

USER MANUAL

PyroSlave X16

V1.1

2023/04



Showven Technologies Co., Ltd.

▲ Foreword

Thanks for choosing SHOWVEN PyroSlave X16, we wish it will bring you lots of exciting moments. Please read the following manual carefully before operating this product. Operate according to instructions is very important for safety, and can elongate the service life of the machine

Strictly follow the instruction in the manual when operate PyroSlave X16. If you have any doubts, please contact SHOWVEN technologies Co., Ltd by info@showven.cn

We assume the person who use or come in contact with the device are familiar with how the device and fireworks should be handled. This includes proper use, maintenance and repair of the machine as defined in this user manual.

▲ Warning

- ∨ This product can only be operated by persons of legal age. And is only suitable for qualified operators. Operators should obtain the corresponding local professional technical certificates or qualifications before operate this system.
- ∨ Make sure all legal requirements for the performance of display fireworks, stage fireworks and special effects are met in the respective country of use.
- ∨ Make sure that the required safety distance to persons or flammable objects are maintained according to the related firing objects.
- ∨ If there are flame heads or fireworks have been connected to the salve, before we check the salve status on FXcommander all personnel should be cleared from the danger area. For fireworks the safety distance is according to local laws and regulations.
- ∨ It is recommended to use at least 1.5mm² double-core stranded wire for the bus. It is required to distinguish between positive and negative.
- ∨ It is recommended to use fireproof and frost-resistant cables for the bus. The flame-retardant material will prevent the cable from igniting in an open flame, thereby greatly reducing the probability of bus short-circuit due to fire. The antifreeze property of the bus can ensure that the bus is still soft in a low temperature environment.
- ∨ If the bus is close to fire-prone areas (such as next to cakes), in order to avoid the bus being ignited and causing a short circuit, it is recommended to wrap the bus in these areas with tin foil.
- ∨ No matter wireless or wired mode, please always install battery for slaves.
- ∨ The device shall not be altered and applied to other use purpose.

▲ Product Description

PyroSlave X16 is a 16-channel firework igniter specially designed for pyro technician and stage special effects professionals. In order to adapt to extreme outdoor applications, PyroSlave X16 equipped with robust aluminum housing, touch keys, metal connection terminals. PyroSlave X16 can be operated both wired and wireless. Wireless mode with dual band antennas communicate simultaneously, preventing signal interference on a single frequency band. The 2-wire PBUS technology used in wired communication can realize power supply while communicating.

▲ Functional Characteristics

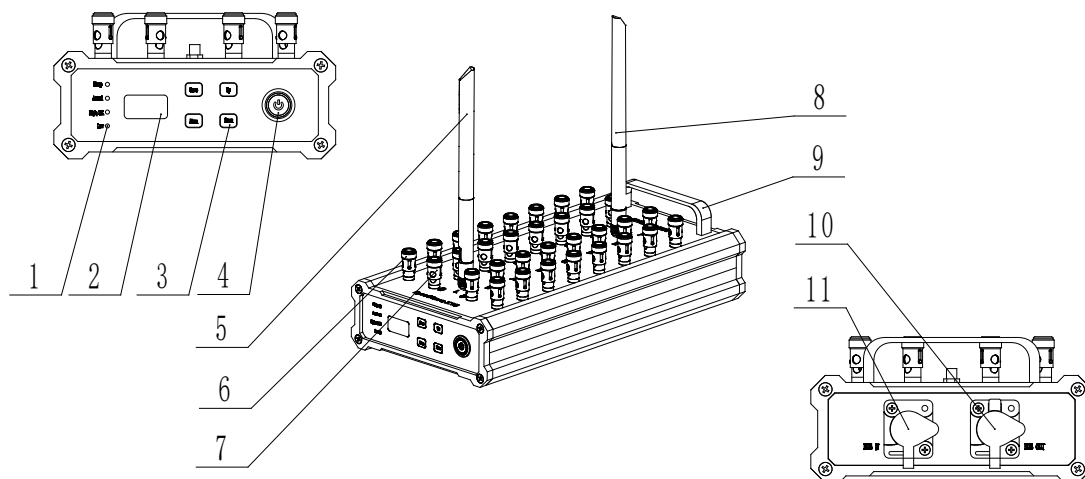
- ∨ Robust aluminum housing and metal connection terminals, waterproof and dustproof as well as prevent the impact of sparks drop from fireworks.
- ∨ Can be operated both wired and wirelessly
- ∨ Wired mode with 2-wire PBUS technology can realize power supply while communicating, ensure continuous working
- ∨ PBUS bus with long transmission distance and strong load capacity. Supports mounting 64 slaves at the end of a 2000m with 1.5 mm² twin-core cable.

