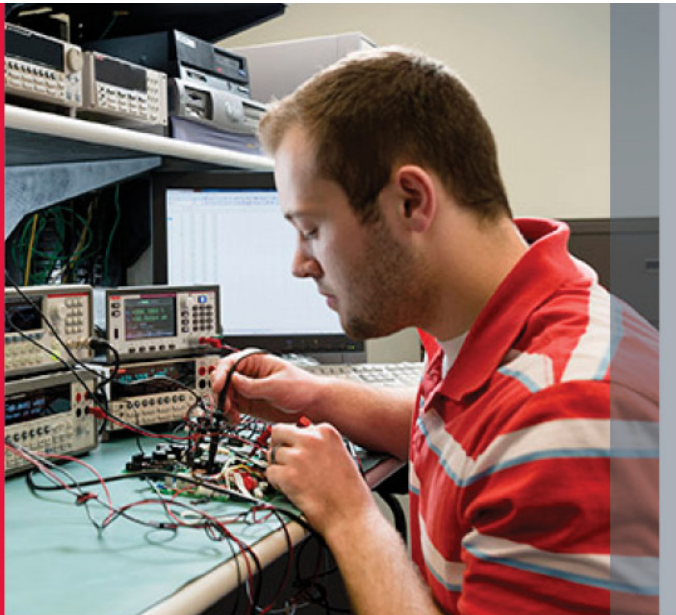


# Power Supply Selector Guide

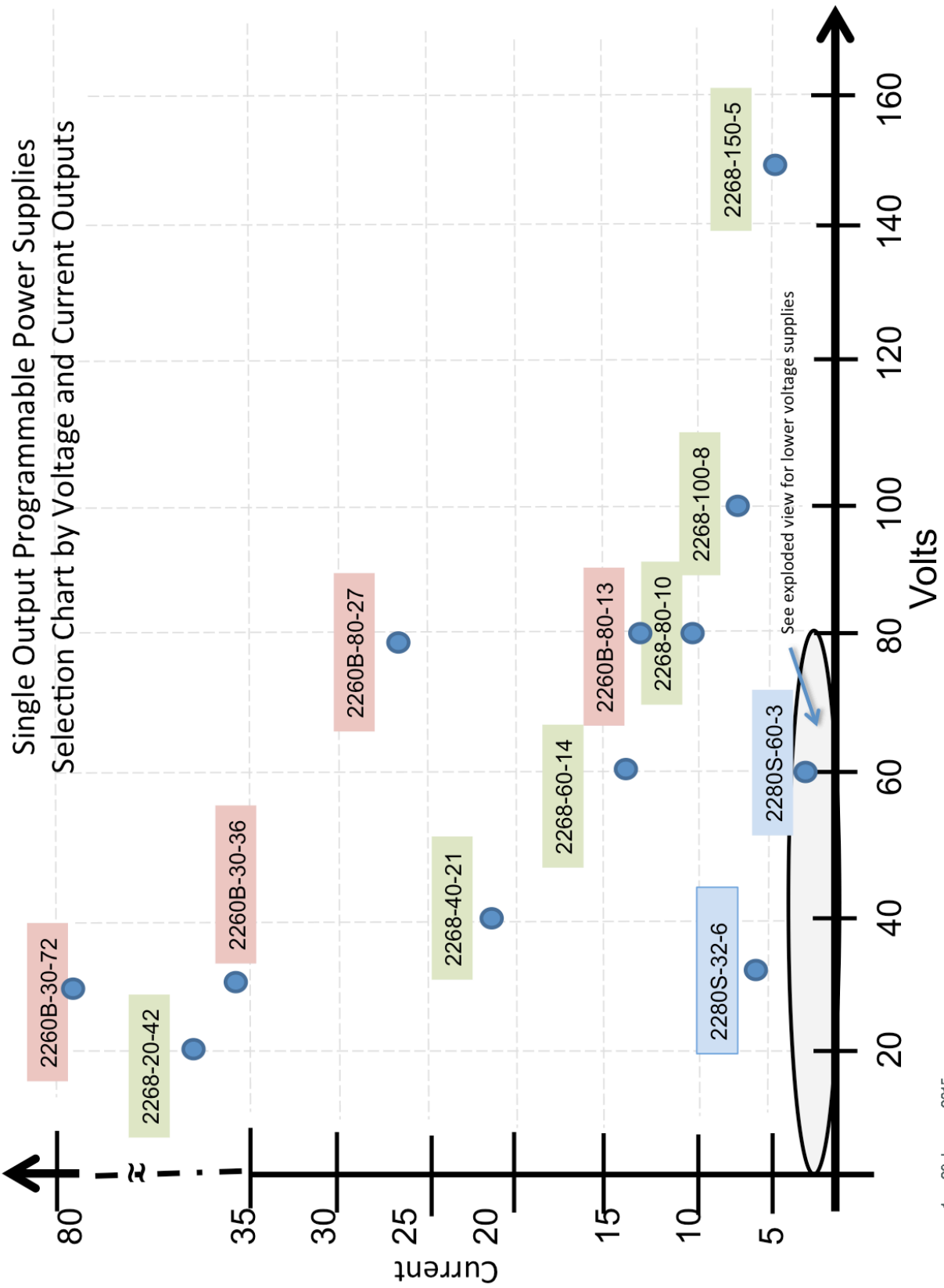


For more information, download the **FREE Power Supply Technical Guide Tablet Application**, now available from the iTunes store and Google play.

