MICROSMARTSLAVE

Compact wired ignition module

Instruction Manual

PiroshoW
PROFESSIONAL ARTISTIC SOLUTIONS

www.piroshow.com

Connectors

Chrome bushings for

Nutrition

Built-in cover
MicroSmartSlave

Introduction

Each MicroSmartSlave has a double and autonomous internal operating circuit: the first, which requires a power supply of only 5v, has the function of allowing ID assignment and line test operations, the second of 50v (a voltage far higher than other similar modules of other companies) is the one responsible for performing ignitions.

The two silver ferrule connectors are used exclusively to receive power from the Master FullPower or SuperSlave and to establish the communication of information, via electric wire.

CAUTION: Do not confuse these connectors with a TRIGGER INPUT!! Since the MicroSmartSlaves do not have an internal battery, they could never work!!

The internal circuit that regulates the operation of the MicroSmartSlave is an exclusive Piroshow project at the forefront of technology that guarantees the pyrotechnician design possibilities, cost savings and guarantee of reliability impossible to obtain in similar competitor products:

- The external power supply system through the double and powerful battery of the Master FullPower or SuperSlave allows a constant power supply for each module with an output voltage of 50v.
- Voltage loss due to the length of the connection cable is avoided, always allowing the possibility of connecting at least 15 igniters in series for each channel, the least number of modules necessary for the staging of the show.
- Master FullPower and SuperSlave are entrusted with the control of the load on the scheduled bus, preventing the possibility of short circuits at the source. Guarantee of reliability.
- The exclusive Piroshow internal circuit allows the passage in the connection cable (a simple electric wire – telephone pair) not only of the power supply, but also of the communications of transmission of the status of the MicroSmartSlave to the Master Full or FullPower.
- Compared to the use of the 4-pole cable, which is necessary for the use of similar modules from other companies, there is an enormous cost saving.
- The two chrome bushings that serve as the input for the power/data transmission cable have been designed to have no polarity. In whatever order the two ends of the telephone pair are inserted, the MicroSmartSlave will always be fully functional. Great ease of use and time savings in set-up.

The connector at the other end of the MicroSmartSlave with respect to the two input bushings of the power / data transmission cables, is protected by a hermetic screw cap and has the sole function of connecting the MicroSmartSlave to the ID Programmer to carry out ID assignment operations and system tests.

1 Guaranteed firing voltage

- Parallel igniters: I insert two or more igniters in the same pair of connectors. The electronics of the MicroSmartSlave do not support parallel connections of igniters.

- Series igniters: Only one igniter is connected to the connector, but they are connected to the electrical wire of the igniter via UYB connectors. The MicroSmartSlave supports the connection of igniters in series.

The number of igniters that can be connected is variable and depends on a number of factors:

- From the distance of the Master FullPower or SuperSlave: the longer the electrical cable connecting the devices, the greater the physical effect of voltage drop on the line.
- By the number of MicroSmartSlaves connected: the more Smart Slaves connected, the lower the output voltage (firing voltage) for each of them.

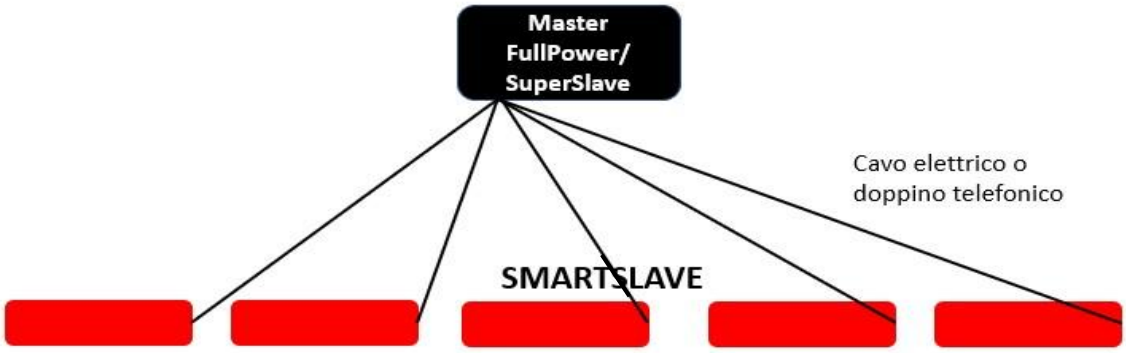
Taking into account these variables, Piroshow guarantees all pyrotechnics the presence of 30V of firing voltage (output) on each connected MicroSmartSlave, even when 5 MicroSmartSlaves are connected to the SuperSlave or 126 MicroSmartSlaves to the Master FullPower (the maximum number allowed). Being able to count on 30v voltage means being able to connect up to 15 igniters in series for each of the 30 channels present in each MicroSmartSlave!!

