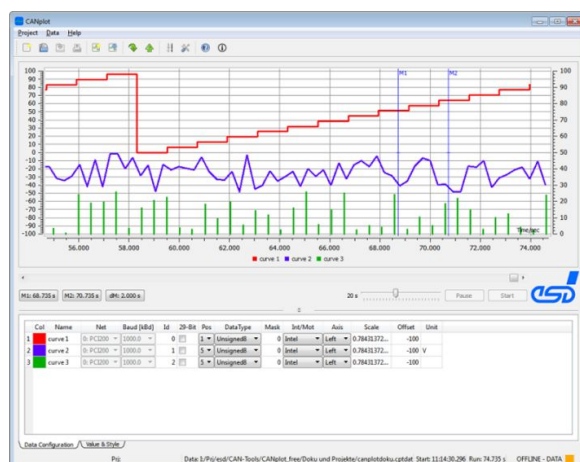




CANplot

CAN Tool for the Representation of the Chronological Process of CAN Data Bytes



Software Manual

to Product C.1108.01

NOTE

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1.3	-	all figures new	2016-05-30
	1.1	program items supplemented	
	1.2	New chapter "System Requirements" inserted	
	1.3	New chapter "Installation and Program Call" inserted	
	1.4	New chapter "Glossary" inserted	
	2.1	Table extended (Axes, Legend)	
	2.4.1	Table of the user interface supplemented (Axis, Scale/Offset), Diagram about display of the curves inserted	
	2.4.2	Table of the description menu revised (Checkbox En)	
	4	Figure "Toolbar" inserted	
	4.1.4	Description of drag'n'drop of the curves	
	4.1.5	New chapter "Curve Scaling " inserted	
	4.1.6	New chapter "Scaling of the Axis (Value Axis Viewport)" inserted	
	4.1.7	Table of the register revised (Curves inserted)	
	4.3.2	New chapter "CANplot Manual in PDF-Format" inserted	
4.3.3	Table of the register revised (About for Contents...)		
5.	New chapter "Order Information"		
1.5	4.1.4	Figure changed	2016-06-03

Technical details are subject to change without further notice.

Classification of Warning Messages and Safety Instructions

This manual contains noticeable descriptions, warning messages or safety instructions, which you must follow.

NOTICE

Notice statements are used to notify people on hazards that could result in things other than personal injury, like property damage.



NOTICE

This NOTICE statement contains the general mandatory sign and gives information that must be heeded and complied with for a safe use.

INFORMATION



INFORMATION

Notes to point out something important or useful.

Typographical Conventions

Throughout this manual the following typographical conventions are used to distinguish technical terms.

Convention	Example
File and path names	<code>setup.exe</code>
Menu items	<i>Count</i>

Number Representation

All numbers in this document are base 10 unless designated otherwise. Hexadecimal numbers have a prefix of 0x. For example, 42 is represented as 0x2A in hexadecimal.

Abbreviations

API	Application Programming Interface
CAN	Controller Area Network
CiA	CAN in Automation
DLL	Dynamic Link Library
HW	Hardware
LSB	Least Significant Bit
MSB	Most Significant Bit
n.a.	not applicable
OS	Operating System
SDK	Software Development Kit

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1. Overview

1.1 Introduction

This document describes the program CANplot.

CANplot is an esd-CANopen tool for the representation of the chronological process of CAN data.

CANplot offers:

- Representation of CAN online/offline data in form of graphs.
- Selection of data bytes to be represented by CAN identifiers, positions in data field and data type
- Supports Intel- and Motorola data formats
- Individual setting of representation and colour coding of data.
- Support of the hardware timestamp
- Two freely scalable y-coordinate axes

1.2 System Requirements

- Windows XP or newer
- 512 MB RAM
- 25 MB free HD hard drive space
- esd CAN hardware and driver



INFORMATION

A CAN Network needs at least two CAN devices!

1.3 Installation and Program Call

The tool CANplot is contained in the CAN SDK, which is distributed with the esd-CAN CD or can be downloaded from the esd-homepage (<https://esd.eu>). At the installation of the SDK (Software Development Kit) the program CANplot is automatically installed.

1. Start the SDK-installation file `Can_sdk\setup.exe` on the esd-CAN-CD and carry out the installation.
2. If not defined different at the installation, after successful installation CANplot can be started under Windows by selecting the menu items *Start / Program files / CAN / CANplot*.

The CANplot program window can be opened several times in order to display various CAN data simultaneously, for instance.

When the program is called, parameters can be specified in the command line:

Call	Function
CANplot <i>projectfilename</i>	CANplot is called, the project <i>projectfilename</i> (with extension *.cptprj) is opened and the configuration data is displayed under <i>Data Configuration / Value&Style</i> . See also chapter "Open a Project" on page 19.
CANplot <i>logfile</i>	CANplot is called and the logfile with <i>logfile</i> (with extension *.cptdat) is loaded and the project data is also loaded and represented in the program window under <i>Data Configuration/Value & Style</i> . See also chapter "Load Data" on page 25
CANplot <i>projectfilename</i> --start	CANplot is called and project <i>projectfilename</i> is opened and the recording and displaying of the data curves is started. See also chapter "Starting and Stopping the Program Run" on page 11.

