



## Why Keithley Series 2200 **Multichannel Power Supplies** are *the Superior Choice*

| KEITHLEY   | COMPETITORS   |
|--|---|
| <ul style="list-style-type: none"> <li>All channels are isolated and programmable</li> </ul> | <ul style="list-style-type: none"> <li>Not all channels are always isolated; sometimes the third channel is a fixed voltage</li> </ul>          |
| <ul style="list-style-type: none"> <li>All channels have remote sensing</li> </ul>           | <ul style="list-style-type: none"> <li>Not always available; voltage at the load is reduced due to voltage drops in the source leads</li> </ul> |
| <ul style="list-style-type: none"> <li>Series and parallel the 30V/1.5A channels</li> </ul>  | <ul style="list-style-type: none"> <li>Cannot parallel channels if the lows of a positive and a negative channel are connected</li> </ul>       |
| <ul style="list-style-type: none"> <li>See all channel outputs all the time</li> </ul>       | <ul style="list-style-type: none"> <li>Must switch between channel displays</li> </ul>  |



| Series 2220 Dual-Channel Power Supplies |           | Series 2230 Triple-Channel Power Supplies |           |           |
|---|-----------|---|-----------|-----------|
| Channel 1                               | Channel 2 | Channel 1                                 | Channel 2 | Channel 3 |
| 30V                                     | 30V       | 30V                                       | 30V       | 6V        |
| 1.5A                                    | 1.5A      | 1.5A                                      | 1.5A      | 5A        |

USB-TMC Interface on all versions; GPIB Interface added with the "G" versions

# Series 2220 and 2230 Multi-Channel USB and USB/GPIB Programmable DC Power Supplies

## Specifications

|                           | 2230-30-1, 2230J-30-1,<br>2230G-30-1, 2230GJ-30-1 |                          |                          | 2220-30-1, 2220J-30-1,<br>2220G-30-1, 2220GJ-30-1 |                          |
|---------------------------|---|--------------------------|--------------------------|---|--------------------------|
| <b>DC OUTPUT RATING</b>   |   |                          |                          |   |                          |
| Voltage                   | 0 to 30 V   | 0 to 30 V                | 0 to 6 V                 | 0 to 30 V   | 0 to 30 V                |
| Current                   | 0 to 1.5 A  | 0 to 1.5 A               | 0 to 5 A                 | 0 to 1.5 A  | 0 to 1.5 A               |
| <b>MAXIMUM POWER</b>      | 120 W   |                          |                          | 90 W  |                          |
| <b>LOAD REGULATION</b>    |   |                          |                          |   |                          |
| Voltage                   | < 0.01% + 3 mV                                    | < 0.01% + 3 mV           | < 0.01% + 3 mV           | < 0.01% + 3 mV                                    | < 0.01% + 3 mV           |
| Current                   | < 0.01% + 3 mA                                    | < 0.01% + 3 mA           | < 0.01% + 3 mA           | < 0.01% + 3 mA                                    | < 0.01% + 3 mA           |
| <b>LINE REGULATION</b>    |   |                          |                          |   |                          |
| Voltage                   | < 0.01% + 3 mV                                    | < 0.01% + 3 mV           | < 0.01% + 3 mV           | < 0.01% + 3 mV                                    | < 0.01% + 3 mV           |
| Current                   | < 0.1% + 3 mA                                     | < 0.1% + 3 mA            | < 0.1% + 3 mA            | < 0.1% + 3 mA                                     | < 0.1% + 3 mA            |
| <b>RIPPLE AND NOISE</b>   |   |                          |                          |   |                          |
| Voltage (7MHz)            | < 1 mV rms<br>< 3 mV p-p                          | < 1 mV rms<br>< 3 mV p-p | < 1 mV rms<br>< 3 mV p-p | < 1 mV rms<br>< 3 mV p-p                          | < 1 mV rms<br>< 3 mV p-p |
| Current (20MHz)           | < 5 mA rms  | < 5 mA rms               | < 6 mA rms               | < 5 mA rms  | < 5 mA rms               |
| <b>SETTING RESOLUTION</b> |   |                          |                          |   |                          |
| Voltage                   | 1 mV  | 1 mV                     | 1 mV                     | 1 mV  | 1 mV                     |
| Current                   | 1 mA  | 1 mA                     | 1 mA                     | 1 mA  | 1 mA                     |
| <b>SETTING ACCURACY</b>   |   |                          |                          |   |                          |
| Voltage                   | ± 0.03% + 10 mV                                   | ± 0.03% + 10 mV          | ± 0.03% + 10 mV          | ± 0.03% + 10 mV                                   | ± 0.03% + 10 mV          |
| Current                   | ± 0.1% + 5 mA                                     | ± 0.1% + 5 mA            | ± 0.1% + 5 mA            | ± 0.1% + 5 mA                                     | ± 0.1% + 5 mA            |
| <b>METER RESOLUTION</b>   |   |                          |                          |   |                          |
| Voltage                   | 1 mV  | 1 mV                     | 1 mV                     | 1 mV  | 1 mV                     |
| Current                   | 1 mA  | 1 mA                     | 1 mA                     | 1 mA  | 1 mA                     |
| <b>METER ACCURACY</b>     |   |                          |                          |   |                          |
| Voltage                   | ± 0.03% + 10 mV                                   | ± 0.03% + 10 mV          | ± 0.03% + 10 mV          | ± 0.03% + 10 mV                                   | ± 0.03% + 10 mV          |
| Current                   | ± 0.1% + 5 mA                                     | ± 0.1% + 5 mA            | ± 0.1% + 5 mA            | ± 0.1% + 5 mA                                     | ± 0.1% + 5 mA            |

**ISOLATION VOLTAGE, OUTPUT TO CHASSIS:** Any output can be floated up to 240V (DC + peak AC with AC limited to a maximum of 3Vpk-pk and a maximum frequency of 60Hz) relative to earth ground terminal.

