OWON DGE1060

OWON DGE1060 Waveform Generator User Manual

Model: DGE1060 | Brand: OWON

1. INTRODUCTION

This manual provides essential information for the safe and effective operation of your OWON DGE1060 Waveform Generator. Please read this manual thoroughly before using the device and keep it for future reference. The DGE1060 is a versatile arbitrary waveform generator designed for various applications in laboratories, research, and education, offering a 60MHz bandwidth, 300MSa/s sampling rate, and a wide range of waveform outputs.

2. SAFETY INFORMATION

Always observe the following safety precautions to prevent injury and avoid damage to the instrument or any products connected to it.

- **Power Source:** Use only the specified power adapter. Ensure the voltage and frequency match the device requirements.
- **Grounding:** Ensure the instrument is properly grounded to prevent electric shock.
- **Environment:** Operate the device in a dry, well-ventilated area, away from direct sunlight, high temperatures, humidity, and dust.
- **Ventilation:** Do not block ventilation openings. Overheating can cause damage.
- **Cleaning:** Disconnect power before cleaning. Use a soft, dry cloth. Do not use liquid or aerosol cleaners.
- **Servicing:** Do not attempt to service the instrument yourself. Refer all servicing to qualified service personnel.

3. PACKAGE CONTENTS

Verify that all items listed below are included in your package. If any items are missing or damaged, please contact your supplier.

- Host Machine (OWON DGE1060 Waveform Generator)
- BNC to Alligator Clip Cable
- USB Cable
- USB to DC Cord
- Power Adapter
- Quick Guide

Burst	
Waveform	sine wave, square wave, ramp wave, pulse wave and arbitrary wave (Except DC)
Types	N-Cycle
Trigger Source	Internal, Manual
Carrier Frequency	1μHz ≤ Offset ≤ Maximum frequency of corresponding carrier /2
Input / Output	
Display	3.6-inch TFT LCD with resolution 480 x 272
Communication Interface	USB Device
Mechanical specifications	
Dimension (W×H×D)	200mm x 68.5mm x 73.6mm
Weight (without package)	0.5kg

ACCESSORIES AND PACKAGING

1 Host Machine

2 BNC to Alligator Clip

3 USB Cable

4 USB to DC Cord

5 Power Adapter

6 Quick Guide

7 Packaging

Figure 3.1: OWON DGE1060 Waveform Generator and included accessories.

4. PRODUCT OVERVIEW

4.1 Front Panel

Figure 4.1: Front Panel Layout

The front panel features a 3.6-inch TFT LCD display for clear waveform observation and parameter settings. Key areas include:

- **3.6-inch TFT LCD Display:** Shows waveform graphs, parameters, and menu options.
- **Function Setting Area:** Buttons and rotary knob for adjusting parameters and navigating menus.
- **Waveform Switching Area:** Dedicated buttons for selecting basic waveforms.
- **Channel Output Control Area:** BNC connector for waveform output and ON/OFF button for the output.

4.2 Rear Panel

Figure 4.2: Rear Panel Layout

The rear panel provides essential connectivity:

- **USB Device Interface:** Supports PC remote control via SCPI commands.
- **Power Socket:** For connecting the external power adapter.

5. KEY FEATURES

- **Waveform Generation:** 60MHz bandwidth, 300MSa/s real-time sampling rate, 8K record depth, 14 bits vertical resolution.
- **Comprehensive Waveform Output:** Includes 5 standard basic waveforms and 160 built-in arbitrary waveforms (e.g., exponential rise, exponential fall, sin(x)/x, step wave).
- **User-Friendly Interface:** 3.6-inch TFT LCD display and intuitive function setting area for clear observation and easy operation.
- **Multiple Modulation Modes:** Supports AM, FM, PM, and FSK modulation modes.
- **Advanced Functions:** Features Sweep and Burst functions.
- **Waveform Storage:** Stores 16 digital arbitrary waveforms.
- **PC Remote Control:** Compatible with PC remote control for enhanced functionality.

- **Compact Design:** Ultra-thin body for portability and convenient shortcut keys for improved user interaction.

6. SETUP

1. **Power Connection:** Connect the provided power adapter to the Power Socket on the rear panel and then to a suitable AC power outlet.
2. **Output Connection:** Connect the BNC to Alligator Clip cable to the OUT1 BNC connector on the front panel. Connect the alligator clips to your test circuit or device.
3. **Power On:** Press the ON/OFF button on the front panel to power on the device.
4. **PC Connection (Optional):** For remote control, connect the USB cable from the USB Device interface on the rear panel to your computer. Install any necessary drivers or software provided by OWON.

