SFX
Remote Sequencer
User Guide

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DISCLAIMER

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This device is only for use by authorised and appropriately trained persons.

DESCRIPTION

Congratulations on purchasing an EasyPyro SFX Remote Sequencer! The system is intended for controlling pyrotechnics and solenoid valves in the Film, TV and Events industry. The system is built with care and attention in the United Kingdom. It will provide a lifetime of reliable service when used appropriately.

The system allows you to fire channels manually step-by-step or automatically in a preset time delay sequence. Each channel can have a hold-on time set to enable precise control of solenoid valves.

Everything is set from one screen on the base unit. There are no complicated menu systems.

The unit is fired from a handheld wireless remote control or optional external wired trigger.

Multiple units can be connected together for longer sequences.

BATTERY CHARGING

The unit must be off and set to 12V to charge the battery.

Simply remember all switches down.

The unit is provided with a smart battery charger. When first connected the LED on the battery charger will be RED. When the batteries have reached about 90% of charge the LED will be GREEN and trickle charging will commence. You may remove the charger when the LED is GREEN.

The unit must be OFF and set to 12V to charge the batteries. Failure to do this will result in a failed charge.

Fully charged batteries will read at or above 12.5V (when selector switch is set to 12V).

BATTERY CARE

Avoid extremes of temperature for long term storage. Ideally store the unit inside a heated building.

All Lead Acid batteries slowly self-discharge. The batteries can be kept in good condition by charging every 3 – 6 months.

TYPES OF OPERATION

The sequencer can be operated in 2 ways: manually fire channels step-by-step, or fire an automatic sequence with pre-set time delays and hold-on durations.

MANUAL STEP FIRE

Manual step fire allows you to fire each channel step-by-step each time the STEP-FIRE button is pressed. The unit has an instant response; there is no delay between button press and firing. This is useful for precise external cues e.g. to ensure stunt actors are clear of pyrotechnics. The unit will fire the selected channel when the STEP-FIRE button is

pressed and increment to the next channel when the STEP-FIRE button is released. In this way it is possible to rapidly fire through all channels just using the STEP-FIRE button.

The UP and DOWN buttons can be used to skip forward and back through the channels. For example, you may decide to skip over a channel, or go back and fire a channel again.

Note: The system will honour the HOLD-ON time even when step firing. For example, you can set Channel 3 to hold-on for 2.5 seconds, and regardless of how long you hold the FIRE button for, Channel 3 will hold-on for 2.5 seconds. You are free to continue to STEP-FIRE fire through the channels while the channel is held-on.

AUTOMATIC SEQUENCE FIRE

Automatic Sequence Fire allows you to set up a sequence with same time delays / different time delays between channels. This is useful for pre-set sequences of pyro or very fast sequences that would not be practical to manually fire.

The firing delays can easily be set using the controls on the base unit.

You can set the DELAY between channels, and the HOLD-ON time for each channel.

The DELAY is the time delay between the current channel and the next channel.

The HOLD is the duration the channel is held on for.

Note: The minimum possible HOLD time is 0.05s. This is to ensure a channel will always fire.
The minimum possible DELAY is 0.00s. By setting DELAY to 0.00 several channels can fire simultaneously i.e. no delay between them.

SUMMARY OF CONTROLS

REMOTE CONTROL

UP	Move forward 1 channel.
DOWN	Move backward 1 channel.
STEP-FIRE	Step fire through channels step-by-step as fast as required. Channel will fire on button press and advance on button release.
START-SEQ	Start the sequence.
POWER	Hold for 3s to switch remote ON / OFF.
ARM / SAFE	Toggle between ARM and SAFE modes.

BASE UNIT

ON / OFF toggle	Power ON / OFF. OFF completely disconnects the battery.
ARM / SAFE toggle	SAFE completely disconnects the firing current and enables the controls. ARM connects firing current, disables local controls and enables remote to fire channels.
RIGHT ARROW	Select which digit to change.
UP ARROW	Increment the selected digit.
OK / CLEAR	Press OK to move to next channel. This is not required to save settings. Settings are automatically saved as soon as selected digit is changed. Hold OK for 3s to clear values back to factory defaults.
RUN	When in SAFE mode, press to demonstrate the sequence on the channel LEDs.

STARTUP DISPLAY

The base unit will flash all LEDs green and all LEDs red at startup. It will also display the firmware version on the top line of the display and the battery % and voltage on the bottom line of the display for 2 seconds.

100%	> 12.4V per battery.
0%	< 11.8V per battery.

BASE UNIT CONTINUITY CHECK

When the base unit is in SAFE mode, the Channel LEDs will continuously show continuity.

Green	Good continuity (less than 50 Ohms)
Red	Bad Continuity (more than 50 Ohms)

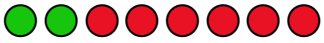
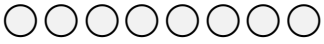
When the base unit is in ARM mode, the Channel LEDs will show which channel is firing. Continuity information will still be visible on the remote control.

