

Virtual measurement and recorder injection in VAMP relays

Virtual measurement of Vamp relays is possible with the v.10.74 software or a later version. Virtual measurement makes it possible to inject virtual current and voltage with 2nd, 3rd, and 5th harmonic content into the relay, thus allowing simple testing without a secondary testing device. It is an ideal tool for testing the relay-Scada communication interface and events. Vampset 2.2.73 setting tool or more recent version is required for this feature.

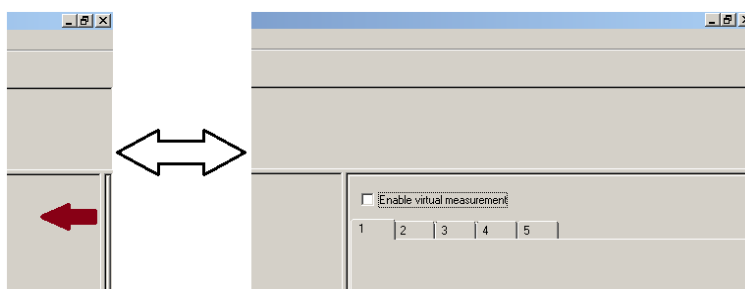
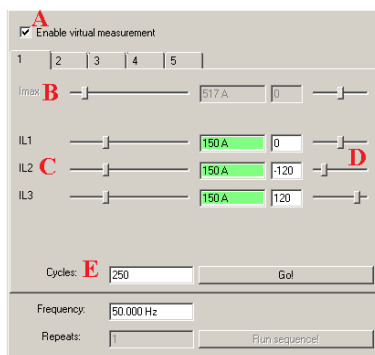


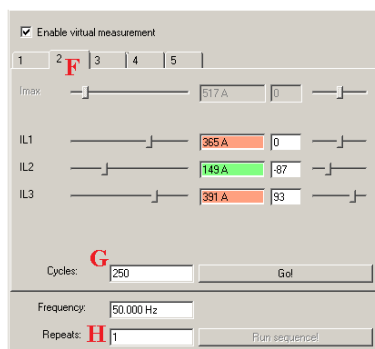
Figure 1. Slide the virtual measurement bar from the right side of Vampset.

Virtual measurement with the Vampset is possible when the relay is connected and the menu structure has been read from the relay. The bar for virtual measurement is hidden on the right side of the Vampset view.



After enabling (A) the virtual measurement view it is possible to adjust the maximum for the signal used (B) and the value of the signal itself (C). You can adjust the phase angle (D) of any signal used. After a value greater than zero is typed into the cycles view (E) you can initiate the virtual measurement by merely pressing the Go! button. The length of the virtual measurement depends on the frequency used and the number of cycles. If the frequency is 50 Hz and the number of cycles is set at 250, the injected length of the virtual signals is as follows:

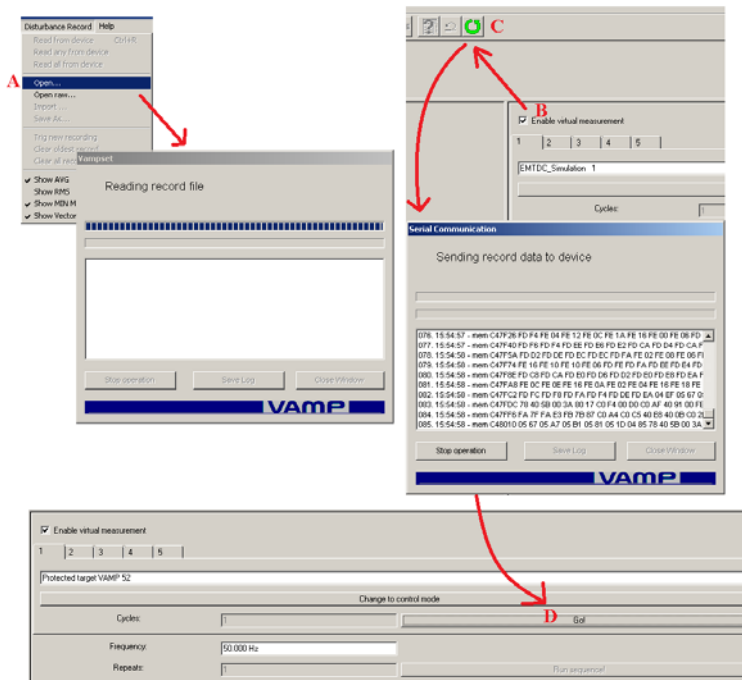
$$t = \frac{1 \cdot 250}{50}, \text{ e.g. 5 seconds.}$$



You can also create sequences with a maximum of 5 windows. To create a sequence, open another sequence window (F) and add a value greater than zero to the Cycles menu (G). The sequence is launched by pressing the Run sequence! button. There will be no delay between the sequence windows. You can also repeat a sequence without any extra delay (H).

Running virtual comtrade files with Vamp relays

You can run virtual comtrade files with Vamp relays with the v.10.74 software or a later version. This means that you can analyze relay behaviour by playing the recorder data over and over again in the relay memory.



Open the Vampset setting tool. Go to “Disturbance record” and select Open... (A). Select the comtrade file from your hard disc or equivalent. Vampset is now ready to read the recording. The virtual measurement has to be enabled (B) in order to send record data to the relay (C). Sending the file to the relay's memory takes a few seconds. Initiate playback of the file by pressing the Go! button (D). The “Change to control mode” button takes you back to the virtual measurement.

NOTE! The sample rate of the comtrade file has to be 32/cycle (625 ϕ s when 50 Hz is used). The channel names have to correspond to the channel names in Vamp relays: IL1, IL2, IL3, Io1, Io2, U12, U23, UL1, UL2, UL3 and Uo.

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