

MASTER MANUAL

User Manual



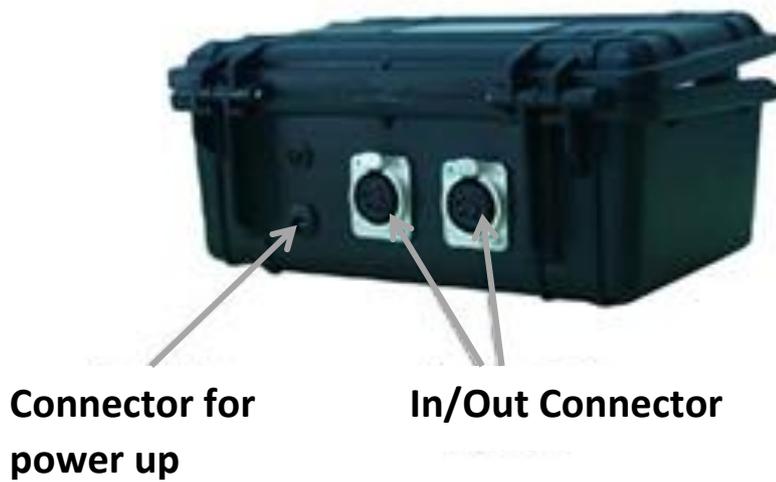
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1 Wiring of the firing system

You need to create a connection via wire or via radio to establish a communication between Master manual and the ignition modules. A correct wiring system allow the instantaneous communication of the commands of the Master.

Master Manual has two exit on the back of the case, they allow the connection of wire with XLR connection with two or four poles. The presence of two exit simplify the management of the connection via wire or via radio modem in case of big show (for example, one exit for the right part of the show, the other for the left part.

Cable Communication Mode:

Connect via a cable with a two-pole XLR connector with the nearest Slave 30CH 100V or Piroshow Power Box. The identity of the module with which the connection is made is irrelevant when wiring the system. Then connect the Socket 30CH or the Power Box via their XLR input left over via additional cable with the next next module.

Proceed to the connection of all the modules required for the performance of the show. Make sure that the first two connecting cables from the Master to its two first cascade wiring modules are long enough to ensure a proper safety distance for the pyrotechnic.

Radio Modem Communication Mode:

The radio modem connection allow to place the Master at a distance that guarantee the safety of the pyrotechnician and his staff during the show. You need at least two Piroshow radiomodem to do a via radio modem connection.

Connect via wire with a XLR connector with four poles with RTX Piroshow module. Place the other radio modem in the place of fire and connect it via wire with four poles at cascade via wire as shown before and repeat the operation with other two radio modems.

2 Show with one or more placemento and definition of the concept of Slave per line

The internal software of the Master Manual module allow to manage the execution of simple shows or even of bigger and more complex shows in many simultaneous fire placement.

When the show has more than one fire placement, all the Slaved used create a Fire LINE. In the moment of the execution, it is sufficient to choose the channel to execute to made all the Slaves in the same line will execute the same channel. This way allows to execute show with complex choreographies with simplicity.

IMMAGINE

In the example screenshot, we chose a solution with 5 placement.

The total number of the available lines in a show is not fixed but depends on the number of the Slaves per line and having as reference point the total number of 126 Slaves that the Master can manage.

IMPORTANT: depending on the number of the modules you use in the show, you have to assign an IDENTITY that follow a numerical increasing order to the Slaves or Smart Slaves. It is always better to distinguish the Slave from the Smart Slaves by assigning, for example, at first the identities of the Slave and then the identities of the Smart Slaves.

Show with one only position

If the show is simple and has an only position of fire every LINE will have ONE ONLY SLAVE. At the moment of the execution, once you completed the set ignition on the Slave of the first line, use the pointer to the next line and continue to the next ignitions.

In this case the pyrotechnician will have 126 LINES, each one composed by one only Slave.

Show with more positions

If the show has more fire positions, each LINE will be composed by as many Slaves as the simultaneous set fire positions.

At the moment of the execution, the Master will send the fire signal for the selected channel in all the Slave in the same LINE at the same time.

Depending on the complexity, the shows with more than one simultaneous fire position can be:

1. Shows with a constant number of post

In this case the entire show follow the same scheme of execution from the beginning to the end: all the development phases, from the introduction, to the various passages, to the end will be structured in the same number of posts set (NUMBER OF SLAVES PER LINE).

