MAF60 serie II

User's manual

October 2026 *(firmware version 3.7) - English -*

This manual is only valid for products corresponding to the version described in this manual.

Before use, carefully read these instructions and you'll be fully satisfied with your new hardware.
FAQ on www.genetec.fr

Genetec, ZA, 84120 La Bastidonne, France. Tel +33 (0)4 90 07 27 79 *www.genetec.fr*

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PRESENTATION :

The MAF60 series II is a 60 Ways digital firing system with a wired remote control.

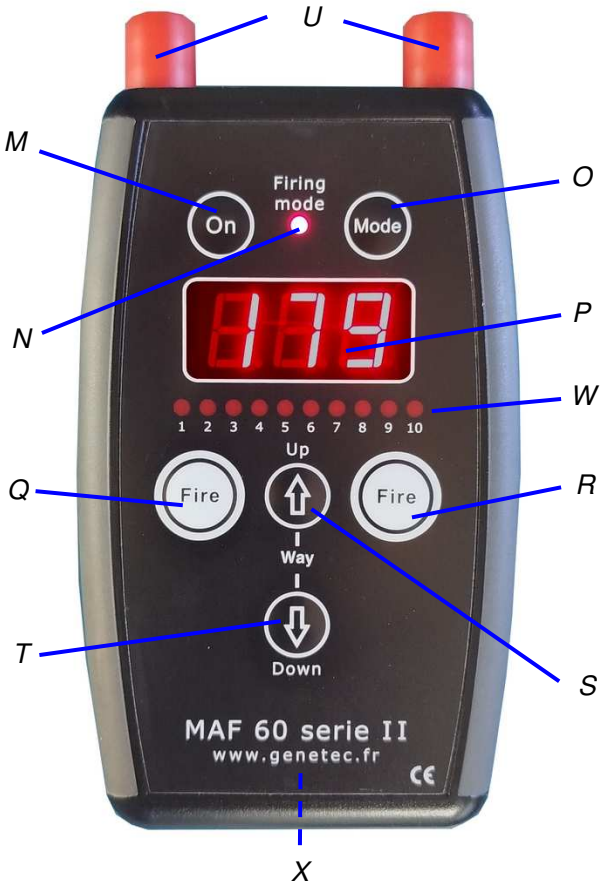
The basic configuration is one wired remote control and one satellite. The satellite is equipped with 60 outputs, but one remote control can drive up to 180 different lines (with 3 satellites).

The satellite is powered with a 12V rechargeable battery (the charger is provided), and deliverers 70 volts maxi impulses (duration 27ms, with a regulated current at 1,2A) at the outputs. The 60 led indicators of the line resistance are calibrated on 70 ohms. The remote control is connected to the satellite by your traditional two-wire, thus not need to envisage an expensive numerical cable. This connection can go up to 5 kilometers. The satellite is equipped with a key to enable the firing mode and with a beacon indicator to check the good wired connection to the remote control.

