



# Lab

## POWER SUPPLIES

E-mail: [ettienne@switches.co.za](mailto:ettienne@switches.co.za), Web: [www.rectifier.co.za](http://www.rectifier.co.za)



Current Automation

16 Staal Street, Kya Sand, Randburg, 2162, Gauteng

P O Box 2051, Northriding, 2162

Tel: +27-11-462-4253, Fax: +27-11-462-4310

# TOPWARD

## 3000-6000 Series Linear DC Power Supplies Description

The 3000/6000 series is designed as a versatile system power supply series. The 3000 series supplies variable single output with 2 analogue or digital displays.

The 6000 series supplies variable dual outputs with 4 analogue or digital displays plus a fixed 5V/5A output.

All the variable outputs can be connected in parallel or series to get multiple output current or voltages. The safety series is designed and manufactured according to IEC-1010-1 requirements.

## Features

- 2 or 4 Build-in analogue / digital displays
- Constant voltage / current output
- Short / external input protection
- Independent, series or parallel tracking on triple model
- Fixed 5V  $\pm 0.25V$  @ 5A output on triple model

Specifications	Description	3000 Series	6000 Series
AC input voltage	Load regulation		$\pm 0.01\% + 2mV$
	Line regulation		$\pm 0.01\% + 2mV$
	Ripple and noise ( $\leq 0.01\% + 2mV$ )		$\leq 0.5mVrms$
	Ripple and noise ( $\geq 0.01\% + 2mV$ )		$\leq 0.1mVrms$
Constant current	Load regulation $\leq 100W$		$\leq 10mA$
	Load regulation $\geq 100W$		$\leq 15mA$
	Line regulation		$\pm 0.01\% + 2mA$
	Ripple and noise ( $\leq 100W$ )		$\leq 2mA rms$
Display accuracy	Ripple and noise ( $\geq 100W$ )		$\leq 3mA rms$
	Analogue Display (A)		full scale 3%
	Digital Display (D)		$\leq 0.1\% + 2d$
Programming Speed	Rise time (no load)		
	Rise time (with load)		
	Fall time (no load)		
	Fall time (with load)		
Output impedance			
Recovery time			
Functions	Series connection		Different models can be connected ( $\leq 240V$ )
	Parallel connection		Same model can be connected ( $\leq 24A$ )
Tracking operation	Tracking error	N/A	$\pm 2\% + 10mV$
	Series regulation		$\leq 0.3\% + 10mV$
5V Fix output	Load regulation		$\leq 10 mV$
	Line regulation		$\leq 5 mV$
	Ripple and Noise	N/A	$\leq 2mV rms$
	Voltage accuracy		$5V \pm 0.25V$
	Output current		5A
Operation mode	Independent	N/A	Two independent outputs and 5V fixed output Output from 0 to rating volts and 0 to rating amps
	Series		Output from 0 to $\pm$ rating volts at rating amperes
	Parallel		Output from 0 to double rating volts at rating amperes
Safety standards			T.U.V / GS, EN61010-1
EMC standards			EN50081-1; EN50082-1
Banana clips		1 each	2 each
Weight		3303, 3601 = 6.5kg	6303 = 13kgs
		33010 = 15.5 kgs	6603 = 16kgs



Case: SA



Case: SD



Case: LA



Case: MD



Case: LD

### Single output series

Type No	AC Input	DC Output	Meter	Case
3303A	100~240V AC	0~30V, 3A	Analogue	SA
3601A	100~240V AC	0~60V, 1A	Analogue	SA
3303D	100~240V AC	0~30V, 3A	Digital	SD
3601D	100~240V AC	0~60V, 1A	Digital	SD
3306D	100~240V AC	0~30V, 6A	Digital	MD
3603D	100~240V AC	0~60V, 3A	Digital	MD
33010D	100~240V AC	0~30V, 10A	Digital	MD

### Triple output

(Dual output with 5V @ 5A fixed output)

Type No	AC Input	DC Output	Meter	Case
6303A	100~240V AC	0~30V, 3A x 2	Analogue	LA
6306A	100~240V AC	0~30V, 6A x 2	Analogue	LA
6603A	100~240V AC	0~60V, 3A x 2	Analogue	LA
6303D	100~240V AC	0~30V, 3A x 2	Digital	LD
6306D	100~240V AC	0~30V, 6A x 2	Digital	LD
6603D	100~240V AC	0~60V, 3A x 2	Digital	LD

## NRP-2050/3630/6016 - Lab Grade Single Output Power Supply with 3 Digit Meters

### Description

This series of 100W Switching Mode Power Supplies with Current Limiting Control, is designed with the objectives of cost effectiveness, compactness and easy portability.