It is a good habit to insert the igniters before the MicroSmartSlave is connected to the Master FullPower or SuperSlave.

2 How to connect the MicroSmartSlave

1. "Radial" connection

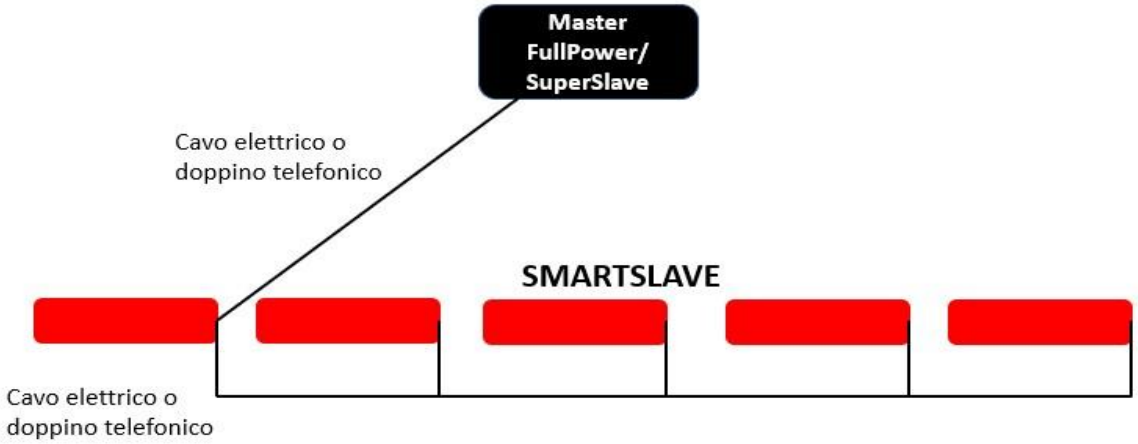
Each MicroSmartSlave is connected to the Master FullPower or SuperSlave via a separate electrical cable.



2. "Cascading" connection

When this connection mode is used, only the first MicroSmartSlave of those present in the firing system is connected to the Master FullPower or SuperSlave.

The other MicroSmartSlaves, on the other hand, are connected to each other "in a cascade", as if it were a single cable that connects them all.



Once the show has been positioned on the ground and all the connections have been made, it is possible to verify the real firing voltage through the line test operation via ID Programmer, Master Full or Master FullPower.

The internal electronics of the MicroSmartSlave and the external power supply system via Master FullPower or SuperSlave allow for a minimum interval between one ignition and another of only 0.05 sec. Although it is theoretically possible (in the event that each connector is connected to only one igniter), Piroshow advises the pyrotechnician not to run two or more channels of the MicroSmartSlave at the same time but to take advantage of the enormous firing voltage guaranteed by connecting in series a plurality of igniters to be executed simultaneously.

Warranty Conditions

All PiroShow products are covered by an international warranty for production defects and malfunctions in accordance with the provisions of the European Directive 1999/44/EC and Legislative Decree 206/2005 of the Italian State.

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All Piroshow products are covered by an international warranty for manufacturing defects and malfunctions, in accordance with the European Directive 1999/44/EC and the Legislative Decree 206/2005 of the Italian State.

Duration and validity of the warranty

- The warranty is valid for 2 years from the date of purchase.
- It only covers manufacturing defects or malfunctions that are not attributable to improper use.
- The warranty is void in the event of tampering, improper use or lack of maintenance. In the event of delivery of a defective or malfunctioning product, the buyer has the right to a replacement or withdrawal, subject to notification within the legal deadlines.

Rules for the validity of the warranty

To keep the warranty active, you must comply with the following guidelines:

- Each Piroshow module must be used only after careful reading of the user manual.
- Avoid unauthorized access to the firing field and prevent any interference with ignition systems.
- The correct functioning of the modules also depends on compliance with the instructions for use of pyrotechnic items, especially those sensitive to electromagnetic fields.
- Modules declared weather-resistant must be used with a hermetically sealed case. If this is not possible, it is necessary to protect them with suitable covers.
- Where indicated, modules are resistant to heat and ash, but should never be exposed directly to flames or placed too close to fires and effects.
- The communication and wiring ports between the modules are waterproof only if used correctly and with the airtight caps closed, except for the time strictly necessary for connection.
- Use only undamaged modules, with no visible or suspected damage. In the event of a malfunction, do not use them or attempt repairs yourself.
- The modules must be checked before use, especially in the case of rental to third parties.
- The ports and connectors should be cleaned regularly to prevent dirt buildup.
- Maintenance and repair of Piroshow products may only be carried out by authorized personnel. Any opening of the module by a third party will result in the immediate forfeiture of the warranty.

Improper use of a module can compromise the safety of the operator, assistants and the public!

