

# multicomp<sup>PRO</sup>



## Dual-Channel Arbitrary Waveform Generator Quick Start Guide MP751059 & MP751060

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# 1. General Safety Requirement

**Before first use, please read the following safety precautions to avoid any possible personal injury and prevent this product or any other products connected to it from damage.**

**Use only the power supply included or one of identical specification.** Check to ensure the power supply used matches your local mains supply before connecting.

**Do not operate without covers.** Do not operate the instrument with covers or panels removed.

**If you suspect damage has occurred to the instrument.** Have it inspected by qualified service personnel before further use.

**Use your instrument in a well-ventilated area.** Inadequate ventilation may cause increase of temperature or damage to the device. Keep well ventilated and inspect the intake for dust and dirt regularly.

**Do not operate in damp conditions.** To avoid short circuiting to the interior of the device or possible electric shock, do not operate in a humid environment.

**Do not operate in an explosive atmosphere.**

**Keep product surfaces clean and dry.**

**No user serviceable parts inside.** Do not disassemble, all servicing must be done by an approved technician.

## 2. Safety Terms and Symbols

**Terms in this Manual.** The following terms may appear in this manual:

**Warning:** Warning indicates the conditions or practices that could result in personal injury or loss of life.

**Caution:** Caution indicates the conditions or practices that could result in damage to this product or other connected devices.

### Safety Symbols

**Symbols on the product.** The following symbol may appear on the product depending on the model:

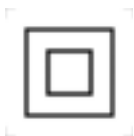
**Symbols on the Product.** The following symbol may appear on the product:



Hazardous Voltage



Refer to Manual



Double Insulation



Chassis Ground



Test Ground

## 3. General Inspection

After you get a new instrument, it is recommended that you should make checks as follows:

### 1. **Check whether there is any damage caused by transportation.**

If it is found that the outer carton or internal packaging has suffered serious damage, do not dispose of it until the complete device and its accessories have been thoroughly tested.

### 2. **Check the Accessories**

Check that all the accessories are intact. If there is any accessory missing or damaged, please get in touch with the Multicomp-pro distributor.

### 3. **Check the Complete Instrument**

If it is found that there is damage to the appearance of the instrument, or the instrument does not work normally, or fails in the performance test, please get in touch with the Multicomp-pro distributor.

If there is damage to the instrument caused by the transportation, please keep all the packaging. Please get in touch with the Multicomp-pro distributor to arrange repair or replacement as required.