- \
- \ Wireless mode with dual band antennas communicate simultaneously, preventing signal interference on a single frequency band.
- \ Wireless mode with 4 wireless channel, 65536 ID, ensure the safety firing. Only when FXcommander and Slave with exactly the same wireless channel and ID before they can communicate.
- \ Firing precision 100 firings/s
- \ 2 * M10 hole convenient for truss installations

▲ Technical Specifications

- \ **Model:** PyroSlave X16
- \ **DIMENSION:** 335×165×85mm
- \ **WEIGHT:** 2.8kg
- \ **OUTPUT:** 16
- \ **TRIGGER INDICATE:** LCD display and record
- \ **ADDRESS:**256 (00 to FF)
- \ **CONTROL:** Dual-band wireless, 2-wire PBUS (communication + charging)
- \ **WIRELESS RANGE:** 600m
- \ **WIRED RANGE:**2000m
- \ **FIRING VOLTAGE:** 24V
- \ **FIRING CURRENT:** 5A
- \ **FIRING DURATION:** 500ms
- \ **RESISTANCE TEST:** YES
- \ **BATTERY:** 4 * 18650 cell, 4.2V, 2500mAh per piece
- \ **OPERATION TIME:** 60h, sleep mode 2 weeks, wired communication non-stop
- \ **CHARGING CONTROL:** A PyroAdaptor support 25 units PyroSlave X16
- \ **CHARGING TIME:** Appr. 6h
- \ **WATERPROOF LEVEL:** IP65
- \ **MINIMUM FIRING INTERVAL:** 10ms

▲ PyroSlave X16



- 1: Indicator light;
- 4: Power switch;
- 7: Negative output clamp (BLACK);
- 10: BUS IN;

- 2: Screen;
- 5: Low frequency antenna;
- 8: High frequency antenna;
- 11: BUS OUT

- 3: Button region;
- 6: Positive output clamp (RED);
- 9: Handle;

Operation Panel



1. LED Display Area

Sleep: Sleep state indicator light; blink every 3s in sleep mode, OFF in normal mode

Armed: Ignition state indicator light; stays ON when received ignition or pre-ignition commands

High/RX: High-frequency signal receiving indicator light. Blink once every time received high-frequency signal

Low: Low-frequency signal receiving indicator light. Blink once every time received low-frequency signal

2. Button Functions

Menu: Switch interface to setup parameter

Up: Parameter Up

Down: Parameter Down

Save: Confirm and save parameters

Note: If not operated for 30s, the button will become invalid and needs to reboot machine to reactivate.

3. Connectors Region



Bus IN: PBUS input (2pin negative, 3pin positive)

Bus OUT: PBUS output (2pin negative, 3pin positive)

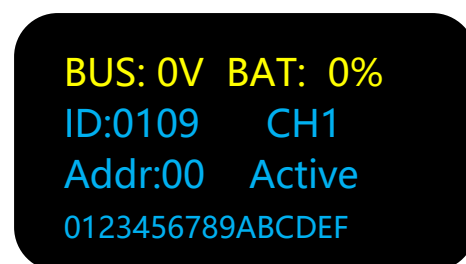
4. Main Interface

First Line: BUS voltage and Battery level

Second Line: Wireless customer ID and wireless channel (CH1, CH2, CH3, CH4)

Third Line: Address and Status (Active / Arm)