REMOTE CONTINUITY CHECK

When remote in SAFE mode, the remote is polling (checking) the base unit for continuity 1x per second.

Always look for solid LEDs on the remote before you switch to ARM. This indicates there is a reliable “ping pong” handshake 1x per second between the remote and base unit.

If signal is lost, the remote channel LEDs will go off until signal is received again. Usually this is the next second.
If this is observed, check antennas and reposition for better signal and solid LEDs.

Remote Mode	Example Remote LEDs	Description / Example
SAFE		Solid LEDs mean signal is good. Channel 1 and 2 show good continuity.
SAFE		All LEDs off. Signal is lost. LEDs updated 1x per second. Check antenna and reposition for better signal and solid LEDs.
ARM		Remote is ARMED. No continuity will be displayed. Remote is waiting at Channel 1 to fire.
ARM		Remote is ARMED. No continuity will be displayed. Remote is waiting at Channel 3 to fire.

You can instantly view the continuity again by switching the remote back to SAFE mode. The switch between modes is always instant.

12 VOLT / 24 VOLT

The base unit can be switched between 12V or 24V operation. The battery voltage will display on startup screen. However, the voltage can be selected at any time.

24V is recommend for pyro. The higher voltage will drive more current around the pyro circuit.
12V is for certain 12V rated solenoids and bomb-releases, actuators, motors etc.

SIMULATE / DEMONSTRATE A SEQUENCE

It is useful to safely demonstrate a sequence without firing.

When the base unit is in SAFE mode, the sequence can be viewed on the base unit LEDs at any time by pressing the green RUN button.

When the base unit is in ARM mode, the RUN button does not operate.

BASE UNIT ARM / SAFE MODE

When the base unit is in SAFE mode, all controls are enabled.

When the base unit is in ARM mode, all button controls are disabled and locked out.

REMOTE ARM / SAFE MODE

The remote is switched between ARM and SAFE mode by pressing the ARM / SAFE button. The remote mode is indicated by the green SAFE LED and the red ARM LED on the remote. You can switch between modes instantly by pressing the ARM / SAFE button.

The remote must be in ARM mode to fire.

When the remote is in SAFE mode, the remote is polling the base unit 1x per second for channel continuity information. The information is displayed on the channel LEDs.

If the channel LEDs are flickering on and off, then some data packets are being lost. Move closer, check antennas or reposition for better signal.

When remote is in ARM mode, the channel LEDs will not show continuity information. The currently selected channel LED will be RED. All other channel LEDs will be OFF.

You can instantly view the continuity again by switching the toggling the remote back to SAFE mode.

Note: When arming Remote, if the Green SAFE LED and Red ARM LED flash rapidly and alternatively the base unit is still in SAFE mode. This is to prevent accidentally leaving the base unit in SAFE mode prior to firing. Ensure base unit is in ARM mode and ARM remote again. The red ARM LED on remote should now be solid red.

Note: If the base unit is switched from ARM to SAFE, the remote will automatically enter SAFE mode. This is to reduce the possibility of a remote being accidentally left in ARM mode when reloading pyro. This feature will only work if the base unit is switched from ARM to SAFE. If the base unit is simply powered off when in ARM mode, the remote will not automatically disarm.

REMOTE LOW BATTERY WARNING

The remote control used 2 x AA batteries. Use good quality alkaline batteries. The red LOW BATT LED will flash when the battery voltage falls below 1.25V per AA cell. Replace the remote batteries immediately when this happens.

SET UP AUTOMATIC SEQUENCE

It is very easy to set up an automatic sequence.

You can quickly set ALL channels together (e.g. all 8 channels with 0.10s delay) or you can set each channel individually (e.g. all 8 channels with different delays).

Use the RIGHT ARROW to select the position of the cursor under the digit, and use the UP ARROW to increment the digit.

Note: It is not necessary to press OK. The values will be stored automatically when they are changed.

You can press OK to advance to the next channel (or place the cursor under the channel digit and advance to the channel you want to change).

Set ALL channels with the same value

To set up the same DELAY and HOLD values for all channels, simply ensure that ALL is selected.

The screen below shows ALL the channels firing with 0.10 seconds between each channel, and each channel held on for 0.05 seconds.

Set individual channels with different values

To set up different DELAY and HOLD values for each channel, simply select the channel you want to change.

The screen below shows Channel 01 being set with a delay of 0.10s until Channel 02 fires, and a hold-on duration of 0.05 seconds.

The screen below shows Channel 2 being set with a delay of 0.35 seconds until Channel 3 fires, and hold-on duration of 1.5 seconds.

Press OK to advance to the next Channel, or use the RIGHT ARROW and UP ARROW to go directly to the Channel you want to change.

