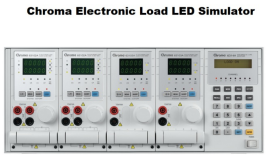
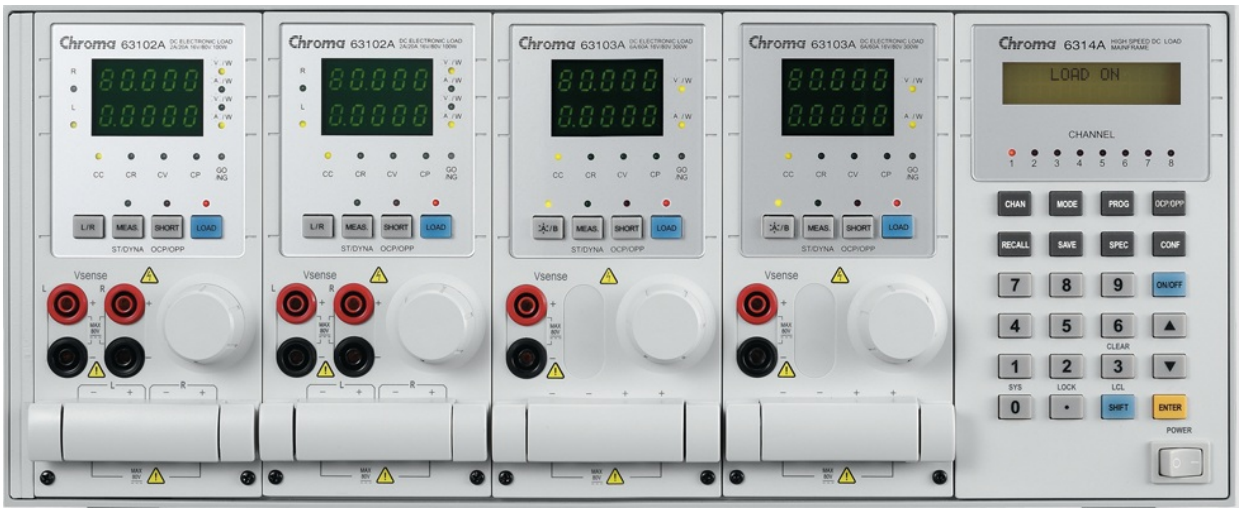


Chroma Electronic Load LED Simulator User Guide

Contents

Chroma Electronic Load LED Simulator



Product Information

Specifications:

- **Model**: Chroma 63200A
- **Feature**: User-Defined Waveform (UDW)
- **Operating Mode:** SoftPanel Interface
- **Compatibility**: Power supplies

Product Usage Instructions

Obtaining Load Current Waveform:

Manually Setting Up a Current Waveform:
Configure the load current waveform required using Excel.

Recording and Saving the Output Current:

1. Connect the power supply with the actual load and run it.
2. Use an oscilloscope to capture the required current waveform segment and save the file in .CSV format.
3. Open the recorded waveform file in Excel and plot it for comparison and confirmation.

Downloading Load Current Waveform:

1. Open the 63200A SoftPanel software interface.
2. Choose the desired Excel file under Excel Path & Name.
3. Select Data (Column or Row).
4. Click Download to import the data into the unit.
5. Use the Load button to start or stop the UDW test on the unit.

Preface

In industries such as electronics, automotive, and IT, electronic loads are indispensable devices in the development and design of products like power supply units, server power systems, telecom power supplies, and

batteries. Transient response tests on the power supply must be conducted throughout the research, design, and verification phases. By testing the stability of the output voltage during instantaneous changes in different load currents, engineers can verify that the backend system operates without potentially harmful anomalies. Validating the stability of the power supply under real load conditions serves as a cornerstone for ensuring the overall quality of the unit.