Fourth Line: already activated position and alarm information

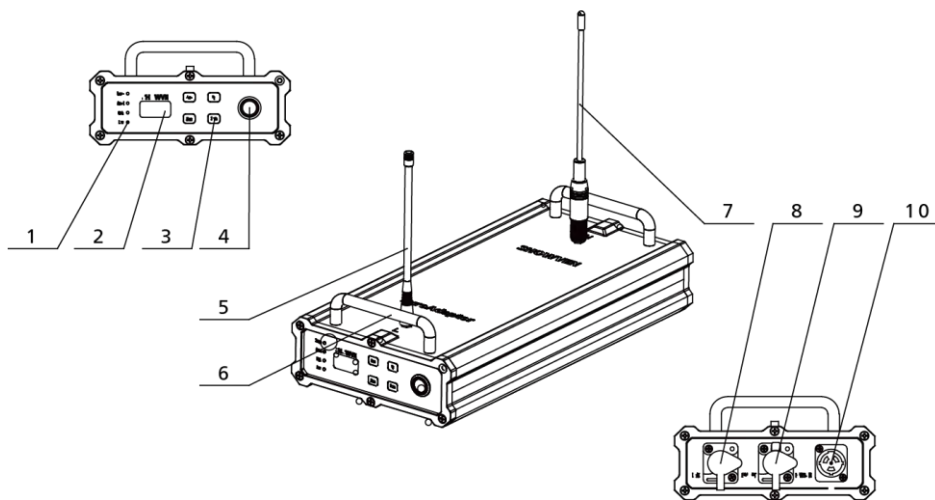


Menu Setup

Press "MENU" to switch through setup menu

Menu	Range	Default	Explanation
TEST			Press "Save" can test the resistance value between each pair of output. The resistance value is between 0~100Ω.
Address	00~FF	00	Address setup
Wireless Channel	Ch1, Ch2, Ch3, Ch4	Ch1	For wireless communication, FXcommander Channel and Slave Channel must be the same. It can also be modified on FXcommander.
Customer ID	0000~FFFF	0102	For wireless communication, FXcommander ID and Slave ID must be the same.
Wireless Mode	Receiver/Bridge	Receiver	Receiver is normal wireless mode; Bridge is wireless bridge mode, after receiving command from wired communication, the wireless signal can be forwarded, and this function can be used to increase the wireless distance.

▲ PyroAdaptor



1: Indicator light;
4: Power switch;
7: High frequency antenna
10: Power IN;

2: Screen;
5: Low frequency antenna;
8: Download interface;

3: Button region;
6: Handle;
9: Bus out;

Operation Panel



1. LED Display Area

Charge: charging status indicator light; Stays ON in charge mode, blinks slowly in transmit mode.

Armed: Ignition state indicator light; Stays ON when received ignition or pre-ignition commands

Rx: High-frequency signal receiving indicator light. Blink once every time received high-frequency signal

Tx: Wired signal transmit indicator light. Blink once every time transmit wired signal

2. Button Functions

Menu: Switch interface to setup parameter

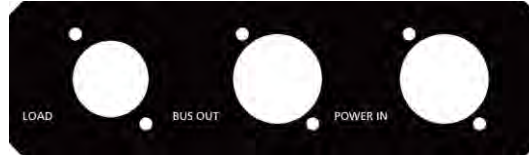
Up: Parameter Up

Down: Parameter Down

Save: Confirm and save parameters

Note: screen display will switch to main interface if there is no operation in 15s.

3. Connectors Region

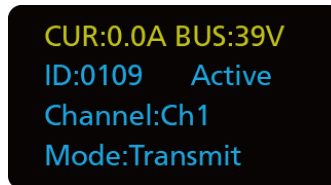


LOAD: Software update interface

BUS OUT: PBUS output (2pin negative, 3pin positive)

POWER IN: 100-240VAC, 50~60Hz power input

4. Main Interface



First Line: BUS current and BUS voltage

Second Line: Customer ID and PyroAdaptor status (Active / Arm)

Third Line: Channel (CH1, CH2, CH3, CH4)