Note: Once some values are changed, the ALL option will show #.## to indicate various values are set.

RESET / CLEAR VALUES

Hold the OK / CLEAR button for 3 seconds (until the bar graph completes) to reset all values and start again.

We recommend using the CLEAR function to reset everything to a known state each time you use the system.

FIRING PROCEDURE

Note: If firing only pyro, it is good practice to ensure the channels do not overlap i.e. HOLD duration should be less than the DELAY time between channels. This is to ensure an electrical short after the pyro is fired does not steal current from other channels. Hold the CLEAR button for 3 seconds to reset all DELAY to 0.00s and all HOLD to 0.05s.

The minimum HOLD-ON duration of 0.05s (i.e. 50ms) is more than sufficient to fire all types of pyro.

1. Connect antenna.
2. Connect pyro to base unit. Ensure bare ends of cables do not short together at terminals.
3. Ensure firing area is safe, switch ON and verify continuity on base unit.
4. Switch base unit to ARM, close lid, and move away.
5. Switch on remote control by holding power button for 3 seconds.
6. Verify continuity on remote.

Note: Continuity is updated 1x per second. If LEDs are observed to flicker ON / OFF then some packets are being lost. Move closer or reposition to ensure good signal.

7. ARM remote by pressing ARM / SAFE button. ARM LED will be red. Continuity will disappear and currently selected Channel will be indicated by red LED. It will always start at Channel 1.

Note: When arming Remote, if the Green SAFE LED and Red ARM LED flash rapidly and alternatively the base unit is still in SAFE mode. This is to prevent accidentally leaving the base unit in SAFE mode prior to firing. Ensure base unit is in ARM mode and ARM the remote again. The red ARM LED on remote should now be solid red.

8. Press STEP-FIRE button as fast as necessary to fire channels step-by-step OR press START-SEQ button to start the sequence.

LINK SEQUENCERS FOR MORE CHANNELS

Base units can be linked by cable for longer sequences. There is the facility to have a Trigger In and Trigger Out signal pass between base units. Multiple units can achieve longer runs of timed sequences. Use a standard SpeakON loudspeaker interconnect cable to connect between units.

REMOTE HIDDEN / ENGINEERING FUNCTIONS

The remote has several hidden functions. They are listed here for general information.

SIGNAL STRENGTH METER

There is a signal strength meter in the remote control.

When in SAFE mode, hold the UP and DOWN buttons together. After one second the channel LEDs will be orange (red and green together) and show the approximate signal strength. Higher numbers are better.

BONDING

The base unit and remote control are supplied securely bonded together. However, should a remote be lost or damaged a new replacement remote can be bonded to the base unit.

1. On base unit, in SAFE mode, the UP and DOWN buttons are held together for 2 seconds. There will be a RED LED chase.
2. On remote control, in SAFE mode, the UP and DOWN buttons are held together for 2 seconds. There will be a RED LED chase.
3. Both red LED chases will immediately turn to green LED chases to indicate successful bonding.
4. Press any button on remote and base unit to return to normal operation.

FACTORY TEST

The remote can illuminate all LEDs, test button operation and display the firmware version.

1. In SAFE mode, the STEP-FIRE and UP arrow buttons are held together for 2 seconds. Remote will enter Factory Test Mode.
2. Press POWER button to step through each check.

1	All LEDs RED. Check all LEDs are operational.
2	All LEDs GREEN. Check all LEDs are operational.
3	Firmware version xx.xx (8 bit, decimal 99 max) VERSION_MAJOR
4	Firmware version xx.xx (8 bit, decimal 99 max) VERSION_MINOR (Basically two numbers representing major (non-compatible) and minor (compatible) versions. Red is 0, green is 1. E.g. 1000 0000 / 0100 000 is Version 1.2

TECHNICAL SPECIFICATION

Size (base unit)	27 x 25 x 12cm (11" x 10" x 5")
Weight (base unit)	3Kg
Frequency	868.8 MHz LORA Spread Spectrum modulation
Range	350M clear line of sight, base unit elevated by 0.5M
Firing Channels	8 (base units can be linked with cables for longer sequence, 16, 24 etc)
Batteries	2 x internal 12V sealed lead acid OR external battery pack
Trigger	Wireless remote OR wired voltage input
Output Voltage	12V or 24V selectable
Output Current	Limited by batteries and protected outputs, approximately 15 Amps per channel.
Selectable delay	0.00s to 9.99s
Selectable hold-on time	0.05s to 9.99s
Continuity Test	✅ Yes
Secure 2 Way Radio Comms	✅ Yes
Over-current protected outputs	✅ Yes
See channel continuity on remote?	✅ Yes
Set DELAY and HOLD-ON times per channel?	✅ Yes
Instant manual firing?	✅ Yes
Small, rugged, portable unit?	✅ Yes