## 4. Quick Start

### Front Panel Overview

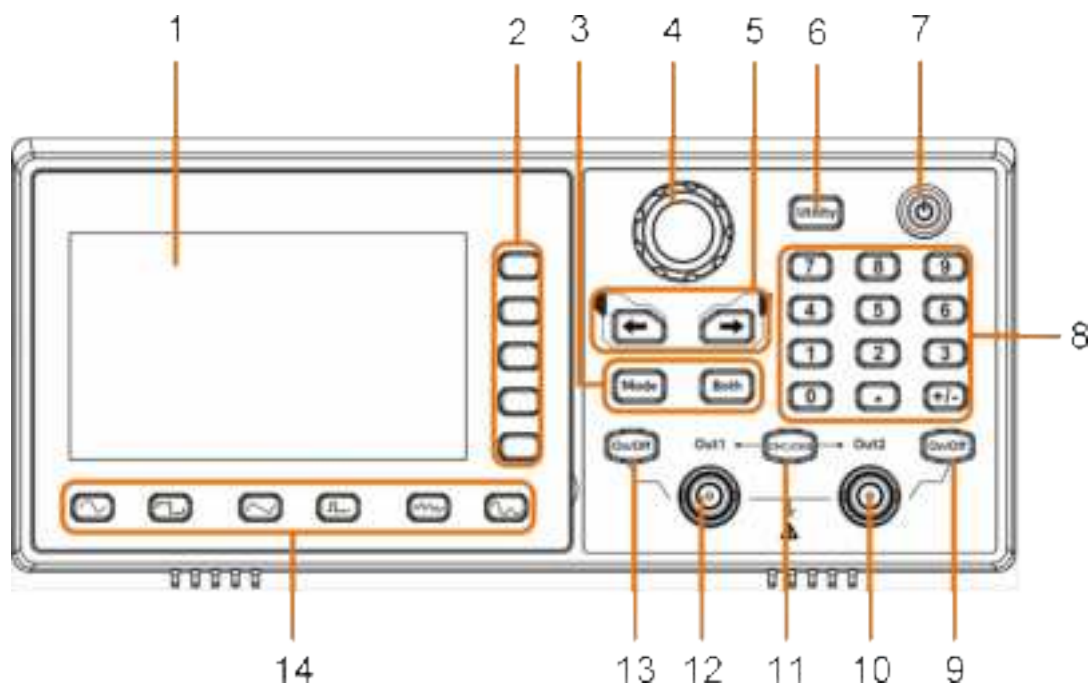








Figure 4- 1 Front Panel Overview

1	<b>LCD</b>	Display the user interface
2	<b>Menu selection keys</b>	Includes 5 keys to activate the corresponding menu
3	<b>Mode keys</b>	<b>Mode:</b> output the modulated waveform <b>Both:</b> Display the editable parameters of both channels
4	<b>Knob</b>	Change the currently selected value, also used to select the arbitrary waveform types and arb data file name. When in the sweep manual mode, press this knob to trigger manually
5	<b>Direction key</b>	Move the cursor of the selected parameter
6	<b>Utility</b>	Set the utility function
7	<b>Power button</b>	Turn on/off the waveform generator.
8	<b>Number keypad</b>	Input the parameter

9	<b>On/Off button</b>	Turns the output of the CH2 channel on or off. When the output is turned on, the button backlight lights up
10	<b>Out 2</b>	Output CH2 signal
11	<b>CH1/CH2</b>	Switch the channel displayed on the screen between CH1 and CH2
12	<b>Out 1</b>	Output CH1 signal
13	<b>On/Off button</b>	Turns the output of the CH1 channel on or off. When the output is turned on, the backlight of the button lights up
14	<b>Waveform Selection buttons</b>	Includes: Sine  , Square  , Ramp  , Pulse  , Noise  , Arb Wave 

## Rear Panel Overview

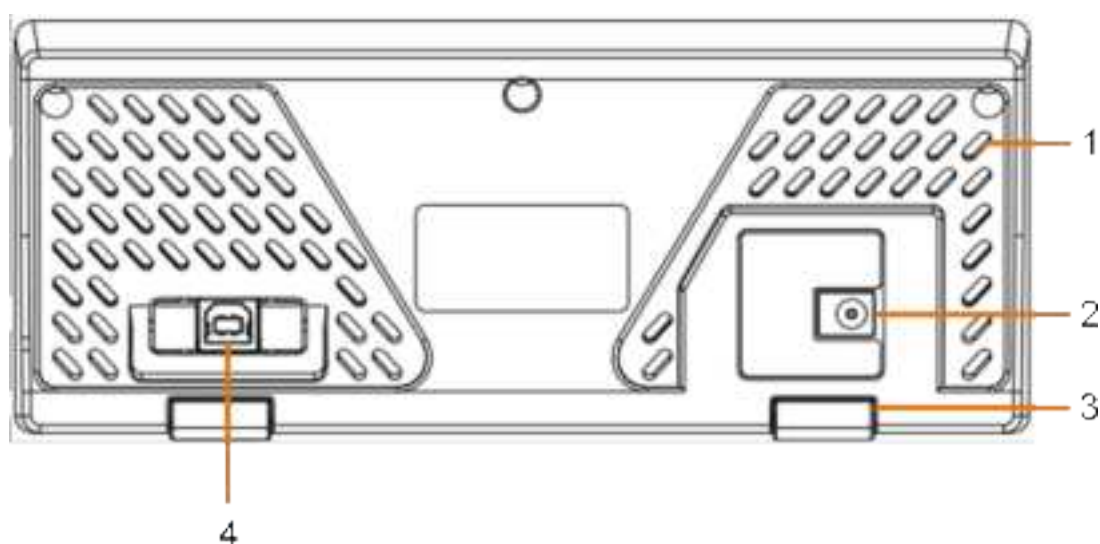


Figure 4- 2 Rear Panel Overview

1	<b>Air vents</b>	
2	<b>Power input connector</b>	DC power input connector
3	<b>Rubber feet</b>	
4	<b>USB Device interface</b>	Used to connect a USB type B controller. Can be connected to a PC, the signal generator can be controlled by the host computer software.