Table 1: Calling CANplot via parameters

1.4 Glossary

In this glossary you find the explanations of the terms, which are used in this manual:

Anti-Aliasing	Procedure for the reduction of alienated aliasing at computer graphics.
CAN 2.0B	Extended specification (29 bit).
CAN-SDK	Software Development Kit for the esd CAN-API.
esd NTCAN-API	A pplication P rogramming I nterface of the cross-platform program library for the access on CAN hardware of esd
Identifier	The CAN identifier is the main part of the arbitration field of a CAN data frame.
Intel data format	In this data format the byte with the least-significant bits is saved first at the lowest address of memory. The Intel data format is also known as Little-Endian format.
Marker	Markers, that can be moved on the time axis (M1 and M2).
Motorola data format	In this data format, the byte with the most-significant bits is saved first at the lowest address of memory. The Motorola data format is also known as Big-Endian format.
Offline	The program is stopped and only saved CAN data can be represented in form of graphs.
Offset	Parameter, which shifts the displayed curve in y-direction.
Online	The program is running and the CAN data can be represented in real-time in form of graphs
Raw / Raw value	Current value, unchanged and without unit.
Scale	Parameter, which influences the amplitude of the displayed curve.

2. Elements of the User Interface

2.1 Display of the CANplot Program Window



Figure 1: User interface CANplot

The screen is divided into the following fields:

Menu bar	This field contains the main menu. It is organized into categories and contains a number of commands and options for various program functions (see page 18).
Display window	The display window represents the values of the data bytes depending on time. The representation can be configured individually for each curve. The image section can be moved via the scroll bar (see page 10).
Position of markers	When markers are set, this field shows their position on the time axis as well as the difference between both times (see page 10).
Section of the time window	In order to scale the represented period shift the position of the slide control. The time span which is represented in the display window is then in correspondence with the value which is shown left to the slide control.

Start/Stop/Pause	Via the <i>Start/Stop</i> buttons the recording and display of data can accordingly be started or stopped (see page 11). Pause only halts the display, but not the recording. Data can then be evaluated online.
Data Configuration	In the <i>Data Configuration</i> register data can be selected which is to be displayed. The kind of representation can be determined for each data curve (see page 12).
Value&Style	In the register <i>Value&Style</i> various values that are relevant for the evaluation of the data are shown (see page 15).
Status bar	The status bar offers current information on the program status (see page 16)

2.2 Description of the Operating Elements

2.2.1 Display Window

The display window represents the chronological processes of the data byte values in accordance with the settings under *Data Configuration/Value & Style*.

The X-axis is the time axis with specification of time in seconds (Time/s). The visible section of the time axis (20 s, in the example in fig.1, page 9) can be enlarged or reduced by means of the slide control.

By means of the scroll bar the section of the image can be shifted.

The Y-axis represents the data values as *Current Values*, depending on time. These values are evaluated from the *Raw Value*, that is the actual data value multiplied by the scaling factor *Scale*, plus the *Offset*.

$$\text{Current Value} = \text{Raw Value} \times \text{Scale} + \text{Offset}$$

2.2.2 Marker in the Display Window

In order to measure time the markers M1 and M2 can be set. The times of the markers are displayed in the field *Position of Markers*.

Position of Markers

This field represents the positions of markers M1 and M2 on the time axis.

Marker	Description
M1	Represents the position of marker M1 on the time axis.
M2	Represents the position of marker M2 on the time axis.
dM	Represents the time difference between markers M1 and M2. This representation can be used for measuring the time.

Shifting the markers

- By clicking the *dM* button the section of the display window is shifted so that both markers are visible in the time window.
- By clicking the *M1* button marker M1 is moved into the currently displayed time window.
- By clicking the *M2* button marker M2 is moved into the currently displayed time window.
- You can also move the markers by directly clicking and holding them with the left mouse key.

In order to change the position of the markers in the display window you can also click the position or time in the display to which the marker is to be set. The marker which is next to the mouse pointer is set to this time. If you keep the left mouse key pressed, you can move the marker to any time value.

2.2.3 Hardware Timestamp

The hardware timestamping is used, if it is supported by the CAN module and the driver (see chapter: "Notes on 'Matrix of Supported Operating Systems and Features'" in the manual "CAN-API, Function Description")
Otherwise the software timestamp is used.

2.3 Starting and Stopping the Program Run

Start, Stop Via the *Start/Stop* button the recording and representation of data can be started or stopped. During the program run the representation of data cannot be changed. In order to evaluate or setting the markers during the program run you have to click the *Pause* button.

Pause Via *Pause* the representation of data can be halted. The data is still being recorded, however.
After clicking the *Pause* button the represented data can be evaluated online and the markers can be set.
After finishing the pause by clicking the *Pause* button again the data which have been recorded during the pause will be displayed. The continuous display of data will be continued.

2.4 Data Configuration / Value & Style

In register *Data Configuration* the data can be determined which is to be represented in the display window. In register *Value & Style* the representation of data is described.

If an existing project is loaded, all project data is automatically entered under *Data Configuration* and *Value & Style*. For a new project the data has to be selected again.

Further information about the fields can be obtained via the tool tip.

2.4.1 Configuring the Data Curve via *Data Configuration*

The individual rows of the table each contain the configuration data of a data curve. The rows are numbered consecutively.

