

# Keysight E4356A Telecom dc Power Supply

Data Sheet



## Clean Power for Telecommunications Equipment Testing

The new Keysight Technologies, Inc. E4356A Telecom dc Power Supply provides engineers who build equipment for the telecommunications industry a clean, reliable power source to simplify their test needs at up to 80 Volts, up to 30 Amperes, and up to 2100 Watts.

This power supply is ideal for manufacturing and R&D engineers who build equipment such as: switches, public and private telephone network equipment, PBX systems, and dc/dc converters that provide power to this equipment.

Since noise elimination is critical for telecommunications applications, the E4356A offers low noise output so that the power supply noise does not interfere with the testing of the telecommunications device, thus simplifying test system design.

## Keysight E4356A Technical Data

### Dual range output provides maximum power

To maximize the available power from this 2100 W power supply, the output automatically switches between two ranges: 0 to 70 V at up to 30 A and 0 to 80 V at up to 26 A. In either range, when operating at high voltages, maximum output power is available.

### Low power supply output noise

The E4356A generates less than 2 mV rms at 80 V output. This noise specification is as much as ten times lower than typical ATE power supplies in the 2000 Watt power range.

### Flexible down-programming for faster system throughput

The E4356A can both source and sink current. When testing DUTs that have capacitance, the E4356A can quickly pull down the voltage on the charged capacitors because it can sink current back into the power supply. As a result, tests can execute faster because less time is spent waiting for voltages to change from high to low. This capability can be used repetitively with no limitation on how often down programming (current sinking) is utilized. Each and every time you need the power supply to down program its output from a high voltage to a lower voltage, the E4356A is ready to do the job.

### “One-Box” solution

The E4356A lowers test system costs by reducing the number of boxes and rack space needed for the system. Previously, test solutions to make accurate power supply voltage and current measurements needed the use of an external voltmeter and current shunt. This additional equipment is no longer required because they are built into the power supply. Thus, less rack space is required, equipment costs are lowered, and systems can be designed and integrated in less time.

By combining all the programming and measurement instrumentation into “One-Box,” you get predictable performance with all-inclusive specifications from the GPIB interface through to the output of the power supply. The performance is predictable because the E4356A is calibrated as a “system,” rather than as separate components or as a power supply with add-on programmer option. Calibration of the entire power supply “system” can be performed from the front panel or over GPIB.

## And More ...

**Protection Features** limit voltage (Overvoltage Protection-OVP) and current (Overcurrent Protection-OCP) such that when limits are exceeded, the power supply is turned off to protect the DUT against excessive voltages or currents. Additionally, when OVP occurs, the downprogrammer is activated to draw down the excessive voltage and protect the DUT.

**Standard Programming Language** reduces software development time and preserves software investment. Software development is kept to a minimum through the use of industry standard SCPI (Standard Command for Programmable Instruments) command set. *VXIplug&play* drivers are available, too.

**Remote Inhibit/Discrete Fault Indicator** lines can be used to initiate an emergency shutdown of the power supply. Furthermore, this feature can be used to chain together other Keysight "One-Box" Solution power supplies to externally disable all of the "daisy-chained" power supplies independent of the GPIB. Emergency shutdown can occur in response to an external signal or internal fault condition. Additionally, these lines can be used as a general purpose digital I/O port.

**Non-Volatile State Storage** of up to 5 states can reduce manual setup time or programming overhead. These states, which include the settings for voltage, current, and protection features, can be stored for later recall during program execution.

**Serial Link** saves GPIB addresses by connecting up to 16 power supplies on one primary GPIB address using low cost serial link cables.

**Product Reliability and Worldwide Support** minimizes system downtime. Keysight Technologies' renowned reliability and product support provides you with higher productivity by ensuring your system is up and running when you need it.

## Specifications

Specifications are warranted over a temperature range of 0–55° C with a resistive load and the power supply sensing at the rear terminals, except where indicated.

Parameter		Value
Output ratings in two ranges (@ 0 to 45° C)	High Range:	0–70 V, 0–30 A
	Low Range:	0–80 V, 0–26 A
Programming accuracy	Voltage:	0.04% + 80 mV
	Current:	0.1 % + 25 mA
Ripple and noise (from 20 Hz to 20 MHz with outputs ungrounded, or with either output terminal grounded)	Constant Voltage rms:	2 mV
	Constant Voltage p-p:	16 mV
	Constant Current rms: (measured with 60 cm leads )	25 mA
Readback accuracy (from front panel or over GPIB with respect to actual output)	Voltage:	0.05% + 120 mV
	Current:	0.1 % + 35 mA
Load regulation (change in output voltage or current for any load change within ratings)	Voltage:	0.002% + 3 mV
	Current:	0.005% + 2 mA
Line regulation (change in output voltage or current for any line change within ratings)	Voltage:	0.002% + 3 mV
	Current:	0.005% + 2 mA
Transient response time (for the output voltage to recover to its previous level within 0.1% of the rated voltage or 20 mV, whichever is greater, following any step change in load current up to 50% of the rated current)		< 900 $\mu$ s