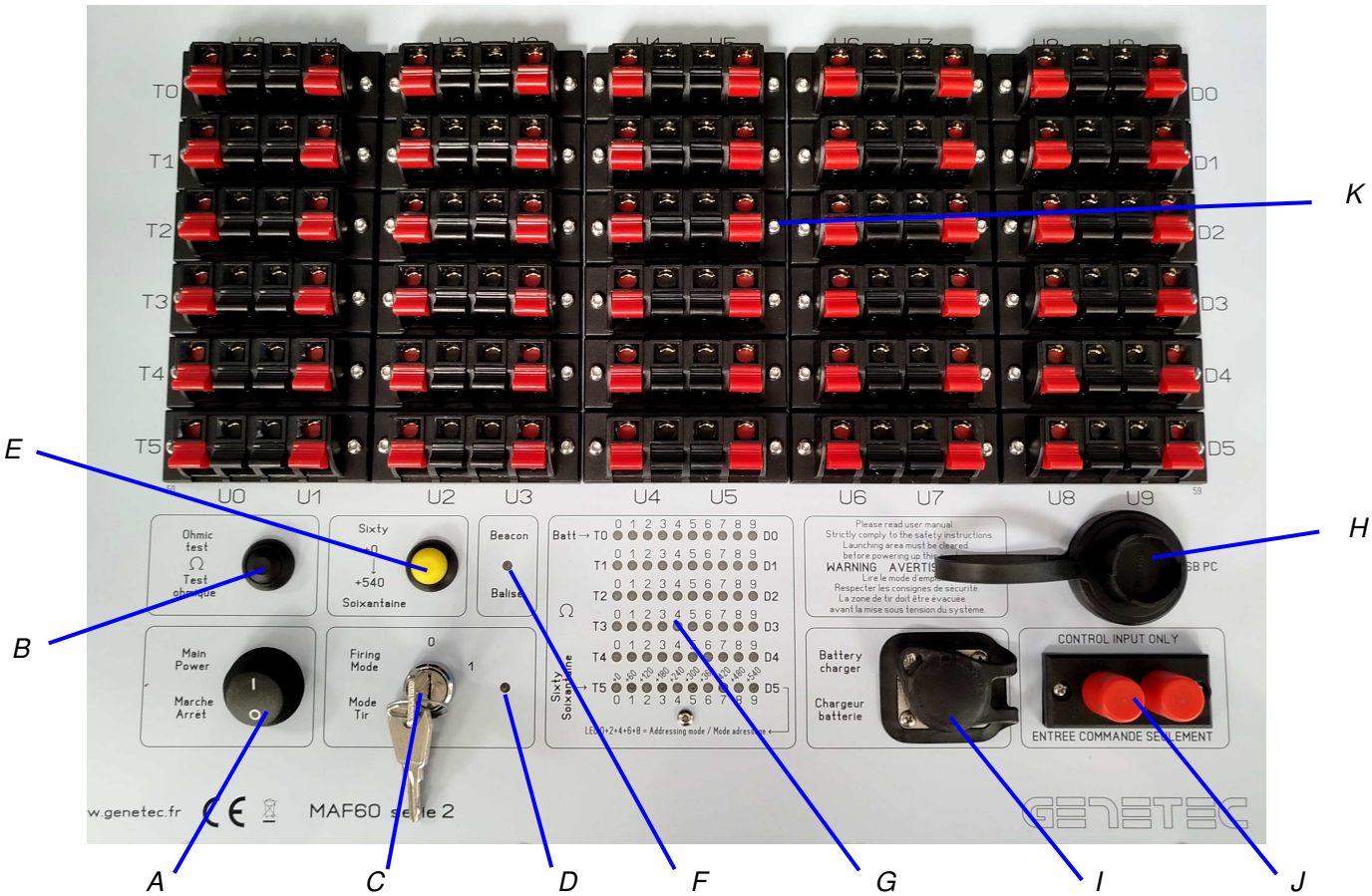
The operator's remote control is easy to use : a luminous display for the selected Way, an automatic step by step advance Way after Way after each shot, two pushbuttons (to advance or move back) for a manual selection of the Way, two firing pushbuttons, two terminals on which you easily connect your two-wire cable which will be connected to all satellites MAF60 series II.

This manual mainly deals with the basic MAF60 serie II system with its manual 180-ways remote control. When using the MAF60 serie II satellite with an OXYDIUM console, refer to the operating instructions supplied with it.

Important : The system you have just received has the latest firmware updates (internal programs), so if you already have MAF60SII series equipment and your new system needs to work with this older equipment, you must update all of it to ensure full compatibility. To do this, visit our website www.genetec.fr under "Updates" and follow the instructions. Updates are free. A device that has had the latest update may be incompatible with a device that has not.



M : On/Off.
N : Beacon emission indicator (flashing) and remote control firing mode activation indicator (steady).
O : Selection mode (beacon or firing).
P : Display of the Way to shoot.
Q : Left firing push-button.
R : Right firing push-button.
S : Manual selection of the Way (up).
T : Manual selection of the Way (down).
U : Terminals for wiring connection to the satellite.
V : USB connector.
W : Various indicators (inoperative on this model).
X : Batteries location (bottom the enclosure).



A : Main power switch.
B : Ohmic test of the lines.
C : Firing mode key.
D : Firing mode led.
E : Pushbutton to select the group of sixty.
F : Led to check the automatic beacon reception.
G : Multi-checks display 60 led.
H : USB connector.
I : Battery charger input.
J : Input from the remote control (or Oxydium device or Oxyradio HF receiver).
K : 60 outputs for the igniter lines.

REMOTE CONTROL MAF60 serie II :

The MAF60 Series II satellite is designed to be remotely controlled with a simple standard two-wire line wire by the standard remote control (or by an Oxydium console).

It is therefore necessary to run a specific control line from the **U** terminals of the remote control to the **J** terminals of satellite. It is with this wired connection that the digital control orders will be transmitted.

Note : If you have several systems MAF60 series II, the elements satellite and remote controls are interchangeable (if they have all the last updates).

This remote control works with 2 x AA alkaline batteries to be installed in the **X** slot located under the case. Observe the polarity. To avoid damaging the metal contacts, insert the positive side of the batteries first, then press the negative side.

To remove the batteries, proceed in reverse order. Do not tap the remote control. Use an object (such as a key, pen, screwdriver, etc.) to remove the batteries, first from the negative side.
When the remote control is switched on, if the batteries are low the display **P** indicates « bat ».
Remove batteries if not in use for a long time.

