Beyondfire Ignition System for Micro Fireworks

OPERATION   INSTRUCTIONS

High quality components, industrial PCB and conformal coating anti-interference optimization design
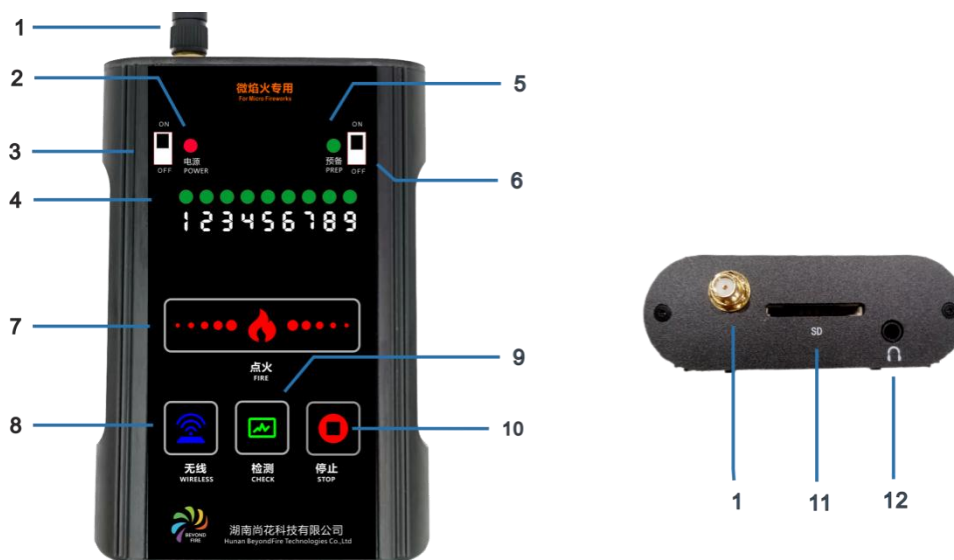
Easy to learn, one-click start operation

Lightweight and portable, one security box to store

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★Please read this manual carefully before use.

★This manual contains warranty card, so please keep it well.

★The BETONDFIRE Ignition System for Micro Fireworks contains: 2 hosts, 10 slaves, 2 chargers for slave, 12 antennas, and a carrying suitcase.
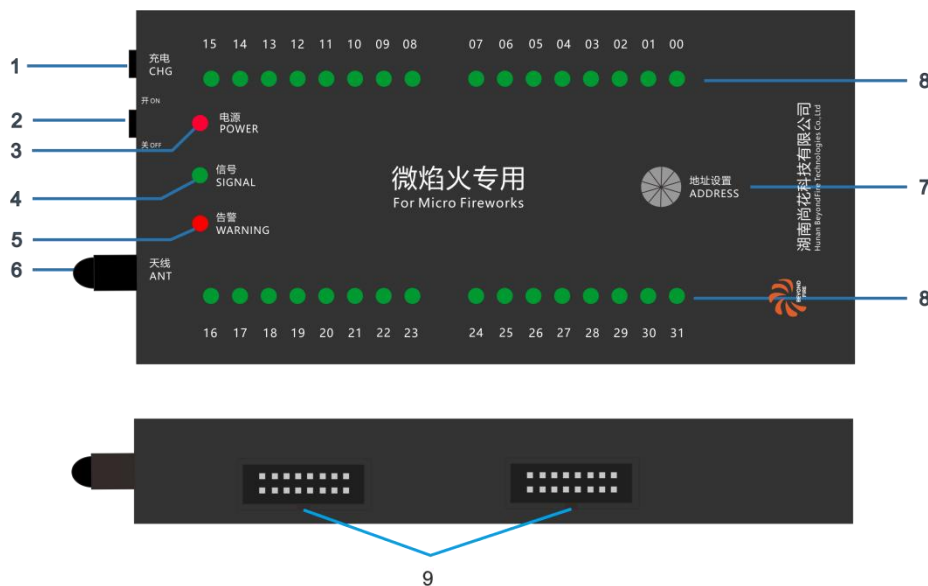
一、 Description of host functions

1   Antenn

2   Power indicator: when the battery is low, this light flashes to remind to charge. Status indicator: steady on -- over 75% power, slow flash -- less than 75% power, second flash -- less than 50% power, stroboflash-- less than 25% power. **Note: The currently used 9V rechargeable battery has no flashing reminder function when the power is low, so please pay attention to full charge before ignition.**

3   Power switch: turn it to "ON" then power on; turn it to "OFF" then power off.

4   Nine status lights: they indicate slave status,orchestration's correspondence, music display progress, ignition detection result and fault display,etc.