In this case the number of AVAILABLE LINES depends on the number of Slaves per line set: for ex: if I set 3 Slaves per line, the available lines are the result of $126/3=42$, so 42 available lines; if I set 5 Slaves per line I will have 25 complete lines with 5 Slave, the last one with an only Slave.

2. Show with a variable number of posts

In case of very complex show, the number of simultaneous fire posts can vary depending on the various phases of development:

For ex: a show with an opening of 7 posts for the duration of two lines, a central part with pyrotechnic passage with 3-4-5 and 8 posts and an ending of 12 posts.

In case of show with a variable number of posts, the pyrotechnician will always set as the number of Slaves per line the higher number of posts. (in the previous example the number will be 12). Higher is the number of Slaves per line, lower is the number of available line. If in the case of 12 constant Slaves per line the number of available lines was 42, in case of 12 Slaves per line, the pyrotechnician will have 10 lines of ignition.

If, depending on the line, the available lines are insufficient to manage the whole show, we'll need to use two Master Manual: the first to execute the first part of the show, the second to end it.

Or, to have a unified management of the show, we need two or more Master Full and use the possibility of NO LIMITS setting!

In case of shows with a variable number of posts, to manage the identity of the Slaves or Smart Slaves present in every line, the pyrotechnician will have to use the Ghost Slave instrument.

3 Ghost Slave

Ghost Slave is a Slave that is present virtually only in the system, to theoretically maintain, the coherence of the starting settings.

If we consider the example made before, if we want to set a show with an opening of 7 posts for the duration of 7 lines, a central part in pyrotechnic passage of 3-4-5 and 8 posts, and an ending with 12 posts, we need a number of Slaves per line =12 and so set the IDENTITY of the Slaves present in the various line in the following way:

1	2	3	4	5	6	7	<i>8 ghost</i>	<i>9 ghost</i>	<i>10 ghost</i>	<i>11 ghost</i>	<i>12 ghost</i>
13	14	15	16	17	18	19	<i>20 ghost</i>	<i>21 ghost</i>	<i>22 ghost</i>	<i>23 ghost</i>	<i>24 ghost</i>
25	26	27	<i>28 ghost</i>	<i>29 ghost</i>	<i>30 ghost</i>	<i>31 ghost</i>	<i>32 ghost</i>	<i>33 ghost</i>	<i>34 ghost</i>	<i>35 ghost</i>	<i>36 ghost</i>
37	38	39	40	<i>41 ghost</i>	<i>42 ghost</i>	<i>43 ghost</i>	<i>44 ghost</i>	<i>45 ghost</i>	<i>46 ghost</i>	<i>47 ghost</i>	<i>48 ghost</i>
49	50	51	52	53	<i>54 ghost</i>	<i>55 ghost</i>	<i>56 ghost</i>	<i>57 ghost</i>	<i>58 ghost</i>	<i>59 ghost</i>	<i>60 ghost</i>
61	62	63	64	65	66	67	68	<i>69 ghost</i>	<i>70 ghost</i>	<i>71 ghost</i>	<i>72 ghost</i>
73	74	75	76	77	78	79	80	81	82	83	84

ATTENTION: every line is composed by an consecutive ID number equal at the max number of Slaves per line, assigned to real or Ghost (virtual) Slaves.

In the example this number is 12, so the first line has IDs from 1 to 12, the second one from 13 to 24 and so on. You have always to consider this when you assign the IDs for the show, paying attention to the type of show you want to make. In the example of the second line, we'll have to assign the IDs from 13 to 24; if, by mistake, we assign the ID:8 to the first Slave of the second line, this will be executed at the same time of the Slave in the first line!

Bigger is the difference of the number of posts in the phases of the show, bigger is the presence of Ghost Slaves.

The use of Ghost Slaves allows the possibility to perform very complex show that have an high level of choreography in a very simple way. For the right execution, the show must be planned

rightly and the test phase have to be done with the scheme of the show to control the right identity of the Slaves and Ghost Slaves.