Col	Name	Net	Baud [kBd]	Id	29-Bit	Pos	DataType	Mask	Int/Mot	Axis	Scale	Offset	Unit
1	curve 1	0: PCI200	1000.0	0	<input type="checkbox"/>	1	Unsigned8	0xFF	Intel	Left	0.78431372...	-100	
2	curve 2	1: PCI200	125.0	1	<input checked="" type="checkbox"/>	5	Integer16	0xFF	Motorola	Left	0.00305180...	0.0015...	V
3	curve 3	0: PCI200	1000.0	2	<input type="checkbox"/>	5	Integer32	0xFF	Intel	Right	2.32830643...	50.000...	

Figure 2: Configuration of the data curve

Click in the window *Data Configuration* on the data curve to open the context menu. Additional information about *Add Curve*, *Delete Curve* and *Curve Scaling...* are shown in the chapters “Adding and Deleting Curves in the Display Window” on page 20 and “Curve Scaling” on page 20.

Color Shows the colour of the data curve in the display window. A single mouse click on the colour field opens the window *Select Color* as described on page 22. In the window *Select Color* you can choose a new colour.

New data curves are represented in black.

Name By double-clicking this field you can directly change and edit the name of the selected data curve. New data curves have got the name *NewName*.

Net In this selection box the CAN boards are listed according to their network number. Here you can select a new CAN node.

The tool-tip shows further information about the state of the CAN interface of the selected CAN net (here: Net1).

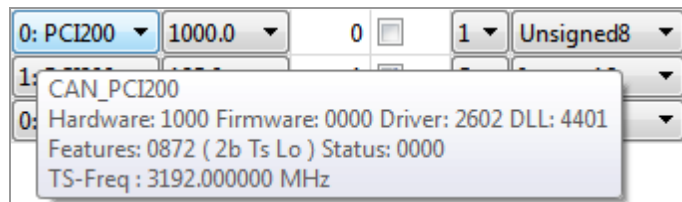


Figure 3: Tool-tip of the CAN net

The current *Hardware*, *Firmware*, *Driver* and *DLL* versions are shown.

The supported *Features* are shown, coded as hexadecimal number.

The abbreviations in brackets indicate:

- 2b* CAN 2.0B support
- Ts* Timestamping is supported
- Sd* Smart Disconnect is supported
- Lo* Listen-Only-Modus is supported

Status indicates the error-status of the module (*board-status*): 0 ... OK, ≠0 ... Error



INFORMATION

For further information about CAN-Interface-Status (CAN_IF_STATUS) please refer to the manual 'NTCAN-API, Part 2, Functional Description'.

The *Ts-Freq*: shows the timestamp frequency if board and driver support the hardware timestamping (see page 11).

Baud (kB) In this selection box you select the baud rate with which the CAN data is to be transmitted.

Id Here the CAN identifier has to be entered. The CAN identifier can be entered in decimal form or as hexadecimal value with 0x as prefixed tag.

29-Bit If this function is activated via the checkbox, the identifier entered under *Id* is interpreted by the CAN bus as 29-bit identifier

29-bit identifier

11-bit identifier

Prerequisite for the support of 29-bit identifier is of course, that the hardware and the CAN driver, used in the implementation for the current operating system, are designed for this!

Pos Under *Pos* the position of the data byte, whose values are to be represented in the telegram, is shown.

Data Type Shows the data type of data, which is to be recorded. By clicking the field a selection box is opened from which a suitable data type can be chosen.

Mask Here it can be configured that only selected bits of a defined byte shall be displayed. The *Mask*-settings are only valid if the data types *signed* or *unsigned char* are specified in the field *Data Type*.

Example: Display bit 5 of the fourth byte only.

The following settings have to be specified:

Data Type = unsigned char *Pos* = 4 *Mask* = 0x10

The entry in the *Mask*-field can be hexadecimal (in format 0x..) or decimal. The default value for *Mask* is 0xFF.

Int/Mot In this selection box the data format of the data which is to be read-in can be selected. The data can be read in Intel- or Motorola format (Little-/Big-Endian).

Axis Assignment of the coordinate axis (left or right axis).

Offset/Scale In order to represent the data curves more clearly in the display window the *Raw Values* are shown converted as *Current Values*. For this the *Raw Values* are multiplied by the scaling value *Scale*. In addition an *Offset* can be set.

Formula: $Current\ Value = Raw\ Value \times Scale + Offset$

Scale and *Offset* are determined via the menu item *Curve Scaling* and can not be edited directly.

