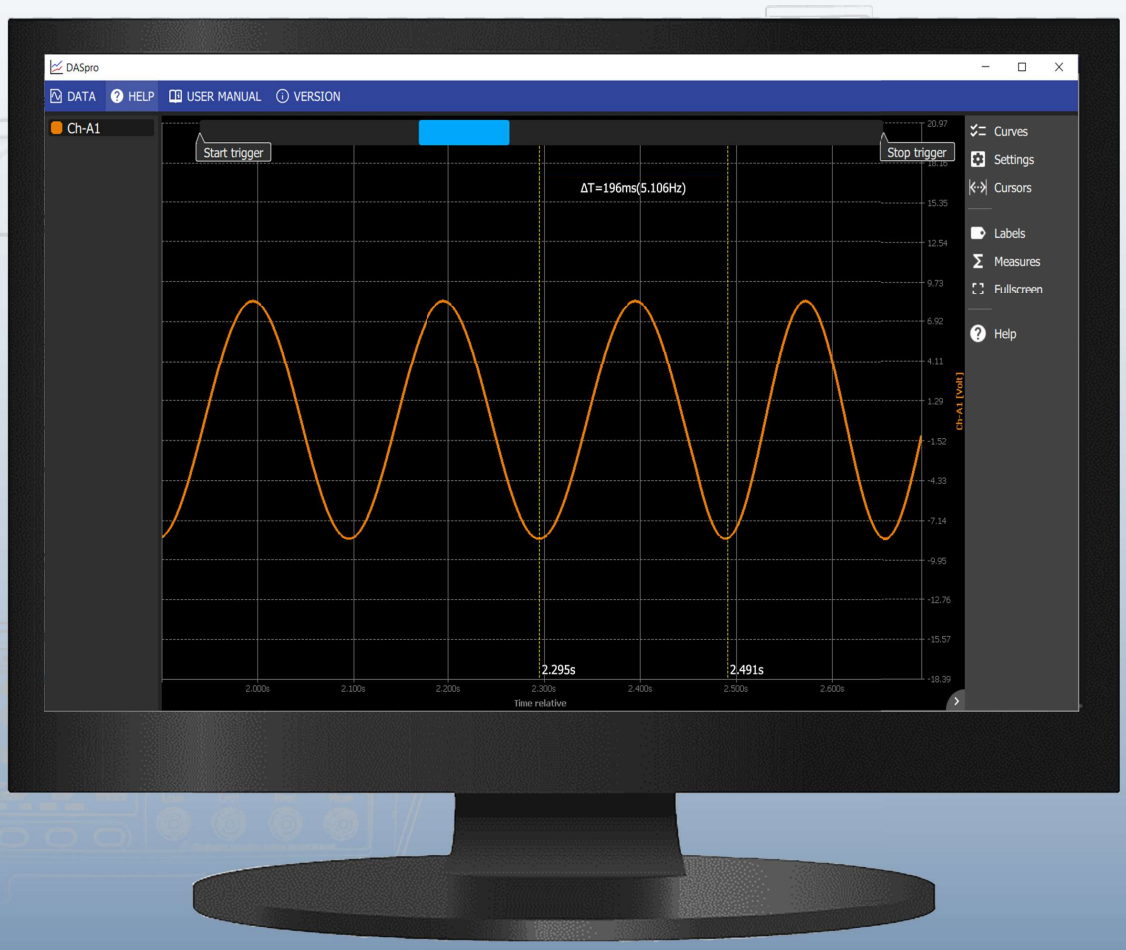
User manual

DASpro



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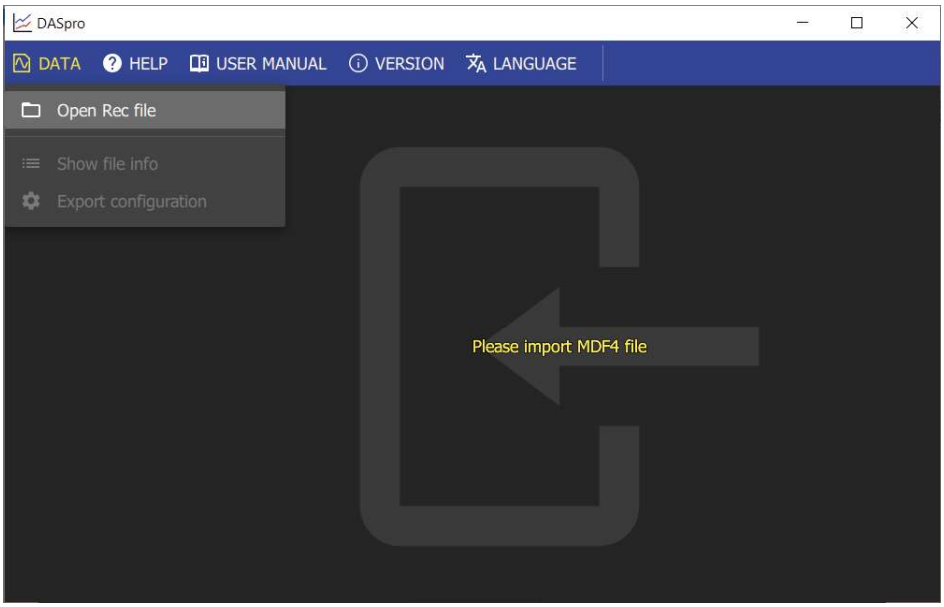
Introduction

