	No	0	100	0	Not selec	Value	None
5.	Gen V L3-N(1)	V	1	8194		2	0	No	0	100	0	Not selec	Value	None

Shows name, dimension, appropriate controller, communication object, color etc. of selected channels.

Select several rows using Shift/Ctrl button and press Edit channel to change controller address for more channels. You can also delete selected channels in one step.

It is possible to hide Y scale for any channel by uncheck box in column Y Axis visible. It is useful for example if you are monitoring 3 voltages in 3phase system and all 3 axis has the same scale. It reduces space occupied by scales.

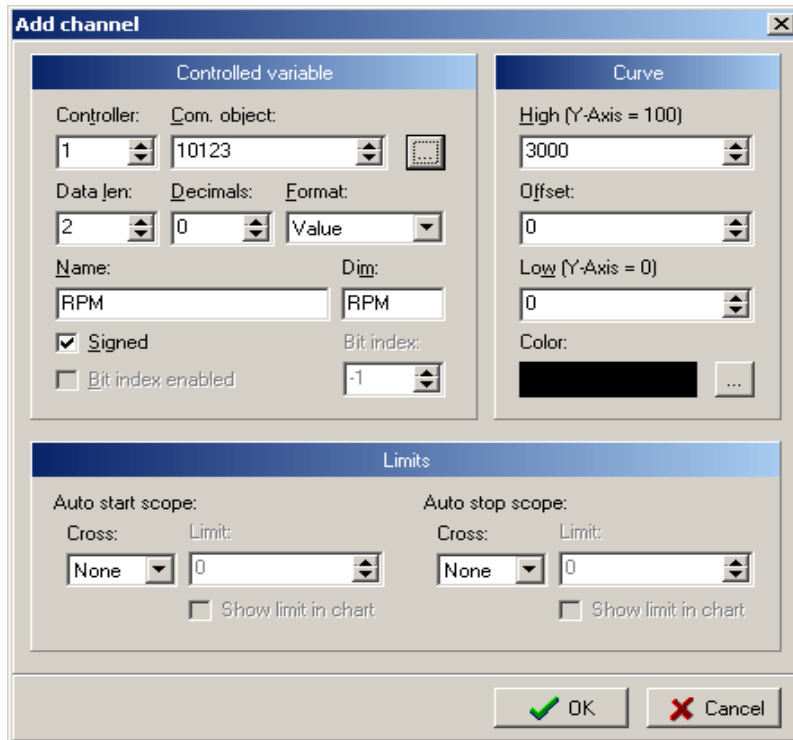
Toolbar:

-  ... opens the [Add channel window](#)
-  ... removes selected channel
-  ... duplicate selected channels with new controller address
-  ... opens the [Edit channel window](#)
-  ... moves selected channel up
-  ... moves selected channel down
-  ... sets channels to ECON/INCON defaults
-  ... opens a browse window to load channels from file
-  ... opens a browse window to save channels to file
-  activate selected channel(s)
-  deactivate selected channel(s)

Add channel window

Note 1:

Com. object, Data len, Format, Name, Dim, Color and in some cases Low and High values are filled in automatically after choosing the communication object from the list of objects (in *Select com. object* window).



Controller → choose from which controller will the quantity be displayed

Com. object → number of communication object appropriate to the selected quantity (this number can vary for the same quantity in controllers with different firmware)

Data len → length of data sample in Bytes

Decimals → number of decimal positions

Format → determines whether the value is binary or analog

Signed → determines whether the quantity will be assumed as signed or unsigned

Select object → opens window *Select com. object* which contains complete list of values and setpoints available for monitoring

Name → name of channel (it is filled in automatically when selecting object but it can be changed by user as well)

Dim → dimension of quantity of selected channel

Color → color of graph line

Offset → adjustable offset of this channel (this value corresponds to interval given by Low and High values)

Low (Y-Axis = 0) → value of the quantity that will be set as zero for Y axis

High (Y-Axis = 100) → value of the quantity that will be set as 100 for Y axis

Auto start scope - Cross → automatic scoping is started when value goes up or down the limit

Auto start scope - Limit → limit for value to start automatic scoping

Auto stop scope - Cross → automatic scoping is stopped when value goes up or down the limit

