USER GUIDE

Datalogger

Emax 2 and Tmax XT

Contents

Feature scope

Data Logger function stores with high sampling frequency the instantaneous values of all the measurements in two memory buffer registers.

Data can be easily downloaded by the Ekip Connect unit and transferred to any personal computer. This enables the current and voltage waveforms to be analyzed for quick fault analysis.

The function continuously stores and stops recording, with a selectable delay, whenever the event set by the user occurs (e.g. trip or alarm).
In this way, it is possible to analyze the complete evolution of the fault: from the start to its complete elimination.

Main scenarios in which datalogger function is useful for the end-user:

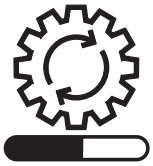
1. Understand the reasons behind an occurred fault and avoid its repetition (correct and prevent faults)

2. Sensitive loads failure prevention (prevent faults)

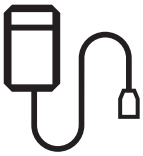
Material required

To use this function, it is needed:

Ekip Connect 3 Software
Download and install the latest version from the ABB Library.



Datalogger License
Purchase from the ABB Marketplace website for Ekip Touch or use an Ekip Hi-Touch version.
The license applies to Emax 2 and Tmax XT devices.



Connection Module
Ekip Programming/Ekip T&P or Modbus TCP module to connect Ekip Connect 3 to the device.

Once redeemed, the license is permanently linked to the device's serial number.

Setting

First, it is necessary to establish a connection between Ekip Connect 3 Software and the circuit breaker that needs to record.
Then, the following parameters must be configured in the software to use the datalogger function.
Access it by navigating to the Tools section in Ekip Connect and clicking on Datalogger.

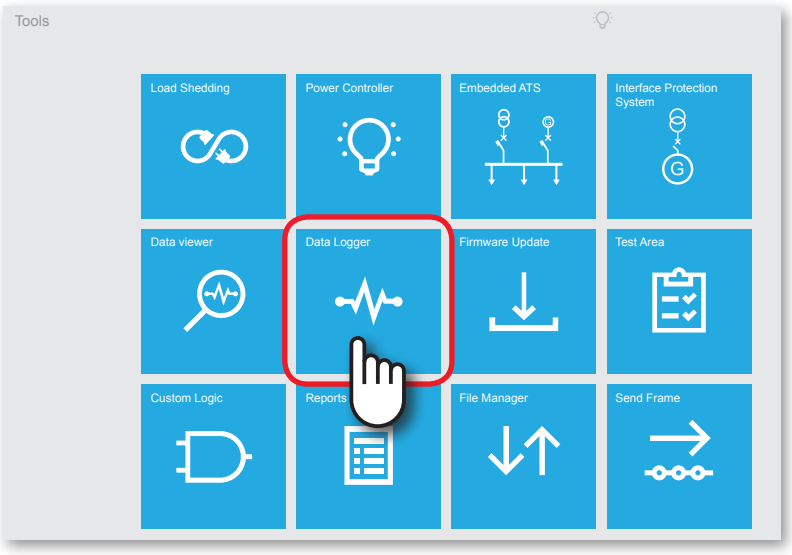


Figure 1 Tool page inside Ekip Connect 3

Setting

Trigger

To let the datalogger work, a trigger (1) must be set. The trigger represents the moment in which the datalogger starts the recording.