**ISOLATION VOLTAGE, OUTPUT TO OUTPUT:** Any output can be floated up to 240V (DC + peak AC with AC limited to a maximum of 3Vpk-pk and a maximum frequency of 60Hz) relative to any other output terminal.

**VOLTAGE TRANSIENT RESPONSE SETTling TIME, LOAD CHANGE (typical):** <150ms to within 75mV following a change from 0.1A to 1A.

**VOLTAGE TRANSIENT RESPONSE SETTling TIME, SETTING CHANGE, RISING (typical):** <150ms to within 75mV following a change from 1V to 11V into a 10Ω resistor (Ch. 1, 2); from 0.4V to 4V into a 4Ω resistor (ch. 3).

**VOLTAGE TRANSIENT RESPONSE SETTling TIME, SETTING CHANGE, FALLING (typical):** <150ms to within 75mV following a change from 11V to 1V into a 10Ω resistor (Ch. 1, 2); from 0.4V to 4V into a 4Ω resistor (ch. 3).

**DISPLAY:** Vacuum fluorescent display.

**MEMORY:** 30 setup memories.

**TRACKING AND COMBINATION MODES:**

**Tracking Mode:** Maintains the ratio on the two 30V output channels that is present when the control is activated.

**Combination V1+V2 Series Mode:** Deliver up to 60 V when CH1 and CH2 are wired in series. Meter reads back combined voltage.

**Combination I1+I2 Parallel Mode:** Deliver up to 3 A when CH1 and CH2 are wired in parallel. Meter reads back combined current.

**REAR PANEL CONNECTIONS:** USB Device Port, Type B connector, USBTMC compatible. 2220G and 2230G versions include a GPIB interface, IEEE-488.2 compliant.

## POWER SOURCE

**AC INPUT:** Non-"J" versions: Switchable between 120VAC or 240VAC, nominal (different fuse required for each voltage).  
"J" Versions: 100VAC, nominal.

**FREQUENCY:** 50/60Hz

**POWER CONSUMPTION:**

Dual Channel Versions: 350VA.

Triple Channel Versions: 450VA.

## PHYSICAL CHARACTERISTICS

**PROTECTIVE BOOTS AND HANDLE INSTALLED:**

**Height:** 105.3mm (4.15 in.)

**Width:** 241.8mm (9.52 in.)

**Depth:** 384.0mm (15.12 in.)

**PROTECTIVE BOOTS AND HANDLE REMOVED:**

**Height:** 90.7mm (3.57 in.)

**Width:** 217.2mm (8.55 in.)

**Depth:** 361.6mm (14.24 in.)

**NET WEIGHT:**

2220-30-1: 8.2 kg (18 lb.)

2230-30-1: 8.5 kg (19 lb.)

**SHIPPING WEIGHT:**

2220-30-1: 11 kg (24 lb.)

2230-30-1: 11 kg (24 lb.)

## SERVICES AVAILABLE

**PLEASE SEE DATA SHEET FOR COMPLETE LISTING**

[www.keithley.com/data?asset=57005](http://www.keithley.com/data?asset=57005)

## Ordering Information

**2220-30-1**  
Programmable Dual Channel DC Power Supply

**2220G-30-1**  
Programmable Dual Channel DC Power Supply with GPIB Interface

**2220J-30-1**  
Programmable Dual Channel DC Power Supply for Japan

**2220GJ-30-1**  
Programmable Dual Channel DC Power Supply with GPIB Interface for Japan

**2230-30-1**  
Programmable Triple Channel DC Power Supply

**2230G-30-1**  
Programmable Triple Channel DC Power Supply with GPIB Interface

**2230J-30-1**  
Programmable Triple Channel DC Power Supply for Japan

**2230GJ-30-1**  
Programmable Triple Channel DC Power Supply with GPIB Interface for Japan

## Accessories Supplied

**CS-1655-15 Rear Panel Mating Connector for Models 2220 and 2230 Multi-Channel DC Power Supplies Documentation and Driver CD**

## ACCESSORIES AVAILABLE

|                            |  |
|----------------------------|--|
| CS-1655-15                 | Rear Panel Mating Connector for Series 2200 Power Supplies           |
| <i>Model Number</i> JUMPER | (example: 2230-30-1 JUMPER) Shorting Jumper for CS-1655-15 Connector |
| 4299-7                     | Universal Fixed Rack Mount Kit                                       |
| RMU2U                      | Fixed Rack Mount Kit   |
| 386-7598-xx                | RMU2U Rack Mount Cosmetic Filler Panel                               |
| USB-I-1                    | USB Cable  |
| KPCI-488LPA                | IEEE-488.2 Interface Board for the PCI Bus                           |
| 7007-05                    | Double Shielded Premium IEEE-488 Interface Cables, 0.5m (1.6 ft)     |
| 7007-1                     | Double Shielded Premium IEEE-488 Interface Cables, 1m (3.2 ft)       |
| 7007-2                     | Double Shielded Premium IEEE-488 Interface Cables, 2m (6.5 ft)       |
| 7007-3                     | Double Shielded Premium IEEE-488 Interface Cables, 3m (10 ft)        |
| 7007-4                     | Double Shielded Premium IEEE-488 Interface Cables, 4m (13 ft)        |



A Greater Measure of Confidence