

DC Power Supplies Migration Guide

E363xA Series (E3633A, E3634A) to
E36200 Series (E36231A, E36232A)

Overview

Keysight E36231A and E36232A autoranging DC power supplies are designed to replace the E3633A and E3634A DC power supplies respectively. However, it is important to note that the E36231A and E36232A do not serve as a direct replacement for its predecessor and may have drawbacks and advantages simultaneously when being compared.

This document is intended for pre-existing users of the E3633A and E3634A migrating to the E36231A and E36232A as replacement products. This migration guide will compare the specifications and capabilities of the E3633A, E3634A, E36231A, and E36232A power supplies and aid users in finding suitable replacement models. To get the most out of this guide, ensure that it is used in conjunction with external documents referenced across the content.



E363xA Series vs. E36200 Series Comparison

Table 1. Key features comparisons

Features	E3633A/E3634A	E36231A/E36232A
Display	Fluorescent	4.3-inch LCD color display
Color-coded channels	Not Applicable	Yes
Individual knobs for voltage and current	Not Applicable	Yes
USB port	Not Applicable	Yes
LAN port (LXI)	Not Applicable	Yes
Digital I/O terminal port	Not Applicable	Yes
GPIO	Yes	Yes (Optional)
RS-232	Yes	Not Applicable
Kensington security lock	Not Applicable	Yes
Rear earth ground reference	Not Applicable	Yes
Overall dimension (W x H x D)	213 mm x 133 mm x 348 mm	216.5 mm x 136.2 mm x 388.4 mm

E36200 Series Features

Interactive Front Panel

The new E36231A and E36232A have a high contrast 4.3-inch, easy-to-read LCD color display and color-coded channels. They are built with two individual knobs for voltage and current, with rotary encoder control for precise settings. An instrument keypad on the front panel allows for quick adjustments and configuration in less time.



Figure 1. Front panel of the E36231A and E36232A



Figure 2 a. The E36231A and E36232A can display many more details simultaneously, including the present output, measured output, OVP/OCP condition, and delays.



Figure 2 b. The E3633A and E3634A only display one channel setting (current and voltage) at a time.

Connectivity and Interface

All the E3633A, E3634A, E3635A, and E36232A have one output channel at the front panel and additional output at the rear panel. This feature gives you the flexibility to choose either front or rear panel output to meet your application needs.

By default, the E3633A and E3634A are built with RS-232 and a General-Purpose Interface Bus (GPIB), while the E36231A and E36232A come with a USB interface and a default LAN port. The GPIB connectivity interface is optional and user-installable for E36231A and E36232A. You can place an order anytime when the GPIB connectivity interface becomes necessary for your applications.

Furthermore, the E36231A and E36232A also feature a Kensington lock slot, which allows you to secure your power supply and prevents theft or misplacement.