4 Starting and battery status verification

Turn the switch on, the upper line visualize the charge status of the battery with a double indication:

the status of the entry voltage is shown on the left:

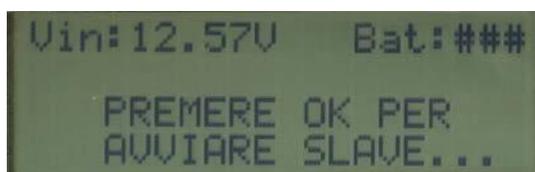
- 12V or higher= optimal voltage.
- up to 11,7V=WARNING! The state of charge could be insufficient to complete a middle or a big show.
- 11,6V or less= re-charge immediately! Battery insufficient.

On the right the symbols # indicate the state of charge:

=full charge battery

= partially charged battery, the autonomy could be not sufficient to complete a middle or a big show.

= re-charge immediately! Battery insufficient.



NOTE: if there is a big discordance between the indication of the entry voltage and the graphics – for ex 11,7 e ### – send the Master to the customer service.

The lower line of the first screen invite the pyrotechnician to “Start Slave” by pushing OK.

Before the settings of the Slave, you have to complete two simple operations:

1. Set the number of Slave per line
2. Activate the connection RTX in case of wiring of the system with presence of radio modem.

5 Activation of the via RTX connection and setting of the number of Slaves per line.

Push TEST after the starting screen.



The Master ask the pyrotechnician to set the number of Slaves per line to activate the via RTX communication, if at least a couple of Radio modem is present.

You can activate (ON) or de-activate (OFF) the RTX function through the pointer in the LIN column. You can set the number of Slaves per line you desire through the pointer in the SLV column.



Note 1: remember that the number of Slaves per line is always equal at the number of posts present in the show and that this setting will be used from the Master at the moment of the execution of the show and in the system test phase.

Note 2: the Master always maintains the last settings in memory.

If you are working on a new show and you forget to set the number of Slaves per line or the presence (or absence) of RTX communication, the results of the ID Req and the system test will be never coherent with the ones in the list of the pyrotechnician for the new show.

Push OK.

You return to the initial screen.

6 Slave Starting: ID REQ function

Start the Slaves by pressing **OK**.

Slave startup is the **ID req** function.

The starting of the Slaves imply that all the modules present in the fire system are already correctly wired and that all the modules with internal batteries are ON.

Importance of the ID REQ function

1. L"Slave Start" activates the IDentity REQuest function and so the research of all the identity (modules) connected to the Master Manual. This is a preliminary and preparatory activity for all test and firing functions.
2. The ID REQ function give 2 results:

- indicates how many and which modules are correctly connected to the Master Manual
- establish the bi-directional communication between the various modules and the Master; from now on, every module is “listening” the action that arrives from the Master.

3. Once it found the connected modules, ID REQ allow to execute :

- request information = system test function
- action order = stand by / wake up
- fire order

N.B. = Each Piroshow module memorizes the last settings even if it is OFF (to save Energy before the show), so if there is even an only modification to the system you need to push RESER e re-do the ID REQ (Slaves start).

ID REQ function times

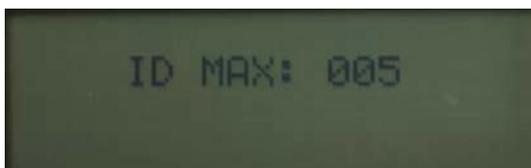
- via cable: ONLY 2 SECONDS, for all the system (up to 126 Slaves/Smart Slaves)
- via RTX: 15 SECONDS (1,2 seconds every 10 Slaves)

RTX OFF case

If the RTX function is set **OFF**, the Master will show the number of Slaves in the systems.

RTX ON case

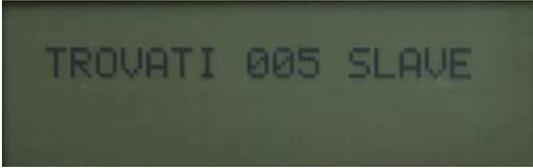
If you have chosen **RTX ON**, at the Slaves starting and before to show the number of present Slaves, the system invites the pyrotechnician to set the **ID MAX** that is the ID of the Slave with the higher number.



In this way, if the number of the connected Slaves is not high, the test go faster.

NOTE: if the max ID set is not right, the ID REQ won't find the Slaves present in the fire system. For ex: if the show need the use of 5 Slaves with the ID 1-2-3-87-113, the max ID to insert is 113, not 5! If you insert the number that corresponds to the total of the Slaves (5), the two identities 97 and 113 won't be found by the system. Clearly, if we have the last IDs with numbers 97 and 113 instead of 4 and 5 we'll lose all the advantages related to the time of response of the system and if the first Slave has a number higher than 1 the show is compromised because the system will need to control all the other units.

