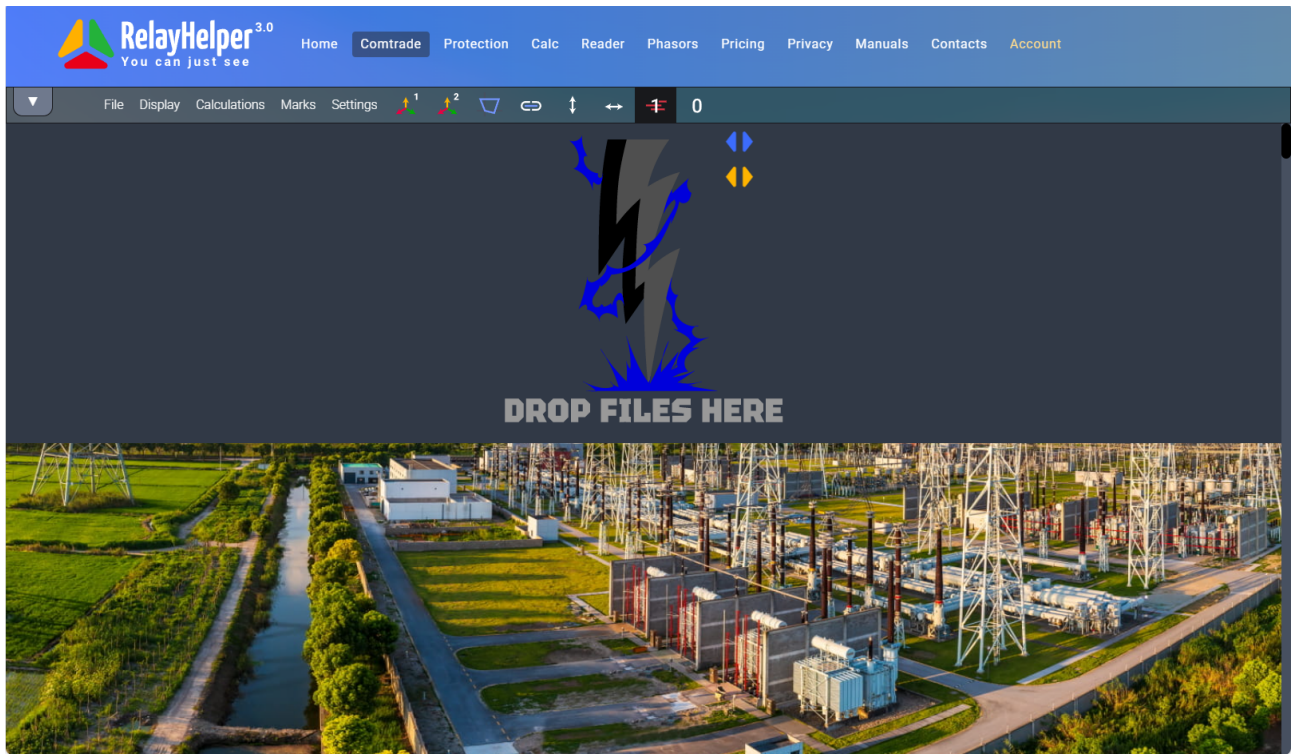


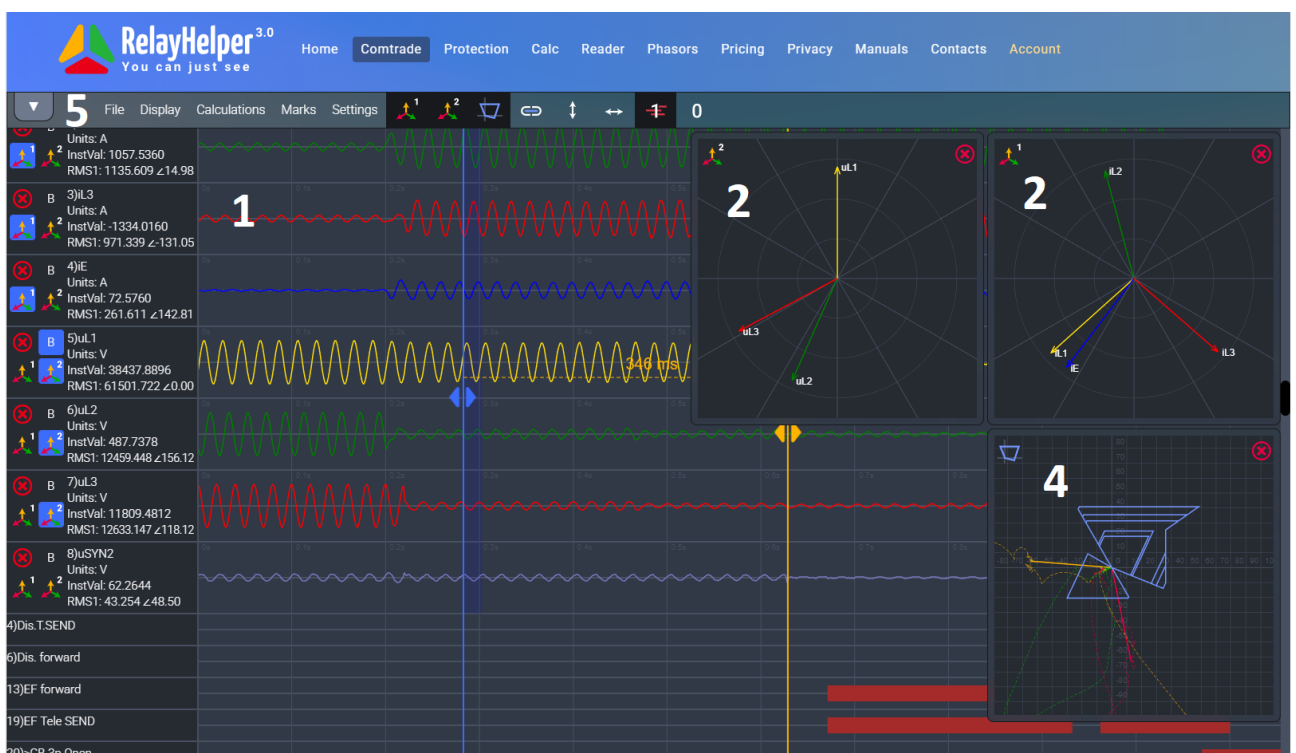
## Comtrade page.

Page overview.

With no file loaded COMTRADE page looks like this.



The Comtrade page with the loaded event file