SWITCHING ON/OFF THE REMOTE CONTROL : Push one time the pushbutton **M** to switch on, another press to switch off. Immediately when the remote control is switched on, it is in automatic beacon mode (a beacon signal transmits each 2 seconds, the indicator **N** lights up each time).
In beacon mode, the display **P** in beacon mode indicates « - - - » and the pushbuttons **Q**, **R**, **S**, **T** are inoperative.

SELECTION OF THE BEACON MODE OR FIRING MODE : To activate the firing mode, push one time the pushbutton **O** : the beacon mode is off. The indicator **N** lights continuously and the display **P** indicated the Way selected to shoot (from 0 to 179). The pushbuttons **Q**, **R**, **S**, **T** become actives. There is no automatic beacon signal transmited when the firing mode is enabled.

FIRING PUSHBUTTON : A simultaneous push on these two pushbuttons **Q** and **R** sends the firing order of the displayed Way. The line is fired within approximately 0.1 sec. A push on only one of these two buttons is without effect. After each shooting, the remote control goes up automatically to the following Way. It is necessary for firing that the remote control and the satellite(s) are in firing mode.
If the satellite is switched on, and its key **C** on “1”, all order of shooting will be effective.

MANUAL SELECTION OF THE WAY : It can be useful to have to select another Way to shoot that the one given by the step by step automatic advance. Each press on the arrow up **S** moves up one Way, Each press on the arrow down **T** moves down one Way.

Note: if the displayed Way is 0, a push on “Down” makes it possible to go directly to 179 or if the displayed line is 179, a push on “Up” makes it possible to go directly to 0.

ALWAYS PRESS BUTTONS MODERATELY

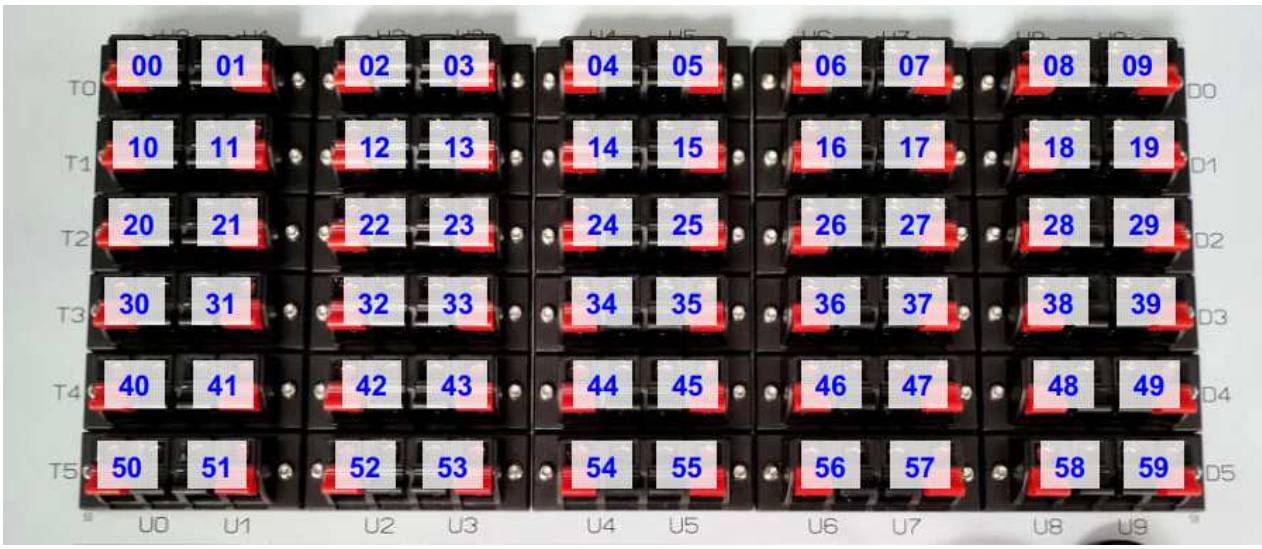
CONNECTION TO THE SATELLITE : To be able to transmit the signals of beacon and firing, the remote control needs to be connected to the satellite by wire. It is on these terminal plugs **U** that you connect standard pyrotechnician double wires which connect the remote control with the satellite(s) inputs **J**. This output is not polarized, thus useless to mark the wires. To connect the wire, partially unscrew the red knob, insert the stripped wire, folded in half, into the hole, and screw it back on, tightening moderately. Be careful not to overtighten the wire's insulation.

If you have to connect several satellites MAF60 serie II, if possible avoid making it directly from these two plugs, but prefer a connection in chain of a satellite towards the following one (see page 10). Do not do short circuit between these two plugs.
*Note : The number of satellites controlled by a single remote control is not unlimited, that mainly because of the repartition weakens the signal in the circuits : with more than 4 or 5 satellites controlled from only one remote control, it is necessary to check attentively the beacon on the led **F** on each satellite.*
If it is necessary to have satellites in more large number, it is advised to use several remote controls, or one Oxydium system.