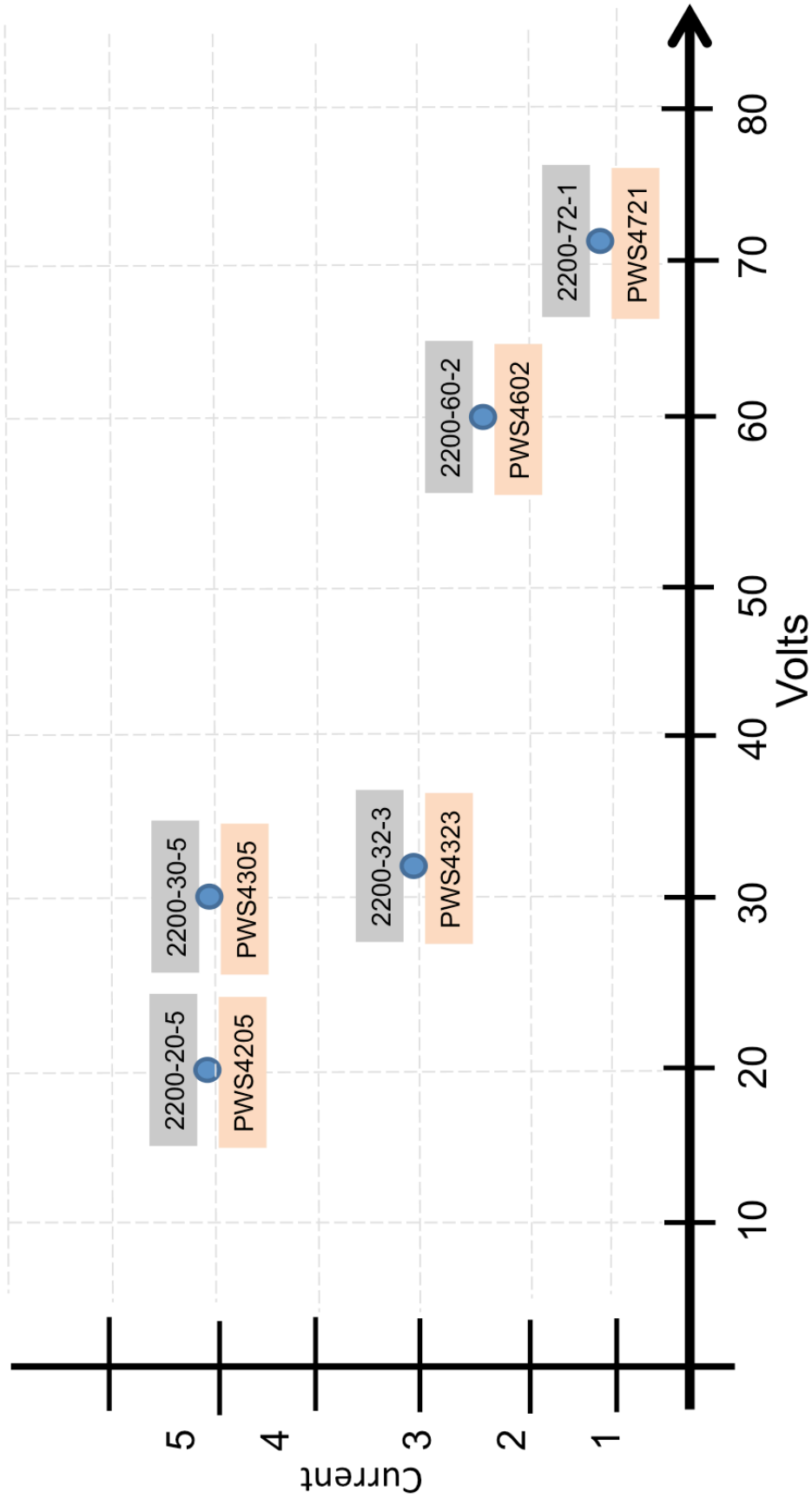


## Tektronix and Keithley Power Supply Selection Guide

Model	Channel	Power	Output Voltage	Output Current	Programmable	Feature and benefits	Applications		
PWS2185	1	90 W	18 V	5 A	N/A	<ul style="list-style-type: none"> <li>Affordable price</li> <li>Wide output range from 90W to 192W</li> </ul>	✓ Basic teaching lab		
PWS2323	1	96 W	32 V	3 A	N/A				
PWS2326	1	192 W	32 V	6 A	N/A				
PWS2721	1	108 W	72 V	1.5 A	N/A				
PWS4205	1	100 W	20 V	5 A	USB	<ul style="list-style-type: none"> <li>Low ripple and noise</li> <li>High programming accuracy</li> <li>Remote sense to compensate the voltage drop from test leads</li> </ul>	<ul style="list-style-type: none"> <li>✓ R&amp;D lab</li> <li>✓ ATE system</li> </ul>		
PWS4305	1	150 W	30 V	5 A	USB				
PWS4323	1	96 W	32 V	3 A	USB				
PWS4602	1	150 W	60 V	2.5 A	USB				
PWS4721	1	86 W	72 V	1.2 A	USB				
2200-20-5	1	100 W	20 V	5 A	GPIO/USB				
2200-30-5	1	150 W	30 V	5 A	GPIO/USB				
2200-32-3	1	96 W	32 V	3 A	GPIO/USB				
2200-60-2	1	150 W	60 V	2.5 A	GPIO/USB				
2200-72-1	1	86 W	72 V	1.2 A	GPIO/USB				
2220-30-1	2	45 W	30 V	1.5 A	USB	<ul style="list-style-type: none"> <li>All channels are isolated and programmable</li> <li>High programming accuracy</li> <li>Remote sense for all output channels</li> <li>Fully supported TekSmartLab™</li> </ul>	<ul style="list-style-type: none"> <li>✓ Advanced teaching lab</li> <li>✓ R&amp;D lab</li> </ul>		
2220J-30-1		45 W	30 V	1.5 A					
2230-30-1	3	45 W	30 V	1.5 A	USB				
		30 W	6 V	5 A					
2220G-30-1	2	45 W	30 V	1.5 A	USB/GPIB				
		45 W	30 V	1.5 A					
2230G-30-1	3	45 W	30 V	1.5 A	USB/GPIB				
		30 W	6 V	5 A					
2231A-30-3	3	90 W	30 V	3 A	Optional USB			<ul style="list-style-type: none"> <li>All channels are isolated and programmable</li> <li>Fully supported TekSmartLab™</li> </ul>	✓ Basic teaching lab