Auto stop scope - Limit → limit for value to stop automatic scoping

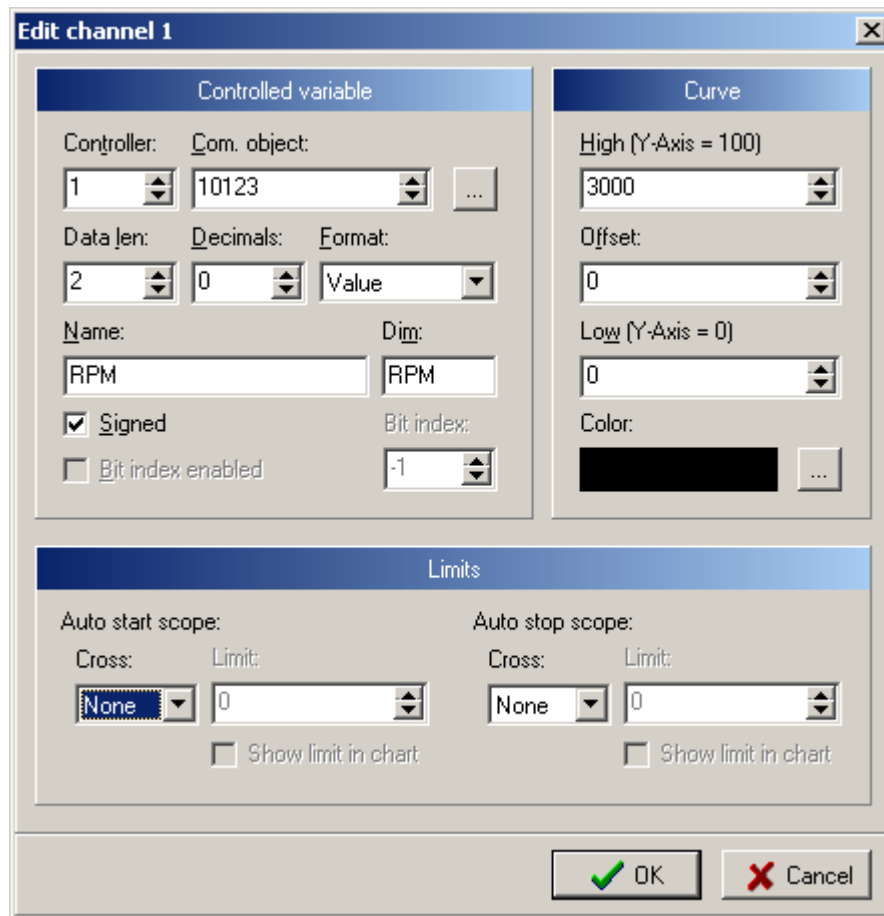
Show limit in chart → the limit value will be indicated in the chart

Note:

The right address of controller must be chosen so that the Select object... button becomes visible.

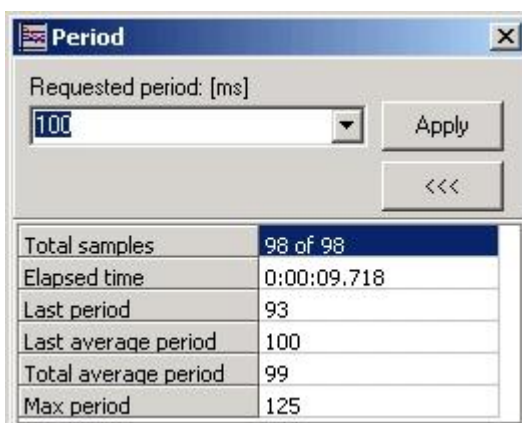
Edit channel window

The same items as in *Add channel window*.



Period window

Enables to change requested period from 10 to 10000 ms. (Possible when connected to IS/IG/IL/ID/IGS-NT controllers; impossible when connected to ECON/INCON – fixed 10ms period.)



- Total samples → total number of samples from pressing Start scope button
- Elapsed time → total time elapsed from pressing Start scope button
- Last period → duration of last period between two samples [ms]
- Last average period → duration of average period of a few last periods [ms]
- Total average period → duration of average period of all periods [ms]
- Max period → maximal length of period

Note:

If it is not possible to keep the requested period, the background of some data in the Period window turns red. This means that WinScope doesn't get samples from the controllers in the right periods which can be caused by fail of connection or too many active channels (overrun of communication capabilities). In the later case try to reduce number of active channels or increase requested period.

When WinScope log is opened in off-line mode, requested period is calculated according original sampling period.