## Power on

- (1) Connect the instrument to the AC power using the DC power adapter included with the product.
- (2) Press the **power button** on the front panel. The back light of the power channel switch will light up, and the buzzer will sound.

## User Interface



Figure 4- 3 User Interface

1	Display channel name
2	Display channel switch status
3	Display load
4	Current waveform mode
5	Indicator to show when connected to the USB Host via the USB DEVICE interface
6	Buzzer
7	Menu title
8	Current waveform or mode setting menu
9	Start phase
10	Offset / low level, depending on the right highlighted menu item
11	Amplitude / high level, depending on the right highlighted menu item



- |    |   |
|----|---|
| 12 | Frequency/Period, depending on the highlighted menu item on the right |
| 13 | Displays the current waveform   |

## Setting the channel

- **Select the channel for configuration**

Before configuring waveform parameters, you must first select the channel you want to configure. Press **CH1 /CH2** to switch to the desired channel and the user interface.

- **To Display / Edit Both Channels**

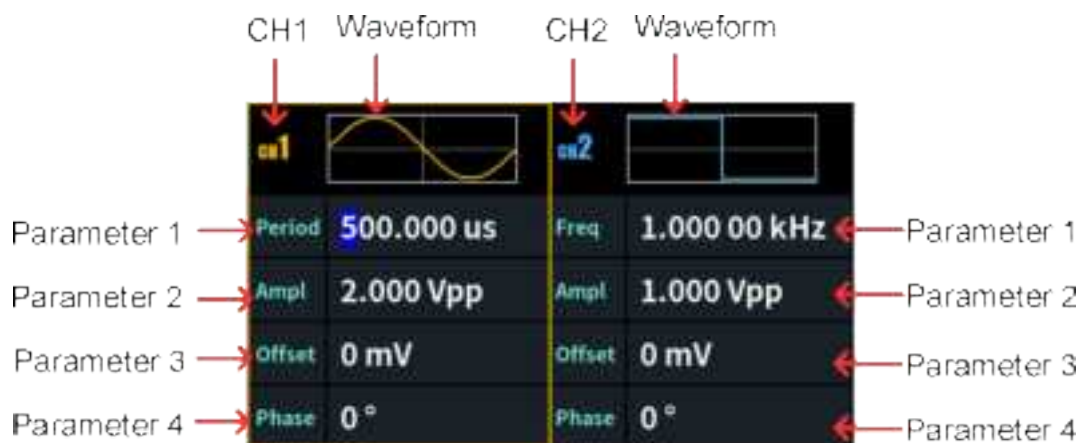
Press **Both** button to display the parameters of both channels.

To switch channel: Press **CH1/2** to switch the editable channel.

To select waveform: Press **Waveform selection buttons** to select the waveform for the current channel.

To select parameter: Press **Menu selection keys** to choose the **Parameter 1** to **Parameter 4**(**Corresponding keys 2-4**); Press it again to switch the current parameter such as Frequency/Period.







To edit parameter: Turn the **knob** to change the value of cursor position. Press **←/→** direction key to move the cursor. (The number keys cannot be used to input.)




- **Turn on/off the channel output**

Press CH1 **On/Off** or CH2 **On/Off** on the front panel to turn on/off the corresponding channel output. The backlight of the button lights up when it is set to output.

## Setting a basic waveform

To set and output the Sine, Square, Ramp, Pulse, Noise or Arbitrary waveform, press the waveform selection button on the front panel of the instrument: sine , square , ramp , pulse , noise , arbitrary  to enter the corresponding waveform setting interface. The waveform is different and the parameters that can be set are relative.