5   Prepare light, ignition safety switch light.

6   Prepare switch, ignition safety switch; When no ignition needed, please turn this switch to "OFF" position to avoid ignition by mistake.
Before the official ignition, the host PREP switch should be turned to OFF, and the PREP indicator is off to avoid misoperation of the ignition.

7   FIRE ignition button: start ignition or music trial.

8   WIRELESS button: to start the host wireless function and download the music orchestration.Press and hold this button to start code matching.

9   CHECK detection button to check the ignition head configuration. If need to select the start of the music,press this key to confirm.

10   STOP button: During the ignition or music trial, press this button to pause the ignition or music trial, and press this button for over 5 seconds to stop the ignition or music trial. Press this key to return when in the matching state; Press this key to select the start section of music before enabling the wireless function.

11   SD card interface: insert the SD card that stores legitimate files or music files.

12   3.5mm audio interface: to connect the external audio equipment.

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二、 Description of slave function

1　Power charging interface

2　Power switch: turn it to "ON" then power on; turn it to "OFF" then power off.

3　Power indicator: when the power is on, the light will be on. When the power is low, the light will flash to remind you to charge.Status indicator: steady on -- over 75% power, slow flash -- less than 75% power, second flash -- less than 50% power, stroboflash-- less than 25% power.

4　SIGNAL indicator light: when it lights, it means that it receives a wireless signal that the host sends.

5　WARNING indicator light: it indicates a detection or hardware fault. If it is steady on, the hardware is faulty. If it is blinking,the ignition head configuration is inconsistent with the configuration file.

6　Antenna

7　Address set knob switch: to set the slave address. Under normal circumstances, please set the address in the range of 1 to 9 and address 0 is for other extended functions.

8　Ignition channel status indicator: correspond to the status of 0 to 31 ignition channels. If the indicator is on, it means the ignition head is successfully connected. You can judge the connecting status of the ignition line and ignition head according to this indicator.

9　Ignition line interface: it is used to connect 4 groups of 8 ignition lines.

三、 Wireless code match

If the host and slave are not matched, the code must be matched before use, and the code must be re-matched when the host is replaced during the ignition process. The code matching steps are as follows:
- Turn off the slave that needs code match.
- If press the wireless button on the host , it will enter the code matching state, and the display light No. 1-9 will display from left to right.
- Keep the host in the code matching state, then ensure that the host and slave are in the effective communicating distance, and turn on the power of slave , finally the host and slave will automatically complete the code matching

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within 3 seconds. When the slave successfully matches the code, its three display lights (power, signal and warning）will blink three times, which indicates that the code is successfully matched.
- Complete the code matching operation of all the slave machines in turn.
- Press the stop button of the host to end the code matching state.

四、 Download music arrangement

The host automatically downloads the orchestration when wireless is enabled:
- Ensure that the host is within a valid communication distance from all slaves and the code is matched.Then start up the slaves,and it is advised to set the slave IP address to 1-9.
- Insert the SD card with the configuration file into the host and turn on the host.
- Turn on the host wireless function,and it will automatically enter the arrangement download state, then the display light No. 1-9 will display the download progress from right to left; Next,the three lights "power,signal and warning" of the slave machine which receives the download arrangement file will blink repeatedly. If the download is successful, the three display lights will blink three times synchronously.
- When the download is complete, the host light 1-9 displays the result. Always on: the orchestration is normal. Blinking slowly: the communication is unstable but the orchestration is normal. Blinking quickly: the orchestration is abnormal and needs to be downloaded again.

Note that for temporary modification of the arrangement, after the SD card is inserted into the host, the host needs to shut down and start again, and press the wireless button to download the orchestration.

五、 Select opening chapter

If part of the chapter needs to be skipped in the ignition process, or there is power off operation of host machine during the ignition process, or the ignition process needs to continue after the end of the stop button, the initial chapter needs to be selected. The steps are as follows:

- Shut down the host and turn it on again.
- Before the wireless switch is turned on, the chapter is selected by continuously pressing the stop key. The starting chapter is randomly selected from 0 to the arranged maximum chapter, but the starting chapter cannot be greater than 9.
- Nine status lights display the selected opening chapter synchronously. Chapter 0 , all the status lights are off; The 1-9 chapters correspond to the 1-9 status lights.
- After selecting the initial chapter, press the "CHECK" button to confirm and finish the selecting operation.
- The default text is 0. If the start chapter needs to start from 0, you do not need to press the "Stop" button after the startup.