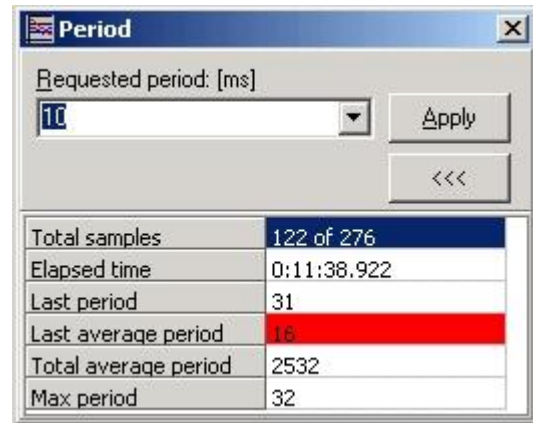
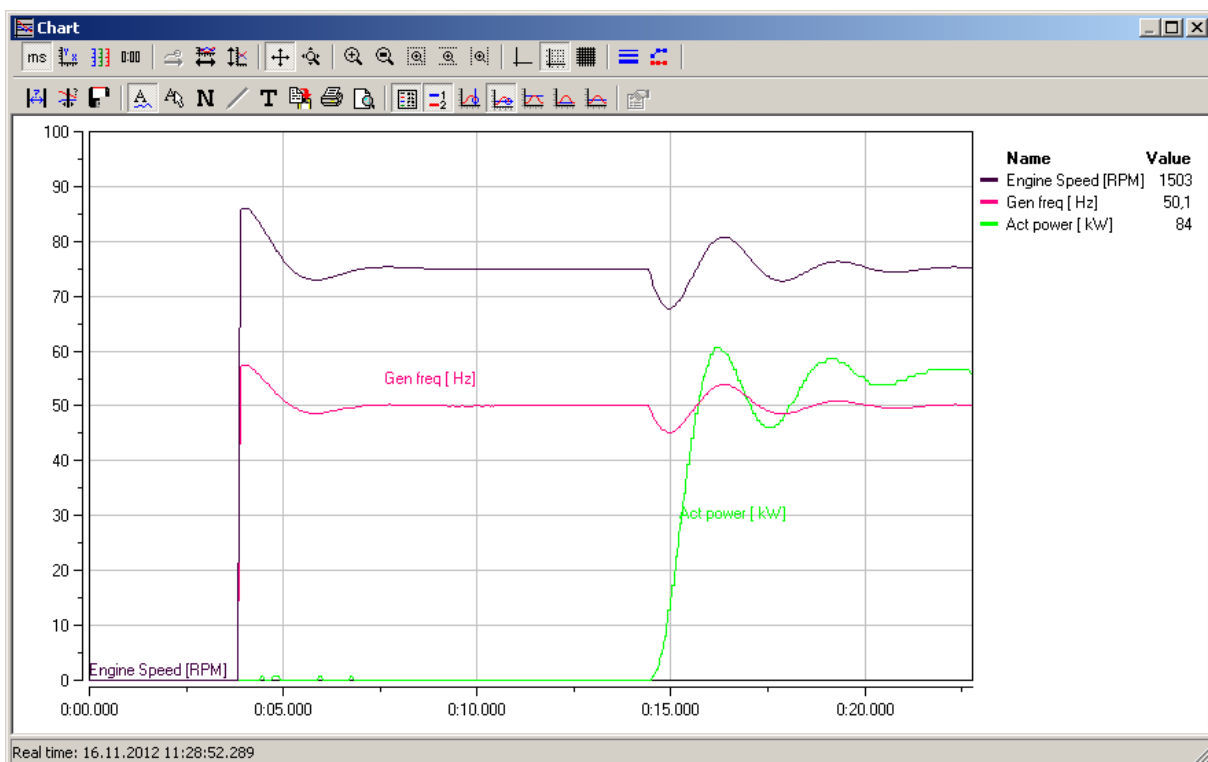

































Chart window

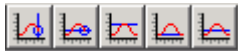


Displays time trends of quantities selected by check-boxes in the [Channels window](#).

Toolbar:

-  ... changes time resolution: seconds/milliseconds
-  ... opens the [Axes window](#)
-  ... shows/hides individual axes for channels selected by check-boxes in the Channels window
-  ... resets axes to default values
-  ... time tracking on/off – if pressed, the time axis is moving and it is possible to see last sample on the screen; if not pressed the time axis stops moving and it is possible to see only values in this selection not the last samples
-  ... zooms time to fit all data in the current window
-  ... zooms Y axis to fit all data in the current window

-  ... scroll mode – if pressed, moving of cursor across axes labels with pressed left mouse button scrolls axes up/down or left/right
-  ... zoom mode – if pressed, moving of cursor across axes labels with pressed left mouse button invokes shrinkage or stretching of axes range
-  ... zoom in
-  ... zoom out
-  ... zoom box – zooms area selected by mouse in both x and y axis
-  ... zoom box – zooms area selected by mouse in x axis
-  ... zoom box – zooms area selected by mouse in y axis
-  ... grid off
-  ... thin grid
-  ... dense grid
-  ... opens window to set line width (1,2,3) – only when scope is stopped
-  ... value markers on/off – when the scope is stopped pressing this button shows markers on trends where the samples came
-  ... measure time – shows two vertical lines; moving them left and right shows the time difference between them in timestamp window
Moving:
 - ←→ + Shift ... moves left line
 - ←→ ... moves over 1 sample
 - ←→ + Alt/Ctrl ... moves over 10 samples
 - ←→ + Alt + Ctrl ... moves over 100 samples
 - Home ... jumps at the beginning
 - End ... jumps at the end
 - or use the mouse
-  ... measure values – shows one vertical line; when moving it left and right the time value and values of all quantities are measured and shown on the right side of the chart; moving the cursor is the same as for measure time cursor
-  ... shows time cursor to select part of graph that should be saved pressing the same icon on the Main toolbar
-  ... shows/hides annotations of channels for example for the purpose of print
-  ... enables to move channel annotations
-  ... opens window to make notes to actual chart (possible also while the scope is running, it is saved into *.SDT file)
-  ... opens window to edit chart title
-  ... copy snapshot to clipboard
-  ... print set by print preview
-  ... print preview
-  ... shows/hides legend table on the right side of the chart
-  ... legend lines on/off



... show/hide current time, current values, maximal, minimal and average values next to legend table. If the Measure time function is activated, MIN, MAX and AVG values are calculated only from the selected interval.



... advanced settings – opens the [Plot window](#) where many chart properties can be set; e.g. when selecting Channels and Trace it is possible to choose line style and width

It is possible to select one channel from the legend table by click on channel name. Selected channel has yellow background. In chart, data for selected channel are displayed with wider line and also only its scale is displayed. To unselect it, click on it again.