Fourth Line: Current mode (Charge / Transmit) and alarm information

Menu Setup

Press "MENU" to switch through setup menu

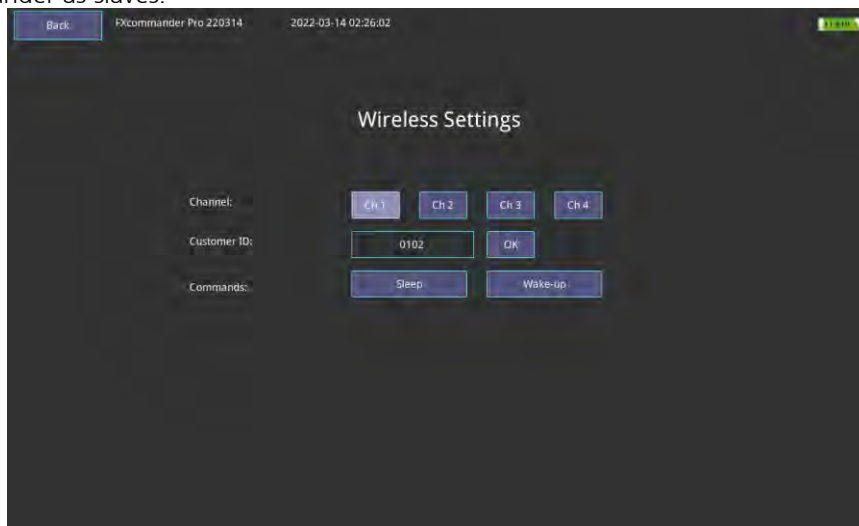
Menu	Range	Default	Explanation
Mode Select	Transmit / Charge	Transmit	Charge Mode: just charging, charging time appr. 6h. wired communication is not possible. Transmit Mode: wired communication between adaptor and slave, can also realize low power charging for slaves.
Customer ID	0000~FFFF	0102	For wireless communication, FXcommander ID and PyroAdaptor ID must be the same. For fast setting, Customer ID can be adjusted by first two digits and last two digits separately.

△ Operation

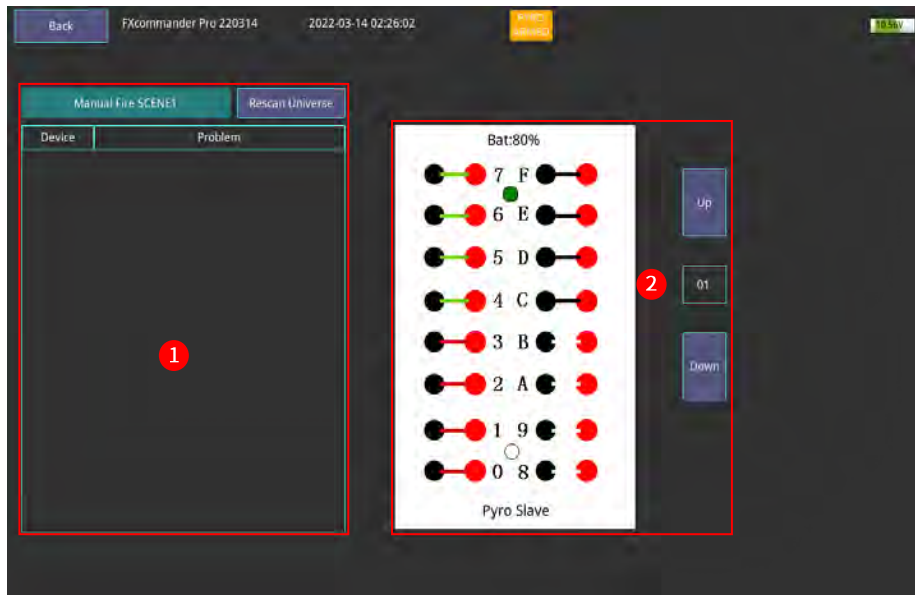
Wireless Operation



1. Turn OFF slave, connect igniters on slave; install both antenna for slave, turn ON slave, set "Channel", "Customer ID" for slave (all slaves which controlled by the same FXcommander, please set same Channel and ID), set different "Address" for each unit of slave.
2. Turn on FXcommander, enter "Setting" interface find "wireless pyro setting", click enter we can enter "Wireless setting" interface, please set the same "Channel" and "Customer ID" for FXcommander as slaves.