The slim tower housing makes it ideal for tight work bench. It is light and conveniently portable with a collapsible handle.

The large and illuminated LDC display provides clear and sharp readings even under dim light.

The output power on off switch allows safe and handy operations. The tracking OVP (Output Over Voltage Protection) ensures a better and tighter protection to voltage sensitive loads. It has good line and load regulations, high efficiency and low ripple & noise that are typical of advanced switching mode power supply.



NRP Series



## High current switchmode power supplies with remote sensing and control

### Description

This high current switchmode DC regulated output power supply is designed with highly efficient active power factor correction. The constant current limiting protection allows the output current to remain stable but the output voltage decreases to a level that permits safe operation of the power supply.

The remote sensing terminals are used to compensate for output losses so that a precise regulation can be achieved for critical voltage application away from the power supply. The output voltage level and ON-OFF can be externally controlled via the remote terminal. It is ideal for applications that need good quality high DC current network with precise point of voltage regulation. SPS-9600 / SPS-9602 has a small footprint for its 900W continuous maximum power. It is suitable for a wide range of applications.

### Features

- Total maximum continuous output current 60A.
- Main Output with remote sensing & remote control is at the terminals at the back.
- Front terminals 5A (SPS-9600 / 3A (SPS-9602) limiting.
- Remote control terminals for output voltage adjustment and ON/OFF control.
- Light weight and small.
- Overload / Over temperature / Short circuit protections.
- Constant current mode with LED indicator prevents overloading.
- Variable speed thermally controlled fan.
- High RFI stability.
- Active power factor correction (PF >0.97)



SPS Series

SPECIFICATIONS	SPS-9600	SPS-9602
Variable Output voltage	1~15 VDC	1~30V DC
Total rated output current - Main output + the Front output connections	60A	30A
Rated output current (Main output)	60A	30A
Rated output current (Front output)	5A	3A
Load regulation	0.1% + 5mV	
Line regulation	0.05% + 3mV	
Ripple and Noise (Peak-Peak)	50mV p-p	
Input voltage	230VAC AC / 50Hz	
Efficiency	> 85%	
Meter type	LED Meter	
Voltage range	3 digit display	
Ammeter range	3 digit display	
Meter accuracy	±1% + 1 count	
Protection devices	Overload (Constant current limiting), Short circuit, Over temperature, Over voltage protection	
Cooling system	Variable speed thermally control fan	
Special Feature	Remote sensing, remote output voltage control and "ON/OFF" control	
Approvals	CE - EMC: EN55022, CE - LVD: EN60950	
Dimensions	220mm (Wide) x 110mm (High) x 360mm (Deep)	
Weight	5.8 kgs	

### 900W Switchmode power supply with C.C, C.V, remote control and remote sensing.

### Features

- Remote control for output power on-off.
- Remote control for voltage and current adjustment.
- Remote sensing for remote point of precise voltage regulation
- High RFI stability
- Thermally controlled variable speed fan
- CC & CV mode with auto-cross over.
- Output over voltage protection.
- Active power factor correction
- Overload, Over-temperature, short circuit protection
- 10-turn wire wound potentiometers
- 4 digit LED (A) and (V) meters



SIM Series



SPECIFICATIONS	SIM-9106	SIM-9303
Variable output voltage	1~15 VDC	1~30V DC
Variable output current	1~60A	1~30A
Load regulation	0.1% + 5mV	
Line regulation	0.05% + 3mV	
Ripple and Noise (Peak-Peak)	50mV p-p	
Input voltage	110~230VAC AC / 50Hz	
Efficiency	≥ 82%	
Meter type	LED Meter	
Voltage range	4 digit display	
Ammeter range	4 digit display	
Meter accuracy	±0.5% + 2 counts	
Protection devices	Overload (Constant current limiting), Short circuit, Over temperature, Over voltage protection	
Cooling system	Variable speed thermally control fan	
Special Feature	Remote sensing, remote output voltage control and "ON/OFF" control	
Approvals	CE - EMC: EN55011, CE - LVD: EN61010	
Dimensions	235mm (Wide) x 95mm (High) x 340mm (Deep)	
Weight	6 kgs	



## SDP Series -Programmable DC Regulated Power Supplies Description

This is a series of cost effective switchmode programmable power supplies with full remote programming and data logging functionality. A programmable cyclic sequence of up to 20 sets of operational periods, voltage, & limiting current level can be set at the unit's keypad or by remote PC ( Personal Computer) interface.