		90 W	30 V	3 A					
		15 W	5 V	3 A					
2280S-32-6	1	192 W	32 V	6 A	GPIO/USB/LAN	<ul style="list-style-type: none"> <li>100nA to 6A with high accuracy</li> <li>Capture dynamic load currents as short as 140µs</li> <li>Friendly graphic user interface</li> <li>Built-in web page simplifies automated control/monitoring/Data logging</li> </ul>	<ul style="list-style-type: none"> <li>✓ Advanced R&amp;D lab</li> <li>✓ Advanced ATE system</li> <li>✓ Battery-powered device power consumption test</li> <li>✓ LED resistance test</li> </ul>		
2280S-60-3	1	192 W	60 V	3.2 A	GPIO/USB/LAN				
2260B-30-36	1	360 W	30 V	36 A	USB/LAN	<ul style="list-style-type: none"> <li>Compact size with large output range</li> <li>Programmable rise and fall times</li> <li>Battery simulation capability</li> <li>Constant current priority setting</li> </ul>	<ul style="list-style-type: none"> <li>✓ R&amp;D lab</li> <li>✓ ATE system</li> <li>✓ Power LED and laser device as a current source</li> </ul>		
2260B-30-72	1	720 W	30 V	72 A	USB/LAN				
2260B-80-13	1	360 W	80 V	13 A	USB/LAN				
2260B-80-27	1	720 W	80 V	27 A	USB/LAN				
2268-20-42	1	850W	20V	42A	GPIO/USB/LAN, RS-232, RS-485, Isolated Analog I/O, Non-Isolated Analog I/O	<ul style="list-style-type: none"> <li>1U high and half-rack width</li> <li>15V and 5V Auxiliary Outputs</li> <li>Constant power control mode, foldback mode with programmable delay</li> </ul>	<ul style="list-style-type: none"> <li>✓ ATE system</li> <li>✓ Automobile electronics test</li> </ul>		
2268-40-21	1	850W	40V	21A					
2268-60-14	1	850W	60V	14A					
2268-80-10	1	850W	80V	10.5A					
2268-100-8	1	860W	100V	8.5A					
2268-150-5	1	850W	150V	5.6A					

