**inem KONČAR**

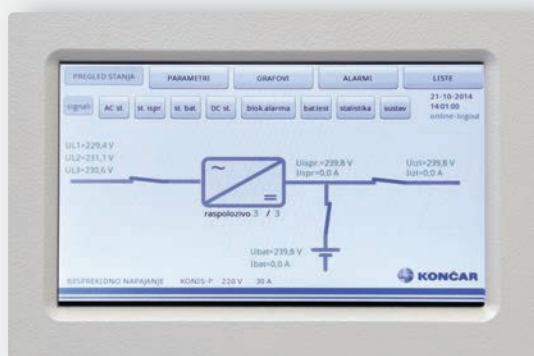Končar - Electronics and Informatics Inc.

# Nap@net - networking of DC power supply systems



*KONLOG – the system overview display*

**Nap@net software on the server computer generates a database of all networked systems by storing their detailed lists of events, oscillograms of all measurements during alarm events, the results of different automatic tests, changes in parameters, measurement data, etc.**

Nap@net software for networking DC power supply systems enables interconnection of all power supply systems inside one power distribution or transmission area and thus creating one complete control and service unit. This allows a significant increase of service and maintenance quality and efficiency, which directly increases the reliability, availability and service life of the power supply systems. Networking software allows users to view all data on any system at any time.

In case of failure, precise and timely measurement data, event signals, system parameters and results of various diagnostic tests provides a competent assessment of the event, identification of relevant circumstances and selecting an optimal course of action.

The server application has user-defined passwords that protect the access to the application, but rules for the network access and server authority is responsibility of the customer.

Registration of the user on the client application with associated password and corresponding authority, as well as encryption of the information packets, guarantees the security of data exchanged between the control unit of the DC power supply system and the user on the client side.

Networking is intended for systems provided with monitoring and control unit KONLOG which collects and processes large amount of data from power supply systems and makes them available for Nap@net.



*Power supply system with the control unit KONLOG*

It is also possible to enable networking with systems comprising other control units but in that case, number of available data shall be significantly reduced.

Networking over Nap@net provides overview of basic informations of all systems using geographical map of the area: presence of mains voltage, operation and alarms.

It enables detailed real-time oveview of individual networked systems with the following information:
- Measurements:
    - input mains (UL1, UL2, UL3)
    - rectifiers voltage and overall current (Urec, Irec)
    - batteries voltage, current, temperature and capacity (Ubat, Ibat, Tbat, Qbat)
    - overall load voltage and current (Uload, Iload)
- Operating status of all relevant circuit breakers in the system.
- Displaying of all active alarms on the principal diagram, within individual sections of the system or under alarm menus.
- Oscilograms of all measured values (UL1,UL2, UL3, Urec, Irec, Ubat, Ibat, Tbat, Uload, Iload) with two timelines (last 100 seconds and last 100 milliseconds).
- The results of automatic periodic battery tests: testing the continuity of the battery circuit, capacity checking by discharging the battery through existing loads.
- Statistical data of the system: number of batteries deep discharge cycles, maximum and minimum battery ambient temperature, battery operation time at high and low ambient temperatures, etc.

- Chronological list of events with 1ms temporal resolution and up to 4000 records with markers for occurrence and termination of events.
- List of parameter changes.
- List of system state changes (turning on/off...)
- Periodical notifications (optional) from the database which includes:
    - printout of the chronological list of events and alarms on minute basis, or on a hourly, daily or monthly basis
    - graphical presentation of measured values (including minimums and maximums) on minute basis, or on a hourly, daily or monthly basis.

It is also possible via user's computer to change the systems operating mode, output voltage level and regulation and parameters of all system components available to the user.
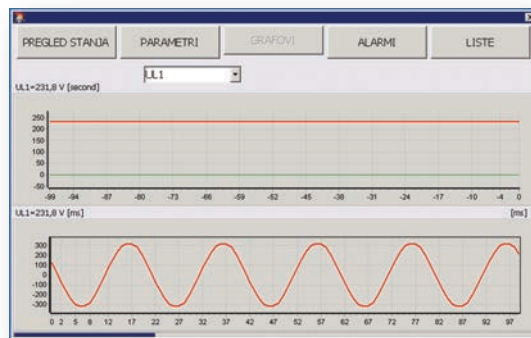
Any attempt to carry out the settings change is password protected, and each change is noted in the list of parameter changes.

While there is no connection to the server, as in case of failure of the communication channel or the unavailability of servers, all data are collected in a database stored locally on an SD card (standard 8GB SD card).

After establishing communication with the server, data is transferred from the SD card and synchronized with the data found on the server.
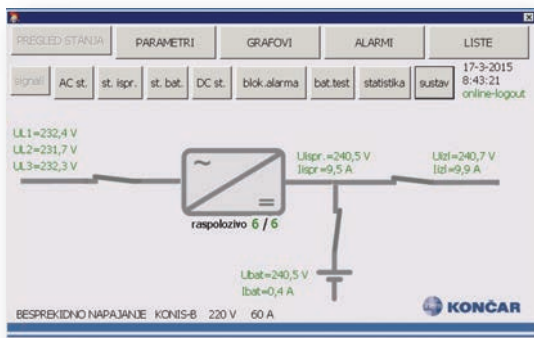


*Nap@net – overview of the operating state*



*Nap@net – mains voltage oscilograms*

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