CONNECTION WITH A PC COMPUTER : The use of MAF60 serie II remote does not require computer. Nevertheless, there is an USB input **V** for firmware updates.

SATELLITE MAF60 serie II :

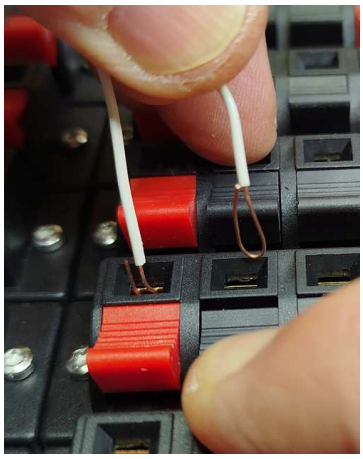
LINES WIRING : Main power switched OFF (0) + firing mode key switched OFF "0".
Your MAF60 serie II has 60 Ways outputs. The push-terminals are numbered by lines and columns: by lines for the tens, and columns for the units. An example: to connect an igniter on the output n°48, locate the line corresponding to ten 4 (T4), and go horizontally to the column corresponding to unit 8 (U8): The two terminals (red and black) being with the intersection of 4 horizontal and 8 vertical is the output 48.



Our systems take as a reference the standard of Davey-Bickford igniters (and most other brands) N28B head, namely a recommended firing current of 1 amp (reminder of the characteristics given by DaveyBickford: Intensity of 100% operation 0.6A, Recommended intensity 1A, average initiation delay 2ms at 1A)
To meet these criteria, the MAF60 satellites provide 27ms pulses of up to 70V with automatic average regulation of the output current between 1.1A and 1.2A
In any case, check the characteristics indicated by your igniter supplier. Carry out preliminary verification tests.
The number of igniters per output can range from one to several dozen wired **in series** depending on the lengths of wire used (the line resistance must not exceed 65 to 70Ω, to simplify count 2 Ω per igniter and 20 Ω for 100m of two-wire).

In winter, when it is very cold, energy yields are lower; be careful not to overload your lines (stay below 45Ω for safety).

Insert the wires of your lines into the clamp terminal blocks, between the moving part and the metal contact. It is recommended to fold the stripped part back on itself by making a small loop, this improves electrical contact by doubling the contact surface, and provides better mechanical strength.
Be careful not to pinch the wire on its insulating sheath part.
Do not strip wires too longs so that they do not touch each other.
There is no common on the output plugs. Therefore, connect only one line per output (one wire on the red and the other one on the black). Do not try to adapt a multicore cable or to connect wire of different lines together.



These terminals are outputs and only outputs: never inject voltage into them *(for example, to force manually the firing of a line with an external battery, always disconnect the line first).*

TO SWITCH ON THE SATELLITE :

The switch **A** power on the satellite : on position 1 the satellite is switched ON, and on position 0 the satellite is switched OFF. The led **D** lights up continuous if switched ON. *The battery level is displayed on the first leds line 0 to 9 (9 is the full charge, and 0 the lower charge).*

The powering up of the satellite MAF60 serie II must be done only if the key "Firing Mode" is on position 0 and the launching area is cleared.

CONTROL OF WIRING, OHMIC TEST :

Once your connections are done, to check the ohmic resistance of the lines :
1. Switch on the MAF60 series II with the switch **A** on position 1.
2. Then, press and maintain the pushbutton **B** of ohmic test. The scan of measurement of the 60 lines is approximatively 2 seconds duration. Check all the red led indicators of the panel **G** corresponding geographically to the wired outputs lights up. If a line's circuit is cut, no wired or too resistive (>70Ω +-5%) the light indicator is unlighted.

Also, you can check with a standard numerical ohmmeter (for a measurement with the ohmmeter, the line must be unplugged from the MAF60 series II).
As soon as the pushbutton **B** is released, the ohmic test stop.
If you have some work to do again on the firework's wiring, switch off completely the MAF60 with **A**.
*Note : It is impossible to perform the ohmic test if the key **C** is on position 1.*

SELECTION OF THE GROUP OF SIXTY :

With the **E** pushbutton. With this selection it is possible for the satellite to work in mode 0 to 59 (add +0), or 60 to 119 (add +60), or 120 to 179 (add +120). Thus with your remote control, you will be able to control 180 different Ways numbered from 0 to 179 according to the selected group of sixty on the satellites.
A satellite can drive 60 different lines. By selecting the group of sixty with the push button **E** (with a 2 seconds press), you choose the sixty of reaction on the satellites.
If you have only one satellite, select the group of sixty +0 (thus it will work from 0 to 59). In this case, on the display panel **G**, on the low line, only the light +0 must be lighted. In the same way, two satellites setted on the same sixty will function simultaneously.