六、 Ignition detection
- Insert the SD card with legal arrangement files and music files into the host.
- Open the wireless function of the host.
- Confirm that the slave ignition head is connected according to the configuration file.
- Press the "CHECK" button to enter the detection state of ignition system.
- The 9 status indicators of the host will display the detection result of the corresponding slave address. If the indicator does not light, it means that there is no arranged ignition head. If the indicator is steady on, it means that the arranged ignition head is correctly configured.If the indicator is blinking, it means that the arranged ignition head is not connected or the communication is abnormal.
- The warning light of the slave is not on,which indicates it is normal. While if it is flashing ,it indicates that the arranged ignition head is not connected.
- Press the "Stop" button to exit the detection state.

七、 Music trial
- Make sure that the host SD card is inserted, the arranged file and music file are copied to the SD card, and the audio connection is normal.
- Turn the "PREP" switch of the host to the "OFF" position, and the "PREP" indicator is off.
- Press the "FIRE" button to start the music trial.
- Press the "Stop" button to suspend the music trial, and press the "FIRE" button again to continue the subsequent music trial.
- Press the "Stop" button for more than 2 seconds during the trial to stop the music trial.
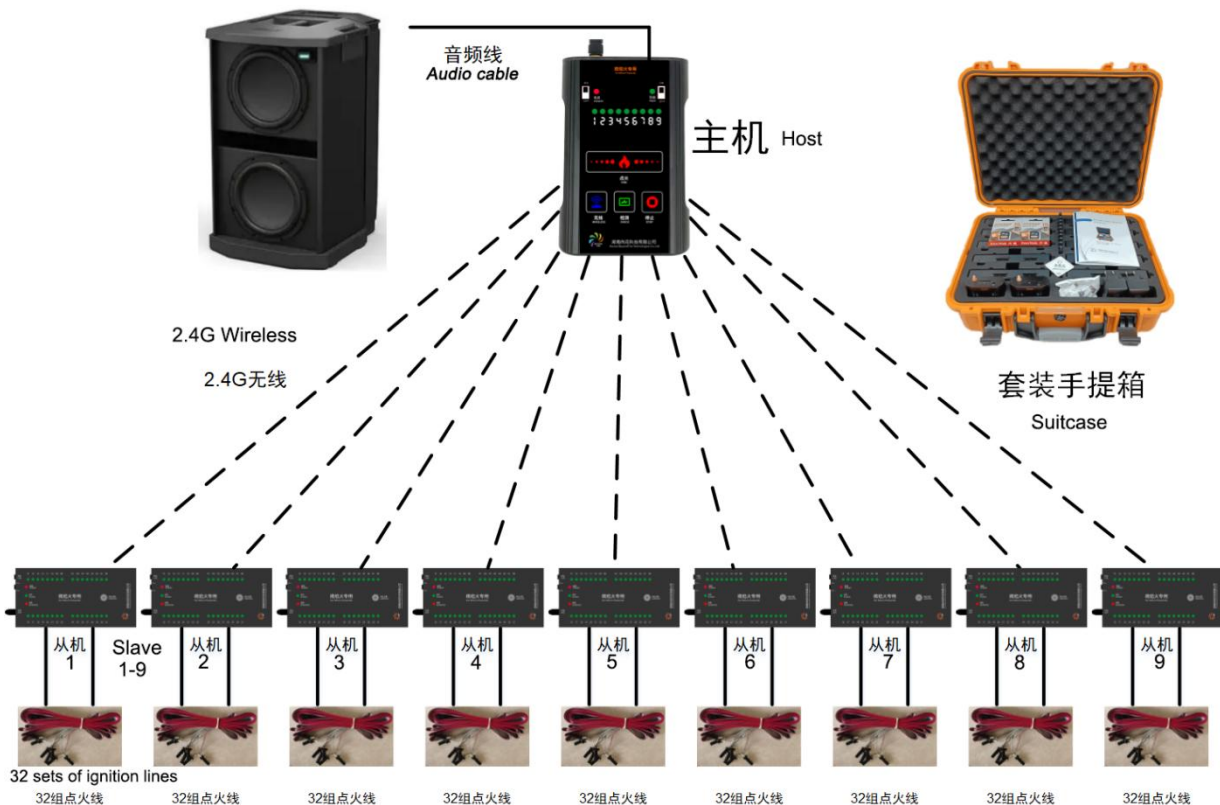
八、 Ignition operation

