EN: This Datasheet is presented by the manufacturer.

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AXIO MET

Function/Arbitrary Waveform Generator

AX-DG2010AF

Instruction manual

General Safety Summary

Carefully read the following safety precautions to avoid person injury and prevent damage to the instrument and any products connected to it. To avoid potential hazards, please use the instrument as specified.

Only qualified technician should perform service procedures

To Avoid Fire or Personal Injure

Use Proper Power Line

Use only the special power line of the instrument which approved by local state.

Ground the Instrument

The instrument grounds through the protective terra conductor of the power line. To avoid electric shock, the ground conductor must be connected to the earth. Make sure the instrument is grounded correctly before connect its input or output terminals.

Connect the Signal Wire Correctly

The potential of the signal wire is equal to the earth, so do not connect the signal wire to a high voltage. Do not touch the exposed contacts or components.

Look Over All Terminals' Ratings

To avoid fire or electric shock, please look over all ratings and sign instruction of the instrument. Before connecting the instrument, please read the manual carefully to gain more information about the ratings.

Not Operate with Suspected Failures

If you suspect that there is a damage of the instrument, please let a qualified service personnel check it.

Avoid Circuit or Wire Exposed Components Exposed

Do not touch exposed contacts or components when the power is on.

Do not operate in wet/damp conditions.

Do not operate in an explosive atmosphere.

Keep the surface of the instrument clean and dry.

Safety Terms and Symbols

Terms used on the instrument. Terms may appear on the instrument:

DANGER: Indicates an injury or hazard that may be immediately happen.

WARNING: Indicates an injury or hazard that may be not immediately happen.

CAUTION: Indicates that a potential damage to the instrument or other property might occur.

Symbols used on the instrument. Symbols may appear on the instrument:
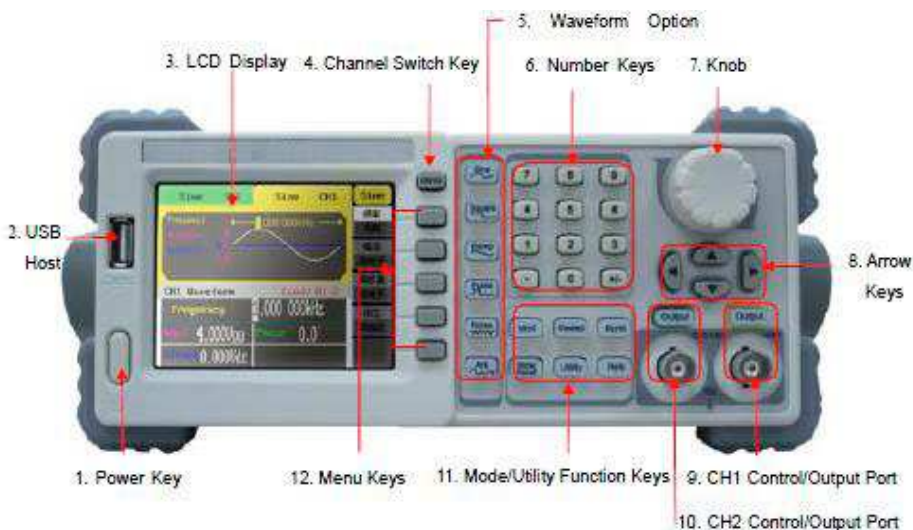

| Hazardous Voltage | Protective Earth Ground | Warning | Earth Ground | Power Switch |

The Front Panel

The picture above shows AX-DG2010AF front panel composition:

1. Power Key

This key is used to turn on/turn off the AX-DG2010AF. When the power key is off, the AX-DG2010AF is under power off state.

2. USB Host

AX-DG2010AF supports USB disk of FAT format. It's used to read waveforms or status files from a U disk or save current instrument status to a U disk.

3. LCD Display

AX-DG2010AF has a 320*240 TFT color LCD display, which can display current function menu, parameter settings, system state, promptings and so forth.

4. Channel Switch Key

This key is used to switch channel's display interface.

5. Waveform Option Area

Sine ----Sine Waveform

Provide sine waveform output and its frequency ranges from 1μHz to 10 MHz

☐ The backlight of the key lights when the key is being chosen.

☐ The "Frequency/Period", "Amplitude/High level", "Offset/Low level",

"Phase" of the sine waveform can be adjusted.

Square ----Square Waveform

Provide square waveform output and its frequency ranges from 1μHz to

10MHz.

- The backlight of the key lights when the key is being chosen.