Transient response testing is one of the basic testing requirements for power supplies. The traditional approach involves obtaining real waveforms using externally generated “arbitrary waveforms”. These waveforms are saved on a computer and sent to the electronic load, either through a data acquisition (DAQ) card or simply by using an arbitrary waveform generator, as shown in Figure 1.

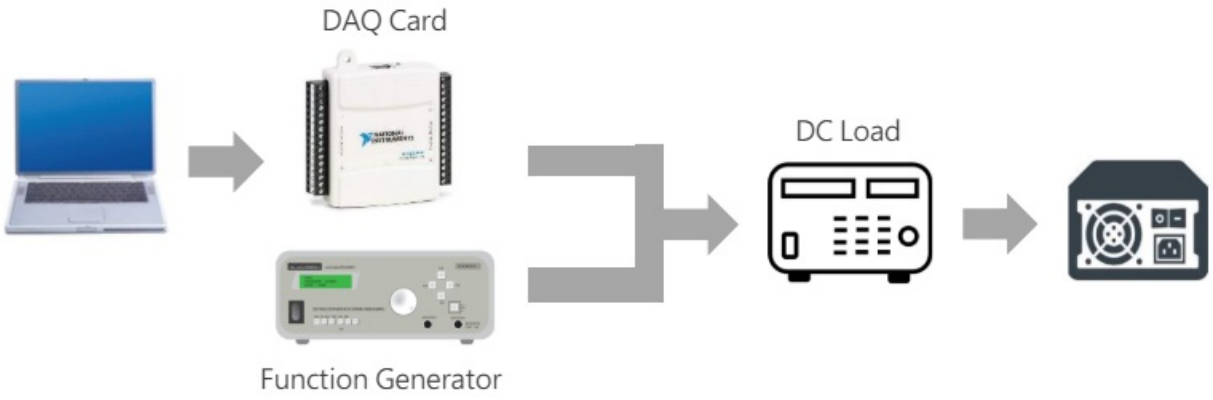


Figure 1. Traditional setup for reproducing real current waveforms

As can be seen from the figure, this traditional approach requires setting up multiple devices, introducing cumbersome complexity into the testing process. To streamline the procedure and eliminate the need for intricate device and wiring configurations, Chroma electronic loads now come with the “User Defined Waveform” (UDW) feature, allowing users to conveniently tailor the test conditions to their specific requirements.

Introduction

When simulating and verifying the dynamic response of power supplies and control systems, the User Defined Waveform (UDW) feature allows users to first capture and record real waveforms of the device under test (DUT) using an oscilloscope. They can then utilize existing software such as Chroma SoftPanel or the 8000 ATE software, or develop custom software to reconstruct the waveforms from a saved file. Next, these reconstructed waveforms are fed to a DC electronic load, enabling the engineer to conduct load tests on the DUT with exactly the right waveform required by the application, as illustrated in Figure 2 below.