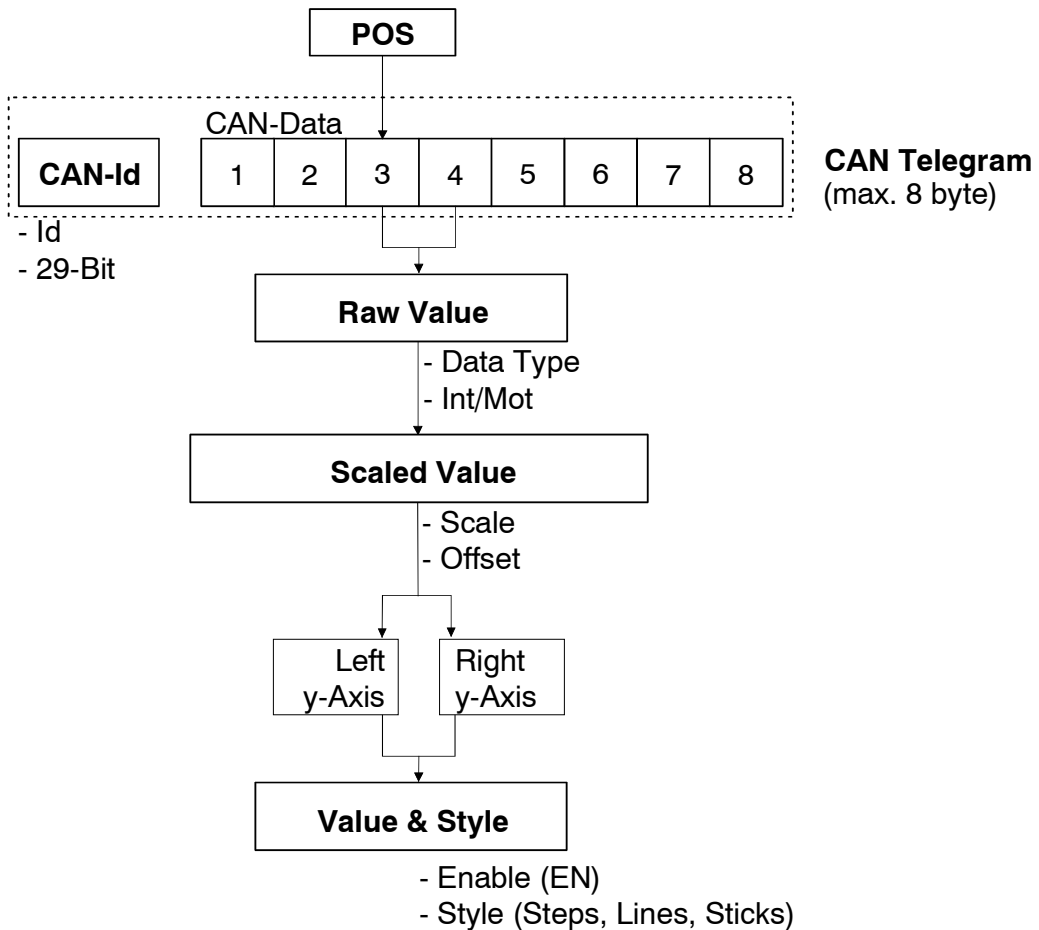


Figure 4: Conversion of CAN data

Unit In this text field a unit for the Y-axis can be determined.

2.4.2 Setting the Representation of Data via *Value & Style*

The individual rows of the table each contain the properties of a data curve. The rows are numbered consecutively.

Col	Name	En	Raw Value	Current Value	Time	Cnt	Unit	Style	M1	M2
1	curve 1	<input checked="" type="checkbox"/>	24.000	-81.176	36.232	100...		Steps		
2	curve 2	<input checked="" type="checkbox"/>	26231.000	80.053	36.232	10146	V	Lines		
3	curve 3	<input checked="" type="checkbox"/>	71665783.000	51.669	36.232	9066		Sticks		

Figure 5: *Value & Style* of the data curves

- Color** Shows the colour of the data curve. The colour can only be changed under *Data Configuration*.
- Name** Shows the name of the data curve. The name can only be changed under *Data Configuration*.
- En** Via this checkbox the representation of the data curve can be activated or deactivated.
 - activates the representation of the data curve.
 - representation of the data curve is disabled.
- Raw Value** The **Raw Value** is the last received value of the data byte selected under *Data Configuration* from the telegram.
- Current Value** This value is represented in the display window, evaluated from *Raw Value*, *Scale* and *Offset*.
 $Current\ Value = Raw\ Value \times Scale + Offset$
- Time** Time when the last data byte, i.e. the last telegram, has been received.
- Cnt** Number of CAN frames which have been received and from which the data have been generated.
- Unit** In this text field a unit can be selected for the Y-axis. This unit will not appear in the display window, however.
- Style** The data can be represented in different ways:

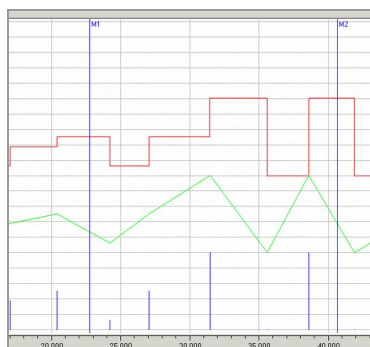


Figure 6: Section of the display window

- Steps** Representation of data as step function; the curve remains on the last received value until a new value is received (upper graph, red)
- Lines** Point-to-point connection of the respectively received values (middle graph, green)
- Sticks** The value of data is only represented by a stick at the moment it has been received (lower graph, blue sticks, without markers M1, M2)

Elements of the User Interface

- M1** When marker M1 is set, the column M1 contains the current value of the respective data curve at the time of the set marker M1. The value in brackets represents the time at which the data have been changed to the according data value, i.e. the time at which the last telegram has been received.
- M2** When marker M2 is set, the column M2 contains the current value of the respective data curve at the time of the set marker M2. The value in brackets represents the time at which the data has been changed to the according data value, i.e. the time at which the last telegram has been received.