3. Enter "Check Slave" interface of FXcommander to check the igniter's connection status. Switch ON "Pyro Arm".
Region 1: Check the igniter status of the set file.
Region 2: Check the detailed status of PyroSlave.
Bat: 80% shows battery level.
Two small circles in the middle shows the high frequency (the upper one) and low frequency wireless signal respectively (Green – signal good, White – no signal).
Line between each group of black and red dot shows igniter status:
Green: used in the cue, connected.
Red: used in the cue, not connected.
Black: not used in the cue, but connected.
White: not used in the cue, not connected.
"Up" and **"Down"**: switch through slaves.
Address range for igniter is between 00~FF.



4. Switch off "Pyro Arm", back to main interface. Enter "Manual Fire" of FXcommander to edit desired effect manually, after finish programming, switch ON "Pyro Arm", when the "Armed" indicator light of PyroSlave was ON means it is ready to fire. Press and hold "Deadman" on FXcommander, and press "Fire" to firing current CUE manually. After firing, PyroSlave will display the triggered igniter position on screen.
5. PyroSlave "Sleep" and "Wake-up" setting. In order to extend the battery life, we can set the PyroSlave to "Sleep" status in "Wireless setting" interface of FXcommander remotely. Please switch back to "Wake-up" state before use the slave.

Important Notice:

- 1) Pay special attention to the battery level of PyroSlave when use wireless communication mode, to avoid slave power off due to low battery.
- 2) Two antennas named H/L is different, do ensure they are installed to the correct position.
- 3) It is risky not be able to query the status of the slave. Possible reasons are: Beyond the wireless coverage, wireless interference, slave is out of power, wrong setting, the antenna is installed incorrectly.

Wired Operation



1. Turn OFF slave, connect igniters on slave; Turn ON slave, set "Wireless" to "OFF" status, set different "Address" for each unit of slave. "Customer ID" is useless under wired mode.
2. Install antennas on both FXcommander and PyroAdaptor, the distance between FXcommander and PyroAdaptor should within 5m.
3. Connect PyroAdaptor and PyroSlaves in sequence with XLR end cables. We suggest connecting the last slave back to the PyroAdaptor to form a closed wiring loop. In this way even there is wire fall out among the loop, setting off still can continue to carry out. And a XLR Y-splitter adaptor cable (2 Female to 1 Male) is required.



4. Turn ON PyroAdaptor, set the "Mode Select" to "Transmit", set Customer ID (suggest to set it different from Customer ID on slave). Check the voltage on slave, if it is above 12V, and High-frequency signal receiving indicator light blinks every few seconds means communication is good.
5. Turn on FXcommander, enter "Setting" interface find "wireless pyro setting", click enter we can enter "Wireless setting" interface, please set the same "Channel" and "Customer ID" for FXcommander as PyroAdaptor.
6. Enter "Check Slave" interface of FXcommander to check the igniter's connection status. Switch ON "Pyro Arm" can check the battery level of each slave and status of each igniter on slaves. If fail to find the slave means communication is abnormal or setting is incorrect.
7. Enter "Manual Fire" of FXcommander to edit desired effect manually, after finish programming, switch ON "Pyro Arm", when the "Armed" indicator light of PyroSlave and PyroAdaptor were ON means it is ready to fire. Press and hold "Deadman" on FXcommander, and press "Fire" to firing current CUE manually. After firing, PyroSlave will display the triggered igniter position on screen.

Important Notice:

- 1) When use wired mode, please pay attention to line loss issue. The bus current displays on PyroAdaptor should be controlled within 2A in Transmit Mode. The more the PyroSlaves, the greater the bus current. The communication current of a single slave is about 0.01A. If the cable is too long or too thin, the bus voltage may drop below 12V and cause communication failure. If the bus current is greater than 5A or bus voltage is less than 10V, may be there is short circuit of the wire or certain slave faulty.
- 2) If PyroSlave receives a wired signal, it will automatically block the wireless function. If power OFF the PyroAdaptor, PyroSlave fail to receive a wired signal, and the wireless function will be turned on automatically after 20 seconds (only when PyroSlave "wireless" function at ON status).
- 3) If starting from a certain slave machine, the bus voltage is not displayed, the problem might be the connection cable disconnected or the positive and negative terminals connected incorrectly.