## Supplemental characteristics

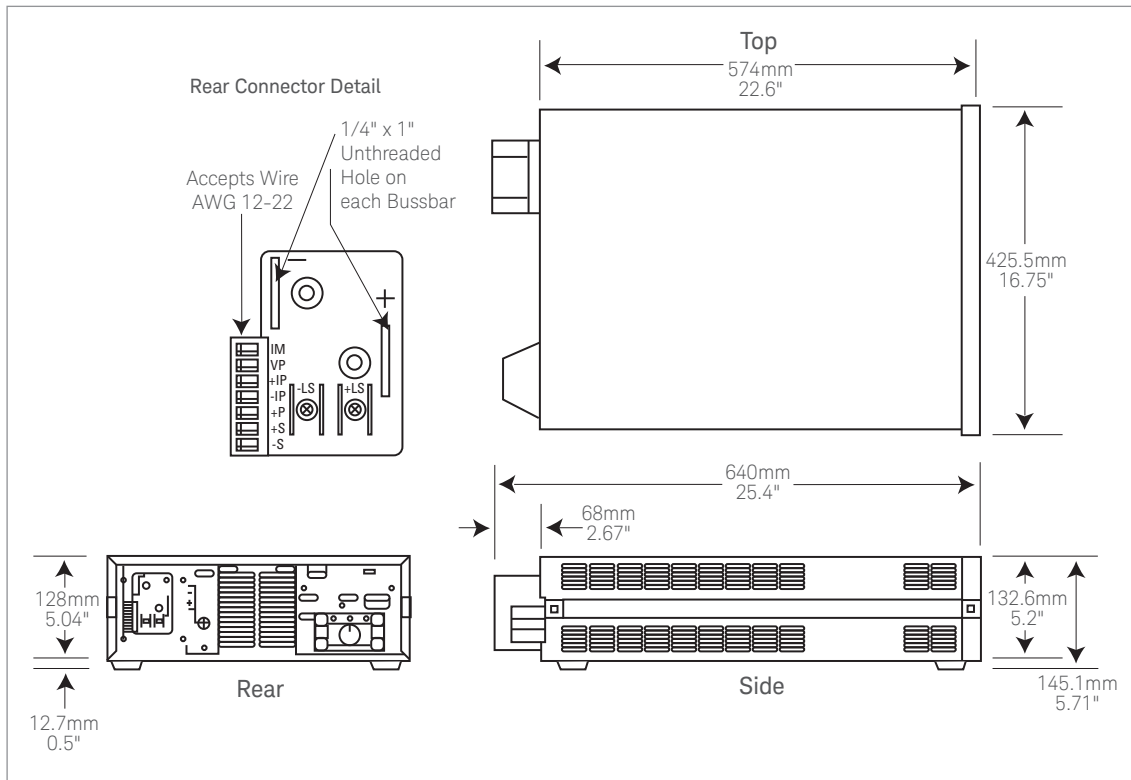
Supplemental characteristics are intended to provide information useful in applying the power supply by describing non-warranted performance that has been determined by design or type testing.

Parameter		Value
Output programming	Maximum voltage:	81.9 V
	Maximum current:	30.71 A
	Maximum overvoltage protection:	96 V
Typical programming resolution	Voltage:	20 mV
	Current:	7.5 mA
	Overvoltage protection:	150 mV
Overvoltage programming accuracy		1.5 V
Maximum input VA and power	with full load:	3800 VA; 2600 W
	with no load:	100 W
AC input ranges (selectable via internal switching)	200 Vac <sup>1</sup> nominal:	174–220 Vac
	230 Vac nominal:	191–250 Vac
	Frequency:	47–63 Hz
Output terminal isolation (maximum, from chassis ground)		$\pm$ 240 Vdc
Maximum AC line current ratings	200 Vac nominal:	19 A rms (25 A fuse)
	230 Vac nominal:	19 A rms (25 A fuse)
Remote sensing capability	Voltage drop per lead:	Up to 1/2 of rated output voltage.
	Maximum available voltage at load:	Subtract voltage drop in load leads from maximum output voltage rating.
Command processing time (average time for output voltage to change after receipt of digital data when the unit is connected directly to the GPIB)		20 ms
Output voltage rise time/fall time (time for output to change from 90% to 10% or from 10% to 90% of its total excursion with full resistive load)		100 ms/200 ms (excludes command processing time)

1. Below 185 Vac, derate output voltage linearly to 56.5 V

## Supplemental characteristics (continued)

Parameter		Value
Full-load programming speed up time/down time (time for output to settle within 80 mV of the final value with full resistive load)		200 ms/475 ms (excludes command processing time)
No-load programming discharge time (time for output to fall to 0.5V when programmed from full voltage to zero volts)		650 ms (excludes command processing time)
Monotonicity		Output is monotonic over entire rated voltage, current, and temp. range
Nonvolatile savable states	Memory locations:	5 (0 through 4)
GPIB interface capabilities	Languages:	SCPI (default); Compatibility
	Interface:	AH1, C0, DC1, DT1, E1, LE4, PP0, RL1, SH1, SR1, TE6
Serial Link Capabilities (multiple units sharing one GPIB primary address)	Maximum # of units:	16
	Maximum total cable length:	30 m (100 ft)
Recommended calibration		1 year interval
Safety compliance	Complies with:	CSA 22.2 No.231, IEC 348
	Designed to comply with:	UL 1244
RFI suppression	Complies with:	CISPR-II, Group 1, Class B
Weight	Net:	27.7 kg (61 lb)
	Shipping:	31.4 kg (69 lb)



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