To choose the Ways 60 to 119, press 2 seconds once more on **E** and on the display panel **G** indicator +60 lights on (the indicator +0 remains also lighted). To choose the Ways 120 to 179, press once more 2 seconds on **E** and on the display panel **G** the indicator +120 lights on (indicators +0 and +60 remain them also lighted). An so on for the other groups of sixty.

WARNING : You must ensure that you always selected the correct group of sixty, because if not your satellite will not works.

Note 1 : The choice of the group of sixty is memorized in the satellite, even if the satellite is powered off. Therefore, check systematically at each new service if the system is not remained on the sixty of the previous firework.

Note 2 : The led numbered 3 to 9 corresponding to extra groups of sixty for the Oxydium system (+180, +240...). If you work with the standard basic remote only the 3 first groups of sixty must be used (+0, +60, +120), or the addressing mode.

ADDRESSING PERSONALIZED MODE :

This function allows to change the numbering of the 60 physical outputs of the satellite. This function is not of interest if you have only one satellite MAF60, however is very useful for several satellites because it allows recombination of the outputs allowing both simultaneous and alternate shooting between different satellites, or if you have mini sub satellites SAT2SAT.

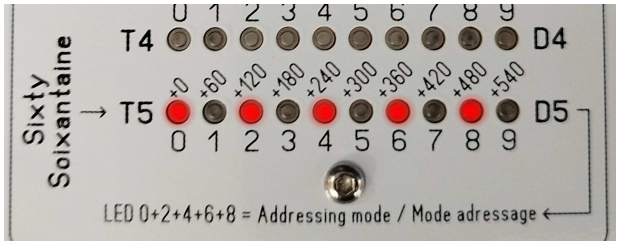
Introduction :

We saw previously that is possible to addressing the outputs of satellites by groups of 60 Ways (because indeed we can set the satellite or on the first group of sixty for having physical outputs that correspond to the Ways 00 to 59, on the 2nd group of sixty for having physical outputs correspond to the Ways 60 to 119, on the 3rd group of sixty for having physical outputs correspond to the Ways 120-179).

The personalized addressing of physical outputs is still based on the same principle, but it is not by group of 60 outputs, it works by individual physical output : each output is individually configurable. The aim is to create a new group of sixty fully personalized.
For example, the physical output 00 of the satellite can become any Way value between 000 and 179 in the context of use with the remote control MAF60 serie II (or up to 598 with a Oxydium console).

The principle is simple: we redefined a new assignment of the 60 physical outputs of the satellite with the "Oxydium suite" software.
Then, successively reprogram the satellites by connecting the PC so that they memorize each new assignment of their outputs.
Even the satellites reprogrammed, they continue to operate normally on the first ten groups of sixty (LEDs 0-9). But after the tenth group of sixty, one more push on the select of sixty button is to active the mode "addressing" personalized, with your own renumbering of its outputs.

The selection of this addressing mode on the satellite is visible by the display on the bottom LEDs line will light alternative one LED on two.

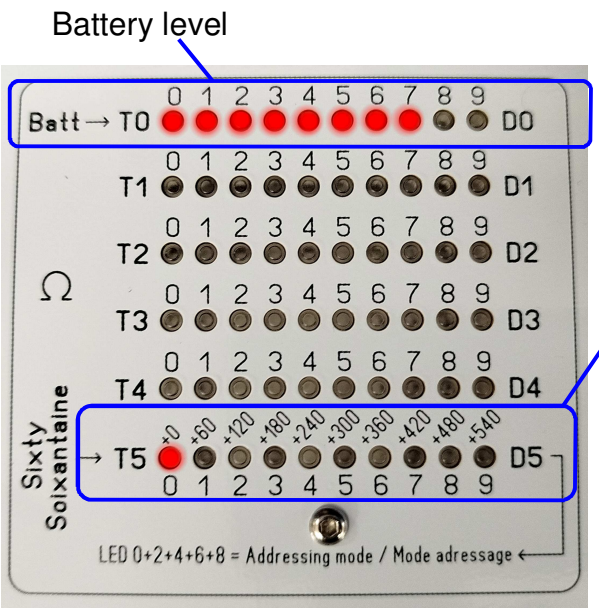


To use this personnalized addressing mode, download the free software "Oxydium suite" (minimum version 3.6) available on our website www.genetec.fr, and the instructions of the Oxydium (in the second part, you'll find the instructions to use the software with all the necessary explanations concerning the personalized addressing of satellites MAF60 series II).