The software is avalaible and free to download on our website www.bkprecision.com

To open a record file, go to “DATA” and open “Rec file”. You can also drag and drop an "MDF4" file into the DASpro window.



Chapter 2
Post-analysis

2.1 | Visualization and graphical analysis

The user interface for viewing F(t), or analyzing a recording on the device or on a PC (via DASpro software) is similar.

To display the measurement, drag-and-drop it into the graph area **(1)**, and adjust the desired scale using the various touch gestures :

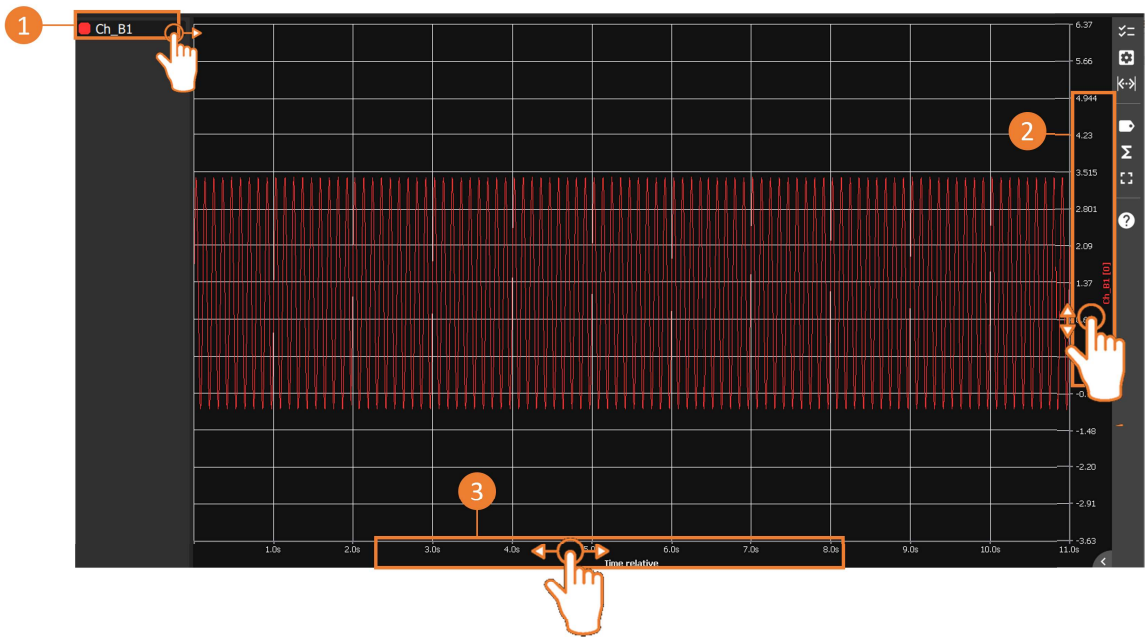


FIGURE 2.1 : Min and max settings for X and Y axes

You can set the minimum and maximum limits by sliding on the axis **(2)**. The same applies to the x-axis (time) **(3)**.

A short press on each axis opens a settings window, where you can manually enter the limits. From this menu, you can, for example, perform an "auto zoom" on the Y axis to automatically center the measurement, or add an additional scale on the Y axis.