Groups of control settings and cyclic sequence can be stored in the PC and input to selected power supply via RS232/ RS485. With our supplied software, all the collected data of output voltage & current from each power supplies during operation can be stored as XLS ( Excel ® ) file format in PC. When using RS-485, one personal computer can control and data log as many as 31 power supplies of different models of the same series. In addition to our supplied software, Command Sets and Labview driver are supplied with the unit so that users can integrate with their own software. In the stand alone operation, the informative LCD display guides users for various functions such as preset output, programmable cyclic sequence operation. In addition to the tracking OVP ( Over output Voltage Protection ), there is an upper output voltage limit which prevents voltage setting over the preset limit. The output upper voltage limit is user preset. This feature prevents damage to voltage sensitive load.

### Features

- Full remote programming and data logging.
- Local or remote programmable cyclic run up to 20 sets V, I, operational period.
- Built-in RS-232/485 interface which controls up to 31 units.
- Supplied with software, command sets and Labview® driver.
- 9 user presets output at keypad.
- CC & CV indicators with auto-cross over.
- 4 digit ammeter, voltmeter and power meter display.
- Tracking OVP and user preset max. output voltage.



SDP Series

SPECIFICATIONS	SDP - 2210	SDP-2405	SDP-2603
Variable output voltage	1~20 VDC	1~40 VDC	1~60V DC
Variable output current	1~10A	0~5A	1~3.3A
Output rated power	200W		
Ripple and noise (peak-peak)	30mV		
Load regulation	300mV	200mV	150mV
Line regulation	10mV		
Input voltage	100 - 240VAC, 50Hz / 60Hz		
Input power ( Maximum )	285W		
Power factor	>= 0.9		
Display meter	4 digit - display LCD ammeter, voltmeter and power meter		
Meter accuracy	(±1% +5 counts for range V < 5V, I < 0.5A) ( ±1% +2 counts for range V >= 5V, I >= 0.5A)		
LCD dimension	48 x 66 (mm)		
Cooling System	Thermostatic control fan		
Operating Temperature	0 - 40 °C		
Protections	Tracking OVP (over voltage protection), Current Limiting and Over Temperature Protection		
Approvals	CE EMC-EN 55011 , LVD-EN 61010		
Dimension ( W x H x D )	193 x 98 x 215 (mm)		
Accessories	User's manual, PC Windows® software, Command set, LabView® driver, RS-232 cable, RS-485 Connector and one 120ohm Resistor		
Remarks	Adjustable Upper Voltage Limit, Power Factor Correction		
Communication interface	RS-232 and RS-485 (up to 31 power supply)		
Remote programming functionality	Full control of power supply functions and data read-back		
Data logging	Yes, with supplied software		
Baud Rate	9600 bps		

## SSP-8080 Constant Power, Ethernet Connectivity, Ramp Generators Description

This constant power design in effect is like having 3 power supplies with different output ranges of :  
0-16.4V 0-5.1A / 0-27.6V 0-3.1A / 0-36.8V 0-2.3A.

- An ARM construction RISC 32 BIT Micro-processor is used to provide the following functions:
- 3 voltage generators and remote programming of accurate voltage and current, data logging out output.
- Miscellaneous repeatable ramp up or down, step, irregular wave forms of output voltages can be generated using different settings of V, I and dt.
- The standard communication port is USB1.1 for PC, remote data logging and programming and control can be done via PC.
- With the optional Ethernet card module, connection to LAN, WAN, Internet is made

### Features

#### Switchmode power supply with active PFC.

- 80W in 3 user selectable VI ranges 0-16.4V 0-5.1A / 0-27.6V 0-3.1A/ 0-36.8V 0-2.3A
- User preset output upper voltage and current protection limits in addition to the tracking OVP and CC.
- Separate indicator for upper current and voltage limits and over temperature.
- 4 digit LED display and output on/off switch.
- Coarse and fine tune selection
- Key lock and unlock function
- Remote sensing for accurate applied voltage at load point.

#### DC Ramp, Step & Irregular Wave Function

- 3 sets of voltage generators with 0 to 600 seconds output time.
- Preset time period from one generator to other is 0-20 seconds.
- Any 2 generators can be merged to form the required irregular wave forms.

#### Remote program & Network connectivity

- Remote control and programming by PC for output on/off, V and I setting, and VI range, and data logging.
- USB1.1 port for PC interface with Ethernet router to LAN or WAN network and to the Internet.
- One PC can control and monitor over 250 power supplies in the C Ethernet.
- Supply of application software, USB driver, command sets, Ethernet setting software and Labview driver for Ethernet.



SSP Series