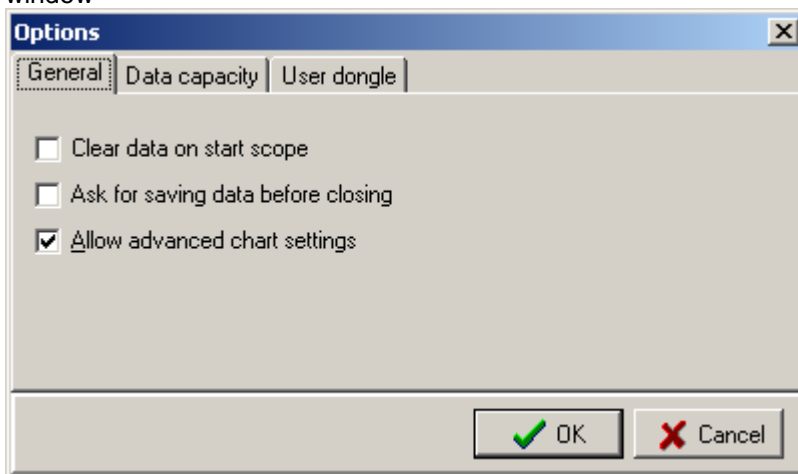
Options window

General card

Clear data on start scope - if selected WinScope automatically clears previously measured data when start scope is pressed

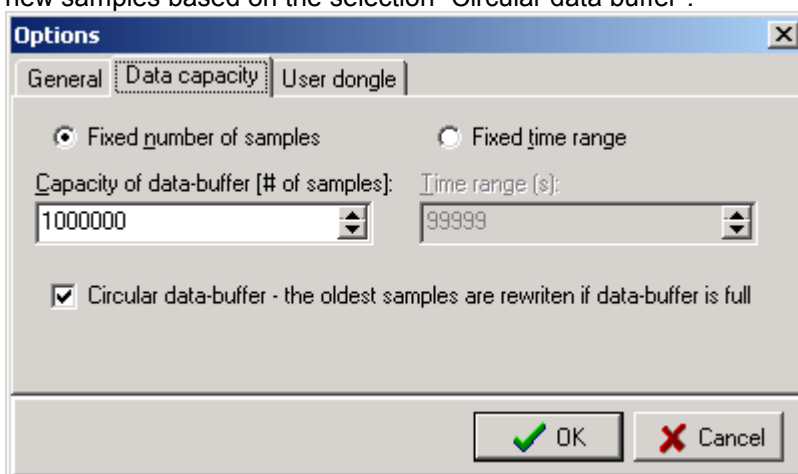
Ask for saving data before closing - WinScope asks whether actually displayed data should be saved or not if opening another *.SDT file

Allow advanced chart settings - enables Advanced settings button in the Chart window to open Plot window



Data capacity

Maximum number of samples or time range can be set here. If this limit is exceeded then the oldest samples are deleted and new samples are added at the end of the trend or WinScope stops adding new samples based on the selection “Circular data buffer”.



Note:

For default number of samples (1000010) and 32 channels configured WinScope allocates approximately 1GB of memory.

User dongle

Select to which port the User dongle is connected. Available only for some special software branches.

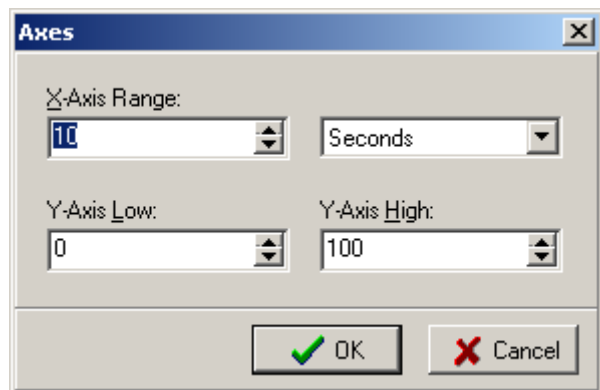
Axes window

Enables to set axes ranges.

X Axis Range [s] → range of time axis in seconds
(it is not recommended to set this value high if scope is running and period is set very short, i.e. show many samples in the actual view)

Y-Axis low → lowest value displayed on Y axis;
corresponds to Low value set in [Edit channel window](#)

Y-Axis high → highest value displayed on Y axis;
corresponds to High value set in [Edit channel window](#)