2.5 Status Bar

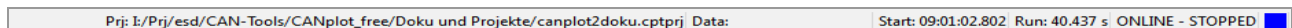


Figure 7: Description of the data curve

<i>Prj:</i>	file name of the project
<i>Data:</i>	file name of represented data
<i>Start:</i>	absolute start time
<i>Run:</i>	run time in seconds
<i>Mode</i>	shows the mode in which the program is. The following four modes are distinguished: <ul style="list-style-type: none"><i>Online Run</i> (green) program is running<i>Online Pause</i> (green) program is paused (data recording in background)<i>Online Stopped</i> (blue) program has stopped<i>Offline Import</i> (yellow) data can be evaluated <i>offline</i>



INFORMATION

The tool-tip on a field of the status bar contains information about the corresponding field.

3. Quick Start

For a basic program application, please follow the steps below:

1. Install the CAN SDK on your computer. CANplot is installed with the CAN SDK as one of the CAN Tools.
2. If not defined at the installation differently, after successful installation CANplot can be started under Windows by selecting the menu items *Start / Program files / CAN / CANplot*.
3. In order to receive online data, select an existing project with already defined configuration data via *Project/Open* or select in register *Data Configuration* (see page 12) which data is to be represented and how the data is to be represented. Select the CAN network, the CAN baud rate, the CAN identifier, etc. Via *Pos* you can select the position of the first data byte and via *Data Type* the number of the data byte from the telegram to be represented.
4. Start the reproduction of data with a click on the *Start* button.
5. The selected data is now represented in the display window. In the register *Value&Style* the values of the respectively last data reproduced are shown.
6. Stop the reproduction of data with a click on the *Stop* button.

4. Menu Bar

The menu bar contains the menu items *Project*, *Data* and *Help*. The menu items can be opened by a single mouse click or the specified key combination.

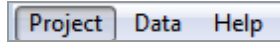


Figure 8: Menu bar CANplot

Some menu items can be selected via the icons in the tool bar.



Figure 9: Tool bar

4.1 Menu Item *Project*

In a project configuration data is determined and saved.

All configuration settings of a curve are contained (see chapter “Configuring the Data Curve via Data Configuration” on page 12).

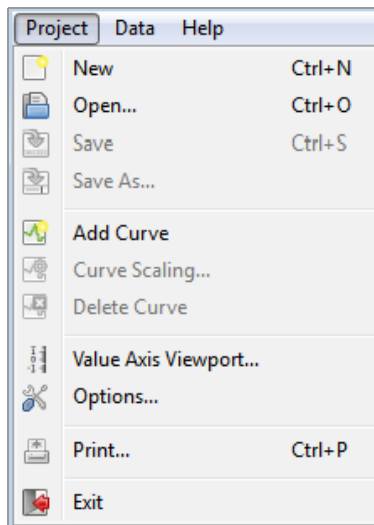


Figure 10: Menu item Project

4.1.1 Starting a New Project

New Starting a new project.
A new project can also be started via the key combination *Ctrl + N*.

4.1.2 Open a Project

Open... Opens an existing project and the configuration data is displayed under *Data Configuration / Value&Style*.
An existing project can also be opened via the key combination *Ctrl + O*.
The following dialogue box *Open Project* is opened:

Here an existing project can be selected. The project files have got the extension **.cptprj*

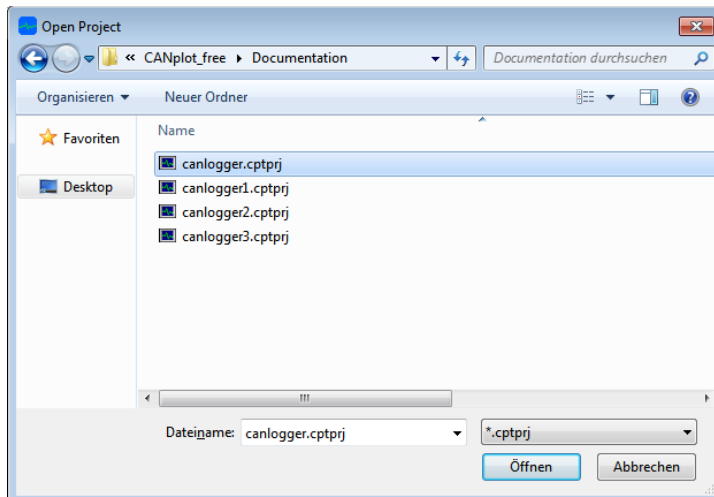


Figure 11: *Open* Dialogue box

4.1.3 Save a Project

Save Saves the current project.
An existing project can also be saved via the key combination *Ctrl + S*.

Save As... Saves a current project under a new name.
The dialogue box (see figure 12) is opened.
Here an existing project can be saved under a selected or a new name. Project files have got the extension **.cptprj*.

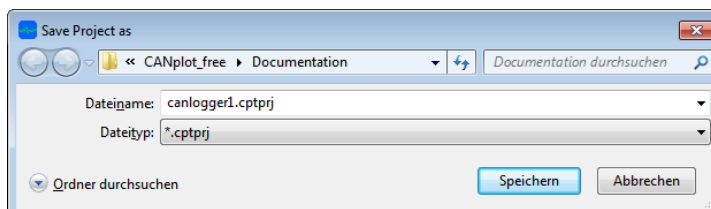


Figure 12: *Save As...* Dialogue box

4.1.4 Adding and Deleting Curves in the Display Window

Add Curve Adds a new line or curve in the window *Data Configuration/Value & Style* to the list of configuration data after the selected line.

