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# Keysight Technologies
# E3640A – E3649A
# Programmable DC Power Supplies

Data Sheet




KEYSIGHT TECHNOLOGIES

## Reliable Power, Repeatable Results

- Single and dual outputs
- Dual range output
- 30 W to 100 W output power
- Front and rear output terminals
- Over-voltage protection
- Remote Sensing
- GPIB and RS-232 standard
- Save and recall functions



## Great Performance, Outstanding Price

With the output power of 30 to 100 W, the Keysight Technologies, Inc. E364xA Series programmable DC power supplies provide great performance at a great price. All ten models deliver clean power, excellent regulation, fast transient response and built-in GPIB and RS-232 interfaces. They are designed to meet the needs of R&D design verification, production testing, QA verifications, and other demanding applications with Keysight Technologies's quality and reliability.

## Steady Output

With 0.01 percent load and line regulation, Keysight E364xA power supplies are able to maintain a steady output when power line and load changes occur. They also specify normal mode voltage noise and low common mode current noise. The low normal mode noise specification assures clean power for precision circuitry applications, and the low common mode current provides isolation from power line current injection. Keysight E364xA power supplies specify less than 90 msec of voltage settling time at any output load condition.

## Remote Interface

Keysight E364xA power supplies support any PC with a GPIB (IEEE-488) card or RS-232 interface. Every model ships standard with both GPIB and RS-232. The easy-to-use SCPI (Standard Commands for Programmable Instruments) allow fast and simple programming procedures. Besides, the user manual provides sufficient information on programming for all end users, from beginners to veterans.

## Broad Support

VXI plug and play software drivers are available for Keysight VEE, National Instruments LabView and LabWindows. With these drivers, integration of the E364xA into your system can never be any easier. The drivers are supported under Microsoft Windows 98 and NT.

## Front Panel Operation

An easy-to-use rotary knob and self-guiding keypads allow you to set the output at your desired resolution without any effort. Also, both voltage and current levels can be set to a maximum resolution of 10 mV/ 1 mA from the front panel. In addition, you can store and recall for up to five complete power supply setups using the internal non-volatile memory.

The output on/off button sets the output to zero. If you own a dual output model, you can view two voltages or currents that are displayed simultaneously.

## Versatile Power

Keysight E364xA power supplies give you the flexibility to select from dual output ranges. Output load is protected against overvoltage, which can be easily monitored and adjusted from the front panel and remote interface. Remote sensing is available in the rear terminal to eliminate errors caused by voltage drops on the load leads. These power supplies offer new versatile binding posts on the front panel and screw-type terminals on the rear panel. New front panel binding posts allow you to use safety test leads as well as conventional banana clips and stripped wires. An optional rackmount kit is available. The Keysight E364xA Series employs a cooling fan with automatic speed control to reduce the acoustic noise.

Set the overvoltage protection and enable the overvoltage protection circuit

Highly visible vacuum fluorescent display

Rotary knob for quick and analog-like control of voltage and current

Tough handle for easy carriage and unit prop-up




Selectable dual range provides flexibility and convenience

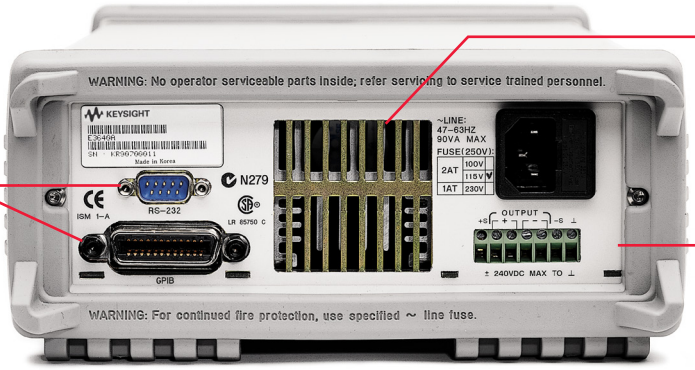
Versatile binding posts offer flexibility to use safety test leads, banana plugs or stripped wires

Store and recall up to five different operating statuses in non- volatile storage locations