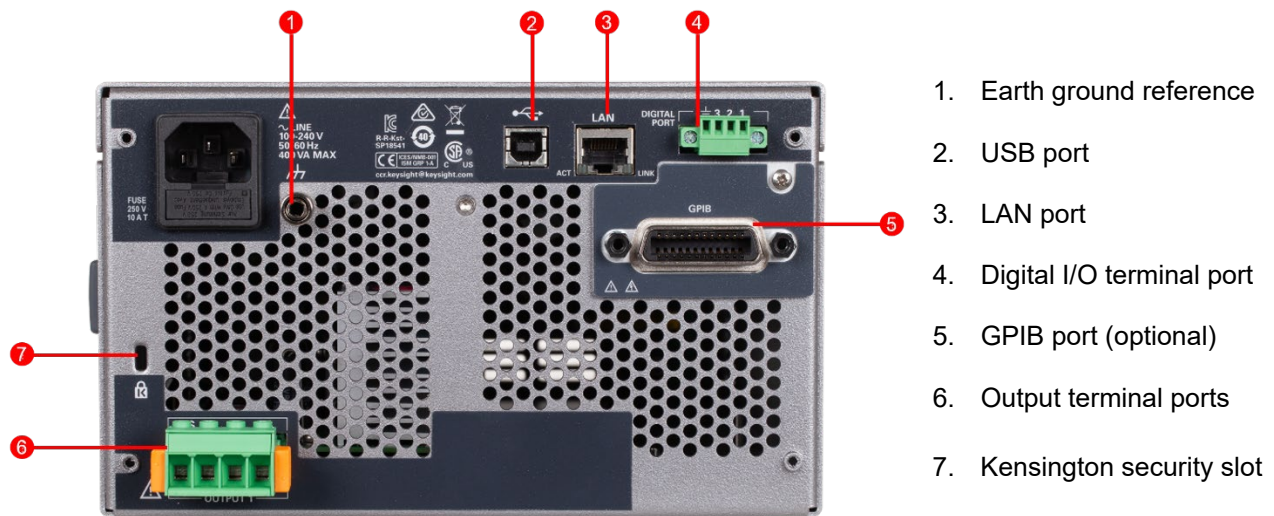


Figure 3. Rear Panel of the E36231A and E36232A

Pathwave BenchVue Software Enabled

The BenchVue software is an additional feature supported by the E36231A and E36232A autoranging DC power supplies. It enables users to conveniently control the power supplies through a computer installed with BenchVue software, eliminating the need to directly access the instrument for programming.

Here are some of the features it offers:

- Configure the commonly used controls and measurements from instruments
- Visualize the outputs of multiple power supplies simultaneously
- Log data, capture screenshots, and save a system state
- Recall a past state of your bench to replicate the results
- Export measurement data in the desired format fast
- Monitor and control your bench from mobile devices
- Quickly access manuals, drivers, FAQs, and videos



Figure 4. Pathwave BenchVue software for E36231A and E36232A

Graphical Web Interface

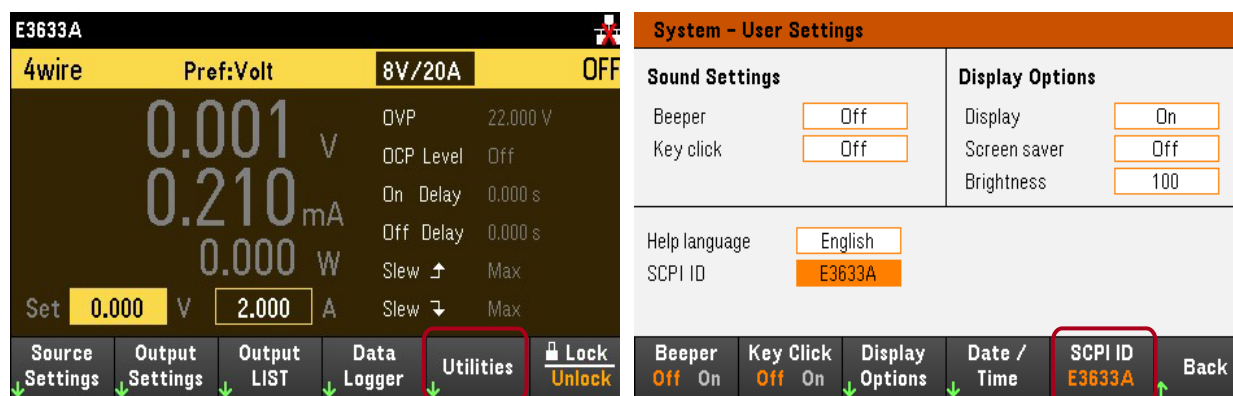
The E36231A and E36232A autoranging DC power supplies come with a web server that allows users to control the mainframe directly from an internet browser. The control functions on the front panel are accessible from the internet browser when connected over the LAN interface. You can easily change the parameters on the web browser interface and see it reflected on the device.



Figure 5. Graphical Web Interface for E36231A and E36232A

Code Compatible with E3633A and E3634A

The E36231A and E36232A are code-compatible with E3633A and E3634A respectively. The E36231A and E36232A persona mode allows the use of the exact same programming codes created in the E3633A and E3634A DC power supply models. Users can switch between E3623XA and E363XA mode with only two steps.