Piroshow suggests to use always the Slaves or Smart Slaves with ID numerical code lower for the show (or to re-assign a new ID) and to proceed without skips, if the type of show allows this operation.



TROVATI 005 SLAVE

If the Master doesn't find any Slave or the total number of the Slaves of the show:

- short circuit in the wires or broken wire: change the wires
- the system is connected via RTX, se ON RTX in the starting phase.
Verify that there is no magnetic field that can interfere with the right radio communication: move the position of the Radio Modems – go to a wire communication.
The Radio Modem are not supplied with power:
verify that the modules are ON
Insert the connection wire correctly
substitute the wire is needed
- All the module ore OFF (Slave or Power Box)

Once you find the problem, push **RESET** e repeat the operation.

7

Verification of the module identity and line test

Once visualized the result of the ID REQ, push **OK**. The display visualizes the recap of the first Slave LINE



LIN:001 N:005 SL:001
SPARARE CH: 00

The column **LIN:001** confirms that is the first line of the show.

The column **N:005** indicates that there 5 Slaves in the first line.

The column **SL:001** visualizes the lower identity between the Slaves in the first line.

The indication **FIRE CH:00** confirms that the **Master is unarmed** and so the chance push of the FIRE button would have no results.

By scrolling with the pointer, the pyrotechnician can verify the right presence of all the found identities in every single line.

Piroshow suggest the pyrotechnician to do the **verification taking the scheme of the show and the indication of all the module identities in every single line**. This is more important if we talk about a show with lots of posts and the presence of Ghost Slave.

Failure to match results:

1. The number of the Slaves per line that is visualized is too low respect the set one:
 - the Master visualizes the result of a precedent show and it was not upgraded.
 - you have set a wrong number of Slaves (too low than desired). Push RESET, then TEST then n° SLX LIN=XX and verify the correction
2. The number of the Slaves is too high (when you use Ghost Slaves): there is a problem of ID attribution in the single Slaves level. Solution:
 - verify the project of setting of the show in the list of ignition, verify the identities of the Ghost Slaves.
 - correct the identities of the single Slaves, push RESET e repeat the operation.

NOTE = The Master always maintains the last settings in memory (Slaves per line). If there is no correspondence, push RESET, set the right number of Slaves per line and repeat the operation.

Line test ➡ Now, the pyrotechnician can proceed to the line test of all the Slaves of the fire system. The line test allows to verify the right settings of the show.

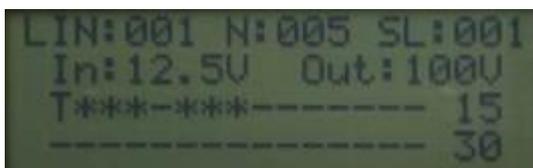
Scroll the identities of the single Slaves in each line through the yellow pointers under the voice SLV. The counter stops when you reach the max number of Slaves per line. You have to pass to line 2, by using the yellow pointer under the voice LIN and being careful to not forget to test any Slave.

Proceed this way until the end of the test.

Push the button **TEST** for every selected Slave.

The screen will show the summary of test of the selected Slave:

- the state of the internal battery charge through the indication of the entry voltage.
- the state of the exit voltage: the fire one.
- the channel test of the Slave organized in two levels: from channel 1 to 15 and from channel 16 to 30.



Channel test key:

*: present and functional igniter.

- : absent or not rightly functional igniter.

T: presence of a TRIGGER or impedance problem (the connected igniter in series is too high for this channel).

NOTE:

- In the Slave the exit voltage is about 100V.

- in the Smart Slave the voltage depends on the length of the connection wire and on the related fall of voltage.

If you find errors in the test phase:

correct the error, push **RESET**, verify the test for the single Slave.

IMPORTANT!

You have to do the test with the maximum care, being sure that the channel is set to 00.

As long as the selector of the CH is on 00, the Master is unarmed and the FIRE! Button is OFF. This prevents the possibility of ignition by chance during the test. If the selector is on 01 the Master is armed! **WARNING!!**

To unarm the Master, once you selected by mistake the channel 01 or higher and so the FIRE! Button is red lighted, you have to bring again the Master in the position 00. Anyway, to do this operation to shift the channel toward the bottom and to 00 is not sufficient. The Master, once in 01 position is ready to the ignition so it would consider the search of 00 as an error (which wouldn't have any associated ignition).