- Make sure that the host SD card has been inserted;the arranged files and music files have been copied to the SD card;the audio connection is normal, and the volume is adjusted properly.
- Verify that the fireworks are connected.
- Verify that the wireless communication between the host and the slave is normal and the slave's status indicator is always on or blinking slowly.
- Confirm that the starting section of the music fireworks is set correctly.
- Confirm that the detection of slave ignition head is consistent with the arranged document.
- Confirm that the fireworks ignition site has met the safety requirements and the personnel have been evacuated to a safe area.
- Turn the "PREP" switch of the host to the "ON" position, and the "PREP" indicator light is normally on.
- Press the "FIRE" button to start the music, and the device will automatically start the fireworks ignition according to the arranged sequence.The No. 1-9 status light of host will display the ignition progress of the current music chapter from left to right, and the signal indicator light of slave will flash.
- After the current chapter is completed, the host enters the waiting state. Press the "FIRE" button to continue to the next chapter until all chapters are complete.
- During the ignition process, press the "STOP"button to suspend the ignition process and press the "FIRE" button again to continue the subsequent ignition.
- During the ignition process, pressing the "STOP" button for over 2 seconds will stop the ignition, but shutting off the host power will not stop the ignition of the current chapter.

九、 System diagram

The Beyondfire micro fireworks ignition system consists of host, slave, charger, ignition line, sound box, audio cable, SD card, antenna, suitcase and other parts.The host, slave, charger, antenna and suitcase are the standard accessories.The SD card, sound box, audio cable are optional accessories.The host battery and ignition line are consumables.

十、 Specification parameter

Model: SH-09 Beyondfire Micro Fireworks Ignition System	
	Whole box: Host x2, Slave x10, Charger x2
	Size and weight of Host: 127 x 82 x 30mm, 350g
	Size and weight of Slave:190 x 91 x 45mm, 560g
	Host battery voltage:9V
	Host power: standby 0.6W, wireless transmission 3W
	Slave charger:DC8.4V1A (AC100~240V 50/60Hz)
	Slave power: standby 0.7W, wireless transmission 3W
	Rated capacity of Slave lithium battery: 16.3Wh/ piece
	Communication frequency band: 2.4G
	Working temperature: -20℃~60℃
	Maximum number of Slaves supported:9
Box size: 49 x 39 x 15CM	Maximum number of ignition heads supported:32*9=288
Weight: 10kg	Host Memory Card Type: SD card (purchased separately)

- The communication distance between the host and the slave can reach 400 meters when there is no shelter or interference.It is recommended to start ignition within 150 meters. Avoid high-power facilities such as drones, routers, and high-voltage wires within 10 meters of the equipment.
- The host adopts the power supply of 9V battery , standby current < 60mA. It can be used for about 4 hours with alkaline batteries and about 8 hours with rechargeable batteries. It is recommended to use a 9V rechargeable battery to obtain a longer continuous running time.Replace the battery in time when the power light of the host is stroboscopic.
- The slave is powered by 7.4V lithium battery with standby current < 60mA. The battery can be used for more than 36 hours when full charged. It needs to be charged with a special charger when the power light is stroboscopic. The ignition of the 32 ignition heads of the slave machine can be completed when the power light is full, slow flashing or second flashing.
- The products are designed with environmentally friendly materials and have passed ROHS certification.Lithium battery has also obtained CE, UN38.3 certification.

十一、 Common problems and solutions

Fault and problem	Possible cause	Solutions
Unable to power on	The battery has no voltage output. The battery buckle of the host is loose.	Replace the battery of the host and charge it in time. Secure the battery buckle of the host by using pliers.
Power light flashing	Low power warning:slow flashing < 75% power, second flash< 50% power, stroboscopic < 25% power.	It depends on the fireworks' discharge time and the flashing frequency of power light to decide whether continue to operate or replace the battery of the slave machine and charge the slave machine in time.In general, the host can run for over 2 hours and the slave can run for more than 8 hours when the power light blinks slowly.
After the host is powered on, the nine status indicators blink together.	The host is designed with the power-on self-check function. When detecting faults of internal security components,the device warnings and it cannot be used to ensure user safety.	The safety components of the device are damaged. Please stop using the device and send it for repair.
The status indicator blinks quickly after the host wireless is enabled	The host's orchestration is not correctly downloaded to the slave machine.	Hold the host close to the slave, and shut down the host then turn it on again,finally turn on the wireless to re-download the arrangement.