- The "Frequency/Period", "Amplitude/High level", "Offset/Low level", "Phase" and "Duty" of the square waveform can be adjusted.

Ramp ----Ramp Waveform

Provide frequency ranges from 1μHz to 25MHz ramp waveform output.

- The backlight of the key lights when the key is being chosen.

- The "Frequency/Period", "Amplitude/High level", "Offset/Low level", "Phase" and "Symmetry" of the ramp waveform can be adjusted.

Pulse ----Pulse Waveform

Provide frequency ranges from 1μHz to 300KHz pulse waveform output.

- The backlight of the key lights when the key is being chosen.

- The "Frequency/Period", "Amplitude/High level", "Offset/Low level",

"Pulse width/Duty" and "Delay" of the pulse waveform can be

adjusted.

Noise ----Noise Signal

Provide 50MHz bandwidth Gauss white noise output

- The backlight of the key lights when the key is being chosen.

- The "Variance" and ""Mean" of the noise signal can be adjusted.

Arb ----Arbitrary Waveform

Provide frequency ranges from 1μHz to 5MHz arbitrary waveform output.

- It can output 48 kinds of waveforms: Sinc, index rose, exponential decline, tangent, cotangent, inverse trigonometric, Guass and so on. Besides, it can output the arbitrary waveforms in the U disk.

- Users can on line edit (16Kpts) or edit through EsayWave arbitrary waveform and down load them to the instrument.

- The backlight of the key lights when the key is being chosen.

- The "Frequency/Period", "Amplitude/High level", "Offset/Low level", "Phase" of the arbitrary waveform can be adjusted.

6. Number Keys

Those keys, including numbers from 0 to 9, radix points ".", symbol keys "+/-", are used to input parameters. Pay attention: when you need to input a negative, you should input a symbol "-" before you input the numbers.

7. Knob

It is used to increase (clockwise) or decrease (anticlockwise) current outstanding numerical value when setting parameters.

8. Arrow Keys

When using knob to set parameters, it is used to switch the place of numerical value.

When inputting a file name, it is used to move the position of cursor.

When saving or reading files, it is used to choose a position to save a file or

choose a file to be read.

9. CH1 Control/Output Key

Output This key is used to turn on/off CH1 output.

BNC connector and its nominal output impedance is 50Ω

When turn on Output (backlight is light), the connector output waveform

with CH1 current scheme.

10. CH2 Control/Output Key

Output This key is used to turn on/off CH2 output.

BNC connector and its nominal output impedance is 50Ω

When turn on Output (backlight is light), the connector output waveform with CH2 current scheme.

11. Mode/Utility Function Keys

Mod **Modulate**

This key is used to output modulated waveforms and provide several kinds of mode modulate and digital modulate manners. It generates AM, FM, PM, ASK, FSK and PWM modulated signals.

-   It supports "Internal" and "External" modulate source.

-   The key backlight lights when the function key is being chosen.

Sweep **Sweep**

This key is used to generate "sine waveform", "square waveform", "sawtooth waveform" and "arbitrary waveform" sweep signals.

-   It supports "Linear" and "Log" two kinds of sweep manners.

-   It supports "Internal", "External" and "Manual" 3 kinds of trigger source.

-   The backlight of the key lights when the key is being chosen.

Burst **Burst**

This key is used to generate "sine waveform", "square waveform", "sawtooth waveform" and "arbitrary waveform" burst output.

-   It supports "NCycle", "Gated" and "Infinite" 3 kinds of burst modes.

-   Noises also can be used to generate gating burst.

-   It supports "Internal", "External" and "Manual" 3 kinds of trigger source.

-   The backlight of the key lights when the key is being chosen.

Store/Recall **Save and Recall Function**

Through this key users can save/recall instrument state or arbitrary waveform datum edited by users.

-   As it supports file management system, users can do normal file operations.

-   Besides a nonvolatile memory (C disk) inside, a U disk (D disk) can also be outside connected.

-   The backlight of the key lights when the key is being chosen.

Utility **Utility Function and System Setting**

This key is used to set some system parameters and check version information.