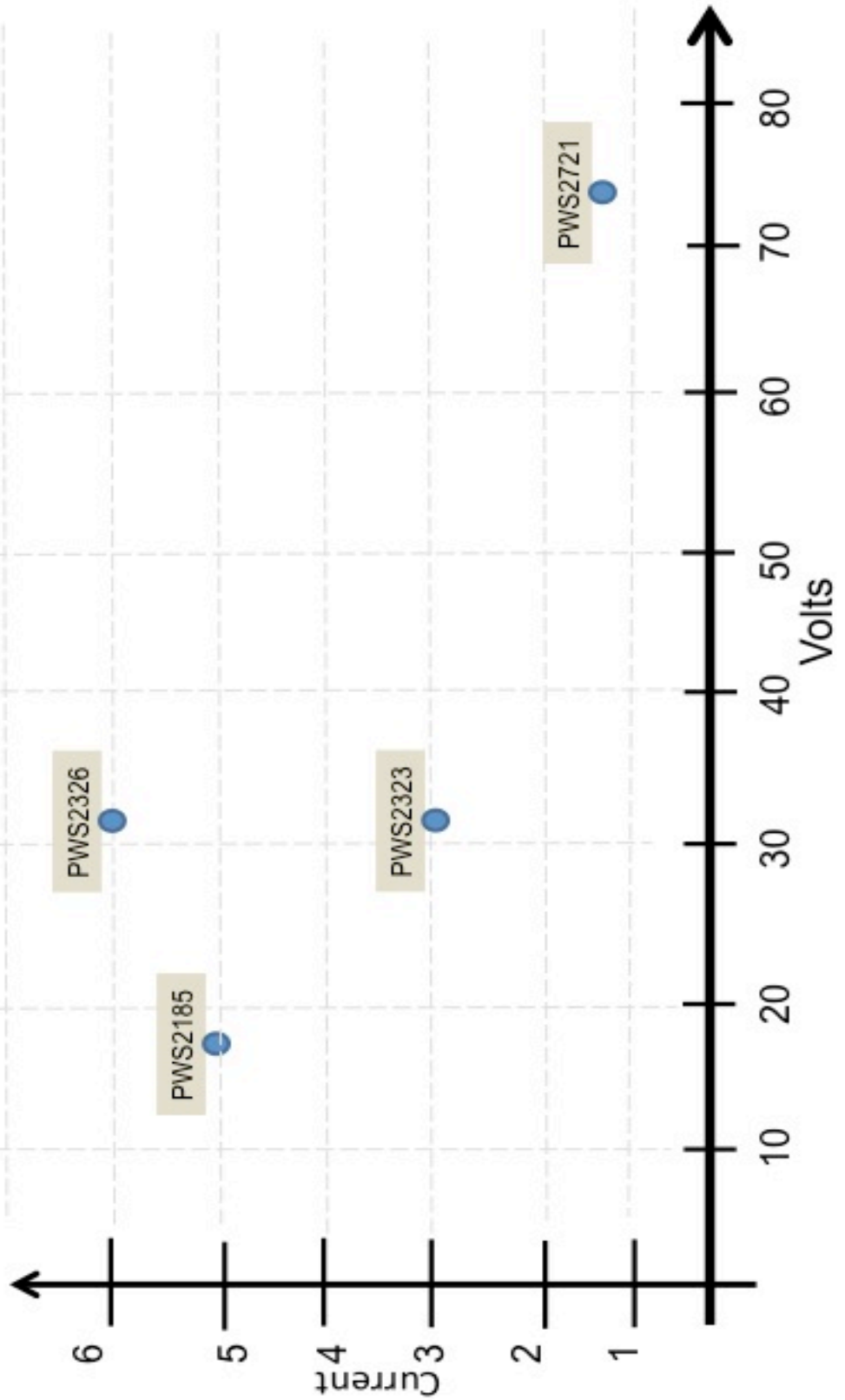


# Single Output Programmable Power Supplies Selection Chart by Voltage and Current Outputs Exploded View



1 23 January 2015

Single Output Manual Power Supplies  
Selection Chart by Voltage and Current Outputs



## PWS2000 Series

Single-channel, Low-noise, Non-programmable Power Supply  
Designed for Benchtop Applications

Model	PWS2185	PWS2323	PWS2326	PWS2721
Output Voltage	0 - 18V	0 – 32V	0 – 32V	0 – 72V
Output Current	0 - 5A	0 – 3A	0 – 6A	0 - 1.5A
Output Power	90W	96W	192W	108W
<b>Ripple and Noise (20Hz - 7MHz)</b>				
CV p-p	≤ 3mV			
CV RMS	≤ 1mV			
CC RMS	≤ 5mA			
<b>Programming Accuracy (25°C ±5°C)</b>				
Voltage	≤0.05% + 10mV			
Current	≤0.2% + 10mA			
<b>Readback accuracy (25 °C ± 5 °C)</b>				
Voltage	≤0.05% + 15mV	<20V: ≤0.05% + 15mV ≥20V: ≤0.05% + 120mV		
Current	≤0.1% + 15Ma			
Dimension	2U high, half rack width			
Others	Store up to 20 sets of user settings			



### PWS2000 Features

- Linear power supply with low ripple and noise
- Power up to 192W
- 0.05% voltage programming accuracy
- 0.2% current programming accuracy
- 10mV/10mA programming resolution
- Ripple and noise peak-to-peak value less than 3mV
- Store 20 sets of settings
- Keypad data entry
- Three-year warranty

With their good ripple and noise performance, the PWS2000 Series are excellent supplies for education and lab R&D use.