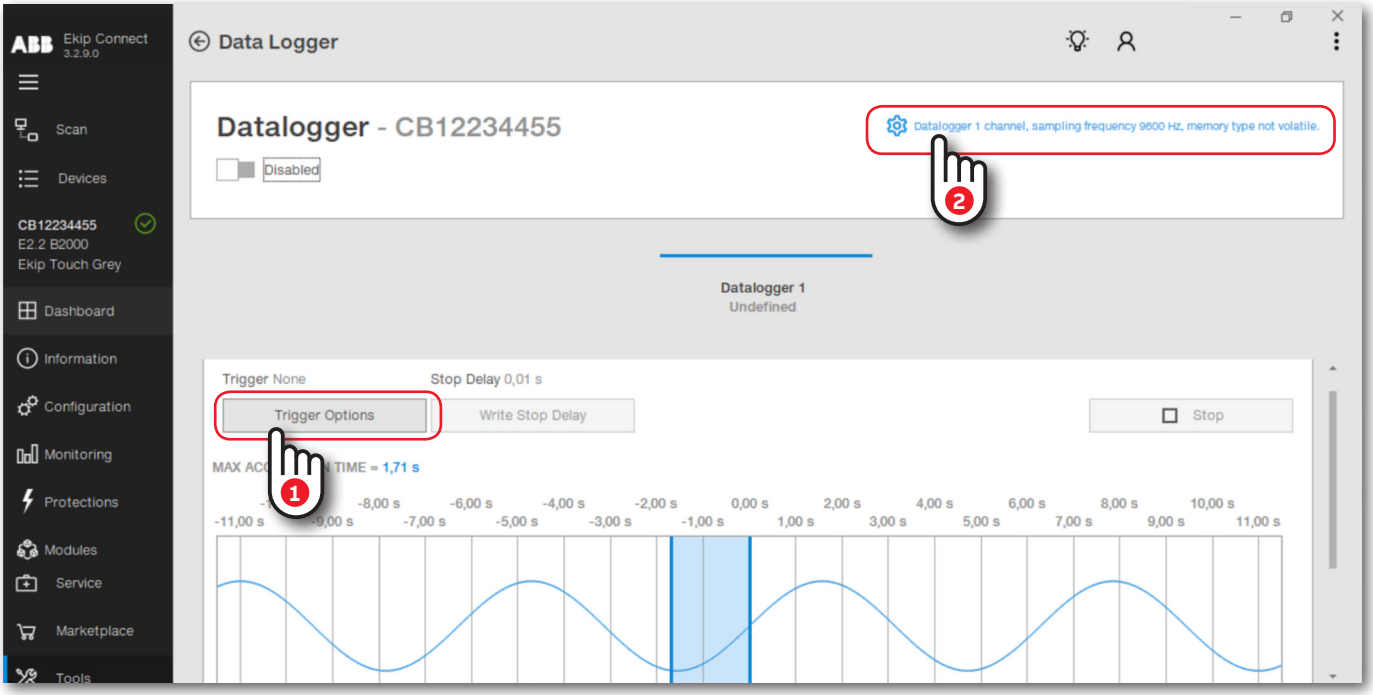


Figure 2 Datalogger tool inside Ekip Connect 3

Inside Trigger options menu, a full list with multiple trigger types such as status, warning, alarms will be shown.

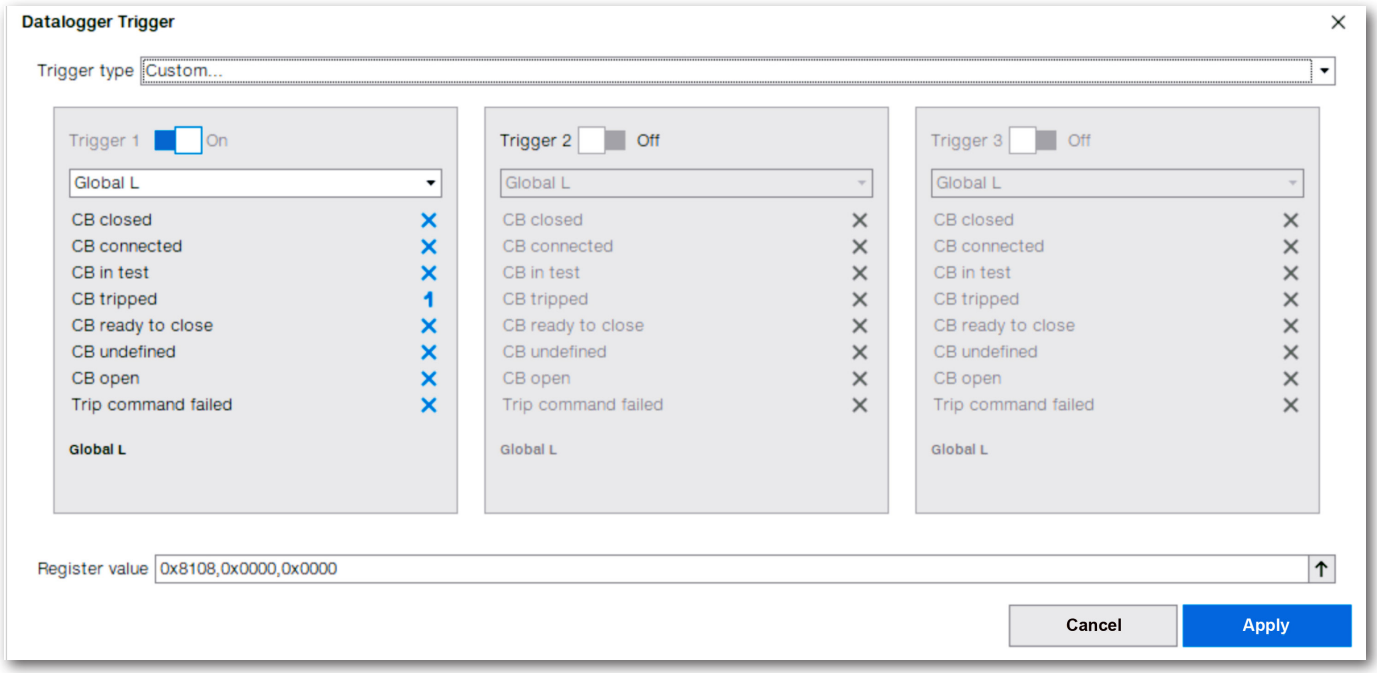


Figure 3 Trigger available inside the tool

It is possible to create an AND logic between 2 triggers or leverage on OR logics with 3 triggers combining them together.