Electronic calibration from the front panel

1 year warranty protects your investment

Cooling fan with automatic speed control for low acoustic noise




Built-in GPIB and RS-232 interfaces

Rear output and sensing terminals

# Keysight E3640A – E3649A Programmable DC Power Supply Specifications

| Model number | E3640A | E3641A | E3642A | E3643A | E3644A | E3645A |
|---|---|---|---|---|---|---|
| Maximum power | 30 W | | 50 W | | 80 W | |
| # of outputs | 1 | 1 | 1 | 1 | 1 | 1 |
| DC output rating (@ 0 °C to 40 °C) | 0 to 8 V/3 A or 0 to 20 V/1.5 A | 0 to 35 V/0.8 A or 0 to 60 V/0.5 A | 0 to 8 V/5 A or to 20 V/2.5 A | 0 to 35 V/1.4 A or 0 to 60 V/0.8 A | 0 to 8 V/8 A or 0 to 20 V/4 A | 0 to 35 V/2.2 A or 0 to 60 V/1.3 A |
| Net weight | 5.3 kg | 5.2 kg | 6.3 kg | 6.2 kg | 6.6 kg | 6.7 kg |
| Dimensions (without bumper) | 212.6 mm W x 88.5 mm H x 348.3 mm D | | | | | |

| Model number | E3646A | E3647A | E3648A | E3649A |
|---|---|---|---|---|
| Maximum power | 60 W | | 100 W | |
| # of outputs | 2 | 2 | 2 | 2 |
| DC output rating (@ 0 °C to 40 °C) | Two 0 to 8 V/3 A or 0 to 20 V/1.5 A | Two 0 to 35 V/0.8 A or 0 to 60 V/0.5 A | Two 0 to 8 V/5 A or 0 to 20 V/2.5 A | Two 0 to 35 V/1.4 A or 0 to 60 V/0.8 A |
| Net weight | 8.2 kg | 8.0 kg | 9.2 kg | 9.1 kg |
| Dimensions (without bumper) | 212.8 mm W x 133.0 mm H x 348.3 mm D | | | |

| | |
|---|---|
| Load and line regulation ± (% of output + offset) | |
| Voltage | < 0.01% + 3 mV |
| Current | < 0.01% + 250 µA |
| Ripple and noise (20 Hz to 20 MHz) | |
| Normal mode voltage | < 5 mVpp/0.5 mVrms for 8 V/20 V models<br>< 8 mVpp/1 mVrms for 35 V/60 V models |
| Normal mode current | < 4 mArms |
| Accuracy [1] 12 months (@ 25 °C ± 5 °C), ± (% output + offset) | |
| Programming | |
| Voltage | < 0.05% + 10 mV (< 0.1% + 25 mV for output 2 of E3646/47/48/49 A) |
| Current | < 0.2% + 10 mA |
| Readback (over GPIB and with respect to actual output) | |
| Voltage | < 0.05% + 5 mV (< 0.1% + 25 mV for output 2 of E3646/47/48/49 A) |
| Current | < 0.15% + 5 mA (< 0.15% + 10 mA for output 2 of E3646/47/48/49 A) |
| Meter [2] (over front panel with respect to actual output) | |
| Voltage | < 0.05% + 2 counts (<0.1% + 4 counts for output 2) |
| Current | < 0.15% + 5 mA (<0.15% + 10 mA for output 2) |
| Transient response | Less than 50 µsec for output to recover to within 15 mV following a change in output current from full load to half load or vice versa. |

1. Accuracy specifications are valid after a 1-hour warm-up with no load and calibration at 25 °C.
2. Meter accuracy specification is at minimum 10 mV decimal limited by front panel resolution.