Delete Curve Deletes the selected line or curve in the list of configuration data in the *Data Configuration/Value & Style* window. It is also possible to delete several lines at the same time. In order to prevent unintentional deleting you will be prompted for confirmation before the data is finally deleted.

Col	Name	Net	Baud [kBd]	Id	29-Bit	Pos	Data Type	Mask	Int/Mot	Axis	Scale	Offset	Unit
1	curve 1	0: PCI400	1000.0	0	<input type="checkbox"/>	1	Unsigned8	0xFF	Intel	Left	0.78431372...	-100	
2	NewName	0: PCI400	1000.0	0	<input type="checkbox"/>	1	Integer8	0xFF	Intel	Left	0.78431372...	0.3921...	
3	curve 2	1: PCI400	125.0	1	<input checked="" type="checkbox"/>	5	Integer16	0xFF	Motorola	Left	0.00305180...	0.0015...	V
4	curve 3	0: PCI400	1000.0	2	<input type="checkbox"/>	5	Integer32	0xFF	Intel	Right	2.32830643...	50.000...	

Figure 13: Reorder the curves



INFORMATION

To reorder the curves in the table, click on the number of the curve, which is contained in the left table header and move it per drag'n'drop.

4.1.5 Curve Scaling

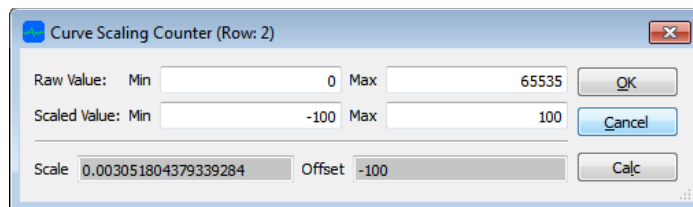


Figure 14: Curve Scaling Dialogue box

Raw Value Raw data value according to selected data interpretation (Pos, Data Type, Mask, Int/Mot) from the selected CAN message type (Id, 29 Bit).

Scaled Value Physical value, to be linearly converted, *Raw Value: Min* corresponds to *Scaled Value: Min* and *Raw Value: Max* corresponds to *Scaled Value: Max*.

Calc Not necessary, the values are calculated automatically if the *OK* button is clicked; Preview of the parameters of the linear assignment, calculated from *Min* and *Max*:

Scale: $(Scaled\ Value\ Max - Scaled\ Value\ Min) / (Raw\ Value\ Max - Raw\ Value\ Min)$

Offset: $Scaled\ Value\ Max - (Raw\ Value\ Max \times Scale)$

4.1.6 Scaling of the Axis (Value Axis Viewport)

Setting the scale range of the value axis (i.e., Y axis for converted physical values).

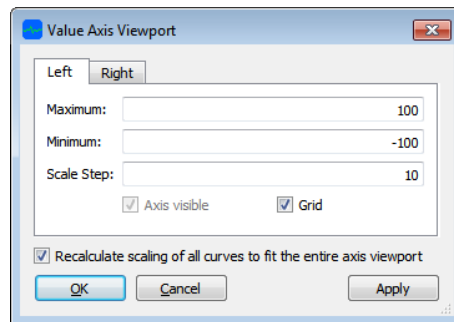


Figure 15: Value Axis Viewport dialogue box

<i>Left / Right</i>	Definition for left or right axis
<i>Maximum</i>	Maximum value of the scale
<i>Minimum</i>	Minimum value of the scale
<i>Scale Step</i>	Scaling of the axis (number of steps)
Example:	Maximum: 25 Minimum: 0 Scale Step: 5

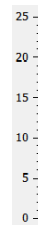


Figure 16: Scaling of the axis

<i>Axis Visible</i>	Show/Hide the axis. Only the right axis can be hidden and only if it is not assigned to a graph. The left axis can not be hidden.
<i>Grid</i>	A grid can be displayed, which is aligned to the <i>Scale Steps</i> . If the grid of an axis is enabled, the grid of the other axis is automatically hidden, because only <u>one</u> grid can be shown.
<i>Recalculate scaling of ...</i>	The parameters <i>Curve Scaling</i> (see page 22) of all graphs are recalculated, so that the CAN raw values are completely mapped to the scaling range.



INFORMATION

Please note, that the user-specific values of *Scale* and *Offset*, that have been entered in the dialogue *Curve Scaling*, will be overwritten.

4.1.7 Options for Representing Data

Options Via this menu item the dialogue window *CANplot Config* is opened. It contains the registers *Color* and *Buffer* and *Curves*. Here you can select options concerning the representation of data in the display window.

- *Color* In the *Color* register the background colour (*Background*) as well as the grid colour (*Grid*) and the colour of markers 1 and 2 can be changed. By a single mouse click on the colour to be changed the window *Select color* is opened. Select a colour as described below. The selected colour is then shown in the according field in the *Color* register.

Click the *Defaults* button to reset the settings of the tab *Color* to the default values (see Figure 17).