with two vector diagrams windows and protection window looks like this



Where:

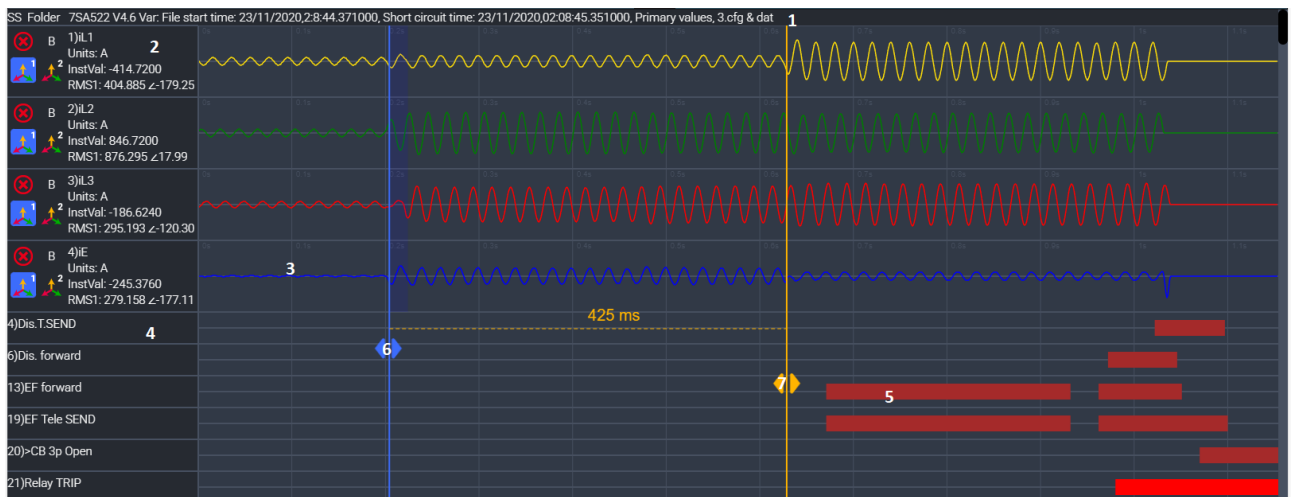
- 1 Main window.
- 2 Vector diagram window.
- 3 Relay protection window.
- 4 Menu and Toolbar.