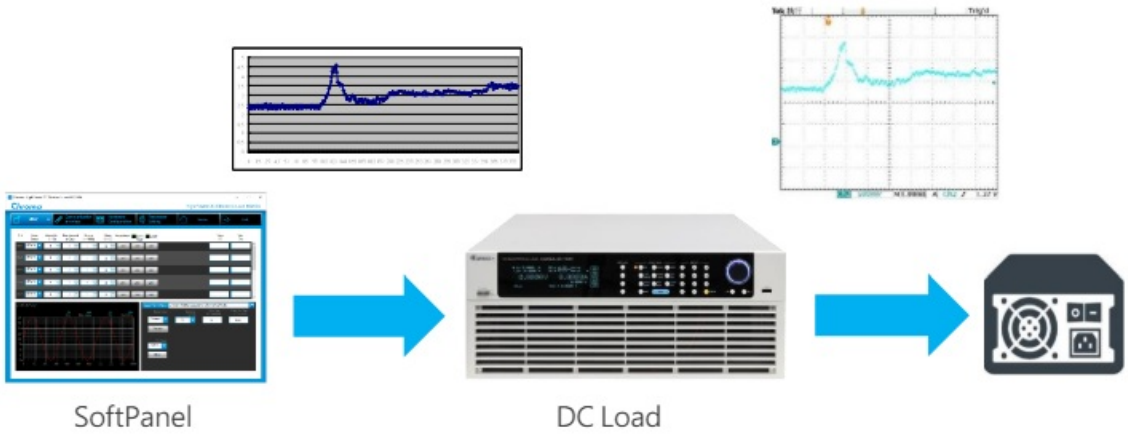


Figure 2. Chroma 63200A UDW feature architecture

Operating Procedure

Obtain a load current waveform

1. Manually setting up a current waveform
    1. Configure the load current waveform required using Excel, as shown in Figure 3 below.

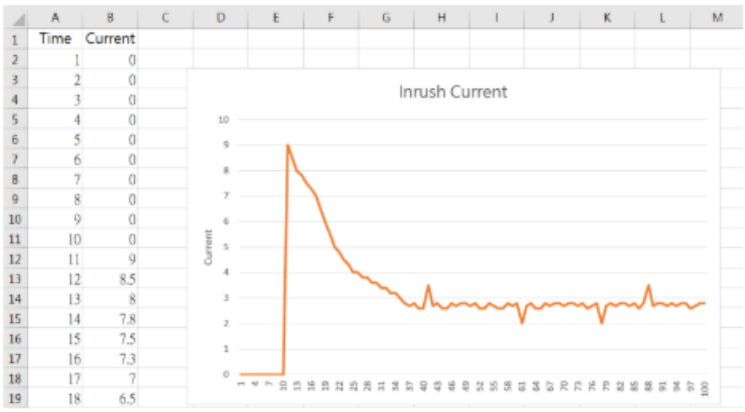


Figure 3. Setting up the load current waveform in Excel

2. Recording and saving the output current of the actual load connected to the power supply
    1. Connect the power supply with the actual load and run it, then use an oscilloscope to capture the required current waveform segment and save the file in .CSV format, as shown in Figure 4.
    2. Open the recorded waveform file in Excel and plot it for comparison and confirmation, as shown in Figure 5.