7. OPERATING INSTRUCTIONS

7.1 Basic Waveform Generation

To generate a basic waveform (Sine, Square, Pulse, Ramp, Noise):

1. Press the desired waveform button in the Waveform Switching Area (e.g., Sine wave button).
2. Use the Function Setting Area buttons and rotary knob to adjust parameters such as Frequency, Amplitude, Offset, and Phase.
3. Press the OUT1 ON/OFF button to enable the output.

Figure 7.1: High Frequency Stable Output and Arbitrary Waveform Selection

7.2 Arbitrary Waveforms

The DGE1060 includes 160 built-in arbitrary waveforms and supports user-defined waveforms.

1. Press the 'Arb' button (if available, or navigate through the menu to 'Arb').
2. Select a built-in arbitrary waveform from the list using the navigation buttons and rotary knob.
3. Adjust parameters as needed and enable output.

7.3 Modulation Functions (AM, FM, PM, FSK)

To apply modulation to a waveform:

1. Select a basic waveform to be modulated.

2. Press the 'Mode' button and select the desired modulation type (AM, FM, PM, or FSK).

3. Adjust the modulation parameters (e.g., depth, frequency) using the controls.

Model	DGE1030	DGE1060
Channel	1	
Frequency Output	30MHz	60MHz
Sample Rate	125MSa/s	300MSa/s
Vertical Resolution	14 bits	
Waveform		
Standard Waveform	sine, square, pulse, ramp, and noise	
Arbitrary Waveform	exponential rise, exponential fall, sin(x)/x, step wave, and others, total 160 built-in waveforms, and user-defined arbitrary waveform	
Frequency		
Sine	1µHz – 30MHz	1µHz – 60MHz
Square	1µHz – 15MHz	1µHz – 20MHz
Pulse	1µHz – 15MHz	1µHz – 20MHz
Ramp	1µHz – 1MHz	1µHz – 2MHz
Noise	20MHz (-3dB, typical)	
Arbitrary Waveform	1µHz –10MHz	
Frequency Resolution	1 µHz or 7 significant figures	
Frequency Stability	±30 ppm at 0±40℃	
Frequency Aging Rate	±30 ppm per year	
Arbitrary		
Waveform Length	2 - 8K points	
Sample Rate	125MSa/s	300MSa/s
Amplitude		
into 50Ω Load	1mVpp - 10Vpp (≤10MHz) 1mVpp - 4Vpp (≤70MHz)	
DC Offset Range (AD+DC)	high resistance:±(10 Vpk – Amplitude Vpp/2) (≤10MHz); ±4Vpk-Amplitude Vpp/2) 50Ω: ±(5 Vpk-Amplitude Vpp/2)(≤10MHz); ±(2 Vpk-Amplitude Vpp/2)	
DC Offset Resolution	1mV or 4digits	
Load Impedance	50Ω (typical)	
DC Offset Accuracy	±(1 % of |setting| + 1 mV + amplitude Vpp * 0.5%)	
Modulation		
Type	AM, FM, PM, FSK, Sweep, Burst	
Internal Modulation Frequency	2 mHz to 100 kHz	
Sweep		
Carrier	sine, rectangular wave, ramp wave, arbitrary wave(Except DC)	
Minimum / Maximum Starting Frequency	2mHz (minimum) / maximum frequency of corresponding carrier	
Minimum / Maximum Termination Frequency	2mHz (minimum) / maximum frequency of corresponding carrier	
Trigger Source	Internal, Manual	

Model	DGE1030	DGE1060
Burst		
Waveform	sine wave, square wave, ramp wave, pulse wave and arbitrary wave (Except DC)	
Types	N-Cycle	
Trigger Source	Internal, Manual	
Carrier Frequency	1µHz ≤ Offset ≤ Maximum frequency of corresponding carrier /2	
Input / Output		
Display	3.6-inch TFT LCD with resolution 480 x 272	
Communication Interface	USB Device	
Mechanical specifications		
Dimension (W×H×D)	200mm x 68.5mm x 73.6mm	
Weight (without package)	0.5kg	

Accessories and Packaging

1. Host Machine
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3. USB Cable
4. USB to DC Cord
5. Power Adapter
6. Quick Guide
7. Packaging

Figure 7.2: Modulation and Sweep Function Settings

7.4 Sweep Function

The sweep function allows the output frequency to vary over a specified range.