-   The backlight of the key lights when the key is being chosen.
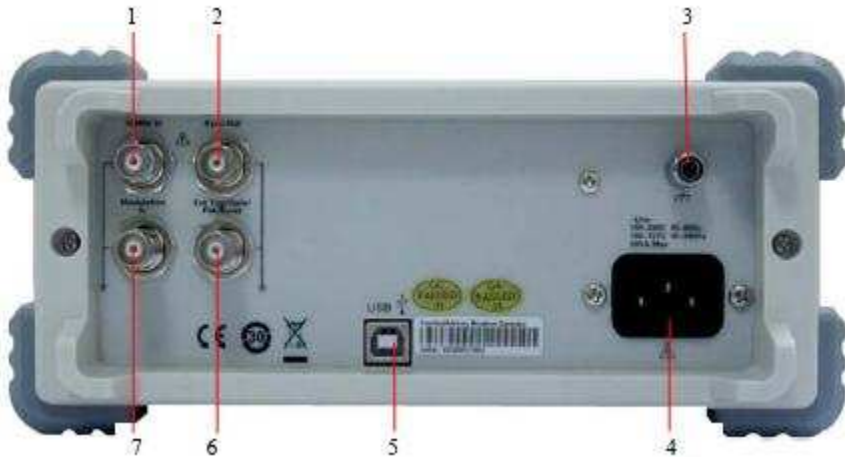
Help **Help**

Press this key to obtain build-in help information about the product.

- The backlight of the key lights when the key is being chosen.

12. Menu Keys

Those keys are corresponding one by one to the left menu, press any key to activate corresponding menu.

The Back Panel

1. 10MHz Clock Input Port

If the instrument uses external clock source, the connector accept an external 10MHz clock source.

2. Synchronization Output Port

When the synchronization is on, the port can output TTL signal with the same frequency.

3. Earth Terminal

It adopts special earth terminal.

4. AC Power Supply Input

AX-DG2010AF can input two different kinds of specification AC power supply.

AC power: 100—240V, 45—66Hz or 100—127V, 45—440Hz;

Fuse: 1.25A, 250V

5. USB Device

Connect the instrument to a computer through the port, and use software EasyWave to control the AX-DG2010AF.

6. [Ext Trig/Gate/FSK/Burst]

- Sweep/Burst trigger signal input port of external trigger.

- Sweep/Burst trigger signal output port of internal/manual trigger

- Burst gating trigger input port;
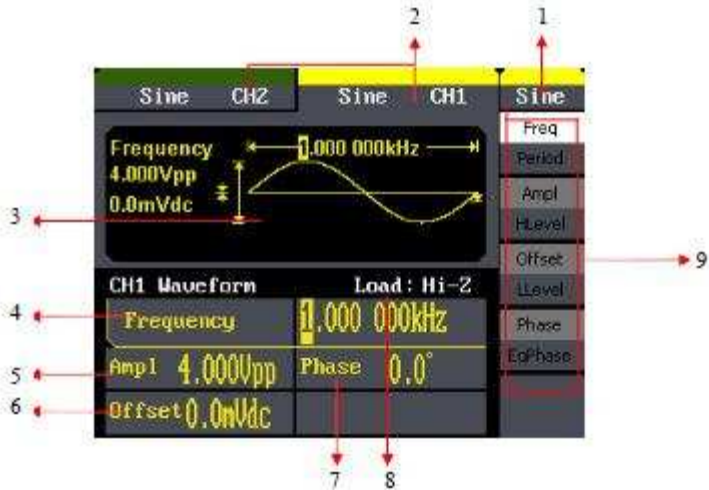
- ASK/FSK external modulation signal input port.

7. [Modulation In]

AM, FM, PM external modulation signal input port;

User Interface

AX-DG2010AF can only display one channel's parameters and waveform. The picture below shows the interface when CH1 choosing sine waveform. The interface will have some difference when current function is different.

1. Current Function

Display current function name. For example: "sine" shows that sine waveform function is being chosen.

2. Channel State

CH1 and CH2 display area which shows the current channel's choosing state.

3. Waveform Display Area

It shows each channel's current waveform.

4. Frequency

It shows each channel's current waveform's frequency. After press corresponding Freq menu, use number keys or knob to change the parameter value.

5. Amplitude

It shows each channel's current waveform's amplitude. After press corresponding Ampl menu, use number keys or knob to change the parameter value.

6. Offset

It shows each channel's current waveform's DC offset. After press corresponding Offset menu, use number keys or knob to change the parameter value.

7. Phase

It shows each channel's current waveform's phase value. After press corresponding Phase menu, use number keys or knob to change the parameter value.

8. Load

It shows each channel's load scheme.

High Resistance: display "Hi-Z" Load: display default "50Ω"

9. Menu

It shows the corresponding operation menu of the current function which is being chosen. For example: the picture above shows the function menu of "Sine" waveform.