**PWS4000/Series 2200**  
**Single-channel, Low-noise, Programmable Power Supply**  
**Designed for Benchtop and Automated Test Applications**



Model	PWS4205 2200-20-5	PWS4305 2200-30-5	PWS4323 2200-32-3	PWS4602 2200-60-2	PWS4721 2200-72-1
Output Voltage	0 – 20 V	0 – 30 V	0 – 32 V	0 – 60 V	0 – 72 V
Output Current	0 – 5 A	0 – 5 A	0 – 3 A	0 - 2.5 A	0 - 1.2 A
Output Power	100 W	150 W	96 W	150 W	86 W
<b>Ripple and Noise (20 Hz-7 MHz)</b>					
CV p-p	<3 mV	<4 mV	<4 mV	<5 mV	<3 mV
CV RMS	<1 mV	<1 mV	<1 mV	<1 mV	<1 mV
CC RMS	<3 mA	<4 mA	<3 mA	<3 mA	<3 mA
<b>Programming Accuracy (25 °C ± 5 °C)</b>					
Voltage	≤0.03% +3 mV	≤0.03%+3 mV	≤0.03%+3 mV	≤0.03%+6 mV	≤0.03%+6 mV
Current	≤0.05%+2 mA	≤0.05%+2.5 mA	≤0.05%+2 mA	≤0.05%+1.5 mA	≤0.05%+1 mA
<b>Readback Accuracy (25 °C ± 5 °C)</b>					
Voltage	≤0.02%+3 mV	≤0.02%+2.5 mV	≤0.02%+3 mV	≤0.02%+6 mV	≤0.02%+5 mV
Current	≤0.05%+2 mA	≤0.05%+2.5 mA	≤0.05%+2 mA	≤0.05%+1.5 mA	≤0.05%+1 mA
Programming	PWS series with USB port, 2200 Series with USB and GPIB ports				
Dimension	2U high, half rack width				
Others	List mode supports up to 7 seven customized test sequences; each sequence can hold 80 voltage and current steps.				

### PWS4000/2200 Features

- Linear power supply with low ripple and noise
- Power up to 150W
- 0.03% voltage programming accuracy
- 0.05% current programming accuracy
- 1mV/0.1mA programming resolution, high precision power supply for testing low power components
- Remote sense function, further improve output voltage accuracy at the DUT
- List mode supports up to 80 steps to improve ATE test efficiency
- PWS Series supplied with a USB interface; 2200 Series supplied with USB and GPIB interfaces
- Three-year warranty

The PWS4000 and 2200 Series programmable power supplies have excellent accuracy for R&D and manufacturing testing of a wide range of components, sub-assemblies, and end products.

## Series 2220/2230 Two or Three Channels, Low Noise, Programmable Power Supply Designed for Benchtop Applications

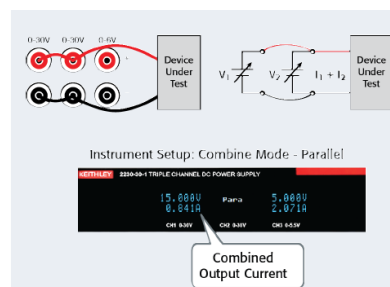
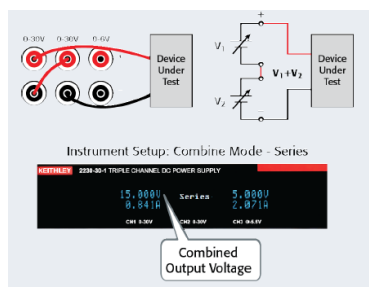
Model	2230-30-1, 2230J-30-1*, 2230G-30-1, 2230GJ-30-1*			2220-30-1, 2220J-30-1*, 2220G-30-1, 2220GJ-30-1*	
Output Channel	3			2	
Voltage	0 – 30V	0 – 30V	0 – 6V	0 – 30V	0 – 30V
Current	0 – 1.5A	0 – 1.5A	0 – 5A	0 – 1.5A	0 – 1.5A
Power	120W			90W	
<b>Ripple and Noise</b>					
CV p-p 7MHz	< 3mV	< 3mV	< 3 mV	< 3mV	< 3mV
CV RMS 7MHz	< 1mV	< 1mV	< 1 mV	< 1mV	< 1mV
CC RMS 20MHz	< 5mA	< 5mA	< 6 mA	< 5mA	< 5mA
<b>Programming Accuracy (25°C ± 5°C)</b>					
Voltage	≤0.03%+10mV	≤0.03%+10mV	≤0.03%+10mV	≤0.03%+10mV	≤0.03%+10mV
Current	≤0.1%+5mA	≤0.1%+5mA	≤0.1%+5mA	≤0.1%+5mA	≤0.1%+5mA
<b>Readback Accuracy (25 °C ± 5 °C)</b>					
Voltage	≤0.03%+10mV	≤0.03%+10mV	≤0.03%+10mV	≤0.03%+10mV	≤0.03%+10mV
Current	≤0.1%+5mA	≤0.1%+5mA	≤0.1%+5mA	≤0.1%+5mA	≤0.1%+5mA
Communication	Standard with USB port; 22XXG/GJ with GPIB Port				
Dimension	2U high, half rack width				
Others	All output channel isolated, support output with both positive and negative voltage. Support outputs synchronization and tracking mode				