Properties

Clicking on the gear 2, the user must set:

- Number of channels: it determines the number of recordings (1 or 2) Note that the recordings share the settings of the sampling frequency and type of memory

- Sampling Frequency: it establishes the number of samples acquired per second and the recording window. Four options are available: 1200 Hz (window= 13.6 s), 2400 Hz (6.8 s), 4800 Hz (3.4 s), 9600 Hz (1.7 s). The sampling frequency selected, will determine the length of your recording window

- Memory type:
  - Non volatile: Ekip Touch maintains the registration even when off; the life of the internal battery of the unit can be sensibly less than the declared value in the absence of auxiliary power supply.

  - Volatile: Ekip Touch loses the recording if it is switched off; when the unit is switched on again, the datalogger automatically restarts, losing the previously stored data.

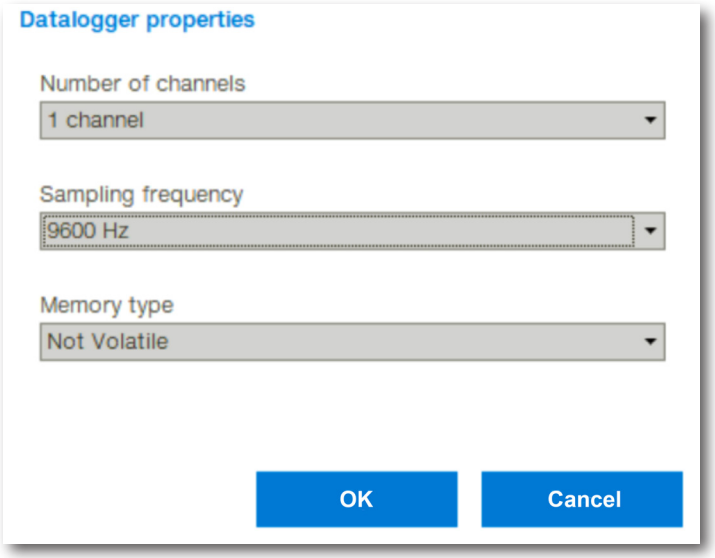


Figure 4 Properties that can be selected

Time window

The datalogger can record before and after the trigger occurs.

If the window is moved to the left and the blue line (Start) is positioned before the green line (Trigger), the datalogger will record both before and after the trigger.

If the blue line coincides with the green line, the datalogger starts recording exactly when the trigger occurs, ignoring prior events.

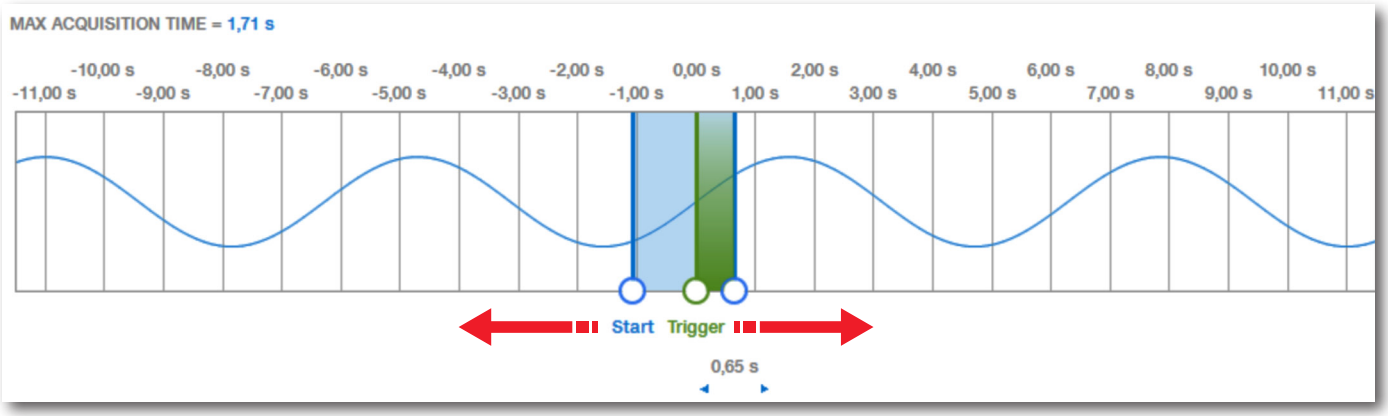


Figure 5 Time window that can be moved according to what I want to record before and after the trigger

Setting

Download recording

Once the datalogger is available, a pop up window will ask you if you want to download the recording.