Example: Press the  key and press the **Frequency/Period** soft key. The selected menu item is highlighted in white, and the cursor will display on corresponding parameter item in the user interface. Press the **Frequency/Period** softkey to switch the frequency/period.

**There are two ways to change the selected parameter value:**

- Turn the **Knob** to increase or decrease the value at the cursor. Press the direction keys to move the cursor left or right.
- Press a **number key** on the numeric keypad directly, the screen will display the data input box, continue to input the desired value. Press the right menu soft key to select the unit of the parameter. Press the **Back** softkey to cancel the current entry.

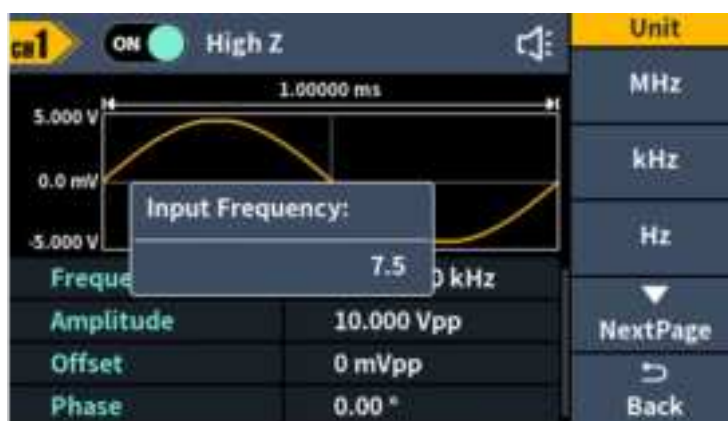



Figure 4-4 : Use numeric keypad to set the frequency

Parameters of waveforms

Waveform	Menu Items
Sine	Frequency/Period, Amplitude/High Level, Offset/Low Level, Phase
Square	Frequency/Period, Amplitude/High Level, Offset/Low Level, Phase

Ramp	Frequency/Period, Amplitude/High Level, Offset/Low Level, Phase Symmetry
Pulse	Frequency/Period, Amplitude/ High Level, Offset/Low Level, Phase, Width/Duty, Rise, Fall
Noise	Amplitude/High Level, Offset/Low Level
Arbitrary	Frequency/Period, Amplitude/High Level, Offset/Low Level, Phase, Built-in, Store

## Output the built-in waveform (including DC)

- (1) Press the  arbitrary wave button, then press the **NextPage** ,to the nextpage menu.
- (2) Press the **Built-in** softkey,go to the build-in waveform and select the menu .
- (3) Press the **Common**, **Medical treatment**, **Standard** softkeys to select the build-in waveform mode:

Press the **NextPage** softkeys, to select the build-in waveform: **Maths**, **Trigonometric**, **Window function**.

Press the **NextPage** softkeys, to select the build-in waveform: **Engineering**, **Seg Mod**, **Fan test**.

Note: DC is a type of built-in waveform, located in the "Common" category, named "DC".

## Generate the Modulated Waveform

Supported modulation types include: AM (Amplitude Modulation), FM (Frequency Modulation), PM (Phase Modulation), FSK (Frequency Shift Keying).

Press the **Mode** function key, to select the modulation type enter the setup menu. To turn off the modulation, press the **Mode** function button again.

Parameters of modulated waveforms:

Type	Parameters
AM	Shape, AM Frequency, Depth
FM	Shape, FM Frequency, Deviation
PM	Shape, PM Frequency, Phase Deviation
FSK	FSK Rate, Hop Frequency

## Generate Sweep

In the frequency sweep mode, the generator "steps" from the start frequency

to the stop frequency at the sweep rate you specify. Sweep can be generated by Sine, Square, Ramp or Arbitrary waveforms.

When the output signal is Sine, Square, Ramp or Arbitrary waveform, press the front panel **Mode** key ,then press the **Sweep** to enter the sweep mode. The parameters allowed to be set are: Sweep Time, Linear/Log, Start Frequency/Center Frequency, Stop Frequency/Frequency Span, Source.

