FeelTech GT-FY6900 20M

FY6900 DDS Function Signal Generator User Manual

Brand: FeelTech | Model: FY6900 20M

1. Introduction

The FeelTech FY6900 series DDS Function Signal Generator is a versatile and high-performance instrument designed for generating accurate, stable, and low-distortion signals. Utilizing Direct Digital Synthesis (DDS) technology, it offers dual-channel output, arbitrary waveform generation, and a built-in frequency counter. This manual provides essential information for the safe and effective operation of your device.

Figure 1.1: FeelTech FY6900 DDS Function Signal Generator

2. Safety Information

- Before using the instrument, ensure the power supply is normal and within the specified voltage range (AC 100-240V).
- Use the instrument only within its technical index range to prevent damage.
- Do not attempt to modify the internal circuit of the instrument. Unauthorized modifications can damage the instrument and pose safety risks.
- Avoid exposing the device to excessive moisture, dust, or extreme temperatures.
- Always disconnect the power before cleaning or servicing the unit.

3. Package Contents

Verify that all items are present and in good condition upon unpacking:

- FY6900 Series DDS Signal Generator (Main Unit)
- USB Data Cable
- BNC-BNC Cable (2 pieces)
- BNC to Alligator Clip Cable (2 pieces)
- Power Cord
- Warranty Card
- Lithium Metal Battery (1, included)

frequency characteristic				
Product Model	FY6900-20M	FY6900-30M	FY6900-50M	FY6900-60M
Frequency range of Sine wave	0~20MHz	0~30MHz	0~50MHz	0~60MHz
Frequency range of square wave	0~15MHz	0~20MHz	0~25MHz	0~25MHz
Frequency range of other waves	0~10MHz	0~10MHz	0~10MHz	0~10MHz
Minimum adjustable width of pulse wave	20ns			
Minimum Frequency Resolution	1μHz			
Waveform Length	8192 points (8K points) *14Bits			
Waveform sampling rate	250MSa/s			
Vertical Resolution of Waveform	14 Bits			
Amplitude range (peak to peak)	frequency≤5MHz	5MHz< frequency≤10MHz	10MHz< frequency≤20MHz	frequency >20MHz
	1mVpp~24Vpp	1mVpp~20Vpp	1mVpp~10Vpp	1mVpp~5Vpp
Amplitude resolution	1mV			
Output impedance	50Ω±10%(typical)			
Bias Adjustment Range	frequency≤20MHz:±12V; frequency >20MHz: ±2.5V			
Minimum Bias Resolution	1mV			
Phase adjustment range	0~359.99°			
Minimum phase resolution	0.01°			
display	2.42.4 inches TFT color liquid crystal display			
Interface	115200 bps			
Power Supply	AC100V~240V			
environment condition	temperature:0~40℃ humidity:Less than80%			

Figure 3.1: Included accessories and documentation.

4. Product Overview

The FY6900 features a user-friendly interface with a color display and intuitive controls.

4.1 Front Panel

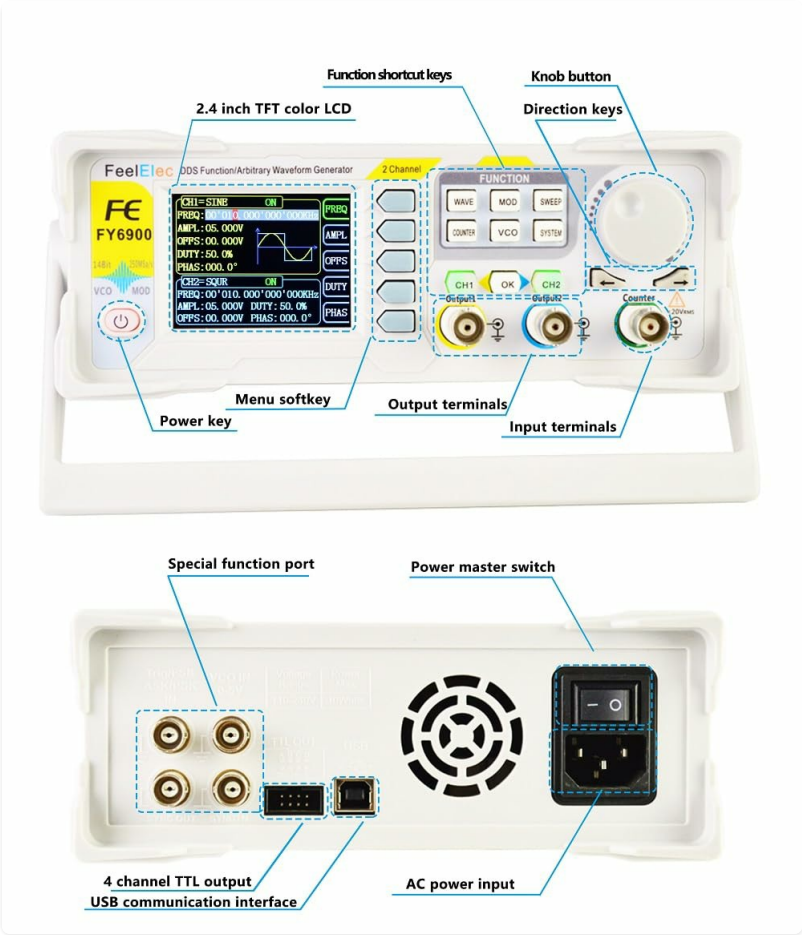

Figure 4.1: Front Panel Layout

The front panel includes a 2.4-inch TFT color LCD, function shortcut keys, a knob for parameter adjustment, direction keys for navigation, menu softkeys, and output terminals for Channel 1 (CH1) and Channel 2 (CH2). A dedicated counter input is also present.

4.2 Rear Panel

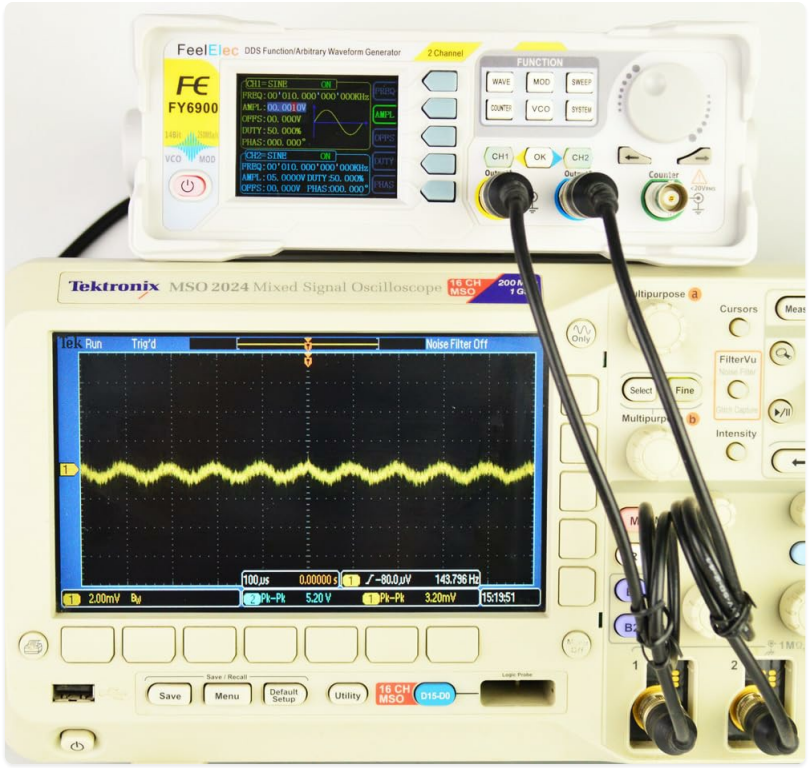

Figure 4.2: Rear Panel Layout

The rear panel features a special function port, a power master switch, AC power input, 4-channel TTL output, and a USB communication interface.

4.3 Key Features

- Adopt DDS direct digital synthesis technology to produce accurate, stable and low distortion signals.
- Desktop design with ABS plastic case, AC 100 ~ 240V (AC) wide voltage supply.
- 2.4-inch (320*240) color display for clear waveform visualization and settings.
- Up to 100MHz (sine wave) frequency output, 250MSa/s sampling rate, 14bits vertical resolution.
- Up to 98 sets of functions/arbitrary waveforms for diverse testing needs.

5. Setup

Follow these steps to set up your FY6900 signal generator:

1. Place the unit on a stable, flat surface with adequate ventilation.
2. Connect the provided power cord to the AC power input on the rear panel and plug it into a suitable power outlet.
3. Flip the power master switch on the rear panel to the 'ON' position.
4. Press the power key on the front panel to turn on the device.
5. Connect BNC cables from the CH1 and/or CH2 output terminals to your oscilloscope or other test equipment.
6. For PC control, connect the USB cable from the unit's USB communication interface to your computer.

6. Operation

The FY6900 offers various functions accessible via the front panel controls and menu options.

6.1 Basic Waveform Generation

To generate a basic waveform:

1. Press the 'WAVE' function key to select the desired waveform type (e.g., Sine, Square, Triangle).
2. Use the direction keys to navigate to the parameter you wish to adjust (e.g., FREQ, AMPL, OFFSET, DUTY).
3. Turn the knob to change the value of the selected parameter. Press the knob to confirm or switch between coarse/fine adjustment.
4. Ensure the desired output channel (CH1 or CH2) is enabled by pressing its respective 'OK' button.

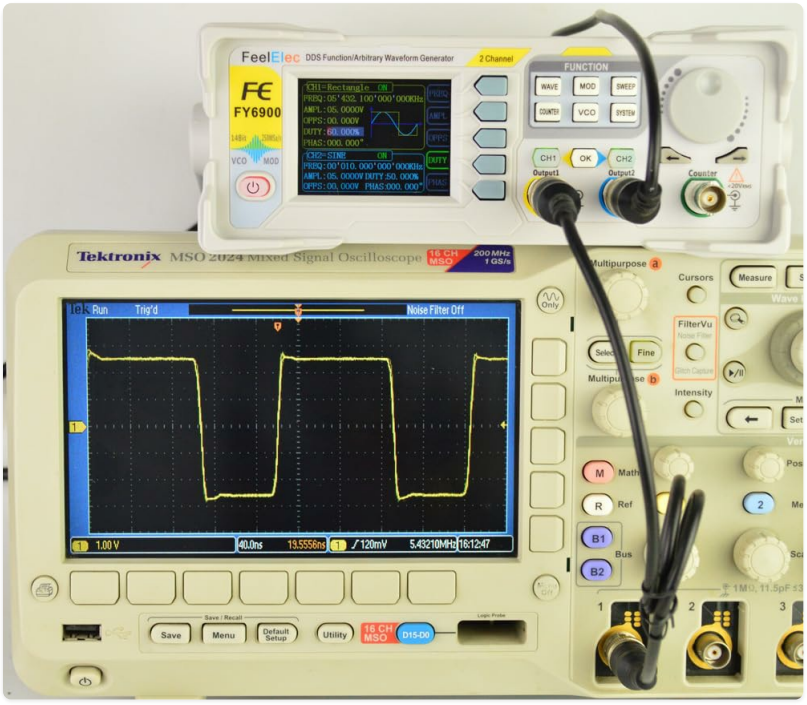

Figure 6.1: Sine Wave Output Example

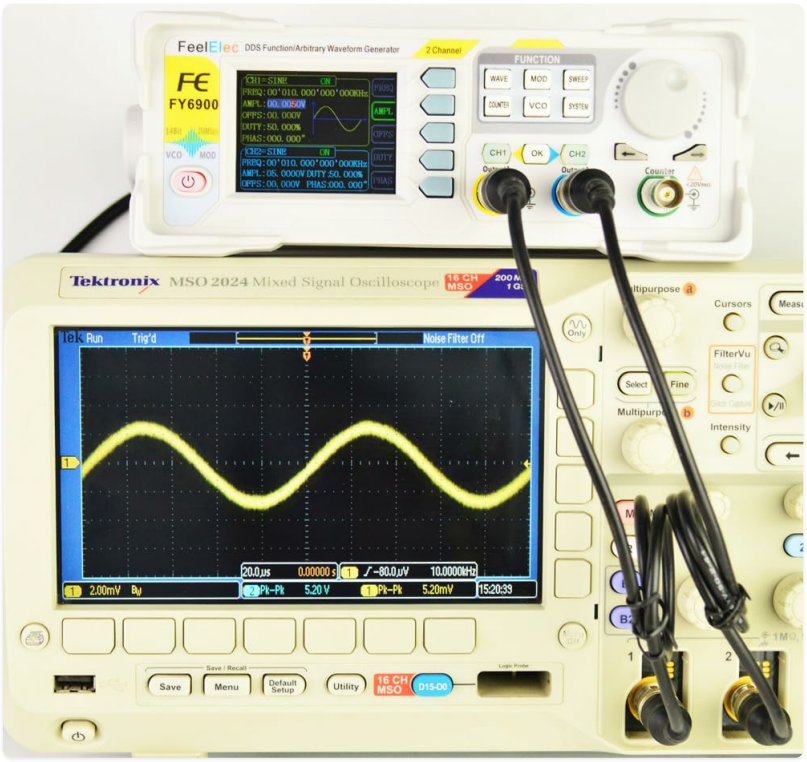

Figure 6.2: Square Wave Output Example

6.2 Sweep Function

The sweep function allows the output frequency to vary automatically between a start and stop frequency over a set time. Press the 'SWEEP' function key to access sweep settings. Configure the start frequency, stop frequency, and sweep time using the knob and direction keys. Press 'OK' to start the sweep.

6.3 Frequency Counter

The built-in frequency counter can measure external signals. Connect the external signal to the 'COUNTER' input terminal. Press the 'COUNTER' function key to display the frequency measurement. The video below demonstrates various operational aspects of the FY6900, including waveform generation and interface navigation.

Video 6.1: Overview of FeelTech FY6900 DDS Function Signal Generator features and operation.

7. Technical Specifications

Characteristic	Specification
Product Model	FY6900 20M
Frequency Range (Sine wave)	0 ~ 20MHz
Frequency Range (Square wave)	0 ~ 15MHz
Frequency Range (Other waves)	0 ~ 10MHz
Minimum Adjustable Width of Pulse Wave	20ns
Minimum Frequency Resolution	1μHz
Waveform Length	8192 points (8K points) * 14Bits
Waveform Sampling Rate	250MSa/s
Vertical Resolution of Waveform	14 bits
Amplitude Range (Peak to Peak)	1mVpp ~ 24Vpp (frequency ≤ 5MHz) 1mVpp ~ 20Vpp (5MHz < frequency ≤ 10MHz) 1mVpp ~ 10Vpp (10MHz < frequency ≤ 20MHz) 1mVpp ~ 5Vpp (frequency > 20MHz)
Amplitude Resolution	1mV
Output Impedance	50Ω ±10% (typical)
Bias Adjustment Range	±12V (frequency ≤ 20MHz); ±2.5V (frequency > 20MHz)
Minimum Bias Resolution	1mV
Phase Adjustment Range	0 ~ 359.99°

Characteristic	Specification
Minimum Phase Resolution	0.01°
Display	2.4-inch TFT color liquid crystal display
Interface	115200 bps
Power Supply	AC100V ~ 240V
Environment Condition	Temperature: 0 ~ 40°C; Humidity: Less than 80%
Product Dimensions	9.84 x 7.87 x 5.91 inches
Item Weight	2.2 Pounds
Date First Available	February 3, 2024
Country of Origin	China

Figure 7.1: Technical Specifications Overview

8. Maintenance

- Keep the instrument clean and free from dust. Use a soft, dry cloth for cleaning. Do not use abrasive cleaners

or solvents.

- Store the device in a cool, dry place away from direct sunlight and extreme temperatures.
- Regularly check cables and connectors for any signs of wear or damage. Replace if necessary.

9. Troubleshooting

- **No Power:** Ensure the power cord is securely connected and the power master switch on the rear panel is 'ON'. Check the power outlet.
- **No Output Signal:** Verify that the output channels (CH1/CH2) are enabled. Check cable connections to the test equipment. Ensure parameters like amplitude are set to a visible level.
- **Incorrect Frequency/Amplitude:** Double-check the parameter settings on the device. Ensure external connections are correct and not introducing interference.
- **Display Issues:** If the display is blank or distorted, try restarting the device. If the problem persists, contact customer support.

10. Warranty and Support

FeelTech warrants that its products' mainframe and accessories will be free from defects in materials and workmanship within the warranty period. If a product is proven to be defective within the respective period, FeelTech guarantees free replacement or repair of products which are approved defective. This product enjoys a 1-year warranty since its delivery. Damages caused by misuse, vandalism, improper maintenance, or force majeure are not covered by the warranty. Any disassembly or amendment without permission will be deemed to give up warranty rights.

For technical support or warranty claims, please refer to the contact information provided on your warranty card or visit the official FeelTech website. Additional protection plans are available for purchase, including 3-Year and 4-Year options, as well as a comprehensive monthly plan.