DC power supply system SDJ 880-03

The SDJ power supply system

General description:

The SDJ 880-03 power supply system is intended for uninterruptible supply of 48Vdc loads by direct current in direct full-float operating mode. The construction of the system using cooperation of rectifiers type PDJ 48/73-3500W and batteries under control of advanced PI1 controller.

Application:

+ telecommunication and teletransmission;
+ IT systems;
+ industrial automation systems.

Features:

+ large flexibility of the extension of the system;
+ possibility of installing large number of loads protections;
+ modern, constant power rectifiers;
+ easy installation of rectifier (replacement or extension) during normal operation status (hot-swap);
+ continuous control of system's operation and fast reporting of alarm states by means of controller;
+ easy and full safe operation;
+ high efficiency;
+ immunity to short-circuits and overloads of output circuits;
+ immunity to electromagnetic interferences.

Rectifiers:

Constant power rectifier PDJ 48/73-3500W with nominal output power 3500W is equipped with microprocessor card controlling its work's parameters. The digital communication between rectifiers and control unit, gives operator the possibility of remote supervision on individual rectifiers of the system.
The PDK rectifier design is based on high-frequency energy conversion technology with DSP (Digital Signal Processor) function. This feature means less number of parts, optimized price & performance, better power distribution between rectifiers. In addition, the rectifier is equipped with a PFC provides sinusoidal current consumption from the mains.

Power supply of the system:

The SDJ 880-03 system is supplied from three-phase AC supply line. Failure of one or two phases of mains supply does not cause the whole power supply system to be switched off (individual rectifier units are supplied from different phases).

Design of the system:

In its standard version the power supply system is in form of stand-alone cabinet.

The standard version the power supply system consists:
+ microprocessor control unit PI1 with OLED display, control buttons and USB port for PC connection;
+ available space for installing up to 12pcs.of PDJ 48/73-3500W rectifiers;
+ battery protections with status monitoring – NH1-3 fuses - 2 pcs.;
+ load protections with status monitoring:
  - TYTAN – up to 3 pcs.;
  - fuse holder NH1-3 - up to 9 pcs.;.
  - fuse holder NH00 – up to 12 pcs.;
+ output current and output voltage measurement;
+ summary battery current measurement;
+ separated battery charging by rectifiers allocated from the system;
+ temperature compensation of float voltage with temperature sensor;
+ 7 alarm outputs in the form of potential-free relay contacts.

Optionally the power supply system can be equipped with additional modules and elements:

+ LVD - automatic disconnection of the batteries from loads (protection against deep discharge);
+ ambient temperature measurement;
+ remote supervision by: Ethernet / Analog modem (PSTN) / GSM/GPRS / SNMP protocol.

Safety and Environmental aspects:

During the system design process following aspects related to environmental protection have been taken into consideration:

+ compliance with the European Union's directive RoHS - restrict the use of certain hazardous substances,
+ compliance with the European Union's directive WEE regarding waste of electrical and electronic equipment,
+ compliance with the European Union's directives LVD and EMC - electrical safety and electromagnetic compatibility,
+ reduce of used electrical energy as the result of high efficiency,
+ reduce the amounts of used materials and wastes as a consequence of system dimensions minimization and high reliability.

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Basic parameters of the system:

Input parameters:		
Input voltage	Vac	3x230/400VAC
Frequency	Hz	45÷65
Max. phase current	Aac	66
Power factor λ	-	~1
Output parameters:		
Range of voltage	Vdc	48÷58
Characteristic	-	UPI
Stabilization of output voltage	%	±1
Maximum output current	Adc	880
Maximum output power	W	42000
Output voltage ripples (psophometric value)	mV	< 2
General data:		
Range of ambient temperature	°C	+5...40
Cooling	-	fan-cooled
Rectifier module efficiency	%	96,7 (peak)
Protection class		IP20
Electromagnetic compatibility	-	in accordance with PN-EN 300-386
Safety	-	in accordance with EN 60 950
Dimensions of the power supply system (HxWxD)	mm	1930 x 600 x 600
System weight without rectifier units	kg	~120
Dimensions of the rectifier unit (HxWxD)	mm	132 x 85.3 x 287
Weight of the rectifier	kg	3,5

Basic functions of the control unit:

+ control & display values of:
  - output current,
  - output voltage,
  - battery current (option),
  - battery temperature,
  - ambient temperature (option);
+ temperature compensation of float voltage;
+ battery charging current limitation;
+ enforcing automatic battery charging mode;
+ signaling of load and battery protections blow-out;
+ battery asymmetry control;
+ creating register of events in control unit's memory;
+ control of the LVD battery contactor - adjustable voltage battery disconnect (option);
+ visualization of parameters and actual state of the system on OLED screen and LEDs;
+ sending an alarm by the potential-free contact;
+ automatic reporting of alarm states to WinCN supervisory system (option).

Extended functions of the control unit:

+ remote computer monitoring of the system by selected Communications medium:
  - Ethernet,
  - Analog modem (PSTN),
  - mobile network (GSM/GPRS),
  - SNMP protocol.

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