Step by Step instruction to activating the synchrocheck function in the VAMP relays

The synchrocheck function is available in the following VAMP relays: VAMP 230, VAMP 255, VAMP 257 and VAMP 259. These relays have three voltage inputs which can be utilized for synchrochecking purposes. This guide describes how to setup the relay when the checking is done comparing only two voltages. However, these relays do support synchrochecking even with three different voltages; please refer to the manual for more information.

When the synchrocheck function is used, one must first make sure that the voltage connection and voltage measuring is correct. The connection used should be "2LL/LLy" which measures two phase to phase voltages and then one phase to phase voltage from the other side. Please note that you should always use U12 voltage for the synchrocheck function.

Voltage measurement modes for synchrocheck function

Voltage input	Terminals	Signals in mode "1LL+U_0/LLy"	Signals in mode "2LL/LLy"	Signals in mode "LL/LLy/LLz"
U_a	X1:11-12	U_{12}	U_{12}	U_{12}
U_b	X1:13-14	U_{12y}	U_{23}	U_{12y}
U_c	X1:17-18	U_0	U_{12y}	U_{12z}
Number of synchrocheck stages		1	1	2
Availability of U_0 and directional I_0 stages		Yes	No	No
Power measurement		1-phase power, symmetrical loads	3-phase power, unsymmetrical loads	1-phase power, symmetrical loads

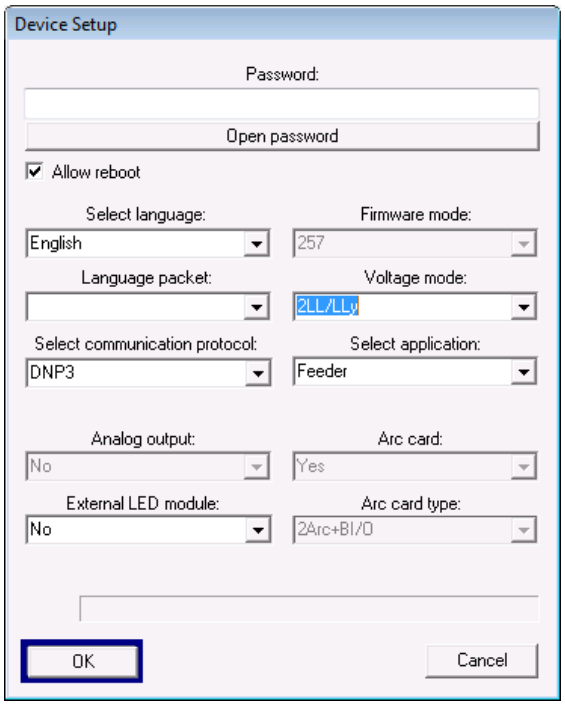
The default voltage measuring mode is not correct for the synchrocheck purposes. Therefore, it is recommended that the mode is already changed in the device setup menu of VAMPSET. Then, there is no need to read the data from the relay several times.

Instructions:

1) Open VAMPSET and select “Connect device”

The Device Setup window should pop up.

2) Give the configurator password (the default password is “2”) and then click “Open password” and tick also the “Allow reboot” box.

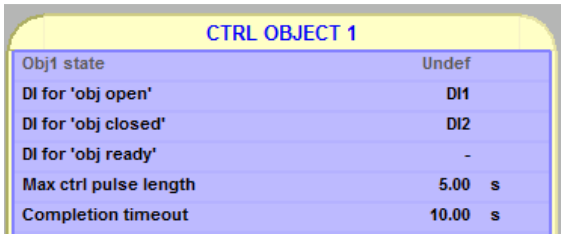


Now there are many boxes to be set. However, you only need to set the “voltage measuring mode” to be “2LL/LLy) to get the synchrocheck stage visible in the menu.

VAMPSET will then change the parameters, restart the unit and read all the setting parameters. This will take a while.

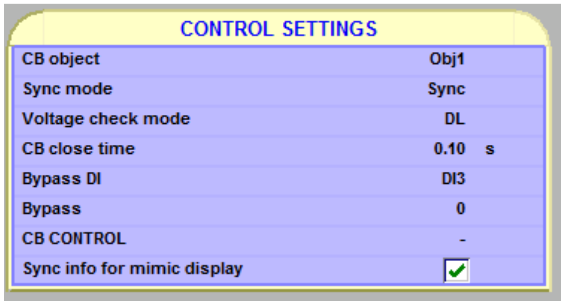
When all the parameters are read, it is a good idea to save all the parameters to a file. Then the relay can be configured. This instruction will just go thru the settings that are necessary for the synchrocheck function.

3) Go to the “Object” submenu and give the CB open and close status inputs. Please also make sure that the control pulse is long enough to give time for the synchrocheck.



4) Go to the “Synchrocheck 1” submenu and check the setting parameters.

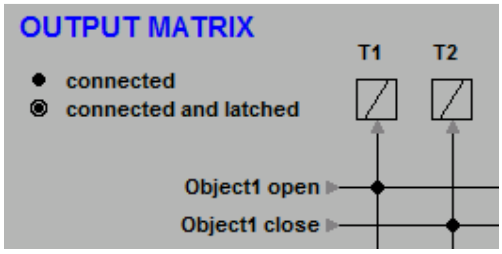
The default parameters are good for this application. However, if you application needs also a voltage check function, remember to select the right operation mode for that (for example “DL”). Furthermore, one digital input should always be selected to bypass the function.

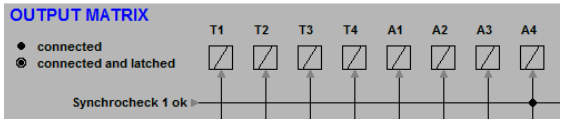


5) Set your settings for the synchrocheck i.e. the maximum allowed frequency, phase angle and amplitude differences.

Frequency difference	0.10 Hz
Voltage difference	720 V
Voltage difference	3 %Un
Phase angle difference	5 °

6) Go to the “Output matrix” submenu and check the synchrocheck and object signals. The object open and close command signals should be connected to the corresponding trip relays, for example T1 and T2. If you want to use the synchrocheck signal for an external logic or device, then the synchrocheck OK signal should be connected to an output relay, for example A4. This signal is active, when the conditions are met.





The function is now ready to be used.

Refer to the relay manual for more information.

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