

KEITHLEY

# 2280S-32-6

The Keithley 2280S-32-6 is a high-precision, measurement-grade DC power supply that provides up to 192W of low-noise linear power. It combines the capabilities of a 32V, 6A power source with a high-resolution 6.5-digit digital multimeter, allowing for precise measurements of load currents from nanoamps to amps, rapid transient response analysis, and configurable output rise/fall times.

## SPECIFICATIONS

### General

|                   |                                                                              |
|-------------------|------------------------------------------------------------------------------|
| Interfaces        | GPIB, USB Device (USBTMC), USB Host, LAN (LXI Core 1.4), Digital I/O (6-pin) |
| Display           | 4.3-inch TFT LCD color display, 480 × 272 pixels                             |
| Warm-up Time      | 1 hour                                                                       |
| Standard Warranty | 3 years                                                                      |
| Setup Storage     | 10 user-configuration states                                                 |

### Physical

|                       |                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------|
| Power Supply          | 100 V / 120 V / 220 V / 240 V AC ±10%, 50/60 Hz, 630 VA maximum power consumption                           |
| Operating Temperature | 0 to 40 °C °C                                                                                               |
| Dimensions (W×H×D)    | 213.6 mm × 88.5 mm × 384.3 mm (without boot and handle); 224 mm × 106 mm × 415 mm (with boot and handle) mm |
| Weight                | 10.85 kg kg                                                                                                 |

## Output Ratings and Performance

|                                            |                                         |
|--------------------------------------------|-----------------------------------------|
| Voltage Output Range                       | 0 to 32 V                               |
| Current Output Range                       | 0 to 6 A                                |
| Maximum Output Power                       | 192 W                                   |
| Voltage Programming Accuracy               | $\pm(0.02\% + 3 \text{ mV})$            |
| Current Programming Accuracy               | $\pm(0.05\% + 5 \text{ mA})$            |
| Voltage Programming Resolution             | 1 mV                                    |
| Current Programming Resolution             | 0.1 mA                                  |
| Voltage Readback Accuracy                  | $\pm(0.02\% + 1.6 \text{ mV})$          |
| Current Readback Accuracy (10 mA range)    | $\pm(0.05\% + 10 \text{ }\mu\text{A})$  |
| Current Readback Accuracy (100 mA range)   | $\pm(0.05\% + 10 \text{ }\mu\text{A})$  |
| Current Readback Accuracy (1 A range)      | $\pm(0.05\% + 100 \text{ }\mu\text{A})$ |
| Current Readback Accuracy (10 A range)     | $\pm(0.05\% + 250 \text{ }\mu\text{A})$ |
| Voltage Readback Resolution                | 100 $\mu\text{V}$ (6.5-digit mode)      |
| Current Readback Resolution (10 mA range)  | 10 nA (6.5-digit mode)                  |
| Current Readback Resolution (100 mA range) | 100 nA (6.5-digit mode)                 |
| Current Readback Resolution (1 A range)    | 1 $\mu\text{A}$ (6.5-digit mode)        |
| Current Readback Resolution (10 A range)   | 10 $\mu\text{A}$ (6.5-digit mode)       |

## Regulation, Ripple, and Noise

|                                          |                                 |
|------------------------------------------|---------------------------------|
| Load Regulation (Voltage)                | $\pm(0.01\% + 2 \text{ mV})$    |
| Load Regulation (Current)                | $\pm(0.01\% + 0.25 \text{ mA})$ |
| Line Regulation (Voltage)                | $\pm(0.01\% + 1 \text{ mV})$    |
| Line Regulation (Current)                | $\pm(0.01\% + 0.25 \text{ mA})$ |
| Ripple and Noise (Voltage, RMS)          | <1 mV RMS (20 Hz to 20 MHz)     |
| Ripple and Noise (Voltage, Peak-to-Peak) | <5 mV p-p (20 Hz to 20 MHz)     |
| Ripple and Noise (Current, RMS)          | <3 mA RMS (20 Hz to 20 MHz)     |