Safety rules

The following rules are used to better understand the most relevant safety regulations. The safety standards are the result of our experience and daily contact with our customers and allow the safe application of all components of our radio-controlled ignition systems. Piroshow is pleased to welcome further suggestions from pyrotechnicians to further improve the indications relating to safety in the implementation and execution of the shows. The following safety rules are part of the instructions for all our systems. The instructions should be made available to all persons who are involved in this topic in your company. Any technical device can potentially cause errors. Incorrect use, damage, wear and tear and aging favor the introduction of errors. The Piroshow electronic ignition system is the most valid support for pyrotechnics for the electronic ignition of shows and to enhance their artistic creativity, but it relates to a type of material, pyrotechnics, dangerous by their very definition. This is why these rules were born.

1. Smoking and holding utensils capable of creating sparks is always prohibited in the performance area
2. Depending on the pyrotechnic items to be used and the local conditions, implement all necessary fire and first aid measures.
3. Always take into account national laws, technical standards and instructions on the use of pyrotechnic objects and their clauses.
4. Make sure that unauthorized persons do not have access to pyrotechnics and ignition systems.
5. Observe the safety zones prescribed by law and by the manufacturer. Keep strangers at a safe distance with barriers.
6. The instructions of the manufacturer of pyrotechnic articles must be observed.
7. The use of ignition installations should only take place after appropriate precautions.
8. Piroshow products indicated as expressly resistant to atmospheric agents must be used with a hermetically sealed case. If, for any reason, this is not possible, the pyrotechnician must take care to protect the modules with suitable covering.
9. Where expressly indicated, Piroshow products are resistant to heat and ash produced during the performance of the show. However, it is important that the modules are not placed in the immediate vicinity of the fireworks and pyrotechnic effects. In any case, Piroshow modules are not resistant to exposure to flames.
10. For the execution of fireworks displays, use only intact products that are perfectly intact in all their parts. In case of suspected malfunction, do not use the module and do not try to make DIY repairs. The use of a non-intact and fully functional module jeopardizes the health of the pyrotechnician, his assistants and the spectators! The inspection and testing of the modules is essential in the case of rental by other pyrotechnic companies!
11. Thunderstorms or electrostatic fields that form before thunderstorms can cause accidental ignitions. With the storm approaching, Piroshow recommends suspending the work of setting up the show and securing what has already been placed.
12. The igniters must be inserted into the appropriate terminals or quick clips, making sure that the relative Slave 30ch 100v, Easy Fire, Smart Slave modules are switched off or without connections to supply power. Any pyrotechnic effect is in any case to be considered active from the moment the cables are connected to the ignition device, regardless of whether the device is on or off.
13. Always check the integrity of the electrical wire connected to the igniter.
14. Do not allow fuzes and their cables to be close to or in contact with current-conducting materials if there is a risk of electrostatic discharge.

15. Always check the integrity of the electrical wiring cables of the system.
16. Avoid all sources of early ignition, including high voltages of electric, magnetic and electromagnetic fields and voltage sources.
17. Mobile phones, radio transmitters and in general all instruments with an internal battery represent a danger that is too often underestimated: if handled at the same time as the ignition igniters are installed, they can cause accidental ignition. WARNING!
18. Fireworks, depending on their composition, can produce ionized gases. These cause the air to become a conductor of current. Ionization processes, if they take place near high voltage cables, can cause deadly overlaps for those nearby. Keep in mind that the air currents on the ground can be different from those found at a height of a few meters.
19. Use cables that are long enough for your safety and that of the appliances.
20. During the test or simulation phase of the show, it is a good habit, despite the extreme safety of Piroshow testing procedures, that no pyrotechnician or worker is present in the vicinity of the pyrotechnic stations.
21. **Pre-show checks:**
    Always carry out a complete functional check of all modules and connections **before the day of the show**, to detect malfunctions in advance.
22. **Planning of firing sequences:**
    Carefully check that **the programmed ignition sequences** are consistent with the safety distances and the provisions provided for in the safety plan of the show.
23. **Technical documentation available:**
    Always keep **the manuals of the modules and control units** easily accessible during the preparation and execution of the show.
24. **Use of PPE (Personal Protective Equipment):**
    All personnel involved must wear **flame-retardant clothing**, safety shoes, and hearing and visual protection equipment when performing the show.
25. **Battery management:**
    Avoid **overheating or short-circuiting the batteries**, and dispose of damaged batteries immediately in accordance with current environmental regulations.
26. **Extreme environmental conditions:**
    In the presence of **strong winds**, **heavy rain** or **snow**, suspend operations if minimum safety conditions are not guaranteed.
27. **Staff training:**
    Ensure that each operator has received **appropriate technical training** in the use of the modules and is familiar with emergency procedures.
28. **Contingency Plan:**
    Always have an **action plan in place in the event of an accident or malfunction**, with roles assigned and escape routes clearly identified.