\* J-versions are designed for 100VAC nominal input AC line voltage.



### Series 2220/2230 Features

- Two or three outputs
- Linear power supply with low ripple and noise
- All channels are isolated and can be controlled independently to maximize flexibility
- All channels have remote sensing to ensure maximum voltage accuracy at the DUT
- Two 30V channels can be connected in series or parallel and the display shows total output voltage and current
- 0.03% voltage programming accuracy and 0.1% current programming accuracy
- Three-year warranty



### Series 2220/2230 Power Supply connections and operating modes for series and parallel connections

Series 2220/2230 Multi-Channel Power Supplies are excellent for use in student labs, R&D, and test labs. They provide 2 or 3 channels of isolated, high quality power to one or multiple DUTs.



## Model 2231A-30-3 Triple-Channel DC Power Supply Offers Versatility and Ease of Use Designed for Benchtop Applications



Model	2231A-30-3		
Channel	1	2	3
Output Voltage	0 – 30V	0 – 30V	0 – 5V
Output Current	0 - 3 A	0 – 3A	0 – 3A
Output Power	195 W		
<b>Ripple and Noise (20Hz - 20MHz)</b>			
CV p-p	≤5mV		
CV RMS	≤1mV		
CC RMS	≤6 mA		
<b>Programming accuracy (25°C ±5°C)</b>			
Voltage	≤0.06% + 20mV		
Current	≤0.2% + 10mA		
<b>Readback accuracy (25°C ± 5°C)</b>			
Voltage	≤0.06% + 20mV		
Current	≤0.2% + 10mA		
Dimension	2U high, half rack width		
Others	Store up to 27 sets of user settings		

### 2231A-30-3 Features

- Three independent and adjustable outputs in one instrument
- Power up to 195W
- 0.06% voltage programming accuracy
- 0.2% current programming accuracy
- DC power with less than 5mVp-p noise
- Simultaneous display of all three outputs
- Double output levels by connecting the two 30V channels in series or parallel
- Store 30 sets of settings
- Turn off any output with a programmable timer
- Control from a PC with optional USB interface
- Three-year warranty

The Model 2231A-30-3 is a highly cost-effective power supply with 195W of power for student laboratories and laboratory R&D use.

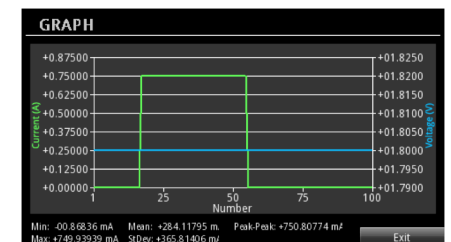
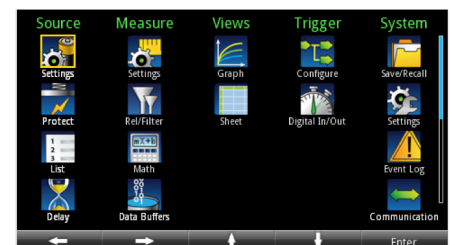
## 2280S Precision Measurement Power Supply Single-channel, Programmable Designed for Current Drain Analysis