## Generate a Burst Waveform

Press the **Mode** function key, then press the **Burst** to enter burst mode, to generate versatile waveforms in burst. Burst can last for certain times of waveform cycle (N-Cycle Burst). Bust can apply to Sine, Square, Ramp, Pulse and Arbitrary waveforms. The parameters allowed to be set are: Burst Period, Cycles/Infinite and Trigger source.

## Storing a Waveform

Supports communication with a computer via the USB port. Using the Waveform Editor software installed on the computer, the signal generator can be operated on the computer to control the output and to store outputs from the signal generator.

The instrument settings can be saved as files in internal memory. Up to 16 instrument settings can be saved in the instrument internal memory.

**Note:** Please go to the Multicomp-pro product page to download the Waveform Editor communication software and install it.

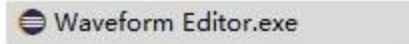
## Communication with PC


- (1) **Set the USB device protocol type of the signal generator:** Press **Utility** → **System** → **USBDev**, switch to PC.
- (2) **Connection:** Connect the USB Device interface on the rear panel of the signal generator to the **USB interface** of the computer with a USB cable.
- (3) **Install the driver:** Run Waveform Editor software on the computer. Follow the instructions to install the driver. The path of the driver is the USBDRV folder in the directory where the Waveform Editor communication software is located, such as "C:\Program Files (x86)\DS\_Wave\Waveform Editor\USBDRV".
- (4) **Host computer communication port setting:** Open the Waveform Editor software, click "Communications" in the menu bar, select "Ports-Settings", in the setting dialog box, select the communication port as "USB".

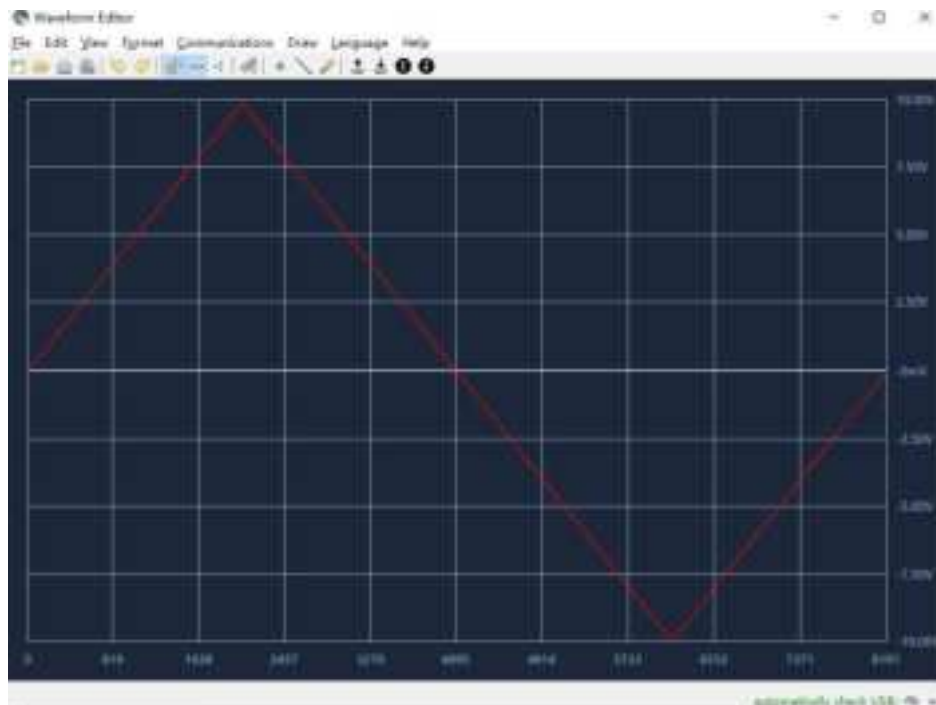
After the connection is successful, the connection status prompt in the lower right corner of the software interface turns green.