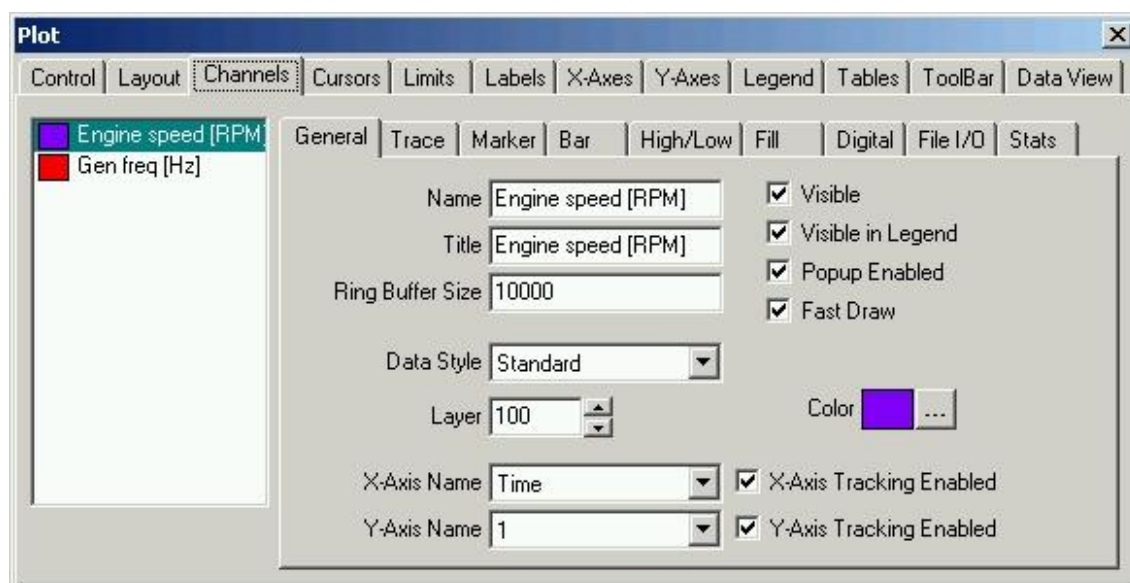


Note:

The range of Y axis (Y-Axis high – Y-Axis low) corresponds to value High – Low, i.e. if Y-Axis low is set to 0, Y-Axis high is set to 100, Low = 0, High = 2000 and Offset = 1000 and the value of quantity is 1500 then this value is displayed as

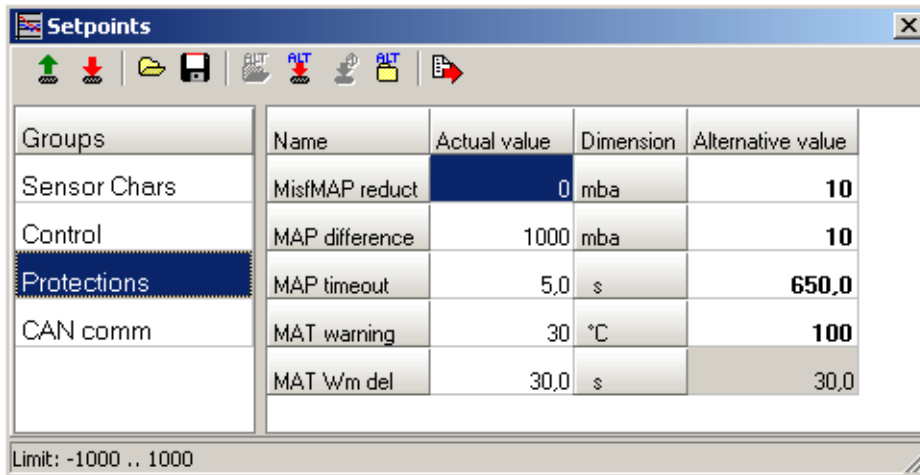
$$\frac{(value + Offset)}{High - Low} \cdot (Y - Axis\ high - Y - Axis\ low) = \frac{(1500 + 1000)}{2000 - 0} \cdot (100 - 0) = 125$$

Plot window



This window enables to change a wide range of chart settings.

Setpoints window



Groups	Name	Actual value	Dimension	Alternative value
Sensor Chars	MisfMAP reduct	0	mba	10
Control	MAP difference	1000	mba	10
Protections	MAP timeout	5,0	s	650,0
CAN comm	MAT warning	30	°C	100
	MAT Wm del	30,0	s	30,0

Limit: -1000 .. 1000

When [Setpoints window](#) is opened or command [Read all setpoints from controller](#) is used, setpoints are read out from unit which is highlighted in Controllers window.

It is possible to edit selected setpoint value. Change is immediately written into controller.

Values displayed in yellow fields are out of limit. Values are shown in red color when write to controller failed (e.g. connection is lost).

For EMCON5 controller, it is possible to open previously saved setpoints and display them as alternative values. When alternative value is different to Actual value, value is shown in bold. When it is equal, value is shown in grey field.

Note:

It is possible to import Alternative value to Actual value by double-click.



Read all setpoints from controller

All setpoints are read from controller.



Write all setpoints to controller

All current setpoints are written into EMCON5 controller.



Load setpoints from file

Previously saved EMCON5 setpoints are opened. Values are imported into actual values, but they are NOT written into controller.



Save all setpoints to file

Current setpoints can be saved to file for later use. Data can be opened off-line or opened as alternative setpoints. File extension is .EMS (**EM**con5 **S**ettings)



Open alternative setpoints

Previously saved data are opened and displayed together with actual values.



Import alternative setpoints and write to controller (CTRL+A)

All alternative setpoints are imported to actual values and written to controller.



Import selected alternative setpoint and write to controller (CTRL+W)

Selected alternative setpoint is imported to actual value and written to controller.



Export setpoints to text file (report)

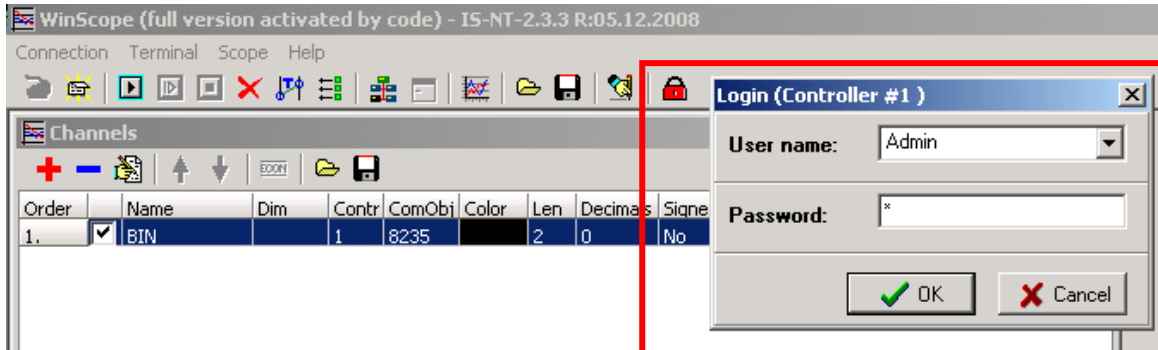
Current setpoints are exported to text file.