1. Press on the **Utilities** button on the main page
2. Press on **SCPI ID** button to switch from E36231A mode to E3633A mode

Figure 7. Enabling E3633A mode on the E36231A DC power supply model

Data Logger for the E36231A and E36232A

The E36231A and E36232A have a data logger function that allows users to view and log the output voltage and current data for up to 21,845 hours and up to 5MB of data. Data can be collected and analyzed conveniently and easily as all three channels' output data can be simultaneously viewed and logged.

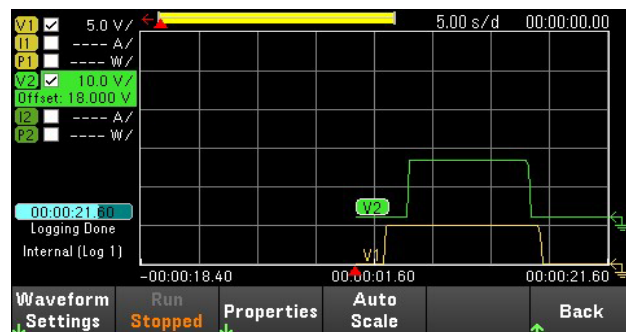


Figure 8. View and log data on multiple traces to the internal memory or external USB drive in the data logger view

Autoranging Capability

The high-performance and precision power modules provide users with additional flexibility in operation via an Autoranging function.

An Autoranging power supply can vary its voltage and current to fall within its maximum power. This allows the supply to produce a higher voltage and current combination than a standard rectangular output.

With Autoranging, E36231A, and E36232A can do the job of several fixed power modules as their operating range covers both low current—high voltage and low voltage—high current regions.

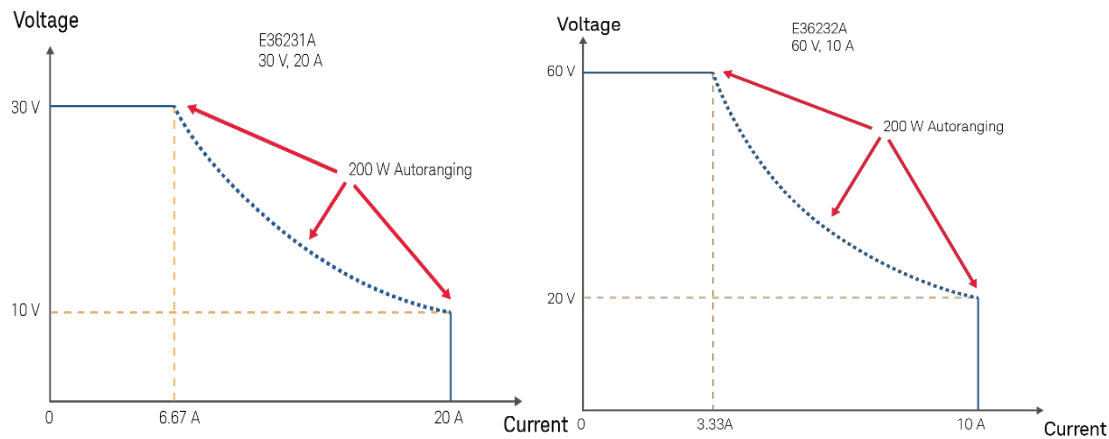


Figure 9. Autoranging ability of E36231A and E36232A. The Autoranger's region covers those of multiple rectangular power supplies.

Digital Ports for the E36231A and E36232A

The E36231A and E36232A have a digital I/O port on the rear panel. The digital port consists of four I/O pins to access the various control functions.