# Supplemental Characteristics

| | |
|---|---|
| Temperature coefficient per °C ± (% output + offset) | |
| Voltage | < 0.01% + 3 mV (< 0.02% + 5 mV for output 2 of E3646/47/48/49A) |
| Current | < 0.02% + 3 mA |
| Stability, constant load & temperature ± (% output + offset), 8 hrs | |
| Voltage | < 0.02% + 2 mV |
| Current | < 0.1% + 1 mA |
| Remote sensing<br>Max. voltage drop in each load lead | 1 V |
| AC Input<br>(47 Hz – 63 Hz) | 100 Vac ± 10% (Opt 0E9)/115 Vac ± 10% (Std)/230 Vac ± 10% (0E3) |
| Warranty | One year for E364xA series power supplies<br>Three months for standard shipped accessories |
| Product regulation | Designed to comply with UL3111-1; certified to CSA 22.2 No. 1010.1;<br>conforms to IEC 1010-1; complies with EMC directive 89/336/EEC (Group 1, Class A) |
| Common mode current | < 1.5 µArms |
| Resolution | |
| Program | < 5 mV/1 mA |
| Readback | < 2 mV/1 mA |
| Meter | 10 mV/1 mA |
| Settling time [3] | < 90 msec |
| OVP | |
| Accuracy,<br>± (% output + offset) | < 0.5% + 0.5 V |
| Activation time [4] | < 1.5 msec, OVP ≥3 V/< 10 msec, OVP < 3 V |

3. Maximum time required for the output voltage to change from 1% to 99% or vice versa following the receipt of VOLTage or APPLy command via direct GPIB or RS-232 interface.
4. Average time for output to start and drop after an OVP condition occurred.

## Ordering Information

Keysight E364xA Series Power Supplies
E3640A 30-Watt Single Power Supply
E3641A 30-Watt Single Power Supply
E3642A 50-Watt Single Power Supply
E3643A 50-Watt Single Power Supply
E3644A 80-Watt Single Power Supply
E3645A 80-Watt Single Power Supply
E3646A 60-Watt Dual Power Supply
E3647A 60-Watt Dual Power Supply
E3648A 100-Watt Dual Power Supply
E3649A 100-Watt Dual Power Supply

## Standard Shipped Accessories

User's & Service guide, Product Reference CD, AC power cord

## Power Options

Opt. 0E3 230 Vac ± 10%
Opt. 0EM 115 Vac ± 10%
Opt. 0E9 100 Vac ± 10%

## Other Options

Opt. 1CM Rackmount kit*
- Single Output (P/N 5063-9240)
- Dual Output (P/N 5063-9243)

Opt. 0L2 Extra Manual
Opt. UK6 Commercial calibration with test result data
E3600A-100 Test lead kit

## Rackmount Kits*

Keysight E3640A/41A/42A/43A/44A/45A
To rackmount two instruments side-by-side
  Lock-link Kit (P/N 5061-9694)
  Flange Kit (P/N 5063-9212)
To rackmount one or two instruments in a sliding support shelf
  Support Shelf (P/N 5063-9255)
  Slide Kit (P/N 1494-0015) required for support shelf
For a single instrument, also order
  Filter Panel (P/N 5002-3999)

Keysight E3646A/47A/48A/49A
To rackmount two instruments side-by-side
  Lock-link Kit (P/N 5061-9694)
  Flange Kit (P/N 5063-9214)
To rackmount two instruments in a sliding support shelf
  Support Shelf (P/N 5063-9256)
  Slide Kit (P/N 1494-0015)

* Rackmounting with 1CM or lock-link/flange kit requires Keysight or customer support rails Keysight Support Rails-E3663AC

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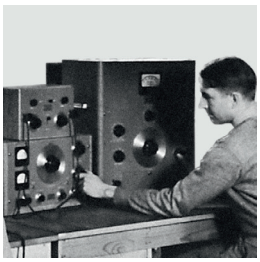
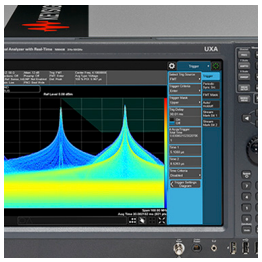
LAN eXtensions for Instruments puts the power of Ethernet and the Web inside your test systems. The business that became Keysight was a founding member of the LXI consortium.

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| Mexico | 001 800 254 2440 |
| United States | (800) 829 4444 |

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| Hong Kong | 800 938 693 |
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| Korea | 080 769 0800 |
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| Singapore | 1 800 375 8100 |
| Taiwan | 0800 047 866 |
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| Belgium | 0800 58580 |
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| Sweden | 0200 882255 |
| Switzerland | 0800 805353<br>Opt. 1 (DE)<br>Opt. 2 (FR)<br>Opt. 3 (IT) |
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