Note:

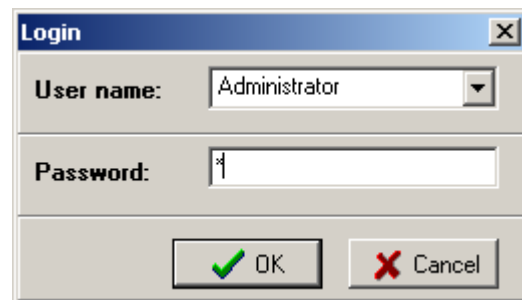
Only “*Read all setpoints from controller*” command and alternative setpoints related commands can be used with Inteli controllers (IL, IG, IS, ID, IG/IS-NT). All commands can be used with EMCON5 controller.

Password and access code

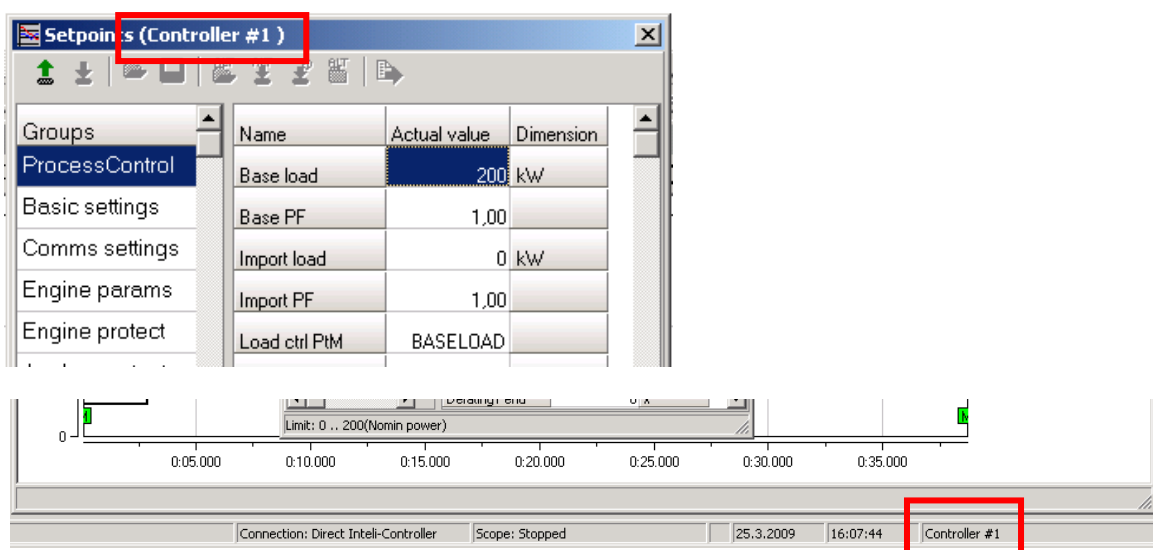
It is possible to change password protected setpoints after entering valid password in Controllers window or by clicking on Password icon on the main toolbar (the password is then related to the controller selected in Controllers window).



In Controllers window doubleclick on the controller that you want to connect to. For IG/IS-NT controllers user has to be selected prior to password entering. Level of entered password is marked in the lock sign.



The selected controller is also visible on status bar and in *Setpoints* window:





















To access the Intel controllers via Internet Bridge an access code has to be entered. Doubleclick on the appropriate controller and enter an access code into the field next to the STOP button.



Controllers with valid access code are in blue, others in red color.

Main toolbar

-  ... open connection button
-  ... close connection button
-  ... start scope button
-  ... start scope in automatic mode button (limits must be set in [Add/Edit channel](#) window first)
-  ... stop scope button
-  ... clears all data
-  ... period button – opens the [Period window](#)
-  ... channels button – opens the [Channels window](#)
-  ... controllers button – open the [Controllers window](#)
-  ... terminal button – opens and closes the Terminal window
-  ... opens the [Chart window](#)
-  ... opens the Browse window to load data from .DAT, .SDT or .XML, .SHN file (see [Saving and loading files](#))
-  /  ... opens the Browse window to save data / part of data to .SDT or .SHN file (see [Saving and loading files](#))
-  ... setpoints – opens the [Setpoints window](#). Icon is enabled only during connection to Intel or EMCON5 controller.
-  ... enter password – opens [Password window](#) and let user to log in.
-  ... deactivate password – indicates correctly entered password / deactivates password.
-  ... change password – opens [Change password window](#).

Handling channels

Displaying of channels is slightly different for IntelliLite/IntelliGen/IntelliSys/IntelliDrive/Intelli NT, EMCON5 controllers and ECON/INCON controllers.