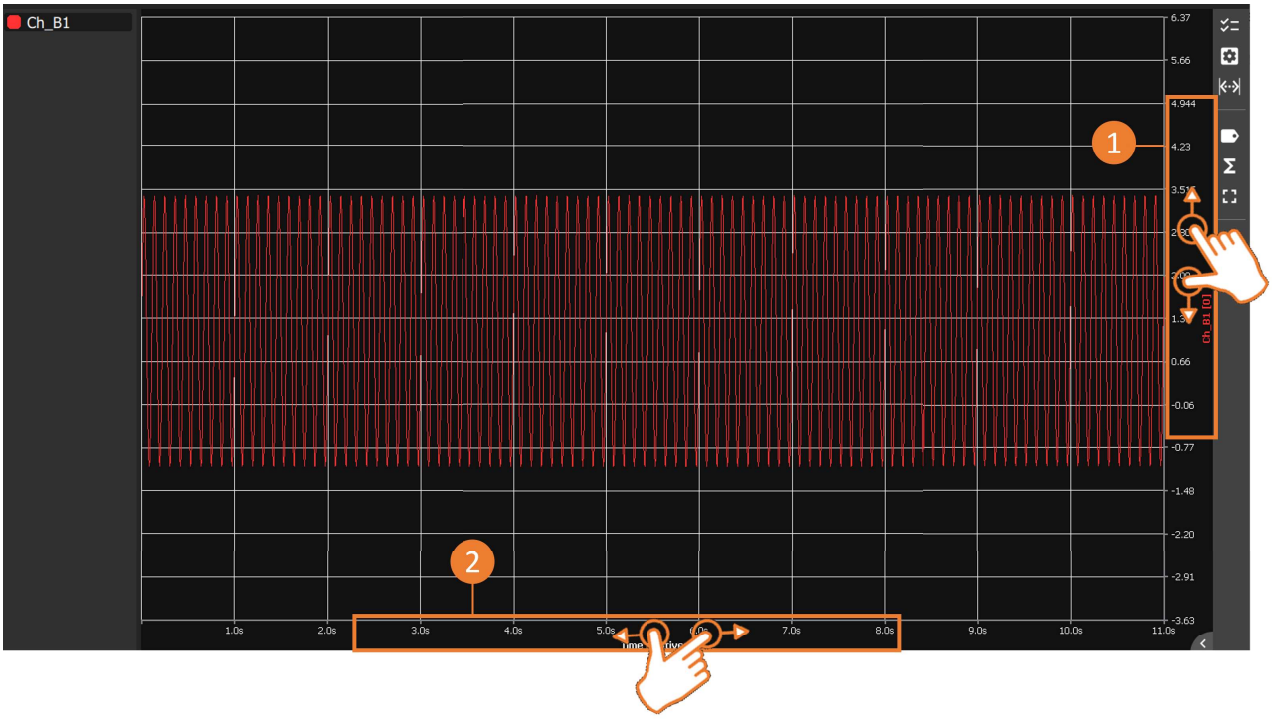


FIGURE 2.2 : Zooming in and out on X and Y axes

By moving the thumb and forefinger closer or further apart on the Y ordinate axis (amplitude), it's possible to zoom in and out between the defined limits **(1)**. The same applies to the X-axis, to change the time base **(2).**

On a computer or if a mouse is connected to the device, use the mouse wheel to perform this function, positioning the cursor on the desired axis.