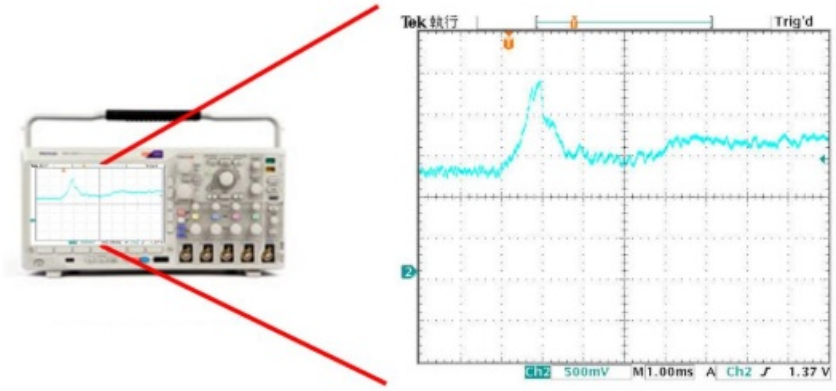


Figure 4. Capturing the required waveform segment with an oscilloscope

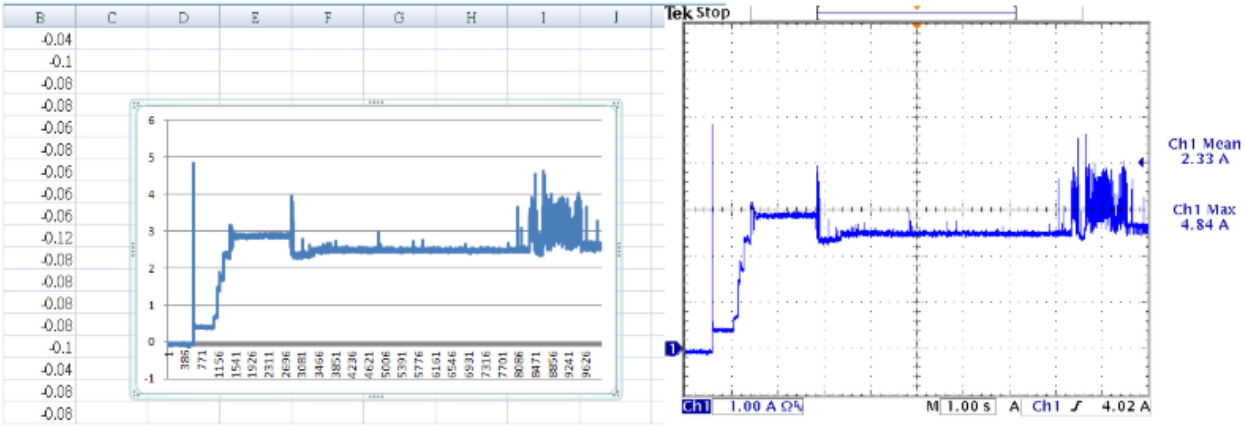


Figure 5. Opening the recorded waveform file in Excel and charting it for comparison

Download the edited or actual load current waveform:

1. Open the 63200A SoftPanel software interface, choose the desired Excel file under “Excel Path & Name” as shown in Figure 6 below.
2. For “Select Data”, choose Column or Row. Column (A-J) is the vertical data starting position in the Excel file, while Row (0-120,000) is the horizontal data starting position. “Preview” provides a preview of the loaded waveform in the Excel Data Graph section.
3. Click “Download” to import the data into the unit.
4. Use the “Load” button to start or stop the UDW test on the unit.

Figure 6. Downloading edited or simulated actual load current waveforms using the 63200A SoftPanel

The edited or actual load current waveform is now reproduced (Figure 7).

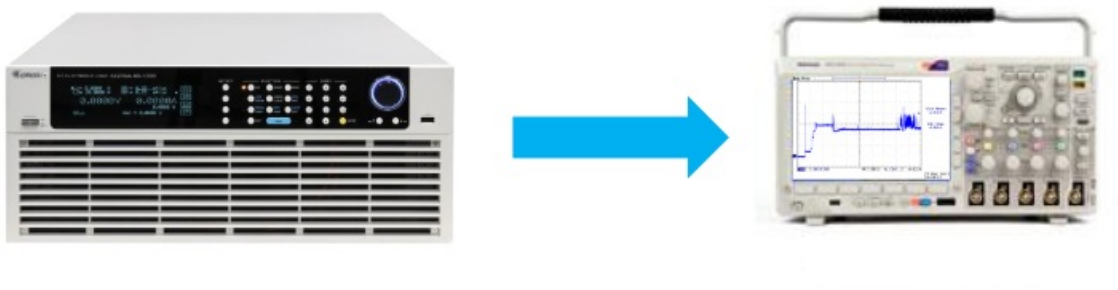
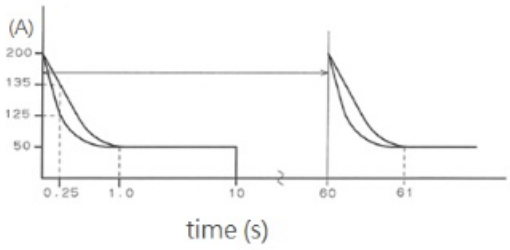


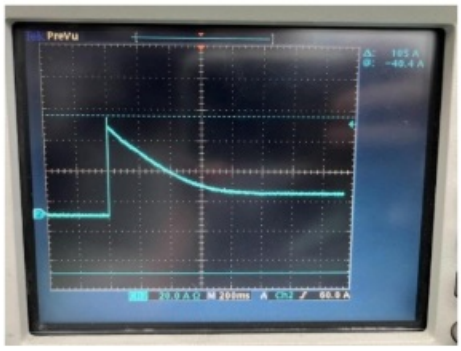
Figure 7. Reproducing edited or actual load current waveforms using the 63200A unit