IL/IG/IS/ID/IGS-NT, EMCON5 controllers

The number of channels is limited to 16 or 32. If it is too high, it can slow down communication and it is then likely that the requested period will not be kept.

For reference trends a new WinScope window has to be opened.

ECON/INCON

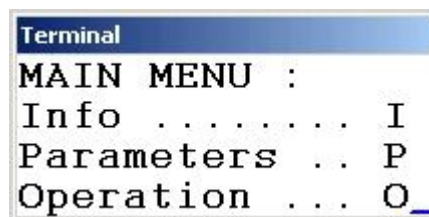
Number of displayed trends is set to 4 channels at once. ECON and INCON controllers send the data sample each 10 milliseconds.

The channels cannot be added in the Add channel window but it has to be added using ECON/INCON Terminal if possible (see [ECON/INCON Terminal](#)). Only some versions of ECON enable to add channels.

ECON/INCON Terminal

It is possible to adjust parameters of ECON and INCON via RS232 line from PC with WinScope installed.

WinScope enables to enter and edit parameters, to show information about controller etc. in the Terminal window:



The menu structure and interface handling is described in ECON and INCON User guides. This interface is the same as it was in the Scope (previous DOS version of WinScope).

Through the Terminal it is also possible to select channels displayed in [Channels window](#). Communication with ECON and INCON limits the number of displayed channels to 4 channels at once.

Anytime the ECON button in the [Channels window](#) is pressed, the 4 default channels are set and current settings are lost.

The data is sent in 10ms periods given by ECON/INCON so it is not possible to set the requested period in the [Period window](#).

Saving and loading files

There are three types of files that can be saved and loaded by WinScope - .SDT, .SHN and .EMS files.

Saving and loading of data

In this type of file the data that were read from controllers and displayed in the Chart window together with channels settings are stored. (All data from *Start scope* to *Stop scope* are stored.)

The file has extension .SDT and can be opened only by WinScope.

To save and load these files use the [Menu: Connection](#) or buttons on the Main toolbar.

Saving and loading of configuration

In this type of file the channels configuration is stored.

The file has extension .SHN and can be opened only by WinScope.
To save and load these files use buttons on the toolbar in [Channels window](#).

Note:

To save graphs actually displayed in the Chart window, it is possible to copy snapshot in clipboard using the appropriate button in the Chart window (see [Chart window: Toolbar](#)).

Saving and loading of EMCON5/ECON3 setpoints

In this type of file the setpoint values are stored.

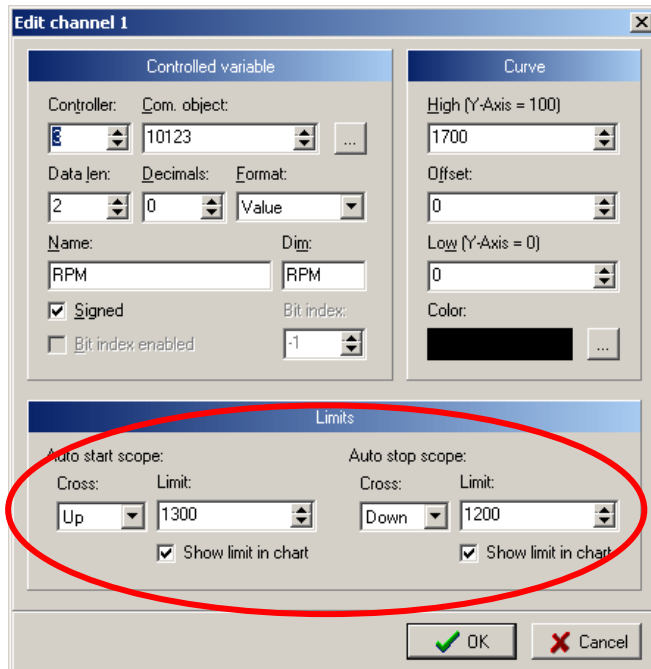
The file has extension .EMS and can be opened only by WinScope.


File can be opened in off-line mode or as alternative setpoints.

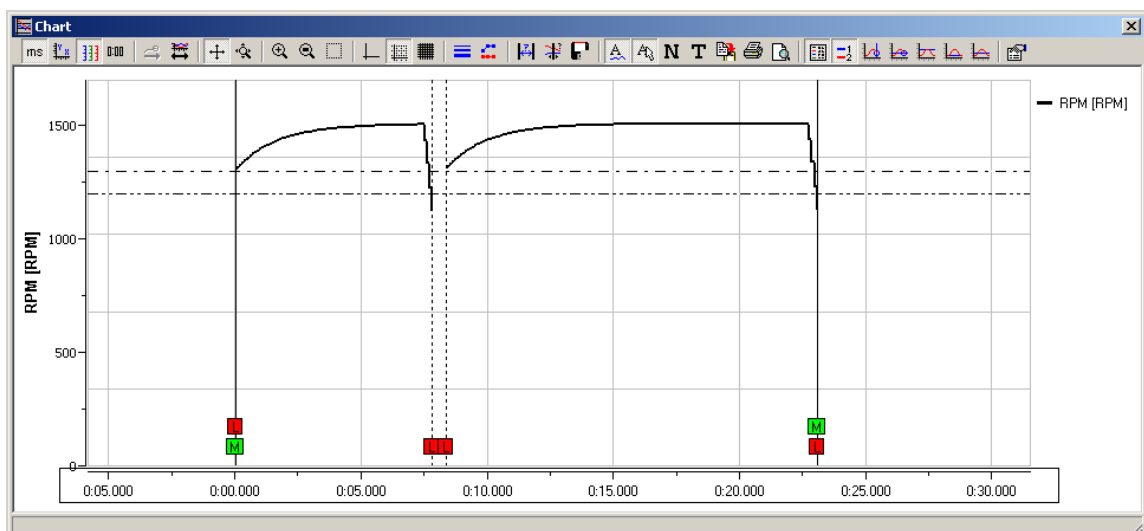
To save and load these files use icons on the toolbar bar in [Setpoints window](#).