Wireless Bridge Operation

Wireless bridge function can extend the wireless communication distance. The principle is to set one of the PyroSlave as a bridge transponder, connect the PyroAdaptor and the bridge slave with a cable. The bridge slave will communicate with other PyroSlaves wirelessly. The specific operations are as follows:



1. Turn OFF slave, connect igniters on slave; Turn ON slaves, set different "Address" for each unit of slave. Set the bridge slave unit by setting "Wireless mode" to "Bridge".
2. Install antennas on both FXcommander and PyroAdaptor, the distance between FXcommander and PyroAdaptor should within 5m. Connect PyroAdaptor and bridge PyroSlave unit with cable.
3. Turn ON PyroAdaptor, set the "Mode Select" to "Transmit", set Customer ID (suggest to set it different from Customer ID on slave). Check the voltage on slave, if it is above 12V, and High/RX indicator light blinks every few seconds means communication is good.
4. Turn on FXcommander, enter "Setting" interface find "wireless pyro setting", click enter we can enter "Wireless setting" interface, please set the same "Channel" and "Customer ID" for FXcommander as PyroAdaptor.

5. Enter "Check Slave" interface of FXcommander to check the igniter's connection status. Switch ON "Pyro Arm" can check the battery level of each slave and status of each igniter on slaves. If fail to find the slave means communication is abnormal or setting is incorrect.
6. Enter "Manual Fire" of FXcommander to edit desired effect manually, after finish programming, switch ON "Pyro Arm", when the "Armed" indicator light of PyroSlave and PyroAdaptor were ON means it is ready to fire. Press and hold "Deadman" on FXcommander, and press "Fire" to firing current CUE manually. After firing, PyroSlave will display the triggered igniter position on screen.

Important Notice:

To avoid wireless signal crossover, the Customer ID and Channel of the PyroAdaptor should be different from those of the PyroSlaves.

▲ Slave Charging

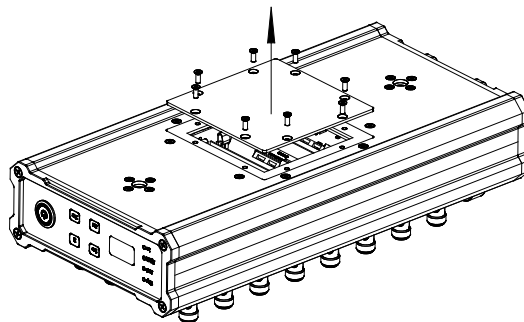
1. Connect all PyroSlaves in series and connect to PyroAdaptor as below picture shows.
2. Connect PyroAdaptor to power supply, turn on and switch the "Mode select" to "Charge" mode.
3. PyroSlave can be charged no matter the power is turned on or off.
4. To avoid line loss, the cable connect PyroAdaptor and PyroSlave, or between PyroSlaves should be as short as possible (such as 1m).
5. A PyroAdaptor can support charging up to 25 PyroSlaves at the same time.
6. If the bus current is greater than 5A, the number of slaves should be reduced until the bus current is less than 5A. If the bus voltage is less than 10V, there should be a fault. It may be a short circuit or a slave fault.



Charging Connection Diagram

▲ Battery Installations

Remove the battery chamber cover at the bottom of PyroSlave as shown in the picture. It requires 4 pcs of 18650 lithium cells.



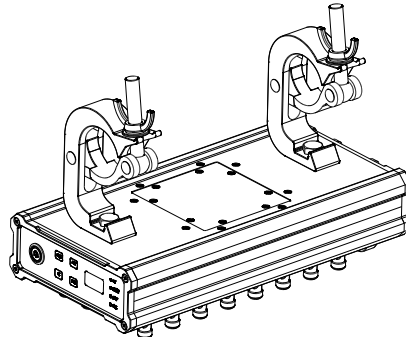
Important Notice:

- 1) Pay attention to the positive and negative polarity of the battery when installing the battery
- 2) After install the battery please use PyroAdaptor to charging it to fully charge the battery.
- 3) If the battery voltage fluctuates greatly during charging, it means a certain battery cell is faulty. In order to find out the faulty battery cell, please measure the voltage of each battery after charging for a long period of time, the faulty battery with voltage less than 3V.