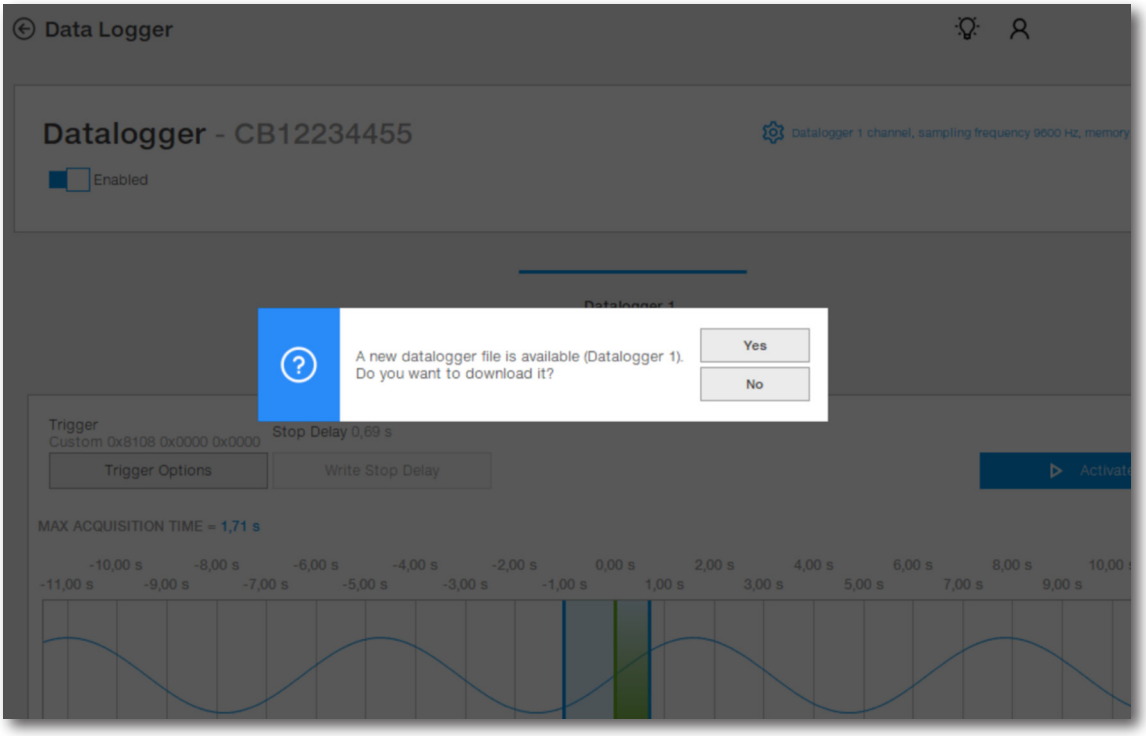


Figure 6 When the datalogger completes the recording, the file can be downloaded

The file can be downloaded through Ekip Connect, using modbus communication or Ekip T&P/Ekip Programming

The download may take a few minutes, but you can also download just a portion of the recording to save time.

An icon appears on the HMI when the datalogger is active.

Dataviewer

To view a file, leverage on the Dataviewer, present inside the “Tools” section.

Dataviewer does not require a connection between Ekip Connect 3 and the device to be utilized.

Click on “Open file” to view the waveform. Once open, all data related to current, voltage, and signals will displayed.