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Status indicators NO.1 to 4 and NO. 6 to 9 are blinking alternately.	The SD card is improperly inserted. The SD card does not have legal arranged files or music files. The SD card file can not be supported by the system.	Insert the SD card correctly. Write legitimate arranged files and music files to the SD card. Format the SD card by using the default configuration of FAT32.
The slave's warning indicator is steady on.	The slave is designed with the power-on self-check function. When detecting faults of internal security components,the device warnings and it cannot be used to ensure user safety.	The safety components of the device are damaged. Please stop using the device and send it for repair.
The slave's warning indicator blinks.	During the host's detection, it was found that the ignition heads needing to be configured in the arranged file were not connected to the slave machine.	Check that the arranged file whether is correct or whether the ignition heads for the configuration are connected correctly.
The slave's wireless communication is disconnected or unstable.	1) The host and slave are not matching codes. 2) The slave's address is incorrectly set to 0. 3) The host device is too far away from the slave device. 4) The frequency band of wireless communication is interfered, which affects normal communication.	1) Match code between the host and slave machine. 2) Set the slave's IP address to a range from 1 to 9. 3) Adjust the host and slave machine to the appropriate distance. 4) Find out high-power wifi nearby or the remote control devices of 2.4Ghz band , then take the machines as far away as possible. Don't get too close to the machines while the drone is operating.
Fail to ignite	1) There is no corresponding ignition information in the orchestration , or the ignition information is incorrect, or the orchestration is not downloaded to the slave machine. 2) The wireless distance is too far, or the communication is interfered. 3) The ignition wire is loose or not inserted well. 4) The ignition head on ignition wire has problem. 5) The slave machine loses power.	1) Change the corresponding ignition information in the orchestration file. Verify that the orchestration has been correctly downloaded to the slave machine. 2) Adjust the communication distance between host and slave to the effective distance. 3) Check that the ignition wire is properly connected. 4) Replace the normal ignition wire. 5) Charge the slave machine in time.
Music play is abnormal	1)3.5mm audio cable is in poor contact 2) Music file is abnormal	1)Plug the audio cable into place well, turn back and forth appropriately to contact tightly. 2) Name music files according to chapter number, WMA format is recommended.

Safety warning:

1) When using this product, the safe distance from fireworks should be controlled at more than 0.6 meters, and it is prohibited to burn, and it is suitable for personal consumption.

2) This product contains sharp parts and high temperature heating parts. Please avoid accidental injury caused by misoperation by minors.

3) Before the official ignition, the host preparatory switch is turned to "OFF", and the "PREP" preparatory indicator is turned off to avoid misoperation of the ignition.

Note:

1) This product uses 9V alkaline battery or rechargeable lithium battery. Please do not leave it outdoors for a long time in low temperature weather. Please turn it off when not in use.Please charge or replace the battery in time when it is low.

2) The slave machine adopts metal shell so it needs avoid long-term exposure under the sun in order not to affect its operation by the shell's high temperature. It is recommended to cover the machine with a cardboard box or wooden board when it is used under the sun for a long time.And it is avoided that the machine is coverd by a tin foil metal bag so that the wireless communication cann't be affected.

3) During construction, the flat cable should be avoided from being loose due to the impact of fireworks' shooting. Recommended method: Do not pull the flat cable too tightly.Do not cover the path of the fireworks shooting port.Use a line or appropriate weight (such as sand, etc.) to fix the flat cable to avoid pulling it loose.

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4) The slave machine should be waterproofed and wrapped in plastic bags when it rains. Use objects to raise the floor when there is running water on the floor to avoid water damage.

5) The copyright of the products and related products belongs to Hunan Beyondfire Technologies Co., Ltd.

6) The company reserves the right to modify the operation manual without prior notice. The latest version of the relevant documents can be obtained at www.beyondfire.com.

Warranty and instructions

▲Sincerely thank you for choosing this product.As a user of our company, you will get the great after-sales service provided by us.

▲The warranty period of this product is one year.If there is a quality problem within seven days of leaving the factory, the company can replace the same model of products.

▲During the warranty period, due to the hardware failure caused by the product itself, the company will provide customers with free maintenance services.Please do not disassemble the machine for maintenance by yourself.

★Under any of the following circumstances, it does not belong to the scope of warranty service:
①　Damaged by the the user's improper handling, use, management or maintenance , or man-made damage.
②　The product has been dismantled, modified or repaired without authorization.
③　Damage due to the external causes (lightning strikes, power supply, etc.).
④　Damage due to the the user's incorrect installation or use.
　Products that are not covered by warranty will be serviced for a fee.

★When the products need to repair, please show the purchase voucher and this warranty card, otherwise it will not be handled.

Warranty card

Product name:	Serial number:
Date of purchase:	Contact number:
Address:	
Customer feedback information:	
Actual troubleshooting:	Date of maintenance:

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