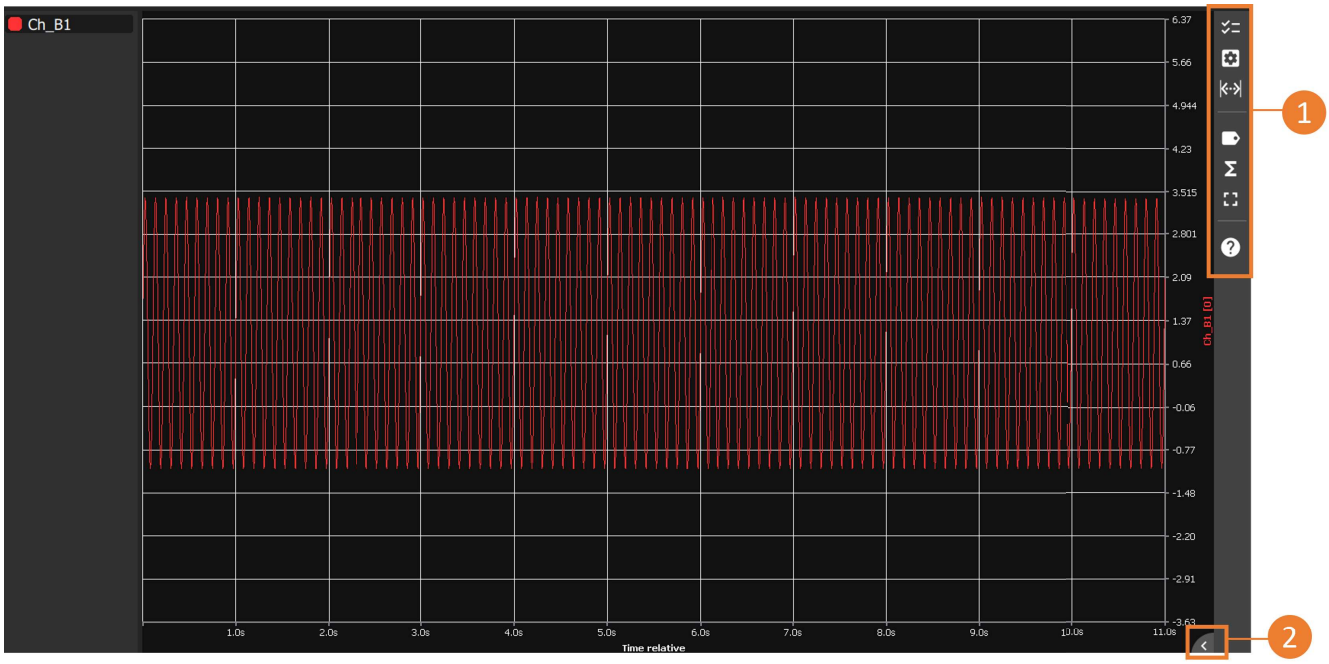


FIGURE 2.3 : Graphic display parameters

On the vertical bar to the right of the screen, a set of parameters is available (**1**). Use the arrow at the bottom right of the screen to open the text description of each parameter **(2).**

Symbol	Description
	Selects the measurements to be displayed in the graphics area
	Allows you to set display parameters : division of the graphics area into several screens, choice of colors, background image, etc.
	Shows/hides vertical and horizontal cursors
	Displays/hides full name of displayed measurement(s) with access to display parameters
Σ	Displays/hides predefined mathematical calculations in real time (see mathematical calculations chapter)
	Displays/exits full-screen mode
	Opens the help window

Mathematical calculations take into account all measurement points displayed on the screen. If vertical cursors are displayed, the calculation will only take into account the points between the cursors.

2.2 | Recording analysis

To open a saved measurement file, go to "Recordings" in the main navigation bar.

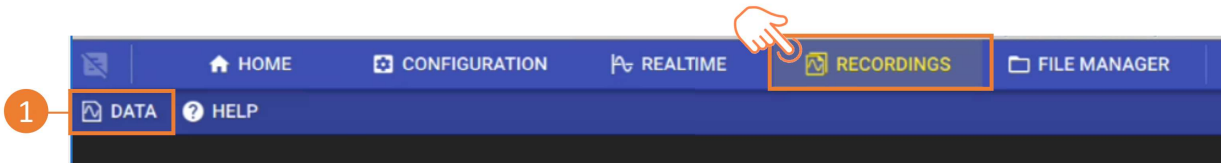


FIGURE 2.4 : Recording measurement file

By pressing data **(1)**, you can :

- Access all saved measurement files
- Convert the displayed measurement file to .csv format, which will be found in the file manager.

Chapitre 3

MDF4 file format

Measurement Data Format version 4 (MDF4) is an ASAM file standard for storing measurement data in a binary file format. For more information about the MDF4 file format, please visit https ://www.asam.net/standards/detail/mdf/wiki/.

3.1 | Format

The MDF contains both raw measurement data and the metadata needed to interpret the raw data. The metadata contains, for example, information for converting the raw data into usable physical quantities, or the names of ASAM-compliant signals. The file is organized in binary blocks, where each block consists of a number of adjacent bytes that can be viewed as a record or data structure.

3.2 | Version and compliance with ASAM standard

Our file format follows the MDF 4.1.1 standard, and can be verified using MDF Validator 2.9.10.

3.3 | Interoperability

Our MDF4 files can be read by the following tools :

- Flexpro
- NI DIAdem
- Matlab + Vehicle Network Toolbox
- Python Asammdf
- Turbolab MDF4-LIB

Other software may be able to open our files if they support the MDF4 standard, but we haven't tested them.

3.4 | Functionality

Main MDF4 features in our devices :

- File description fields : allow users to store information about the context of their measurements
- File history : saves the file creation date
- Marker : time markers added by the user
- Raw data : the raw data saved against the conversion functions defined in the header
- Time synchronization information : information on the source and accuracy of time synchronization
- Attachment : the DAS configuration file is included in the registration file as a backup of the device configuration.
- Lane information : lane identifier, short and long lane names, and color of layout
- Subsampling calculated on the fastest frequency group

3.5 | Example

Here's an example of a Python implementation using the Asammdf library to open an MDF4 record

Listing 3.1 : Exemple d'utilisation de la bibliothèque MDF4 en Python

```
from asammdf import MDF

mdf = MDF('sample.mdf')
speed = mdf.get('WheelSpeed')
speed.plot()

important_signals = ['WheelSpeed', 'VehicleSpeed', 'VehicleAcceleration']
# get short measurement with a subset of channels from 10s to 12s
short = mdf.filter(important_signals).cut(start=10, stop=12)

# convert to version 4.10 and save to disk
short.convert('4.10').save('important␣signals.mf4')

# plot some channels from a huge file
efficient = MDF('huge.mf4')
for signal in efficient.select(['Sensor1', 'Voltage3']):
    signal.plot()
```