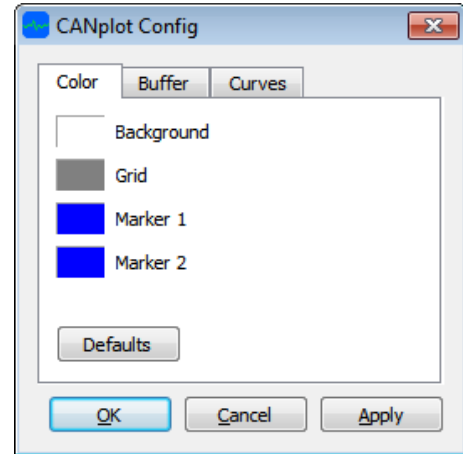


Figure 17: Menu item Options/Color

Selecting Colours for the Display Window via *Select Color*

In order to change the colour of the data curves in the display window click on the current colour of the data curve, that is to be changed in the *Data Configuration* register.

The selection window *Select Color* is opened. By clicking a colour listed under *Basic Colors* you can directly choose a colour and accept it by clicking OK.

If you want to add new colours to the colour list *Custom Colors* select a shade from the colour spectrum by clicking it.

Further, you can change the shade, marked by a cross in the spectrum. For this move the arrow ◀, which points to the right colour scale, up or down. The configured value is shown in the lower window.

The shade can also be directly configured via the colour composition next to it by changing the individual colours.

In order to add the new shade to the *Custom Colors* list you confirm by clicking *Add to Custom Colors*.

Confirm with *OK* to accept the displayed colour and close the window. Or select *Cancel* to close the window without changing the colour.

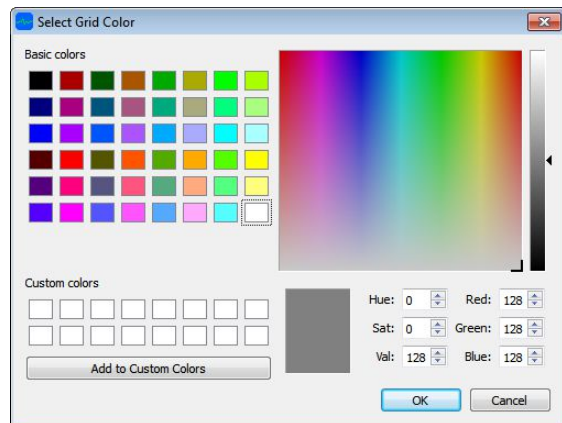


Figure 18: Select Color

- **Buffer** In the register *Buffer* the properties of the buffer memory can be changed. Confirm the changes in the dialogue window *CANplot Config* via *Apply*, when you want to make more changes or select *OK* to accept the changes and close the window. In order to close the window without accepting the changes select *Cancel*.

Buffer Size *Buffer Size* (Default=5000) represents the size of the buffer memory.

The memory operates as a ring buffer, i.e. if more data are received than determined under *Buffer Size*, the oldest data is deleted.

When determining *Buffer Size* you have to keep in mind that a large buffer memory increases the system load.

Buffer Size can either be entered directly or via the arrow up/down buttons in steps of hundred.

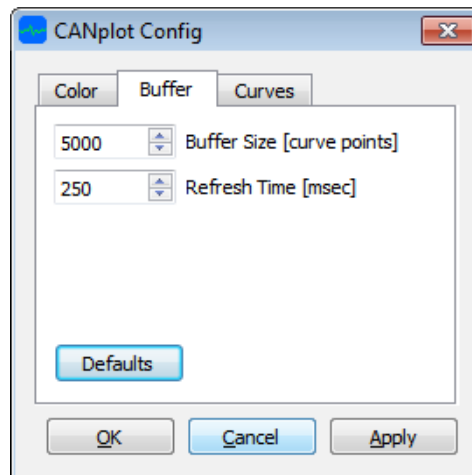


Figure 19: Buffer

Refresh Time The *Refresh Time* (Default=250) shows the time in which the screen is built up again.

Refresh Time also influences the system load of the computer. When setting it please keep in mind that the system load of the computer increases with shorter.

Defaults Click the *Defaults* button to reset all settings of the tab *Buffer* to default values (see Figure: 19).

Curves Display of curves:

- Line Width* Line width in pixels (Default= 1)
- Continuous Scrolling* Enabled per default. For online graphs the time axis *Time/sec* is continuously scrolled (i.e. cyclical update in *Refresh Time* time grid) at the right side of the plot window. If the function is disabled, the displayed time range remains constant, until the curve reaches the right side of the plot window. Then the time axis is shifted forwards about one half of the displayed time range.

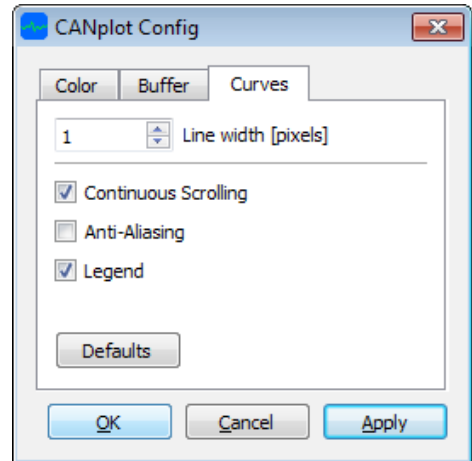


Figure 20: Curves

- Anti-Aliasing* If this function is enabled the displayed curves are smoothed. This function is not available for online graphs – the graph has to be stopped before the Anti-Aliasing can be enabled. If you switch to online mode again, the *Anti-Aliasing* is switched off automatically and the curves are displayed according to default presets.
- Legend* If this checkbox is enabled, the legend is shown in the CANplot window below the display window (see Figure 1 on page 9).
- Defaults* Click the *Defaults* button to reset all settings of the tab *Curves* to default values (see Figure: 20).

