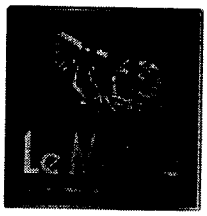
Le Maitre Ltd



RapidFire 12S Sequencer

Important Safety Notes:

The RapidFire sequencer has been designed to operate specifically with Le Maitre pyrotechnic effects. All specifications apply exclusively to the use of these effects.

The RapidFire has been designed to sequentially fire pyrotechnic devices electronically and it is important to be aware that it does not have individual physical channel isolation. As with all pyrotechnic effect networks, it must be assumed that any device connected to an armed electronically switched firing system is capable of ignition, regardless of the actual channel selection. With this in mind, safety requirements and assessments will dictate that all effects connected to the RapidFire sequencer will be within the same safety zone. It is the responsibility of the user to conduct the necessary risk assessments, and to be qualified at the appropriate level.

The RapidFire electronic control section is composed of discrete logic as opposed to a micro-processor format in order to reduce the possibility of glitch induced runaway, and increase operational safety factors.

Any pyrotechnic device fired with this unit will have associated documentation regarding its safe use, and this should be strictly adhered to.

If pyrotechnic effects are connected to the RapidFire, it should never be left unattended. The 'Arming' key should only be inserted at the time of firing, and should never be left in place.

Specification

12 channel electronically initiated firing system.
Constant current, capacitive discharge firing pulses ensures correct firing energy.
Low sided switched constant current pulse control, high side channel selection.
High current rugged discrete control mosfets.
Discrete logic circuitry enhanced safety.
Mains or externally powered.
Standard Le Maitre 'Pod' sockets and 'Pro' quick connects.
Key switch 'arming' with warning Led.
Cable Securing tie bar.
Shrouded 'Firing' button.
Continuity Led.
Analog 'Rate' control and indicator Led with a variable firing range of greater than 1 sec per ignition up to 15 ignitions per sec.
Single channel select and fire.
Auto step channel select and fire, where releasing the 'Fire' button automatically steps to the next channel, ready for firing.
AutoRun firing from the pre-selected channel at a stepping speed set by the 'Rate' control.
'Reset' button selects channel 1.
'Select' button steps through channels.
'Preview' button allows the 12 channel Leds to be viewed at the currently selected AutoRun rate for better visualisation.
'Mode' button selects one of the three methods described above – Single, AutoStep, AutoRun.
A Lockout status Led illuminates to indicate that the electronics is held in a 'no channel' selection state after the 12th channel has fired, to prevent a loop around the channel numbers.
External input power socket for d.c. voltage supplies from 18 – 36 Volts.

Firing Capabilities – As a mains powered unit there will be 35v d.c. available to a sequence of pyrotechnic effects. This allows up to 30 Ohms of cable/pyro to be used per channel. A typical figure here would be 100 metres of 0.5mm cable with 15 pyro effects in series. Using an external 18v d.c supply, the amount of effects would be reduced to 8 in order to ensure the correct firing conditions.

When using an external power supply, it is important to use the correct voltage combined with current capability. The RapidFire relies on the power supply to recharge the firing capacitors between fire pulses, and if the supply is not capable of doing so, the sequencer will not operate correctly. The current capability of any external supply should be at least 1 amp. Unregulated power supplies should not be used, as there may be a risk of exceeding the maximum voltage level. Standby current is in the order of 50mA.
The centre pin of the external power input is positive.

Control Panel Features

Isolating illuminated mains power switch.
Key operated '**ARM**' switch with **Led** indicator. In the off position no ignition is possible. The Arm and Fire switches are in series and provide double isolation.
Test button and **Led** for checking the continuity of any selected channel.
Lockout Led. Indicates that the sequencer has gone passed the 12th position and channel selection is locked at no selection.
Reset button to move the channel selection to the 1st channel.
Select button to move through and select the desired channel. If held this will scan through the channels at a slow rate. This feature allows the 'Test' to be held down for a convenient way of checking all channels.
Preview button to give a real time view of the selected sequencer speed via the channel select Leds, when this mode is selected.
Mode button to select one of three modes of operation.

1.. **Single**. A channel is pre-selected to fire. The selection remains after firing.
2.. **AutoStep**. The channel selection will step to the next channel after firing.
3.. **AutoRun**. The channels will fire in sequence at the selected rate and stop after the 12th channel has fired at the 'lockout' position.

Rate control knob selects the number of ignitions per second that the sequencer will fire.
Fire button will connect the ignition voltage source and provide a signal to initiate ignition pulses.
Channel Leds indicate which channel is presently selected to fire. When 'lockout' is indicated then no channel is selected.

The 'lockout' feature allows two sequences to be initiated without spillover of one sequence into the next live sequence.
This is achieved, for example, by starting at channel 7 for the first six sequenced ignitions. After the 6th ignition the sequencer will halt in the lockout mode, regardless of the rate selected, leaving the first 6 channels intact. A 'reset' will select channel 1, from where the next sequence can be fired. Any run on will now only effect channels that have already been fired, so no undesired ignitions will occur.

As stated on the control panel, the RapidFire should be used in strict compliance with any prevailing Pyrotechnic codes of practice or local legislation.
All wiring connected to the RapidFire should be suitable for use for the intended application and be specified at the highest isolation voltage possible combined with a 1 amp specification.

Le Maitre Ltd cannot be held responsible for any misuse of the RapidFire, or consequences arising from its use by persons who are not qualified to operate it.

All Le Maitre Ltd pyrotechnic effects have a related Product Safety Data Sheet which will contain the relevant data concerning their application. Data is available at www.lemaitreltd.com and should be referred to.