To go back to channel 00 you have to:

- push the up arrow button and the LIN column, pass to the next grouping line. Once passed to the next line, the counter of the channel will start to zero. The Master is unarmed again.
You can go back to LINE 1 and continue the test.
- Alternatively, push **RESET**. All the settings of fire will be lost but the Master will be immediately unarmed.
Repeat the test operation to continue.

8

Stand by Function

Once finished with success all the test phases, if all the modules of the system of fire are rightly connected and there no error or problem, waiting for the show, you can put the entire system in stand by (low battery usage mode).

After that, switch the Master OFF is always the better choice. When you put the Master OFF, it memorize the stand by state of the system.

When ON again, the Master will ask the pyrotechnician if he wants to interrupt the stand by state. Push OK if you are ready to the show or if you want to re-do the system test.



All the features of the Master will be active and you can proceed as you desire.

9**Execution of the show – FIRE**

Switch the Master ON or interrupt the Stand by, re-start the Slaves. After the visualization of the found Slaves, the Master show the summary.

The master is ready for the execution of the show but not yet armed.

You have only to go from channel 00 to channel 01 to arm the Master and made it ready to the execution. The FIRE! Button is red lighted.

Push FIRE! To send every channel in execution.

The Master will shift to the next channel.

Based on the list of fire, the pyrotechnician will select the channel of the Slave in the desired list. You can act simultaneously both on the channels and on the lines through the pointers. Every time that the Master go to the next Slave or to the next line and then go back to the previous, the Master will always prepare the channel that follow the last executed in the selected Slave/line.

10**TRIGGER**

TRIGGER is the electronic/digital impulse that give the Slave 30 CH 100V the signal to execute, a single ignition or a sequential ignition.

By using this ignition modality, if we have a sequential ignition, the dispatch of an only TRIGGER impulse is sufficient to do the whole series. If we have single channel ignition in autonomous manner, we need as many TRIGGER impulse as the channel to ignite.

To put in execution a **TRIGGER** we need to select the channel in position -1.

depending on the position of the fire channel, push the down arrow repeatedly until the screen of the indication “TRIGGER dispatch” and the relative counter.



LIN:001 N:005 SL:001
INVIO TRIGGER N:01

This will allow you to check the number of triggers triggered and those still to be performed with respect to the ignition list and set in the slave.

Obviously in the case of multiple Line Slave, the single trigger pulse will turn on all the Slave in the line.

NOTE: The Smart Slave module does not support TRIGGER mode.

Always remember that the Slave module TRIGGER function, when connected to a Master module, always passes through the XLR connector cables and not through the two orange bushes on the switch side!

In the case of double TRIGGER connection, the operation of the Slave module is jeopardized!

11 Test execution during the show

You can always repeat the test operation during the show. This possibility offered by the Master does not end itself.

In case of adverse climatic conditions, strong winds or small accident, the pyrotechnician will have the possibility to check the right continuation of the show, or eventually skip without interruptions the compromised portions, or decide interrupt the show if there is any risk for the public and the staff.

Warranty conditions

All the Piroshow product are covered by international warranty for flaws, bugs or malfunctions following the European Directive 1999/44/CE and the Italian D.Lgs. 206/2005.

If the product you receive is not functioning or bad functioning the customer has the right to the substitution or the right of withdrawal, after the immediate communication following the laws.

All the Piroshow products are high tech condensate, the warranty on the right function extend for two years from the date of purchase and depends on the right use of the product, on the right maintenance and on the lack of alteration.