## Transient and Dynamic Response

|                                  |                                                                                           |
|----------------------------------|-------------------------------------------------------------------------------------------|
| Transient Response Recovery Time | <50 $\mu\text{s}$ (to within 75 mV of nominal voltage for a load change from 50% to 100%) |
| Voltage Rise Time (10% to 90%)   | <30 ms (typical, with resistive load)                                                     |
| Voltage Fall Time (90% to 10%)   | <30 ms (typical, with resistive load)                                                     |

## Current Sinking and Battery Simulation

|                                      |                               |
|--------------------------------------|-------------------------------|
| Maximum Sink Current                 | 0.45 A (continuous)           |
| Programmable Series Resistance Range | -0.1 $\Omega$ to 100 $\Omega$ |

## Protection and Limits

|                                    |                |
|------------------------------------|----------------|
| Overvoltage Protection (OVP) Range | 1 V to 36 V    |
| Overcurrent Protection (OCP) Range | 0.1 A to 6.6 A |
| Maximum Common Mode Voltage        | 125 VDC        |

## Connectivity and Interface

|                                |                                                           |
|--------------------------------|-----------------------------------------------------------|
| Digital I/O Port Configuration | 9-pin D-sub, 6 configurable input/output lines            |
| Remote Sensing Connections     | Rear-panel terminals; compensates up to 1 V drop per lead |
| Output Terminal Locations      | Rear-panel screw terminals; Front-panel safety jacks      |

## Measurement and Control Capabilities

|                             |                                         |
|-----------------------------|-----------------------------------------|
| Measurement Digitizing Rate | Up to 25,000 readings/second (buffered) |
| A/D Converter Resolution    | 24-bit (sigma-delta converter)          |
| Integration Time Settings   | 0.002 PLC to 10 PLC                     |
| Data Buffer Capacity        | Up to 50,000 measurements               |

## Physical and Environmental

|                           |                                                    |
|---------------------------|----------------------------------------------------|
| Storage Temperature Range | -20 °C to 70 °C                                    |
| Operating Humidity Range  | 5% to 85% RH, non-condensing (at up to 40 °C)      |
| Operating Altitude        | Up to 2000 meters                                  |
| Cooling Method            | Forced air (fan cooled, side intake, rear exhaust) |
| Form Factor               | 2U, half-rack width                                |

## Compliance and Standards

|                      |        |
|----------------------|--------|
| Calibration Interval | 1 year |
|----------------------|--------|

## Performance

|                                |                    |
|--------------------------------|--------------------|
| Command Processing Time        | <1 ms              |
| Voltage Slew Rate Range        | 0.1 V/s to 320 V/s |
| Maximum Remote Sense Lead Drop | 1 V per lead       |
| Series Resistance Resolution   | 0.001 $\Omega$     |

## Power

|                           |                                              |
|---------------------------|----------------------------------------------|
| AC Input Voltages         | 100 V / 120 V / 220 V / 240 V ( $\pm 10\%$ ) |
| AC Input Frequencies      | 50 Hz / 60 Hz                                |
| Maximum Power Consumption | 630 VA                                       |

## Environmental

|                    |                               |
|--------------------|-------------------------------|
| Vibration Standard | MIL-PRF-28800F Class 3 Random |
|--------------------|-------------------------------|

## Compliance

|                |                           |
|----------------|---------------------------|
| LXI Compliance | LXI Version 1.4 Core 2011 |
|----------------|---------------------------|

**Compliance & Safety**

|                   |                                                                                         |
|-------------------|-----------------------------------------------------------------------------------------|
| Safety Compliance | Conforms to European Union Low Voltage Directive, UL 61010-1, CAN/CSA C22.2 No. 61010-1 |
| EMC Compliance    | Conforms to European Union EMC Directive, EN 61326-1, FCC Part 15 Class A               |

**Control & Programming**

|                  |                                                       |
|------------------|-------------------------------------------------------|
| Command Language | SCPI (Standard Commands for Programmable Instruments) |
|------------------|-------------------------------------------------------|

**Safety & Isolation**

|                           |                                                 |
|---------------------------|-------------------------------------------------|
| Chassis Isolation Voltage | 125 VDC or peak AC maximum (Outputs to chassis) |
|---------------------------|-------------------------------------------------|

**TECHNOLOGY**

Linear DC Power Supply

**APPLICATIONS**

Precision electronics testing, battery simulation, low-power IoT device characterization, and high-accuracy current consumption analysis

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