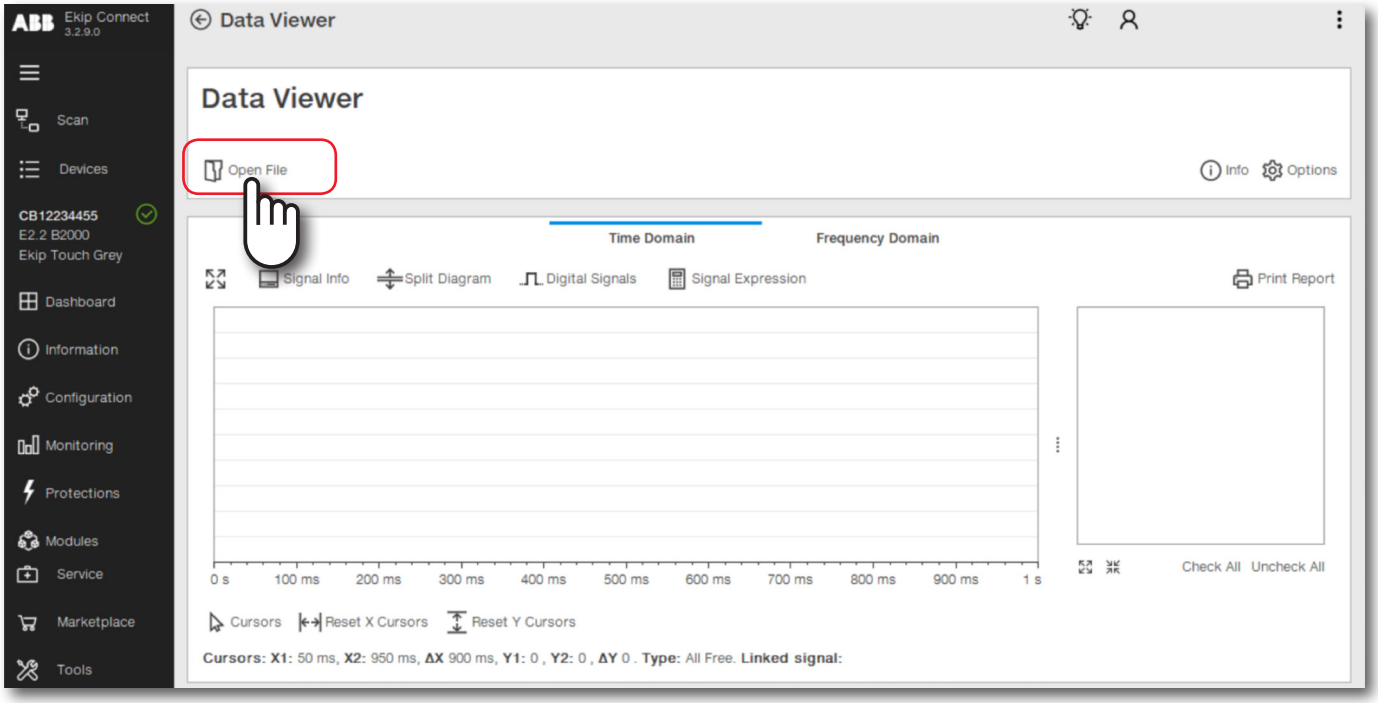


Figure 7 Main page inside the Dataviewer file

Dataviewer

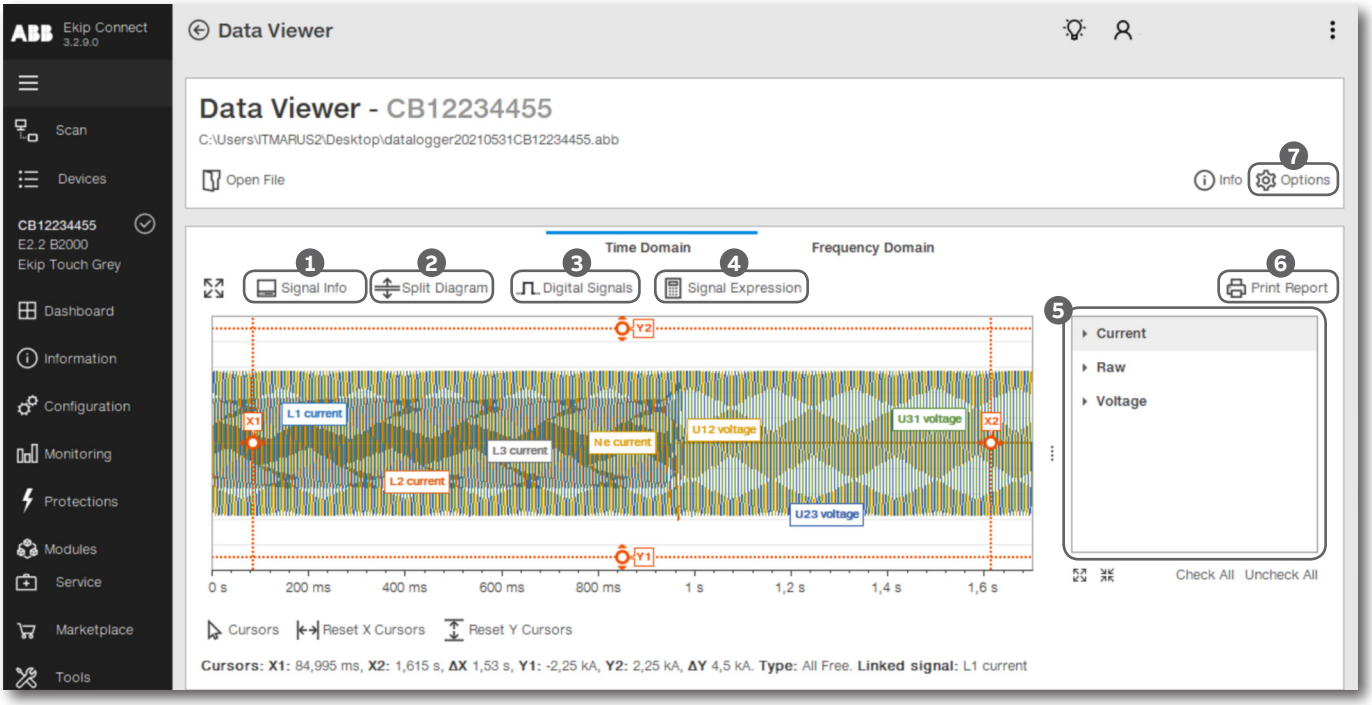


Figure 8 Explanation of all the functions present inside the Dataviewer

Inside the tool, different commands are available:

