

### | General description:

The SDO 130-03 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 PDO 48/42-2000W and batteries under control of advanced PI1 controller.

### | Application:

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

### | Features:

- + compact design of the system (5U/19") adapted for assembling in cabinets (racks) 19";
- + 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 – less energy consumption and heat dissipation;
- + immunity to short-circuits and overloads of output circuits;
- + immunity to electromagnetic interferences;
- + active load sharing: total current consumed by the loads are distributed evenly on individual rectifiers;
- + Front terminal: connection the batteries, loads, and AC input are located on the front panel;
- + power management rectifiers: PI1 controller constantly analyzes the current required by loads and battery charging and activate only the necessary number of rectifiers. As a result rectifiers operate within their optimum efficiency. Other modules (redundant or designed to recharge the battery) during normal operation of the buffer are turned off. The system periodically once a month switches active and inactive rectifiers to ensure their uniform aging;
- + wide range of optional equipment.

### | Rectifiers:

Constant power rectifier PDO 48/42-2000W with nominal output power 2000W is equipped with microprocessor unit controlling its operation parameters. The digital communication between rectifiers and PI1 controller, gives the possibility of remote supervision on individual rectifiers of the system.

The rectifier design is based on high-frequency energy conversion with DSP (Digital Signal Processor) function. This technology means less number of parts, optimized price & performance, better power distribution between rectifiers.

The rectifier uses the PFC module which provides sinusoidal current consumption from the power grid.

### | Power supply of the system:

The SDO 130-03 system is supplied from three-phase AC supply line 3x230/400 Vac. 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). Optionally system may be delivered in version adapted to single phase power supply line 230V/50Hz (L+N+PE).

### | Design of the system:

In standard version the enclosure of the system is intended to installing in standard 19-inch cabinets (racks).

The standard version the power supply system consists:

- + microprocessor control unit PI1 with OLED display, control buttons and USB port for PC connection and RS-232 for KSN connection;
- + available space for installing up to 3pcs. of PDO 48/42-2000W rectifiers;
- + 3U DC distribution module;
- + battery protections with status monitoring:
  - 4x TYTAN (6÷63A) characteristic gL;
- + load protections with status monitoring:
  - 8x MCB (0,5÷63A) characteristic C,
  - 4x TYTAN (6÷63A) characteristic gL;
- + summary battery current measurement;
- + temperature compensation of float voltage with temperature sensor;
- + 7 alarm outputs as potential-free contact of relay.

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.



### Basic parameters of the system:

#### Input parameters:

Input voltage	$V_{AC}$	3x230VAC/400VAC 230VAC (option)
Frequency	Hz	45 ÷ 65
Max. phase current	$A_{AC}$	12 (3-phase AC supply line)
Power factor $\lambda$		~1

#### Output parameters:

Range of voltage	$V_{DC}$	48 ÷ 58
Characteristic	-	UPI
Stabilization of output voltage	%	±1
Nominal output current	$A_{DC}$	126 @ 48Vdc
Maximum output power	W	6000
Output voltage ripples (psophometric value)	mV	< 2

#### General data:

Range of ambient temperature	°C	5 ÷ +40
Cooling	-	fan-cooled
Rectifier module efficiency	%	96,2 (peak)
Protection class		IP20
Electromagnetic compatibility	-	in accordance with PN-EN 300-386
Safety	-	in accordance with EN 60 950
Telecommunication standards	-	PN-T-83101, PN-T- 83102, PN-T-83103
System dimensions (HxWxD)	mm	223(5U) x 483 x 300
System weight without rectifier units	kg	~12,5
Dimensions of the rectifier unit (HxWxD)	mm	41 x 84,5 x 252,5
Weight of the rectifier	kg	1,13

### Basic functions of the control unit:

- + control & display values of:
  - output current,
  - output voltage,
  - battery current,
  - battery temperature,
  - ambient temperature (option);
- + temperature compensation of float voltage;
- + battery charging current limitation (only with battery current measurement system);
- + 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;
- + 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),
  - SNMP protocol.