## Reading the Waveform

- (1) Run "Waveform Editor.exe"






- (2) Enter the "Waveform Editor" interface
- (3) Press the required waveform on the instrument
- (4) Click on Read Waveform  on the waveform editor and the waveform is read and displayed.



## Write and recall the waveform

Use the Line Draw, Hand Draw and Point Edit mode in the Waveform Editor to edit the required waveform, and save and display it on the instrument.

- (1) Under Waveform Editor software interface, Click "Write waveform Icon .
- (2) After the writing is successful, the "File transfer completed" prompt box will be displayed in the waveform editor. Click "OK".

- (3) On the instrument, the screen shows "Wave has been updated to USERX (X is 0-15)".
- (4) Press the  Arb Wave button ,then press the **NextPage** button to enter the NextPage menu.
- (5) Press the **Store** soft key to enter the file system, and then press the **Enter** soft key to enter the file system. Select the file name "USERX" that has just written the waveform.
- (6) Press the **Call out** soft key, the screen displays "File read successfully", then press the  arbitrary wave key, the written waveform can be viewed on the instrument.
- Note:** The file size is displayed on the right of the file. If 0B is displayed, the file is empty.

## Utility Setting

Press the front panel **Utility** function key to enter the system options menu. The user can set the display parameters of the signal generator, CH1/2 parameters, interface parameters and system parameters. Press **Utility** again to exit the system options menu.

Utility system menu

Menu	Description
<b>Display Setting</b>	
Backlight	Set the screen brightness
Screen saver	Switch On/Off the screen saver; When set to On the time before actuating can be adjusted from 0-9999
Separator	Set the separator for the screen display data
<b>CH1/2 Setting</b>	
CH1 Load	Used to match the display voltage with the desired load. The range is from 1 $\Omega$ to 10 k $\Omega$
CH2 Load	
Align Phase	Adjust the phase alignment of the two channels
<b>System Setting</b>	
Language	Select the required interface language
Beeper	Turn the sounder ON or Off
USB Device	Select the communication protocol for the USB Device interface

#### 4.Quick Start

USB Device	<p><b>PC:</b> This is the internal communication protocol. Select this option when connecting to the Waveform Editor software running on a computer via the USB Device interface.</p> <p><b>USBTMC:</b> Select this when you need to use the USBTMC communication protocol standard.</p>
Factory Set	Reset to factory settings.
Upgrade	The instrument firmware can be updated using a USB storage device through the rear panel USB interface.

## 5. Appendix

### Appendix A : Accessories

- UK and EU DC power supply
- 1 × USB power cable
- 1 × Quick Guide
- 1 × BNC/Q9 cable
- 1 × BNC to alligator cable
- 1 × USB communication cable

### Appendix B : General Care and Cleaning

#### General Maintenance

Do not store or leave the instrument where the liquid crystal display will be exposed to direct sunlight for long periods of time.


**Caution:** To avoid any damage to the instrument or probe, do not expose to any corrosive liquids or solvents.

#### Cleaning

Inspect the instrument and probes regularly. To clean the instrument exterior perform the following steps:

1. Disconnect power before cleaning your instrument.
2. Wipe any dust from the instrument and probe surface with a soft cloth. Do not scratch the transparent LCD protection screen when cleaning the display.
3. Clean the instrument further with a moist soft cloth. Mild detergent may be used on stubborn marks. To avoid damage to the instrument or probe, do not use any corrosive chemical cleaning agent.

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 **Warning:** Before powering on again for operation, it should be confirmed that the instrument has been dried completely, avoiding any electrical short circuit or possible electric shock to the user.

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### INFORMATION ON WASTE DISPOSAL FOR CONSUMERS OF ELECTRICAL & ELECTRONIC EQUIPMENT.

When this product has reached the end of its life it must be treated as Waste Electrical & Electronics Equipment (WEEE). Any WEEE marked products must not be mixed with general household waste, but kept separate for the treatment, recovery and recycling of the materials used. Contact your local authority for details of recycling schemes in your area.



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