Note: If you do not use this function and you have never reprogrammed your satellite for personalized addressing, selecting this mode on the satellite will be equivalent to the first group of sixty (00-59).
The ohmic test remains unchanged: each led still continues to display the status of the physical output to which it corresponds geographically.

DISPLAY PANEL MULTI-CHECK :

Panel **G** with 60 red leds is on the satellite. This panel gives several functions for the checking :
1/ The top line *(Batt)* indicates the voltage battery level of the satellite. It is permanently displayed (except during the ohmic test) by the leds 0 to 9 (9 is the maximum charge of the battery, and 0 the minimal one, if 0 flashing the battery level is critical).
2/ The lower line *(sixty),* those 10 led indicators display the group of sixty selected.
3/ The totality of the panel displays the line resistances during the ohmic test (the previous display disappears). It is arranged according to the same method as the outputs : by horizontal lines (which correspond to Tens) and vertical columns (which correspond to the Units).



Led « Sixty » number :	Works on Ways :
Led 0 alone	00 to 59
Led 0 and 1	60 to 119
Led 0 to 2	120 to 179
Led 0 to 3	180 to 239 (with Oxydium)
Led 0 to 4	240 to 299 (with Oxydium)
Led 0 to 5	300 to 359 (with Oxydium)
Led 0 to 6	360 to 419 (with Oxydium)
Led 0 to 7	420 to 479 (with Oxydium)
Led 0 to 8	480 to 539 (with Oxydium)
Led 0 to 9	540 to 599 (with Oxydium)
Led 0 + 2 +4 +6 +8	Personnalized adressing

CONNECTION TO THE REMOTE CONTROL : On the 2 terminals **J** you connect the two simple wires who link the satellite to the remote control. Items must be switched off for the connection.
This input is not polarized, it's unnecessary to mark the wires. This link can go up to 5 kilometres with good conditions, nevertheless it is necessary to pass the wire away from potential sources of perturbations (electrical lines, radio-electric systems, HiFi…).
If you need to connect one second satellite MAF60 serie II, you can connect it on those terminals **J** by linking it up simply in parallel . Lightly twist the stripped wires together to perfect the electrical connection. Do not over tighten to prevent cutting the wire.

THE BEACON TO CHECK THE COMMUNICATION :

The satellite has an indicator **F** to check if the orders coming from the remote control are received and correctly interpreted by the satellite. Thus, the control of the wired connection between these two elements is largely facilitated. A beacon signal is automatically emitted by the remote control each 2 seconds*, therefore the indicator **F** lights on 1 second each 2 seconds (lighted for 1 second, unlighted for 1 second, etc.). If it is not the case (no received beacon, or skipped signals of beacon) the communication is bad and it is advisable to check the wire of connection from remote control to satellite.
When the key **C** is in position 1, the control of beacon reception is shut off.

** An Oxydium sends a beacon every 3 seconds (**F** for 1 second, unlighted for 2 seconds, etc.)*

CONNECTION WITH A COMPUTER PC (H): USB input **H** for doing updates allowing to optimize the system, or to program the outputs for using the addressing mode. The updates are free and available on our website www.genetec.fr . Don't forget to download the driver on our website before.

Our products are constantly evolving. When an optimization is available, it is posted on our website. They improve the operation of the devices by having the latest version of the device's firmware. These updates are free, quick and easy to perform, just follow the instructions given as they are. When a system is delivered, it has the latest update. Visit our website regularly to check if new updates are available. The different elements are all intended to work together within your MAF60 series II system, so you must perform them on all the elements of the MAF60 series II (and Oxydium) range in your possession.

ACTIVATION OF THE FIRING MODE :

The MAF60 satellite(s) should only be switched on if personnel are in a secure area.

Chronology :

First turn on the remote control (or Oxydium) in beacon mode.

Then turn on the satellite(s) with button **A** in beacon mode and check one last time that the beacon tops are still being received then only then turn key **C** to position 1, and not the reverse, the indicator **D** located to the right of the key should then flash. Do not switch off the satellite again.

At this point the satellite is ready to fire.

Return to the remote control (or the Oxydium), put it in firing mode and proceed to fire *(in order to preserve the batteries of the remote control it is possible to turn it off while waiting for the start of the show, however when turning it back on leave it for about ten seconds in beacon mode before switching to firing mode).*
For uninstallation all devices must be turned off.

Chronology not to do : Switch on the remote control, put it in firing mode and switch on the satellite and put it in firing mode. Indeed, apart from the security problem, in this order the satellite will never be able to receive a beacon, but at some point the satellite must be able to see the remote control (or the Oxydium console) in beacon mode to synchronize perfectly with it.

GENERAL POWER SUPPLY AND CHARGE OF THE INTERNAL BATTERY (I) :

The MAF60 serie II operate with an integrated lead battery 12V 3.2Ah conferring to the satellite an autonomy of approximately 10 hours.