- 4) To avoid damage to the lithium battery due to lack of power, please pay attention to the power of lithium battery from time to time, it is recommended to charge the slaves once per month.

▲ Truss Installations

For truss installations, screw two clamps into the two M10 threaded holes on bottom of the machine.



▲ FAQ

1. **In the same show, can some PyroSlaves use wired communication and some PyroSlaves use wireless communication?**
Yes, for the PyroSlaves using PBUS wired communication please turn off the wireless function; For the Pyroslaves with wireless communication please set the ID in consistent with the PyroAdaptor. Of course all igniters should have different addresses.
2. **A unit of PyroAdaptor support for 64 units PyroSlaves, what if there are more than 64 units slaves required in a show?**
In order to avoid the communication abnormalities due to the bus line loss is too large leads to the bus voltage at the igniter terminal drop to 12V, we recommend a unit of PyroAdaptor maximum support for 64 units PyroSlaves. In case there are more than 64 PyroSlaves required for a show, please just use multi PyroAdaptor, and all PyroAdaptor set the same ID to realize simultaneous communication, for example, 2 PyroAdaptor can drive 128 PyroSlaves.
3. **If one of the four 18650 cells of the PyroSlave is damaged, can it still work?**
In wired communication mode a damaged 18650 cell or missing battery (battery level shows 0%) it can still work normally, cause the bus wire can charge for slaves. But we recommended to install battery even in wired communication mode.
In wireless communication mode, as long as the battery is not completely disconnected, even if a certain 18650 cell is dead and can't be charged (the battery power is unstable when charging, and there is a jump of more than 10%), the PyroSlave can still continue to work. Please find out the damage 18650 cell and replace it after the show.
4. **Can we replace battery for PyroSlave on site?**
Yes. If we find the battery of PyroSlave is low, please replace it with fully charged battery directly. So in wireless mode we suggest to prepare some backup fully charged battery in case needed.
5. **Can regular DMX cables be used as communication wires for PyroSlaves?**
Regular DMX cable is too thin and line loss is relatively high, we can use it when total length is less than 100m. If total length exceed 100m, please use at least 1.5mm² (American Standard 15AWG) twin-core multi-strand wires, it can work without shielding, such as power cable. It is required to be able to distinguish between positive and negative, the negative pole is connected to the 2PIN of XLR connector, and the positive pole is connected to the 3PIN of XLR connector.
6. **Can the PyroSlave be exposed to rain?**

The PyroSlave with IP65 waterproof level and can be used in rain. But please do NOT soak in water. Due to the output terminals are exposed, it may with poor ignition or false triggering in rain, so for outdoor use please wrap the PyroSlave with PVC plastic film to prevent rainwater from immersing.

7. How to check the status of PyroSlave before use?

We can check the status on FXcommander, but due to the check function can only make sure whether the igniter is well connected, can't guarantee each output terminal can trigger the ignition normally. We suggest make a test light such as a small 24V5W light bulb, connect the bulb to the output terminal we want to check, in this way we can judge whether the output terminal is normal by simulate the ignition and observing the light. In the mean time we can test the operation effect in this way.

△ Warranty Instructions

- ∨ Sincere thanks for your choosing our products, you will receive quality service from us.
- ∨ The product warranty period is one year. If there are any quality problems within 7 days after shipping out from our factory, we can exchange a brand new same model machine for you.
- ∨ We will offer free of charge maintenance service for machines which with hardware malfunction (except for the instrument damage caused by human factors) in warranty period. Please don't repair machine without factory permission.

Below situations NOT included in warranty service:

- ∨ Damage caused by improper transportation, usage, management, and maintenance, or damage caused by human factors;
- ∨ Disassemble, modify or repair products without permission;
- ∨ Damage caused by external reasons (lightning strike, power supply etc.)
- ∨ Damage caused by improper installation or use;

For product damage not included in warranty range, we can provide paid service.

Invoice is necessary when applying for maintenance service from SHOWVEN

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