1. Press the 'Sweep' button.

2. Select the sweep type (Linear or Log).

3. Set the Start Frequency, Stop Frequency, and Sweep Time.

7.5 Burst Function

The burst function generates a specific number of waveform cycles.

1. Press the 'Burst' button.

2. Set the Burst Period and the number of Cycles (N-Cycle, Gated, or Infinite).

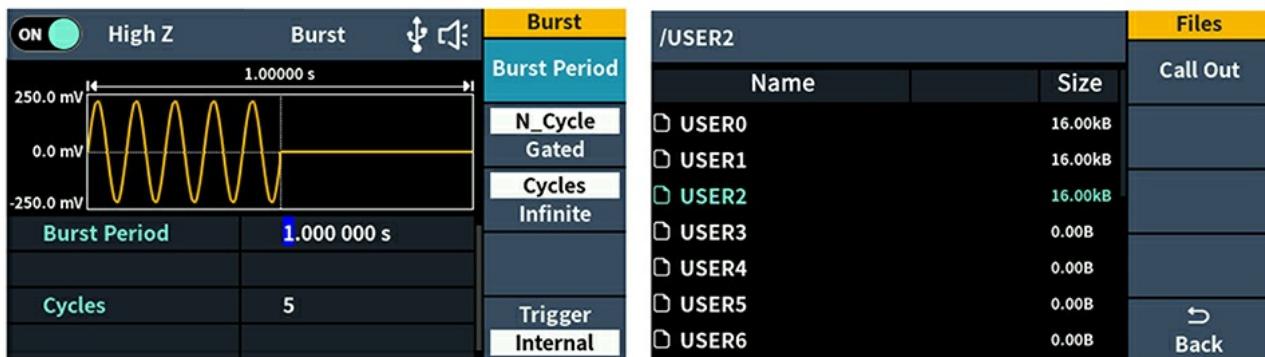3. Select the Trigger Source (Internal or Manual).

Figure 7.3: Burst Function and Waveform Storage

7.6 PC Remote Control

The DGE1060 supports remote control via a PC using the USB device interface and SCPI commands. Refer to the OWON website or additional software documentation for detailed instructions on setting up and using PC remote control.

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Video 7.1: An official product video demonstrating the OWON DGE1060 Waveform Generator, highlighting its compact size, exterior dimensions, large LCD display, and remote operation capabilities. It also introduces various functions like high frequency stable output, arbitrary waveforms, multi-modulation modes (AM, FM, PM, FSK), sweep function, burst function, and waveform storage.

8. Specifications

Category	Specification
Brand	OWON
Model Name	DGE1060
Frequency Output	60MHz
Sampling Rate	300MSa/s
Vertical Resolution	14 bits
Waveform Length	8K points
Standard Waveforms	Sine, Square, Pulse, Ramp, Noise
Arbitrary Waveforms	160 built-in, user-defined
Modulation Types	AM, FM, PM, FSK, Sweep, Burst

Category	Specification
Display	3.6-inch TFT LCD
Communication Interface	USB Device
Power Source	AC/DC
Voltage	120 Volts (AC)
Output Wattage	120 Watts
Product Dimensions (L x W x H)	5"L x 3"W x 5"H (approximate)
Item Weight	2.35 pounds
Color	Black

9. MAINTENANCE

- **Cleaning:** Regularly clean the exterior of the instrument with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Storage:** When not in use for extended periods, store the device in a cool, dry place, protected from dust and extreme temperatures.
- **Calibration:** Periodic calibration by qualified personnel is recommended to maintain measurement accuracy.

10. TROUBLESHOOTING

If you encounter issues with your DGE1060 Waveform Generator, refer to the following common troubleshooting steps:

- **No Power:** Ensure the power adapter is securely connected to both the device and the power outlet. Verify the power outlet is functional.
- **No Output Signal:** Check if the OUT1 ON/OFF button is enabled. Verify that the output cable is correctly connected and not damaged. Ensure the amplitude and frequency settings are appropriate for your application.
- **Incorrect Waveform:** Double-check the selected waveform type and all associated parameters (frequency, amplitude, offset, etc.).
- **PC Remote Control Issues:** Ensure the USB cable is properly connected. Verify that the correct drivers are installed on your PC and that the remote control software is configured correctly.

If the problem persists after attempting these steps, please contact OWON customer support or your local distributor for assistance.

11. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please refer to the official OWON website or contact your authorized OWON dealer. Keep your purchase receipt as proof of purchase for warranty claims.