Automatic scoping

How to run WinScope in automatic mode



1. Set limits for start and stop of automatic scope in Add/Edit channel window. For example start of scoping if RPM value exceeds 1300 RPM and stop if RPM goes under 1200 RPM:
2. Press  button on the Main toolbar or in the Scope menu.
3. Scope is started if value reaches the limit. In our example 1300 RPM and a corresponding stamp is made to distinguish between manual and automatic mode. See [Stamps](#) description.



Stamps

- M** Indicates whether the scope was started/stopped in manual or automatic mode
Click on the stamp to see hint:
 - Date and time
 - Scope started/stopped: manual/automatic mode
- L** Indicates that the limit for automatic scope was reached
Click on the stamp to see hint:
 - Date and time
 - Channel name
 - Value
 - Start/stop limit
- S** Indicates change of setpoint
Click on the stamp to see hint:
 - Date and time
 - Controller name and address
 - Setpoint name
 - Previous value
 - New value

Hot key list

Scope:

- | | |
|---------|---|
| Alt + O | Start scope |
| Alt + A | Start scope in automatic mode |
| Alt + S | Stop scope |
| Alt + D | Clears all data displayed in Chart window |

Cursor moving:

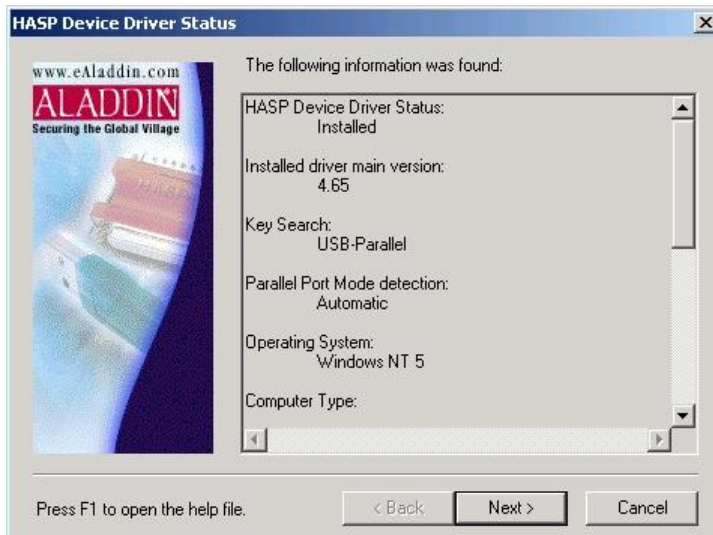
- | | |
|-----------------|---|
| ←→ + Shift | moves second line of time interval measurement cursor |
| ←→ | moves cursor over 1 sample |
| ←→ + Alt/Ctrl | moves cursor over 10 samples |
| ←→ + Alt + Ctrl | moves cursor over 100 samples |
| Home | jumps at the beginning of the graph |
| End | jumps at the end of the graph |
| Ctrl + A | imports alternative setpoints and write to controller |
| Ctrl + W | imports selected alternative setpoint and write to controller |

Appendix

Dongle driver installation

First you have to install the HASP (dongle) device drivers:

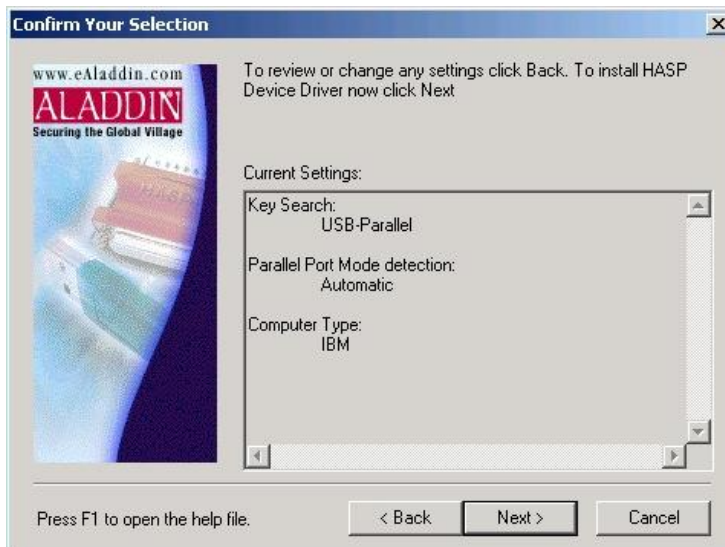
1. Run DONGLE DRIVERS\HDD32.EXE file from IG-IS installation CD.



2. Select Typical setup:



3. Confirm the selection and wait while drivers are installed:



4. Click on Finish button to finish the installation:

