

## FeelTech FYA2010

# FeelTech FYA2010 Signal Power Amplifier User Manual

Model: FYA2010 Series

Brand: FeelTech

## 1. INTRODUCTION

This user manual provides comprehensive instructions for the FeelTech FYA2010 series of 20W Signal Power Amplifiers. This device is designed to amplify various signal waveforms from digital DDS function generators with low distortion. Please read this manual thoroughly before operating the device to ensure proper use and to prevent damage.

### Package Contents:

- 1 x Signal Power Amplifier (FYA2010, FYA2030, FYA2050S, or FYA20A0S model)
- 1 x Power Cable
- 1 x BNC-BNC Cable
- 1 x Q9 Clip Cable
- 1 x User Manual
- 1 x Quality Certificate

## 2. SAFETY INFORMATION

Observe the following safety precautions to prevent injury and damage to the device:

- Ensure the power supply voltage matches the device's requirements (DC 15V).
- Do not expose the device to moisture or extreme temperatures.
- Do not open the casing or attempt to repair the device yourself. Refer all servicing to qualified personnel.
- Use only the provided accessories or approved replacements.
- Ensure proper ventilation to prevent overheating.

### 3. PRODUCT OVERVIEW

The FeelTech FYA2010 series amplifier is a compact and robust device designed for amplifying various signal waveforms from digital DDS function generators. It features full-band amplification and low distortion, making it suitable for a wide range of electronic testing and design applications.

#### Key Features:

- Maximum amplified signal frequency: DC-1MHz (FYA2010), DC-3MHz (FYA2030), DC-5MHz (FYA2050S), DC-10MHz (FYA20A0S)
- Low distortion, high precision signal amplification, compatible with all DDS signals.
- Output voltage up to 28V ( $\pm 14V$ ).
- Output current: 1000mA (MAX), max. output power 20W.
- Magnification X2, X4 optional.
- Slew rate:  $\geq 500V/\mu s$ .
- DC15V power supply.
- Input impedance: 10K $\Omega$ .
- Exquisite aluminum alloy shell for effective heat dissipation.

#### Applications:

- Electronic test and design
- Sensor simulation and testing
- Power device and circuit driving
- Education and training
- Selection and testing of piezoelectric components
- Ultrasonic transducer drive
- IF device driver
- Medical cosmetic equipment drive
- Remote sensing and detection equipment, wireless signal amplifier



Figure 3.1: Front view of the FeelTech FYA2010 Signal Power Amplifier, showcasing its compact design and robust casing.



Figure 3.2: Side view of the amplifier, highlighting the integrated heatsink fins for efficient thermal management.

### **FYA2000** Series of major applications:

- 1, Electronic test and design
- 2 And sensor simulation and testing
- 3 Driven, power devices and circuits
- 4 Ultrasonic transducer drive
- 5, If device driver
- 6, Medical cosmetic equipment drive
- 7 Screening and testing, piezoelectric components
- 8, Electronic training lab test-bed
- 9, Education and training
- 10 Remote sensing and detection equipment, wireless signal amplifier

Are electronics engineers, laboratories, production line and the ideal equipment for teaching and research, but also can be used as industrial equipment supporting modules.

### **FYA2000** Compatible series signal sources

FeelTech FY6900 FY6800 FY6600 FY3200S FY2200S SGP1000S  
FY1000S Arbitrary waveform generator

Tektronix AFG3000B AFG2000 Arbitrary waveform generator

Agilent 33220A 33250A Arbitrary waveform generator

RIGOL DG1022 DG4000/5000 Arbitrary waveform generator

Siglent SDG5000 Arbitrary waveform generator

Shengpu SPF05/10/20/30/40 Arbitrary waveform generator

Figure 3.3: A list detailing the major applications for the FYA2000 series and compatible signal sources from various manufacturers like FeelTech, Tektronix, Agilent, RIGOL, and Siglent.

## 4. SETUP

Follow these steps to set up your FeelTech Signal Power Amplifier:

1. **Power Connection:** Connect the provided DC 15V power adapter to the power input port on the rear panel of the amplifier. Ensure the power switch is in the OFF position before connecting.
2. **Signal Input:** Use the BNC-BNC cable to connect your DDS function signal generator's output to the 'IN' BNC connector on the amplifier's rear panel.

3. **Signal Output:** Connect your load or measurement device to the 'OUT' BNC connector using an appropriate BNC cable.
4. **Grounding:** If necessary, connect the ground terminal to a suitable ground point.
5. **Initial Power-On:** Once all connections are secure, switch the power toggle to the 'ON' position. The power indicator light should illuminate.



Figure 4.1: Rear panel connections including 'IN' and 'OUT' BNC ports, DC power input, ground terminal, and ON/OFF switch.

## 5. OPERATION

---

After successful setup, you can begin operating the amplifier:

1. **Power On:** Ensure the amplifier is connected to power and your signal generator. Flip the power switch to 'ON'.
2. **Gain Selection:** The amplifier offers fixed magnification modes of X2 and X4. Select the desired gain using the switch on the device, typically located near the input. Refer to the specific model for exact switch location.
3. **Signal Input:** Generate the desired waveform from your DDS function generator. The amplifier is compatible with various waveforms including sine, square, pulse, sawtooth, triangle, ECG, and noise waves.
4. **Monitoring Output:** Observe the amplified signal on your connected load or measurement device (e.g., oscilloscope). Adjust the input signal amplitude from your generator as needed, ensuring it does not exceed the amplifier's input amplitude range ( $\leq 14\text{Vp-p}$ ).
5. **Power Off:** When finished, switch the power toggle to 'OFF' and disconnect the power supply.

## 6. MAINTENANCE

---

To ensure the longevity and optimal performance of your amplifier, follow these maintenance guidelines:

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the device. Do not use liquid cleaners or solvents.
- **Storage:** Store the amplifier in a cool, dry place away from direct sunlight and corrosive environments when not in use.
- **Ventilation:** Ensure the heatsink fins are free from dust and obstructions to maintain proper airflow and prevent overheating.

## 7. TROUBLESHOOTING

---

If you encounter issues with your amplifier, refer to the following common problems and solutions:

- **No Power:**

- Check if the power cable is securely connected to both the amplifier and the power outlet.
- Verify that the power switch is in the 'ON' position.
- Ensure the power adapter is functioning correctly and providing DC 15V.

- **No Output Signal:**

- Confirm that the input signal generator is producing a signal and is correctly connected to the 'IN' port.
- Check the connection from the 'OUT' port to your measurement device or load.
- Ensure the input signal amplitude is within the specified range ( $\leq 14V_{p-p}$ ).

- **Distorted Output:**

- Reduce the input signal amplitude from your generator. The amplifier has a maximum output voltage of 28V ( $\pm 14V$ ).
- Verify that the load impedance is appropriate ( $\geq 4\Omega$ ).
- Check if the input signal frequency exceeds the maximum amplified frequency for your specific model (e.g., 1MHz for FYA2010).

- **Overheating:**

- Ensure the device has adequate ventilation and that the heatsink fins are not obstructed.
- Reduce the operating time or the load if continuous high power output is causing excessive heat.

## 8. SPECIFICATIONS

---

Detailed technical specifications for the FeelTech FYA2010 series Signal Power Amplifiers:

| Model                         | FYA2010S                                      | FYA2030S | FYA2050S | FYA20A0S |
|-------------------------------|---|----------|----------|----------|
| Signal Input Bandwidth        | DC~1MHz                                       | DC~3MHz  | DC~5MHz  | DC~10MHz |
| Maximum Output Power          | 20W   | 20W      | 20W      | 20W      |
| Power Supply Input Parameters |   |          |          |          |
| Input Voltage                 | DC 15V  |          |          |          |
| Input Power                   | ≥30W  |          |          |          |
| Signal Input Parameters       |   |          |          |          |
| Input Impedance               | ≥10KΩ   |          |          |          |
| Input Amplitude Range         | ≤14Vp-p                                       |          |          |          |
| Signal Output Parameters      |   |          |          |          |
| Output Amplitude              | ≥28Vp-p (no-load)                             |          |          |          |
| Output Current                | 1000mA(MAX)                                   |          |          |          |
| Load Impedance                | ≥4Ω (with maximum output power)               |          |          |          |
| Slew Rate                     | ≥500V/us                                      |          |          |          |
| Harmonic Distortion           | <1%   |          |          |          |
| Other Characteristics         |   |          |          |          |
| Over-current Protection       | Yes   |          |          |          |
| Gain Regulation Mode          | Fixed magnification, X2 or X4                 |          |          |          |
| Environment                   | Temperature: 0~60℃, Humidity: <80%            |          |          |          |
| Size                          | 153 x 84 x 49 mm (L*W*H)                      |          |          |          |
| Weight                        | 400g (without power supply), accessories 150g |          |          |          |

Figure 8.1: Comprehensive table outlining the specifications for different models within the FYA2000 series, including bandwidth, power, voltage, current, and physical dimensions.

| Parameter                  | Specification   |
|----------------------------|---|
| Model Number               | GT-FYA2010  |
| Signal Input Bandwidth     | DC~1MHz (FYA2010), DC~3MHz (FYA2030), DC~5MHz (FYA2050S), DC~10MHz (FYA20A0S) |
| Maximum Output Power       | 20W   |
| Power Supply Input Voltage | DC 15V  |
| Power Supply Input Power   | ≥30W  |
| Input Impedance            | 10KΩ  |
| Input Amplitude Range      | ≤14Vp-p   |
| Output Amplitude           | ≥28Vp-p (no-load)   |
| Output Current             | 1000mA (MAX)  |
| Load Impedance             | ≥4Ω (with maximum output power)   |
| Slew Rate                  | ≥500V/us  |
| Harmonic Distortion        | <1%   |

| Parameter               | Specification                                 |
|-------------------------|---|
| Over-current Protection | Yes   |
| Gain Regulation Mode    | Fixed magnification, X2 or X4                 |
| Operating Environment   | Temperature: 0~60°C, Humidity: <80%           |
| Dimensions (L*W*H)      | 153 x 84 x 49 mm                              |
| Weight                  | 400g (without power supply), accessories 150g |
| Material                | Acrylonitrile Butadiene Styrene               |

## 9. WARRANTY AND SUPPORT

The FeelTech FYA2010 series Signal Power Amplifier comes with a manufacturer's warranty. Please retain your proof of purchase for warranty claims.

### Warranty Information:

- EU Spare Part Availability Duration: 2 Years.
- For specific warranty terms and conditions, please refer to the documentation included with your purchase or contact your retailer.

### Customer Support:

For technical assistance, troubleshooting beyond this manual, or warranty inquiries, please contact your authorized FeelTech dealer or the point of purchase. Provide your model number (FYA2010) and a detailed description of the issue for efficient support.