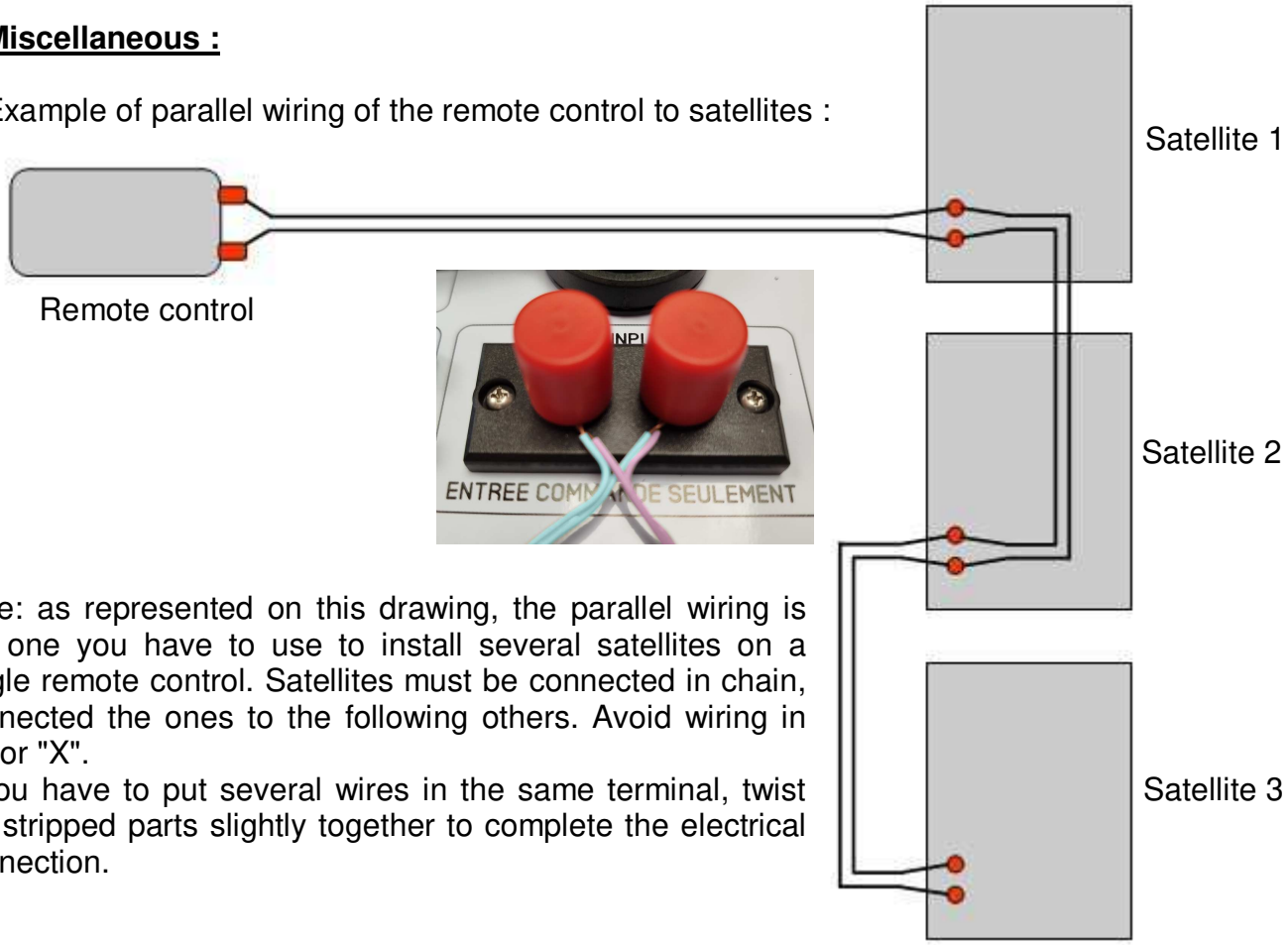
To check the battery voltage :
Switch on the satellite MAF60 serie II with the general power button 0/1 **A**. The level displayed on the first line of leds 0 to 9 (9 = charge maxi 13,1V / 1= charge mini 11,1V). Below the the power supply is too low to supply correctly the system. If led 0 flashing the battery level is critical. (<10.8V).

To charge the internal battery :
The MAF60 serie II must be switched off.
First, remove the cap **I**. Connect on the XLR plug **I** the automatic charger provided. The necessary time can be a few minutes to several hours, in proportion of the initial level of the battery. As soon as the charger is plugged, the light of the charger lights on. When the battery is full charged, this led lights off progressively. Then, unplug the charger and always replace the protection cap.

For a long life of the battery : never discharge completely the battery. Charge the battery after each show, or every 2 month if not used.