1. **Signal info**: it creates a tab below the diagram with detailed values about the waveform (peaks, Mean, RMS…etc.)
2. **Split diagram**: Separates current and voltage measurements for better viewing.
3. **Digital Signal**: shows when a digital signal occurred (e.g. CB closed becomes open). It is possible to retrieve all the status and the moment in which they changed (e.g. CB closed to open)
4. **Signal expression**: Allows for custom curves by summing or subtracting several signals.
5. **Current, Raw, voltage**: Displays only the selected curve, not all recorded variables.
6. **Print report**: Creates a PDF with all waveform information visible in the Datalogger tool.
7. **Options signals**: Exports datalogger file data in .csv and .comtrade formats.

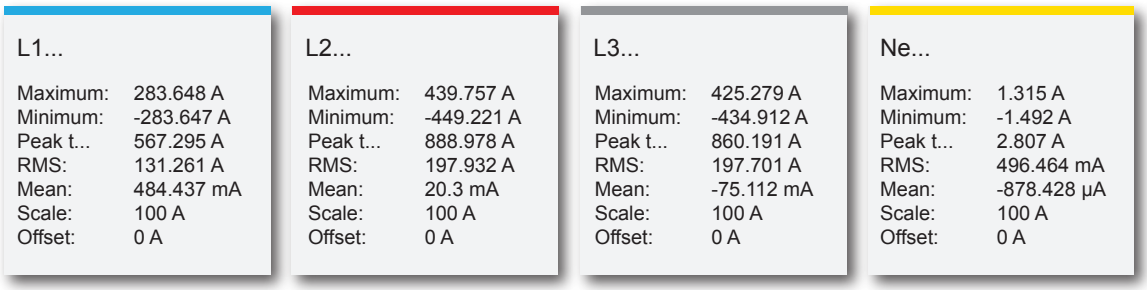


Figure 9 This window appears if Signal Info is clicked

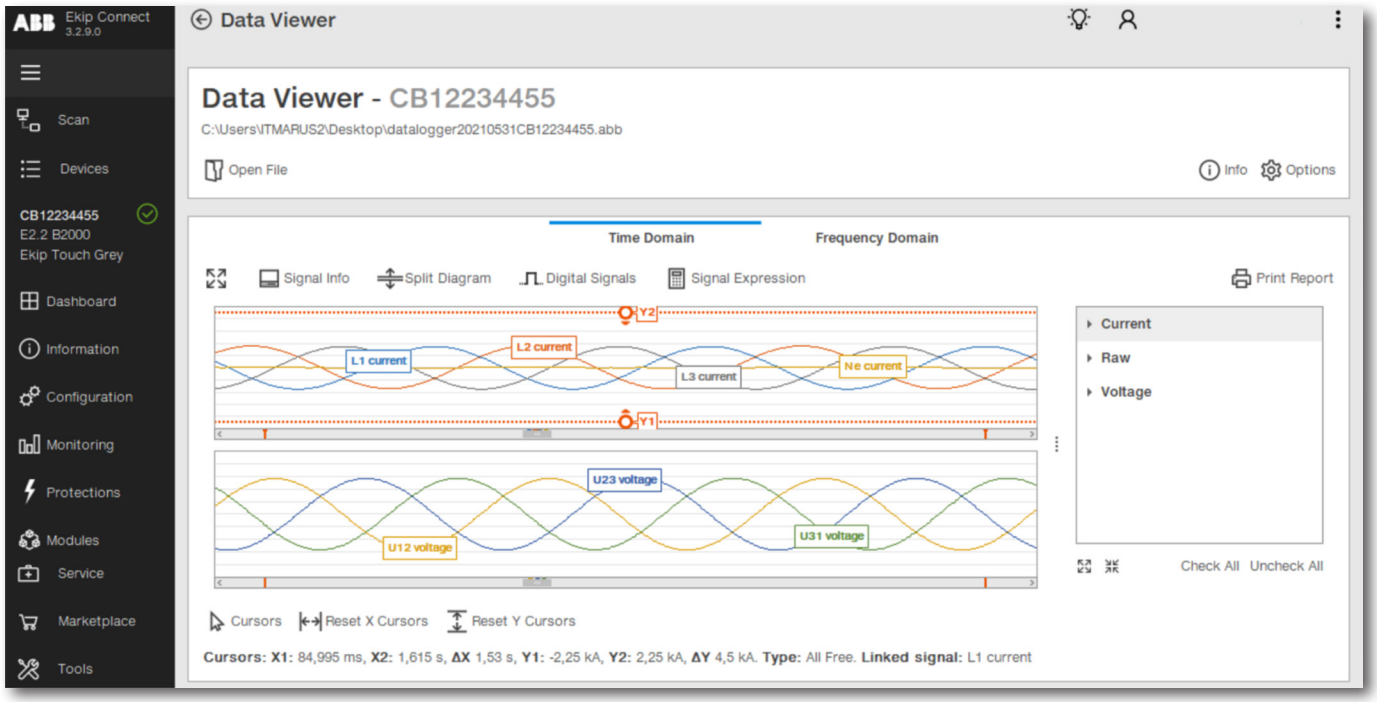


Figure 10 Graphical representation of split diagram function

Below the diagram, it is possible to select a specific waveform and reposition it as desidered with the “cursors” function. It also possible measures the value between different points in the diagram, displaying x and y coordinates.