Digital port	Description
Bi-directional digital I/O	The three I/O pins can be configured for general-purpose bi-directional digital inputs and outputs. The digital I/O can be used to control both relay circuits as well as digital interface circuits.
Digital input	Each of the three digital I/O pins can be configured as a digital input only.
Fault/inhibit system protection	This feature can protect the device under test. This is done via a TTL feedback signal sent from the test system or device under test to disable the output.
Trigger input/output	Any digital control pins can be used as a trigger input/output, and all pins are referenced to the signal common pin. For the trigger input pin, either a negative-going or positive-going pulse can be applied to trigger the instrument. The data logger and the output list can be configured to be triggered by external trigger signals. Simply select DIO Trigger In as the trigger source when configuring the data logger and output list. This will enable input trigger signals on the configured digital pins. A trigger is generated when an external signal that meets the signal criteria is applied to any configured trigger input pin. A 10-microsecond trigger pulse will be generated for the trigger output pin when a triggered event has occurred on the instrument. Trigger-out signals can be generated when configuring the voltage and current in the output List. If the trigger source is set to DIO Trigger-In when configuring the Output List, an output trigger signal will be generated on the configured digital pin.
Output couple controls	This function allows users to synchronize the output on/off sequence across units when connecting multiple E36200A series power supplies.

Key Specifications

Tables 2 and 3 compare specifications between these power supplies so you can easily determine which device best fits your requirements.

The new E36231A and E36232A power supplies have improved voltage, current programming, and readback accuracy functionality, which can easily provide a precise reading for clean voltage and current.

Table 2. E3633A—E36231A performance specifications

Model	E3633A	E36231A
Power output	200 W	200 W
DC Output ratings	8 V / 20 A or 20 V / 10 A	30 V / 20 A
Programming Accuracy	0.05% + 10 mV 0.2% + 10 mA	0.03% +4 mV 0.1% +6 mA
Readback Accuracy	0.05% + 5 mV 0.15% + 5 mA	0.03% +4 mV 0.1% +6 mA
Ripple & Noise (Between 20 Hz – 200 Hz)		
VP-P	< 3mV	< 4.5mV
Vrms	< 350 uV	< 350 uV
Transient response	< 50 us	< 50 us
Load regulation± (% of output + offset)		
Voltage	< 0.01% + 2 mV	< 0.01% +2 mV
Current	< 0.01% + 250 µA	< 0.01% +250 uA
Line regulation ± (% of output + offset)		
Voltage	< 0.01% + 2 mV	< 0.01% +2 mV
Current	< 0.01% + 250 µA	< 0.01% +250 uA
Autoranging Capability	No	Yes

Table 3. E3634A - E36232A performance specifications

Model	E3634A	E36232A
Power output	200 W	200 W
DC output ratings	25 V / 7 A or 50 V / 4 A	60 V / 10 A
Programming Accuracy	0.05% + 10 mV 0.2% + 10 mA	0.03% +8mV 0.1%+3 mA
Readback Accuracy	0.05% + 5 mV 0.15% + 5 mA	0.03% +8mV 0.1%+3 mA
Ripple & Noise (Between 20 Hz – 200 Hz)		
VP-P	< 3mV	< 3.5 mV
Vrms	< 500 uV	< 350 uV
Transient response	< 50 us	< 50 us
Load regulation± (% of output + offset)		
Voltage	< 0.01% + 2 mV	< 0.01% +2 mV
Current	< 0.01% + 250 µA	< 0.01% +250 uA
Line regulation ± (% of output + offset)		
Voltage	< 0.01% + 2 mV	< 0.01% +2 mV
Current	< 0.01% + 250 µA	< 0.01% +250 uA
Autoranging Capability	No	Yes

Additional Information

Table 4. Reference guides for the E3633A, E3634A, E36231A and E36232A DC power supplies

Description	Document	Content
User guides and manuals	• E3633A and E3634A DC Power Supplies user's guide • E3633A and E3634A DC Power Supplies service guide • E36200 Series Autoranging Bench Power Supply user guide	Basic installation and operation guides, power module commands
Programming guides	E36200 Series Autoranging Bench Power Supply programming guide	Introduction to programming the mainframes and modules, language dictionaries, status reporting, and synchronizing power modules
Datasheet	• E363xA Series Programmable DC Power Supplies datasheet • E36200 Series Autoranging Bench Power Supply datasheet	Key and supplemental specifications for mainframe and module, additional features of mainframes, extended classification of modules

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