Norms of validity of the warranty:

- Each module have to be used after the reading of the user manual and the instructions it contains.
- Be always sure that not authorized people will not go on the field of the show and interfere with the ignition system.
- The Piroshow modules are appointed to the ignition of fireworks so the their safety and the safety of the show **depends even** on the right execution of the norms of the single fireworks. Be sure to have a special regard to the ones that are sensible to electromagnetic fields.
- The Piroshow products that are indicated as resistant to atmospheric agents have to be used with the case hermetically closed. In case this is not possible, the pyrotechnician have to cover the modules to protect them with an adequate covering.
- Where expressly indicated, the Piroshow products are resistant to heat and to the ashes produced during the execution of the show. Anyway do not position the module too near the fireworks. In any case, the Piroshow module are not resistant to flames.
- The exits, the doors, and the entries that allow the communication e the wiring between the Piroshow modules are guaranteed in their impermeability only trough a correct use. The hermetic top have to be **perfectly closed**, in exception of the time you need to connect the wires for the show execution.
- Use only intact product for the show. If you think there is any problem, do not use the module and do not try to reparations. The use of a not intact module put at risk the health of the pyrotechnician, of his assistants and to public of the show! The inspection and the test of the module is basic in case of rent from other fireworks companies!
- All the connectors and the entries have to be cleaned after the shoe.
- Piroshow is the only company that can repair and do the maintenance service. Considering the assembly method and the internal technology, the opening of the module is not authorized and is cause of decline of the warranty

Safety regulations

The following rules have to be followed to better understand the more relevant safety regulations. The safety regulations were born from our experience and from the daily contact with our customers and permit the safe application of all the components of our of remote-controlled ignition systems. Piroshow is happy to receive further suggestions from the pyrotechnicians to improve the indications that regard the safety in the execution of the shows.

The following safety regulations are part of the instructions of all our systems.

The instructions have to be made available for all the people that are in contact with this aspect of your company.

Every technical system can potentially cause errors.

An erroneous use, damages, usury an ageing advance the introduction of errors.

The Piroshow electronic system of ignition is the most valid support for the pyrotechnician for the electronic ignition of the show and to exalt his artistic creativity, but is in relation with materials, firework, that are dangerous.

This is the motivation that made this rules.

1. Smoking and keeping tools that can make sparks is always forbidden in the zone of the show.
2. Implement all the anti-fire actions and aid actions you need based on the fireworks you use.
3. Respect the National rules, the technical rules and the user instructions of the fireworks and their clauses.
4. Be sure that unauthorized people can't access to the fireworks and ignition systems.
5. Respect the safety zones following the laws and the producer norms. Maintain the extraneous at the right distance from the barriers.
6. The instructions of the producer of the fireworks have to be respected.
7. The use of the installation of ignition have to be done after the right preventative measures.
8. The Piroshow products that are indicated as resistant to the atmospheric agents have to be use with the case with the case hermetically closed. In case this is not possible, the pyrotechnician have to cover the modules to protect them with an adequate covering.
9. Where expressly indicated, the Piroshow products are resistant to heat and to the ashes produced during the execution of the show. Anyway do not position the module too near the fireworks. In any case, the Piroshow module are not resistant to flames.
10. Use only intact product for the show. If you think there is any problem, do not use the module and do not try to reparations. The use of a not intact module put at risk the health of the pyrotechnician, of his assistants and to public of the show! The inspection and the test of the module is basic in case of rent from other fireworks companies!
11. Storms or electrostatic fields that take place before the storm can make chance ignitions. When you notice a storm is arriving, Piroshow suggest to stop the execution of your work for the show and to put in safety the materials you have already put in.
12. The igniters have to be connected in the specific terminal or quick clips, have the cure that the Slave 30 CH 100V, Easy Fire, SmartSlave modules are off or without connections that provide alimentation. Every pyrotechnic effect is anyway to be consider active in the moment the wires are connected to the unit of ignition regardless the system is set On or Off.
13. Always control the integrity of the electric wire you connect to the igniters.
14. Avoid that the fuse and the respective wire have contact with material than can conduct electricity if there is any risk of electrostatic charges.
15. Always control the integrity of the electric system wires.
16. Avoid all the sources of early ignition, alike high voltage of electric, magnetic and electromagnetic fields and sources of voltage.
17. Mobile phones, radio transmitters and all the instrument with internal batteries are a underestimate danger: if used at the same time of the use of the igniters can be cause of chance ignitions. BE CAREFUL!

18. Fireworks, depending on their composition, can produce ionized gas. These gas made the air conductor of electricity. Ionizing processes, if are near the wires of high voltage can made deadly overlaps for the people in the vicinity. Consider that air currents on the field can be different from the ones that are in the height of some meters.
19. Use wires long enough for your safety and for the safety of the system.
20. During the test or the simulation of the show is better that no pyrotechnician and no person is near the position of the fireworks, even if the testing process of Piroshow systems are extremely safe.