At this moment RelayHelper supports old (\*.cfg and \*.dat), new (\*.cff) format COMTRADE files and \*.CEV files (records format from the famous American manufacturer).

To open file, drag and drop it into the drop zone (main window 1) of the COMTRADE page or go to the File menu, choose option Open. In this case you have to open \*.cfg and \*.dat files separately.

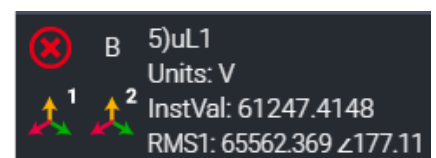
By default, the COMTRADE file is loaded with an inactive protection window, without any channel assigned to the vector diagrams, with the first analog channel as the base channel and with hidden digital channels that did not change during the process. If HDR section of \*.cff file contains any information it loaded into Reader page as well as all settings information in \*.CEV file.

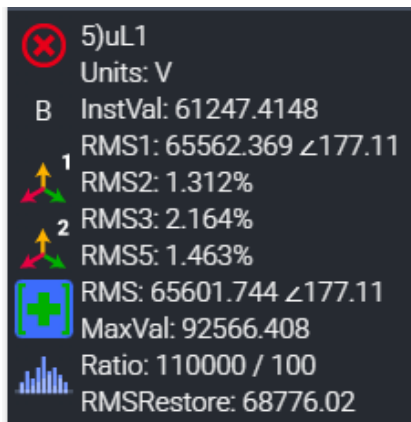
It should be noted that the event files are not uploading anywhere, the calculation and analysis take place exclusively on the device on which the browser is running, until you save it by yourself to your cloud storage.



**Main window is divided into sections and have following objects:**

- 1 Information about event, stored in file, type of displayed values for analog channels (primary/secondary), file names.
- 2 Measurement section has two views. Default:





And extended:

- Channel number and channel name.
- Units of measurement.
- Instantaneous value.
- RMS value of the first harmonic with angle between given channel and base channel.
- Second harmonic value in percent or units (switchable).
- Third harmonic value.
- Fifth harmonics value.
- RMS value of the first 10 harmonics.

- Maximum instantaneous value in the measured interval (1 cycle).
- Transformation coefficient for analog channel.
- Restored RMS value of the first harmonic. Displayed when one of the restoring algorithms is used.

To switch between views, use a button on the toolbar  in the Toolbar.

Also, measurement section has following buttons at the left:



This one allows you to hide the analog channel.



Allows you to mark this analog channel as base channel for angles calculations.



Links analog channel to one of the vector diagrams.



Selects channel for recovery in case of distortion.



Activates spectrogram.

### 3 Waveform of the analog channel.

### 4 Digital channel names. Channels which have the word trip in name are highlighted with light red color (for \*.CEV files all relay bits in trip equation).

### 5 Changes in digital channels.

### 6 Main cursor colored in blue. Responsible for values displayed in measurement section (2) and marks. The area corresponding to one period used for the measurement is displayed to the left of the blue cursor. To move the cursor, drag the triangles on the cursor with the mouse. If they are not visible, just click in the place of the main window where you want them to appear.

### 7 Auxiliary cursor used for time measurement colored in orange.

**8** Measured time between cursors in milliseconds (switchable).

You have several options to navigate through the main window:

- To zoom, use the mouse wheel. Use the "Alt" tab + mouse wheel to make more precise adjustments.
- To move up and down, use the mouse wheel outside section 3 and 5 or outside the main window.
- For horizontal movement drag the waveform with the mouse left button and push.