To better observe the diagram, it is also possible to reset the x and y scale.

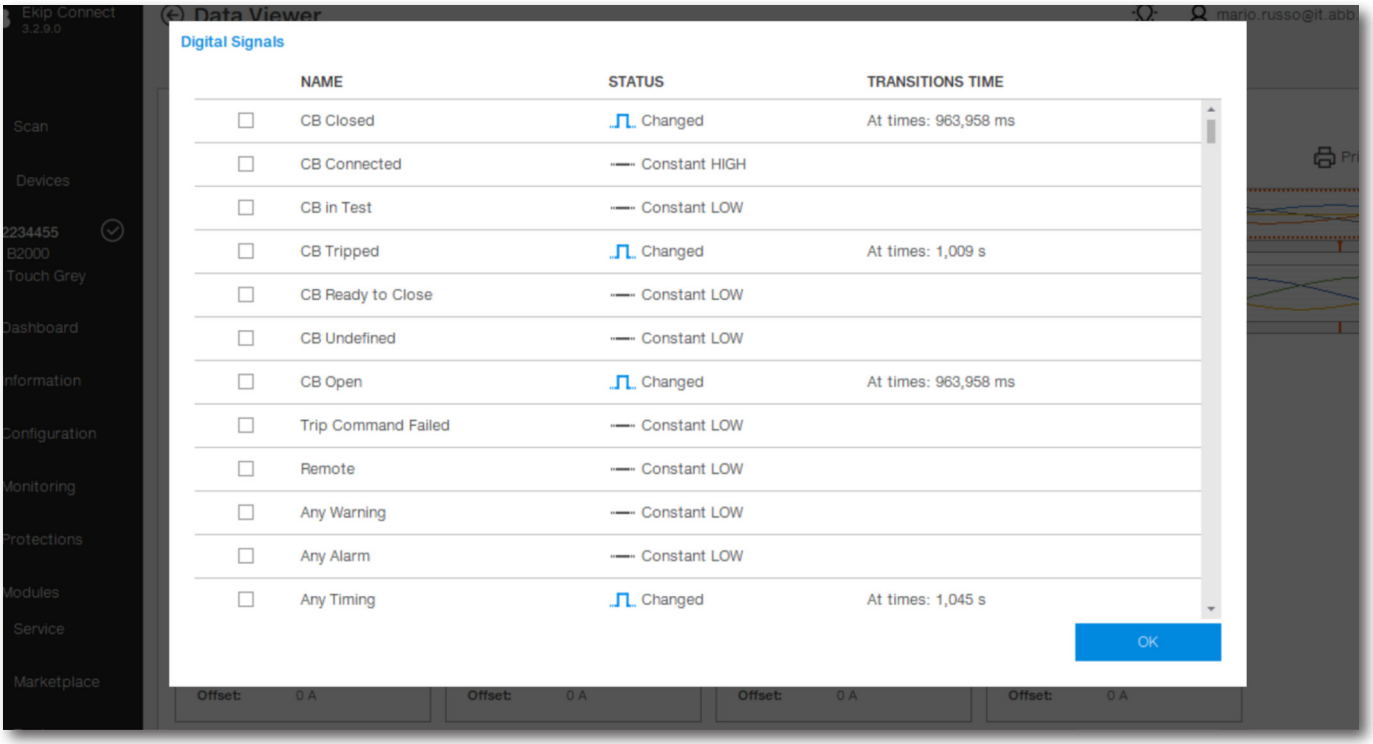


Figure 11 When Digital signal is clicked, all the status recordings appear

Dataviewer

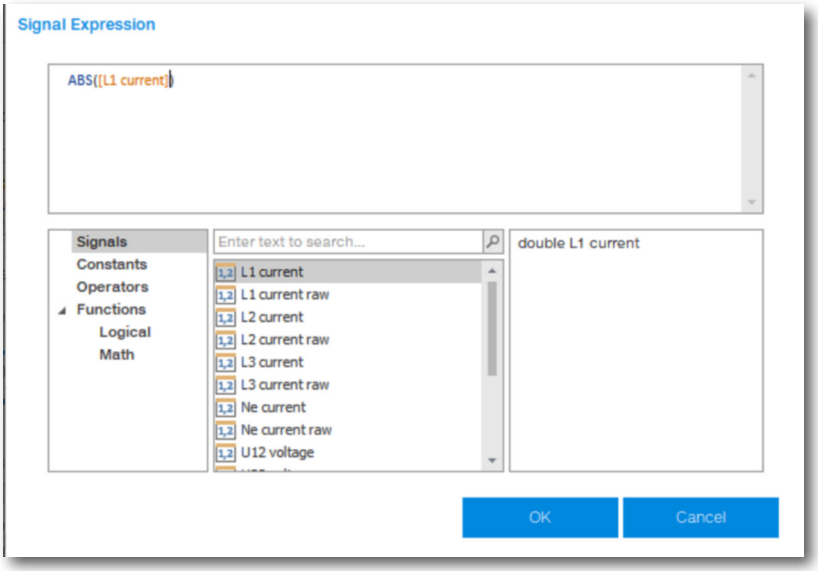


Figure 12 Signal expression window

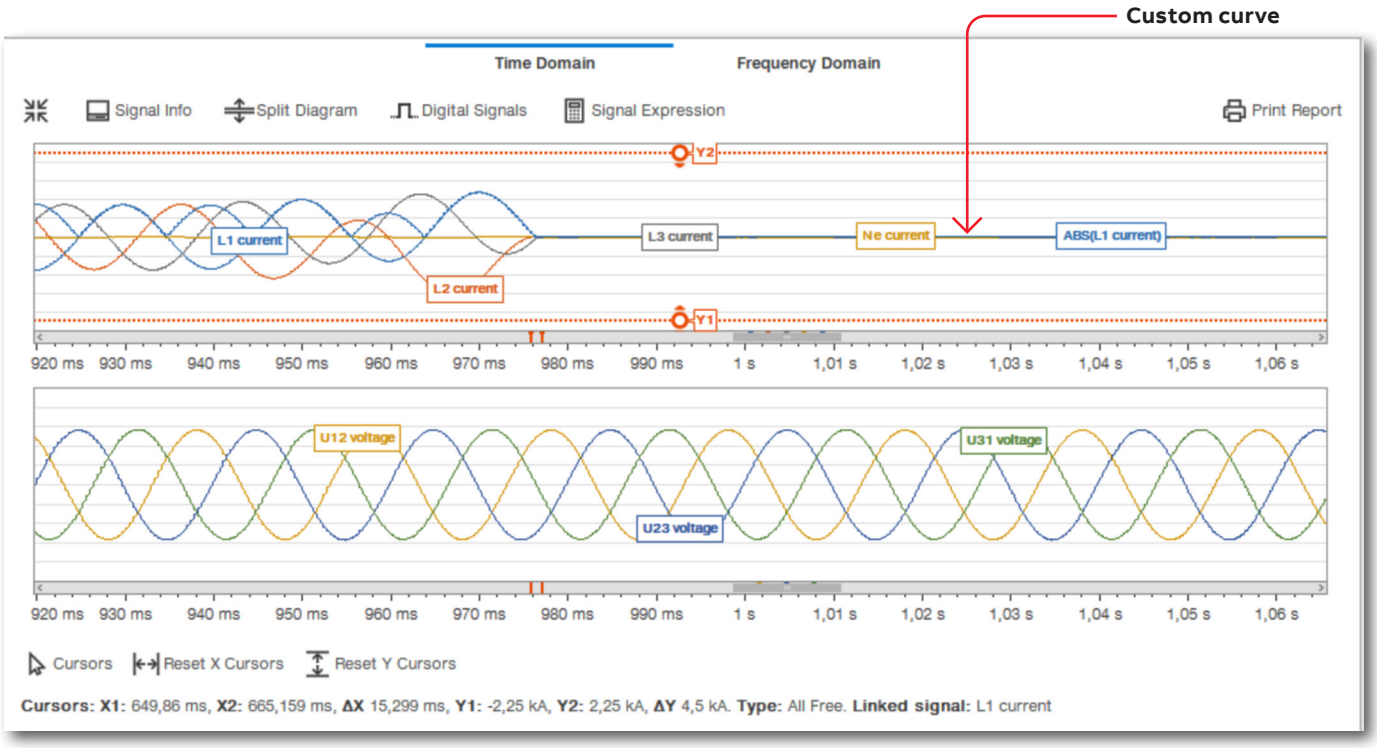


Figure 13 Outcome of the creation of a custom curve

Conclusions

In conclusion, the integration of datalogger functionality into circuit breakers represents a significant advancement in electrical system management.
Dataloggers enhance the reliability, efficiency, and safety of electrical networks.

This innovation not only facilitates proactive maintenance and rapid fault diagnosis but also supports compliance with regulatory standards and optimization of energy usage.

As the demand for smarter, more resilient electrical infrastructure grows, the adoption of datalogger-equipped circuit breakers will undoubtedly play a crucial role in shaping the future of power distribution systems

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