4.1.8 Printing the Display Window

- Print* To print the display window choose the menu item *Print*. The Windows dialogue window *Print* is opened in which you can select your printer options.

4.1.9 Exit the Program CANplot

- Exit* Click *Exit* to close the program CANplot.

4.2 Menu Item *Data*

The menu item *Data* lists all functions for saving, loading and importing the data.

A saved file contains all configuration parameters of a curve (see chapter “Configuring the Data Curve via Data Configuration“ on page 12). In opposition to a project file (*.cptprj), a data file (*.cptdat) additionally contains the data of the curve.

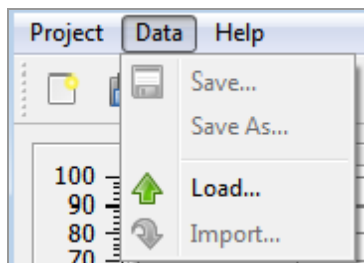


Figure 21: Menu item *Data*

4.2.1 Save Data

Save This menu item saves the current data.

Save As Via *Save As* the received data can be saved under any file name with the extension *.cptdat. The configuration data are also saved.

4.2.2 Load Data

Load Loads saved data into the display window.

Select a file with the extension *.cptdat from the window *Load Data*.

The according project data is also loaded and represented in the program window under *Data Configuration/Value & Style*.

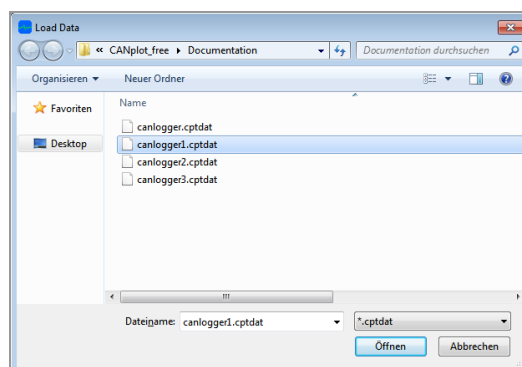


Figure 22: Dialogue box to load data

4.2.3 Import Data

Import

Data of the following files can be imported:

- Text files
- Files with the extension *.csplog (e.g. logfiles recorded with CANreal)

For this, select a file in the window *Import Data*.

The data is only being displayed, if the project configuration data has accordingly been activated. For this, select the check box of the data curve under *Value & Style*.

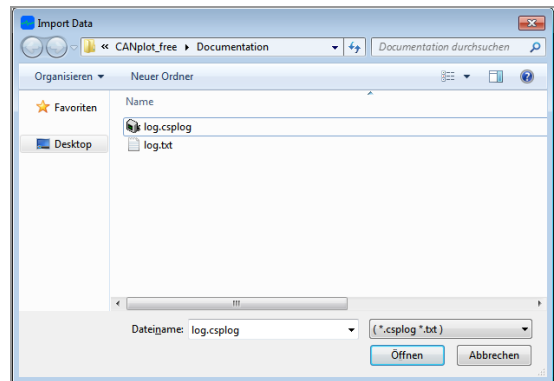


Figure 23: Dialog box for data import

4.3 Menu Item *Help*

Under menu item *Help* the functions *Contents...*, *Show Toolbar* and *About* are listed.

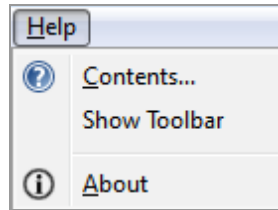


Figure 24: Menu item *Help*

4.3.1 CANplot Manual in PDF-Format

Contents... Opens the CANplot manual in PDF-format.

4.3.2 Show Toolbar

Display the hidden toolbar again.
Procedure to hide the toolbar:

1. Click right on the toolbar or the menu bar to open the context menu
2. Disable the *Toolbar* control box in the context menu.

4.3.3 Information about CANplot

About Opens the information window *About CANplot*, on the right, which apart from contact data of **esd** also contains information about the current program version of CANplot. Confirm by clicking *OK* to close the window.



Figure 25: Menu item *Help/About*

5. Order Information

CANplot is included in the delivery of the CAN-SDK and can be downloaded via the esd website:

<https://esd.eu/en>

PDF Manuals

Manuals are available in English and usually in German as well. For availability of English manuals see table below.

Please download the manuals as PDF documents from our esd website www.esd.eu for free.

Manuals		Order No.
CANplot-ME	Hardware manual in English	C.1108.21
CAN-API-ME	NTCAN-API: Part 1: Structure, Function and C/C++ API, Application Developers Manual NTCAN-API: Part 2: Installation, Configuration and Firmware Update, Driver Installation Guide	C.2001.21

Table 1: Available manuals

Printed Manuals

If you need a printout of the manual additionally, please contact our sales team: sales@esd.eu for a quotation. Printed manuals may be ordered for a fee.