Miscellaneous :

Example of parallel wiring of the remote control to satellites :



Note: as represented on this drawing, the parallel wiring is the one you have to use to install several satellites on a single remote control. Satellites must be connected in chain, connected the ones to the following others. Avoid wiring in "Y" or "X".
If you have to put several wires in the same terminal, twist the stripped parts slightly together to complete the electrical connection.

Before using this system for the first time, to familiarize yourself with it, simulate fireworks with igniters alone or with test lamps (Visulamp).

Protect the satellites from incandescent fallout (fireproof cover... see accessories section on our website). Do not place the satellite directly in the pyrotechnic products, but observe a safe distance.

Protect the batteries from freezing (for example, by installing the satellite at the last moment to avoid the risk of power loss). Do not place the device directly in the snow. For example, in particularly low temperatures, it is possible to place the satellite in a thermally insulated case with a hand-warmer. Always protect the MAF60 Series II from bad weather or excessive heat. Cover the satellite if necessary. A soaked electronic system risk a malfunction. Be careful with seawater, which is conductive and corrosive, as well as sand, which can cause the blocking of mechanisms. If the device is wet, let it dry with the lid open.

Do not use solvents to clean your system; only a little water on a soft cloth (possibly with a little window cleaner added).

The remote control/satellite cable connection is designed to be made with ordinary two-wire fireworks wire. However, it is also possible to use sheathed telephone wire for greater mechanical strength.

The satellite control input can only be connected to a MAF60 remote control, an Oxydium, or an Oxyradio module, and nothing else, otherwise the communication modem will be deteriorated.

The gold contact area of the rotary communication terminals must always be clean. Do not remove the red insulating protective covers from these knobs (dust, ESD discharge, etc.). Check that the connect the bare wire to the gold conductive part of the terminal.

Average lifespan of the internal power supply battery: 4 to 5 years.

CHARACTERISTICS :

Dimensions : 464 x 360 x 176 mm (satellite closed IP65), 160 x 88 x 25 mm (remote control).
Weight : 6,2 Kg (satellite), 220g (remote control).
Power supply (satellite) : Lead battery sealed 12V 3.2Ah
Power supply (remote control) : 2 alkaline battery AA 1V5
Average satellite consumption (switched on, in stand by) : 100mA (1,2Watt)
Power delivered on output when firing : DC pulse of 27ms regulated at 1,2A with adapative voltage up to 70V.
Maximum peak current to the battery during a firing pulse: up to 8A (varies depending on the line load)
Average residual consumption of the satellite (switched off) : 0.05 up to 0.1mA.
Average consumption of the remote control : from 40mA to 100mA depending of display (0.12/ 0.3 Watt)
Average residual consumption of the remote control (switched off) : 0.002mA (0.006 Watt).
Average battery life of the satellite (stand by mode), for information only :10 hours.
Average batteries life of the remote control, for information only :14 hours.
Reaction time (time between pressing the firing button and activating the output): approximately 0.1 sec.
Minimal time between two manual shoots : 0,5 sec.
Minimal time between two automatic firing orders with an Oxydium: 0.1 sec.
PC connection remote control and satellite: USB-B
Automatic resistance measurement of the wired lines (displayed with 60 red leds). Set to 70 ohms.
60 outputs.
Current of automatic resistance measurement : 10 mA max.
Temperature of use : +5°C à +45°C.
Warranty : 2 an.

SAFETY INSTRUCTIONS :

Never work near the fireworks when the system is switched on. Switch off and always keep the key with you. It's always the last person to leave the fireworks area who should keep the key.

The MAF60 satellite must be placed at a safety distance from the fireworks to allow for safe intervention.

Switch on the satellite only if the key firing mode is on « 0 ».

The line's resistance checks should not done until everyone has left the dangerous area.

Storage, recharging, transport : the firing systems must be switched off and away from pyrotechnic products.

Always strictly comply to the safety instructions

The user must study these operating instructions

THE LAUNCHING AREA MUST BE CLEARED BEFORE POWERING UP THE SATELLITE.

DECLARATION U.E.
DE CONFORMITE

CE

Nous, Genetec, déclarons sous notre propre responsabilité que l'appareil suivant :

Console numérique marque GENETEC modèle MAF60

Est conforme aux exigences essentielles listées ci-dessous :

EN61000-6-3
EN61000-6-1

Information supplémentaire :
Ce produit est conforme à la CEM directive 2014/30/UE concernant le rapprochement des législations des états membres relatives à Compatibilité ElectroMagnétique, ainsi qu'à la directive européenne RoHS 2011/65/UE.

Les produits ont été testés dans une configuration normale.

La Bastidonne, le 09/12/2016.

Pour Genetec
J-L Vincent
co-gérant