Model	2280S-32-6	2280S-60-3
Output Voltage	0 - 32V	0 - 60V
Output Current	0 - 6A	0 - 3.2A
Output Power	192W	192W
<b>Ripple and noise (20Hz - 20MHz)</b>		
CV p-p: (mV)	5mV	7mV
CV RMS: (mV)	1mV	2mV
CC RMS: (mA)	3mA	3mA
<b>Programming accuracy</b>		
Voltage	$\leq 0.02\% + 3\text{mV}$	$\leq 0.02\% + 6\text{mV}$
Current	$\leq 0.05\% + 0.1\text{mA}$	$\leq 0.05\% + 0.1\text{mA}$
<b>Readback accuracy</b>		
Voltage	$\leq 0.02\% + 2\text{mV}$	$\leq 0.02\% + 4\text{mV}$
Current 1A/10A Range 10mA/100mA Range	$\leq 0.05\% + 250\mu\text{A}$ $\leq 0.05\% + 10\mu\text{A}$	$\leq 0.05\% + 250\mu\text{A}$ $\leq 0.05\% + 10\mu\text{A}$
<b>Readback resolution (under 6.5 digit setting)</b>		
Voltage	10 $\mu\text{V}$	10 $\mu\text{V}$
Current	10nA	10nA
Minimum Measurement Time	0.002 Power Line Cycles	
<b>Response Time</b>		
Voltage Rising Slew Rate	10V/s – 100V/s	10V/s – 100V/s
Voltage Falling Slew Rate	10V/s – 100V/s	10V/s – 100V/s
Load Transient Response Time	<50 $\mu\text{s}$	
Programming	GPIB/USB/LAN (LXI-C)	
Dimension	2U high, half rack width	
Others	Precision measurement power supply with 6½-digit DMM measurement capability, GUI, LXI web interface, output list function and programmable output slew rate	



### Series 2280S

- 6½-digit DMM measurement capability to observe load currents from 100nA to 6A
- High speed sampling capability, for capturing load current pulses as narrow as 140 $\mu\text{s}$
- 192W linear power supply with low ripple and noise and <50 $\mu\text{s}$ , fast transient response
- Output list function
- Programmable voltage slew rate simulates supply rise time conditions
- GUI with waveform display of output current and voltage
- GPIB/USB/LAN port, with LXI web interface for remote control
- Three-year warranty



The Series 2280S Precision Measurement Power Supply helps R&D and test engineers easily perform current drain analysis on low power products.

Series 2280S main menu screen (top) and graph screen (bottom)

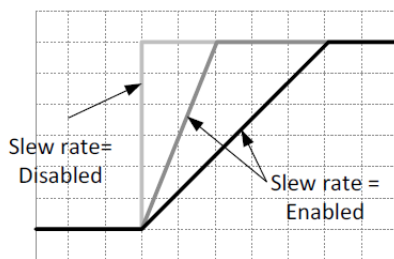
## Series 2260B Single-Channel Programmable Power Supply Designed for Automated Test and Benchtop Applications



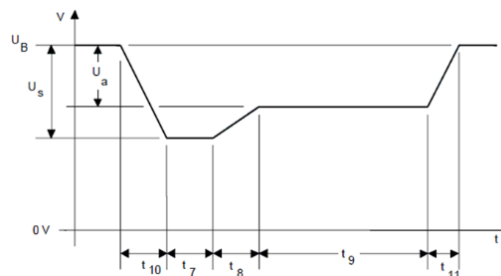
Model	2260B-30-36	2260B-30-72	2260B-80-13	2260B-80-27
Output Voltage	0 – 30 V	0 - 30 V	0 – 80 V	0 – 80 V
Output Current	0 – 36 A	0 – 72 A	0 - 13.5 A	0 – 27 A
Output Power	360 W	720 W	360 W	720 W
<b>Ripple and Noise (noise bandwidth 20 MHz, ripple bandwidth 1 MHz)</b>				
CV p-p	<60 mV	<80 mV	<60 mV	<80 mV
CV RMS	<7 mV	<11 mV	<7 mV	<11 mV
CC RMS	<72 mA	<144 mA	<27 mA	<54 mA
<b>Programming Accuracy</b>				
Voltage	≤0.05%+10mV	≤0.05%+10mV	≤0.05%+10mV	≤0.05%+10mV
Current	≤0.1%+30 mA	≤0.1%+60 mA	≤0.1%+30 mA	≤0.1%+30 mA
<b>Readback Accuracy</b>				
Voltage	≤0.1%+10 mV	≤0.1%+60 mV	≤0.1%+10 mV	≤0.1%+10 mV
Current	≤0.15%+30 mA	≤0.1%+30 mA	≤0.1%+30 mA	≤0.1%+30 mA
<b>Response Time</b>				
Rise Time	50ms	50ms	50ms	50ms
Fall Time (Full Load)	50ms	50ms	50ms	50ms
Fall Time (No Load)	500ms	500ms	500ms	500ms
Load Transient Recovery Time	1ms	1ms	1ms	1ms
Communication	USB/LAN, GPIB Optional (2260-GPIB-USB adapter)			
Dimension	3U high; 1/3 rack width (720W); 1/6 rack width (360W)			
Others	Adjustable output voltage and current slew rate, programming output resistance, serial and parallel connection, CC priority mode			

### Series 2260B Features

- Single output, high power density, system power supply
- 360W and 720W output with voltage up to 80V or current up to 72A
- Programmable output voltage and current slew rate to avoid inrush current damage to a DUT
- List function
- Constant current control mode to current overshoot when powering up LED products
- Simulate battery output characteristics using the programmable output resistance function
- Supports analog programming and USB/LAN/GPIB programming for remote control
- Three-year warranty



2260B output slew rate control



2260B output list function

The Series 2260B Programmable DC Power Supplies provide plenty of power for automated environmental test systems, life testing systems, and production test systems. The programmable slew rates minimize inrush current to protect DUTs, especially for LED product test and Lithium battery charge characterization.