Real Use Cases

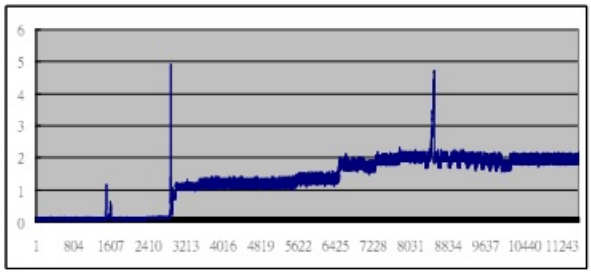
1. Transient Current Periodic Testing of Fuses
2. Power Supply Startup Current Waveform
3. Power Supply Full Load Current Waveform

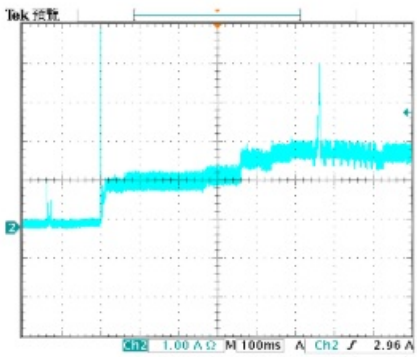
1. Transient Current Periodic Testing of Fuses



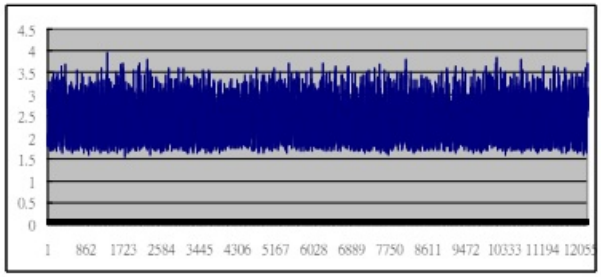


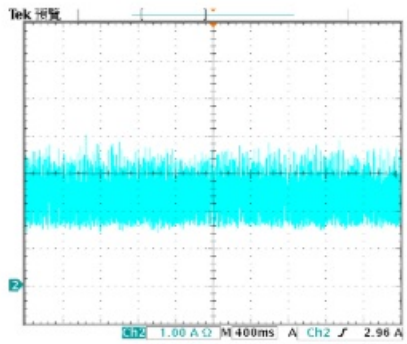
2. Power Supply Startup Current Waveform





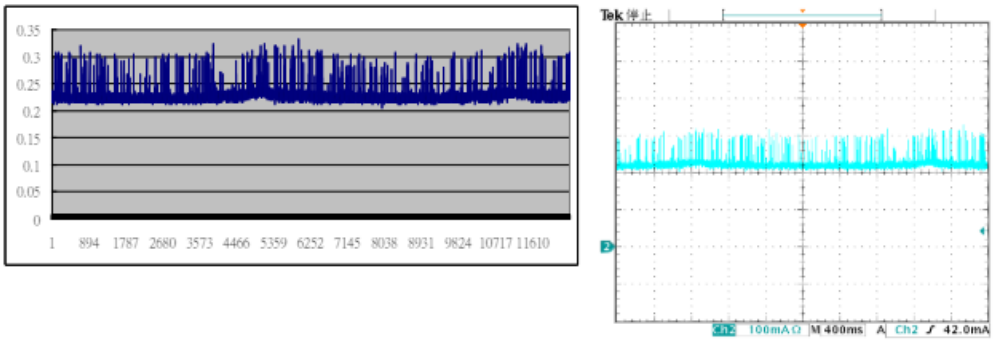
3. Power Supply Full Load Current Waveform



