

Clock Synchronization with SNTP

This application note applies to Vamp 50, Vamp 200 and Vamp 300 series

Overview

The VAMP relays which have an Ethernet interface can be synchronized with a NTP server. The relay makes the synchronization automatically using SNTP protocol. The internal clock of the relay is synchronized to the UTC time of the NTP server. UTC time is used e.g. in the time stamps of the IEC 61850 protocol. It is possible to set the relay to show the local time using “Time zone” and “NTP daylight saving parameters”.

Starting SNTP synchronization

The VAMP relay starts synchronizing its clock to the clock of the NTP server after the IP-address of the NTP server is correctly configured to the “ETHERNET PORT” settings.

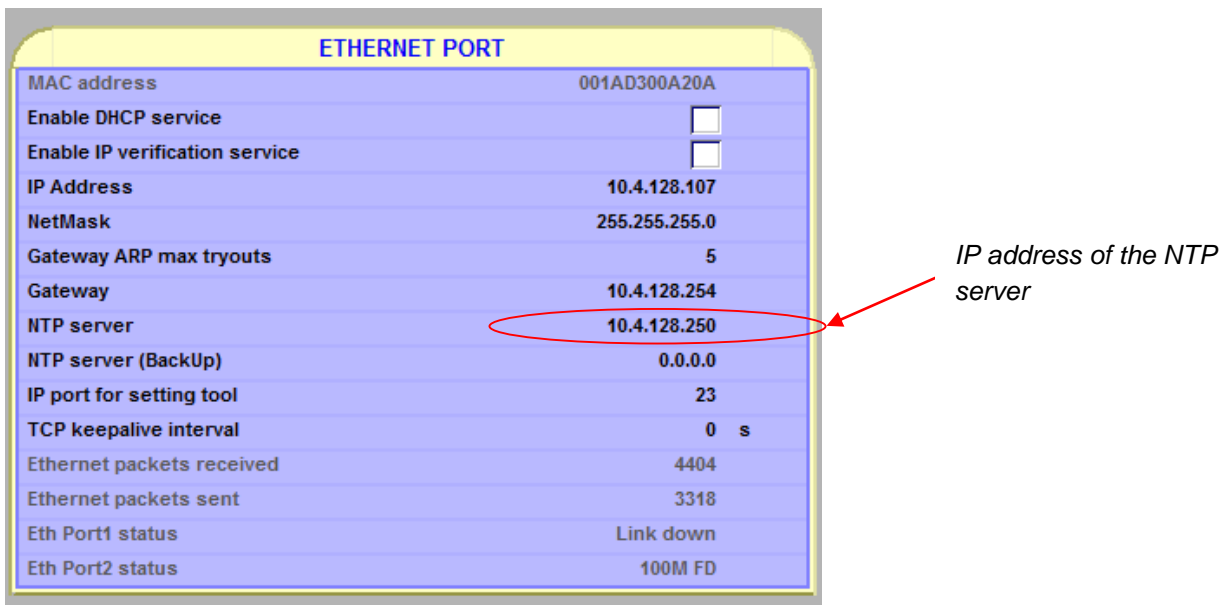


Figure 1. An example of the NTP server IP address setting.

Time zone setting

Example 1. Time zone = 0.00

When the “Time zone” is 0.00 then the UTC time is used also in the events in local display and in the events shown in the VAMPSET event buffer.

CLOCK SYNC

Synchronizing source	SNTP
Minute sync pulse DI	-
Synch correction	0.000 s
Auto adjust interval	8.4 s
Average drift	Lead
Synch message counter	131
Latest time deviation	0 ms
Filtered sync deviation	0 ms

SYSTEM CLOCK

Date	2017-05-16
Day of week	Tuesday
Time of day	11:46:47
Date style	y-m-d
Time zone	0.00 h

Time zone = 0.00

Read

LN Obj Attr Value

Time stamp in IEC 61850 event.

[2]	2017-05-16	11:52:29.152	00E01	DI1 on
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Time stamp in VAMPSET event buffer.

Figure 2. Example of event time stamps when “Time zone” setting is equal to 0.00.

Example 2. Time zone = 3.00

When the “Time zone” is 3.00 then the UTC time is used for IEC 61850 events, but the events in local display and events shown in the VAMPSET event buffer are 3 hours “ahead”.

CLOCK SYNC

Synchronizing source	SNTP
Minute sync pulse DI	-
Synch correction	0.000 s
Auto adjust interval	8.4 s
Average drift	Lead
Synch message counter	131
Latest time deviation	0 ms
Filtered sync deviation	0 ms

SYSTEM CLOCK

Date	2017-05-16
Day of week	Tuesday
Time of day	14:57:27
Date style	y-m-d
Time zone	3.00 h

Time zone = 3.00

Read

LN Obj Attr Value

Time stamp in IEC 61850 event.

[26]	2017-05-16	14:58:50.692	00E01	DI1 on
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Time stamp in VAMPSET event buffer.

3 hour time difference because of the Time zone setting.

Figure 3. Example of event time stamps when “Time zone” setting is equal to 3.00.

NOTICE

The event time stamps shown on the local display are also local time = UTC time +/- Time Zone

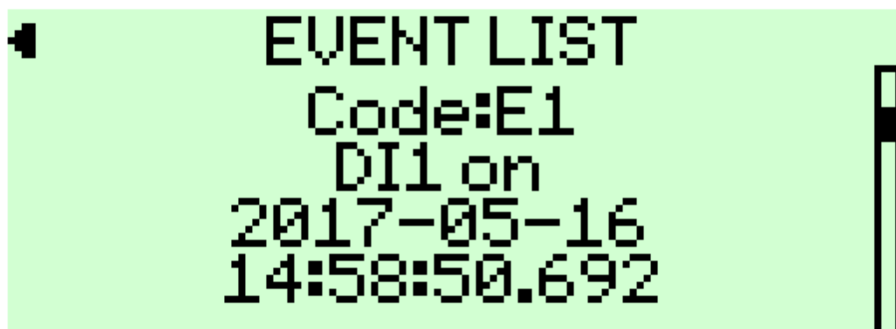


Figure 4. Event listing in local display.

Technical data

Clock synchronization with SNTP

Accuracy of time synchronization	10 ms
Time synchronization interval	Auto adjusted, typically between 0,5 min – 2 min

NOTICE

When relay has been powered ON for the first time or rebooted and SNTP connection is established, it may take up to several minutes until maximum time synchronization accuracy is reached.

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