

| General description:

The SDG 2400 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 hi-efficient PDG 48/120-5800W-02 rectifiers and batteries under control of advanced PI1 controller.

| Application:

- + telecommunication and teletransmission;
- + IT network systems;
- + data centers.

| Features:

- + modular design – dedicated cabinets for power and distribution extension;
- + possibility of installing large number of loads protections by using dedicated distribution cabinets;
- + 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, **up to 96,2%**;
- + Backward compatibility with the previous version of the rectifier (PDG 48/120-5800W), possibility to expand previously produced the SDG power supply systems;
- + immunity to short-circuits and overloads of output circuits;
- + immunity to electromagnetic interferences;
- + wide range of optional equipment.

| Rectifiers:

The design of constant power rectifier PDG 48/120-5800W-02 with nominal output power 5800W is based on high-frequency technology of energy transformation with DSP (Digital Signal Processor) function. It means less number of components, optimized operation and active load sharing for increased reliability. The digital communication between rectifiers and control unit, gives operator the possibility of remote supervision on individual rectifiers of the system.

High efficiency rectifier allows to reduce the cost of electrical energy and heat emission on sites.

| Power supply of the system:

The SDG 2400 system is supplied from three-phase AC supply line 3x230/400 Vac.

| Design of the system:

In its standard version the power supply system is in form of stand-alone cabinets. Depending on the configuration it may be composed by the following modular cabinets:

The rectifier-distribution cabinets

CPG 1200-01 and CPG 1200-02. contains:

- + space designed for installing up to 10 pcs. of rectifiers PDG 48/120-5800W-02;
- + AC distribution panel;
- + microprocessor control unit PI1 with OLED display, control buttons and USB port for PC connection;
- + separated battery charging by rectifiers allocated from the system (option);
- + summary or individual (option) battery current measurement.

The rectifier-distribution cabinet

CPG 2400 contains:

- + space designed for installing up to 20 pcs. of rectifiers PDG 48/120-5800W-02;
- + AC distribution panel;
- + microprocessor control unit PI1 with OLED display, control buttons and USB port for PC connection;
- + separated battery charging by rectifiers allocated from the system (option);
- + summary or individual (option) battery current measurement.

Cabinets for load and battery protections:

- + RBG 1200-01, width 600 mm;
- + RBG 1200-02, width 900 mm;
- + RBG 2400-01, width 600 mm;
- + RBG 2400-02, width 900 mm.

Cabinets for load protections:

- + RDG 1200-01, width 600 mm;
- + RDG 1200-02, width 900 mm;
- + RDG 2400-01, width 600 mm;
- + RDG 2400-02, width 900 mm.

Each type of cabinet may be equipped with adjustable legs. The systems composed from more than one cabinet are equipped with additional roof structure which increases the height of the system by 300mm.

| 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}	3 x 230/400
Input phase voltage changes range	V_{AC}	260 ÷ 530
Frequency	Hz	45 ÷ 65
Supply network configuration	-	2 AC mains (3W + PE)
Nominal phase current (for 20x PDG 48/120-5800W-02)	A_{AC}	(3x90)
Power factor λ		~ 1

Output parameters:

Range of voltage	V_{DC}	48 ÷ 58
Range of voltage	-	UPI
Stabilization of output voltage	%	±1
Maximum output current	A_{DC}	2400
Maximum output power	kW	116
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	-	EN 300 386-2 class B
Dimensions of the cabinets (HxWxD): CPG 1200-01, CPG 1200-02, CPG 2400, RBG 1200-01, RBG 2400-01, RDG 1200-01, RDG 2400-01	mm	2000x600x600
RBG 1200-02, RBG 2400-02, RDG 1200-02, RDG 2400-02		2000x900x600
Cabinets weight W/O rectifiers: CPG 1200-01, CPG 1200-02, CPG 2400, RBG 1200-01, RBG 2400-01, RDG 1200-01, RDG 2400-01	kg	~150
RBG 1200-02, RBG 2400-02, RDG 1200-02, RDG 2400-02		~ 340
Dimensions of the rectifier unit (HxWxD)	mm	87x242x375
Weight of the rectifier	kg	8

Basic functions of the control unit:

- + control of output voltage (high and low voltage alarm and blocking of rectifiers);
- + summary battery current measurement
- + measurement of rectifier's current;
- + measurement of battery temperature and ambient temperature (required second temperature sensor);
- + temperature compensation of float voltage;
- + automatic battery charging;
- + monitoring of battery asymmetry;
- + alarm states visualization;
- + status control of battery protections;
- + status control of load protections;
- + sending alarm signals;
- + automatic reporting of alarm states to WinCN supervisory system;
- + possibility of configuration by:
 - locally by PC with USB port or local user interface (OLED screen and keyboard),
 - remote by: GSM/GPRS, Ethernet, PSTN;
- + possibility of alarm mapping on any relay contact or sending this as information to WinCN supervisory system.

Extended functions of the control unit:

- + remote supervision of the system by means of WinCN software with using:
 - dial-up line (telephone modem),
 - logical network (TCP/IP),
 - wireless network (GSM);
- + separated battery charging by rectifiers allocated from the system (two rectifiers);
- + independent battery current measurement;
- + creating register of events with occurrence date and time (event history module)
- + monitoring of 10 input analog-digital signals and 7 output signals (potential-free contact of relay) with possibility of their configuration (required MWW module).