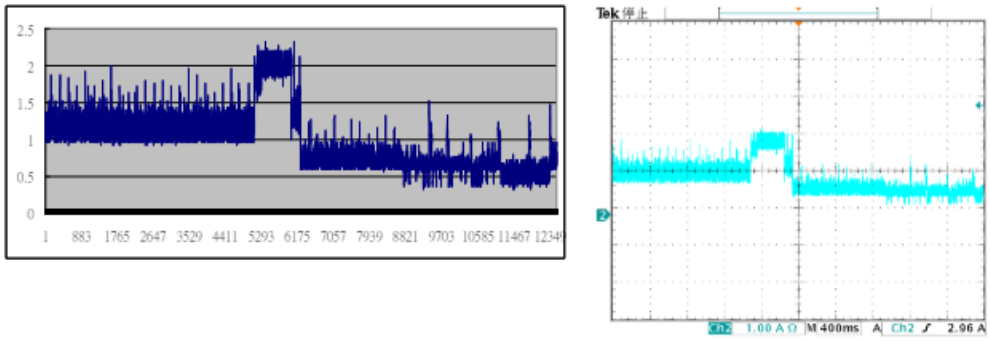


4. Power Supply Standby Current Waveform
5. Power Supply Shutdown Current Waveform
6. Current Recorded from On-Road Electric Bicycle

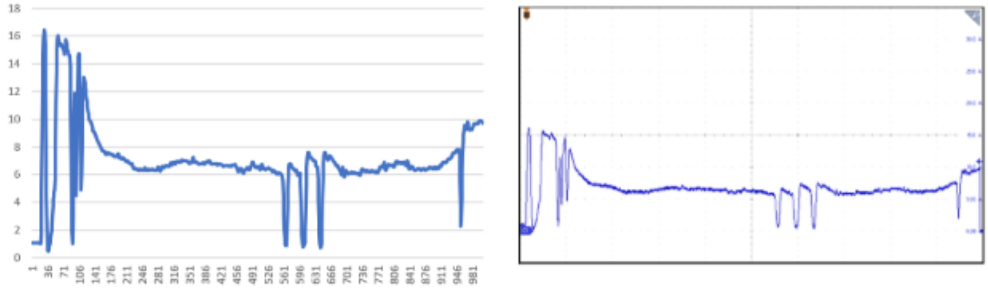
4. Power Supply Standby Current Waveform



5. Power Supply Shutdown Current Waveform



6. Current Recorded from On-Road Electric Bicycle



Conclusion

After reading this guide, we trust that you now have a robust understanding of the User Defined Waveform (UDW) feature. This functionality eliminates the complexity associated with legacy methods, offering a faster and more convenient testing experience. The 63600 and 63200A Series Chroma DC Electronic Loads demonstrate how user-defined waveforms enable precise simulation of real-world scenarios for production testing. This ensures reliability across diverse conditions, and transforms product development, verification, and testing into dynamic and engaging tasks with limitless applications.

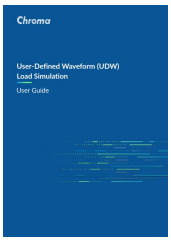
Main Benefits of the UDW Feature:

1. Realistically simulates load current waveforms to verify power supply performance in real-world applications.
2. Fast response time, with a minimum dwell time of 10 microseconds.
3. Straightforward configuration and user-friendly operation.
4. No need for external DAQ cards or waveform generators.
5. Supports 10 user-defined current waveforms, each allowing editing of 120,000 current sampling values. Users can chain up to 10 waveforms together, providing a total of 1.2 million sampling values for maximum versatility.

FAQ

Q: What are some real use cases for the UDW feature?
A: Some real use cases include transient current periodic testing of fuses and power supply startup current waveform analysis.

Documents / Resources

	Chroma Electronic Load LED Simulator [pdf] User Guide Electronic Load LED Simulator, Electronic, Load LED Simulator, LED Simulator, Simulator

References

- User Manual