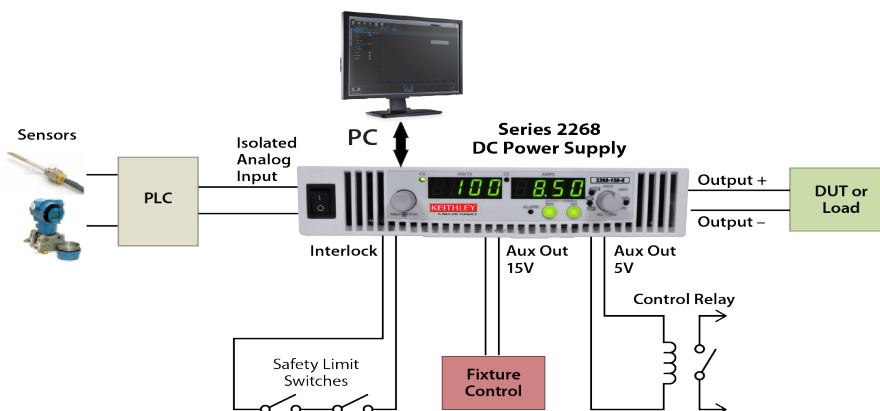
## Series 2268 850 W DC Power Supplies Single-Channel Programmable Power Supply Designed for Automated Test Applications



Model	2268-20-42	2268-40-21	2268-60-14	2268-80-10	2268-100-8	2268-150-5
<b>Output Voltage and Current</b>						
Output Voltage	20 V	40 V	60 V	80 V	100 V	150 V
Output Current	42 A	21 A	14 A	10.5 A	8.5 A	5.6 A
Output Power	850 W	850 W	850 W	850 W	860 W	850 W
<b>Output Noise (RMS, 300kHz)</b>						
Voltage	8 mV	8 mV	8 mV	8 mV	8 mV	10 mV
Current	75 mA	45 mA	35 mA	25 mA	20 mA	16 mA
<b>Programming Accuracy</b>						
Voltage	±20 mV	±40 mV	±60 mV	±80 mV	±100 mV	±150 mV
Current	±84 mA	±42 mA	±28 mA	±21 mA	±17 mA	±11.2 mA
<b>Readback Accuracy</b>						
Voltage	±20 mV	±40 mV	±60 mV	±80 mV	±100 mV	±150 mV
Current	±84 mA	±42 mA	±28 mA	±21 mA	±17 mA	±11.2 mA
<b>Response Time</b>						
Rise Time	60 ms	60 ms	60 ms	100 ms	100 ms	100 ms
Fall Time (Full Load)	50 ms	50 ms	50 ms	80 ms	100 ms	150 ms
Fall Time (No Load)	600 ms	800 ms	900 ms	1000 ms	1200 ms	1800 ms
Transient Response Time	<1 ms	<1 ms	<1 ms	<2 ms	<2 ms	<2 ms
Communications	LAN, USB, GPIB, RS-232, Isolated Analog I/O, Non-isolated I/O					
Dimensions	1U high, Half-Rack Width					
Other	Two auxiliary outputs, 15V @ 0.5A and 5V @ 0.5A, constant power control mode, control up to 30 Series 2268 supplies through one PC interface by interconnecting them through their RS-232 interfaces, programmable feedback mode with programmable onset delay time					

### Series 2268 Features

- Compact, 1U high, ½-rack enclosure provides the highest power in the smallest package
- Two auxiliary outputs power external devices and can eliminate the need for additional instrumentation
- Isolated analog inputs minimize noise on control lines
- LAN, USB, GPIB, RS-232, RS-485, and analog inputs are all standard
- Constant voltage, constant current, and constant power limit setting control
- Auto sequence control allows the internal execution of a set of commands to save bus communication time
- Numerous safety features protect the load and the supply including: over voltage and under voltage protection, over current protection, foldback, over temperature protection, and output interlock control
- Three-year warranty



Use a Series 2268 DC supply as part of a control system. Analog control signals can program the supply's output. In addition to driving the load, the supply's two auxiliary outputs can drive external devices or circuits. The auxiliary outputs can eliminate the need for extra power sources in a test system. Interlock connections can turn off the supply's output if an unsafe external condition is detected.