



CH20S

20 CUE WIRELESS FIRING SYSTEM

USER MANUAL v.4

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DISCLAIMER

The manufacturer(s), distributor(s) and / or seller(s) accept no responsibility whatsoever for any damage, injury or loss, financial or otherwise, resulting directly or indirectly from the use, misuse, function or malfunction of this device. By purchasing and using this device you understand and accept this disclaimer.

SAFETY

Safety is the user's responsibility.

All pyrotechnic effect and firework safety guidelines should be followed completely.

DESCRIPTION

CH20S is a 20 cue advanced wireless firing system for pyrotechnics and fireworks.

With the supplied handheld transmitter it is expandable up to 60 cues in SINGLE FIRE mode using up to 3 receivers. SINGLE FIRE mode means the operator has full access to each individual cue and can fire a cue on command.

It is also expandable up to 320 cues in CONTINUOUS FIRE, STEP FIRE or ALL FIRE modes using up to 16 receivers. This means that the operator does not have full access to each cue. The operator may only fire the cues manually in sequence (STEP FIRE mode), continuously with a preset delay between each cue (CONTINUOUS FIRE mode) or fire all cues simultaneously (ALL FIRE mode).

Each mode needs to be set on the receiver before it is used. The operator cannot switch between modes without returning to the receiver. This is a safety feature to prevent the operator activating a mode accidentally.

A receiver can be easily paired with more than 1 transmitter or transmitter identity (each handheld transmitter has 3 separate selectable identities). In this way receivers can be made to operate in parallel (at the same time) or in series (one after the other) or completely independently.

CHARGING THE SYSTEM

The Battery Status Light will only operate when the unit is switched ON and in FIRE mode. However the system will charge even when switched off.

Battery Status Light	Description
RED (flashing)	Battery Low.
RED (steady)	Battery Charging.
RED / GREEN (flashing)	Battery Almost Full.
GREEN (steady)	Battery Full.

Lead Acid Batteries naturally discharge over time. To keep the battery in good condition it is recommended the system is charged every 3 months.

Storing the system in extremely low or high temperatures will shorten the life of the battery.

BASIC OPERATION

Note: *When using multiple receivers, it is advisable to re-programme each receiver with the correct transmitter before use.*

Ensure the battery is fully charged before use.

For maximum safety please follow the firing procedure below.

1. Clear the receiver and program it with a transmitter.
2. Ensure SAFETY SWITCH is keyed to OFF and FUNCTION SELECTION is set to TEST.
3. Connect igniters.
4. Check continuity. The display will read "E[XX]" where [XX] is the cue numbers that DO NOT have continuity.
5. Set FUNCTION SELECTION to FIRE.
6. Set the correct mode of operation (X.XX, ALL, SINGLE, STEP).
7. Key SAFETY SWITCH to ON.
8. Extend receiver antenna.
9. Ensure the area is safe and secure and retreat to a safe distance.
10. Extend transmitter antenna.
11. Set transmitter SLIDE SWITCH to correct position.
12. Switch transmitter ON.
13. Fire cues.

Transmitter Control Description

Button	Description
1 - 20	Single Fire Mode Fire individual cues.
ALL	All Fire Mode Fire all the cues.
STEP	Step Fire Mode Fire the cues sequentially with each successive button press. Holding STEP down continuously will cause multiple cues to fire.
CONT	Continuous Fire Mode Fire the cues in sequence with a set delay between each cue.
Slide Switch (1,2,3,4)	Transmitter Address Position 1,2,3: Select which receiver(s) to control when more than 1 receiver is used. Position 4: Should only be set in position 4 when the system is configured with receivers operating together automatically in series (one after the other).

Receiver Control Description

Button	Description
Function Selection (FIRE, OFF, TEST)	Controls the mode of the receiver. TEST mode tests the cues for continuity. OFF mode turns the receiver off. FIRE mode allows the system to be programmed and cues to be fired.
Safety Switch (ON, OFF)	This arms and disarms the system.
Program	Programs the receiver with a new transmitter.
Up-Arrow	Increments the selected delay digit.
Right-Arrow	Sets which delay digit to change AND changes the receiver operating mode.
OK / Delete	Enters the current time and Operating Mode setting / Deletes the current time setting and resets the Operating Mode.
ADD	Sets 1 of 16 possible Receiver Addresses for expansion up to 16 receivers, giving 320 cues available in ALL, STEP and CONT firing modes.

PROGRAMMING THE RECEIVER WITH A NEW TRANSMITTER

WARNING

Never program the receiver when another transmitter is transmitting. This may cause the receiver to be programmed with the wrong transmitter.

To clear the receiver of previously stored transmitters:

1. Put FUNCTION SELECTION switch to FIRE position.
2. Hold the PROGRAM button until the program light goes out.

To program the receiver with a new transmitter:

1. Put FUNCTION SELECTION switch to FIRE position.
2. Press and hold a button on the transmitter.
3. Press and release the PROGRAM button briefly. The program light blinks twice to indicate the receiver has been programmed.

SETTING THE RECEIVER OPERATING MODE

The receiver must be set to the correct mode before using the system. This ensures that accidentally pressing a button on the transmitter will not have an unwanted effect.

Mode	Display Shows ...	Description
Continuous (Sequencer)	0.00 or the current delay between cues.	Sequencer with a set delay between each cue of 0.01 to 9.99 seconds.
All Fire	ALL	Fires all cues when the ALL button on transmitter is pressed.
Single Shot	SIN	Fires the correct cue when the button 1- 20 is pressed on the transmitter.
Step	STE	Fires the next cue when STEP is pressed on the transmitter.

To set the receiver operating mode follow the steps below.

1. Hold down OK button until the display reads 0.00
2. Press RIGHT-ARROW to cycle through the digits and operating modes.
3. Press OK to set the correct receiver operating mode.

SETTING THE TIME DELAY FOR CONTINUOUS MODE

The time delay is used when firing in continuous mode. The delay can be set from 0.01 to 9.99 seconds.

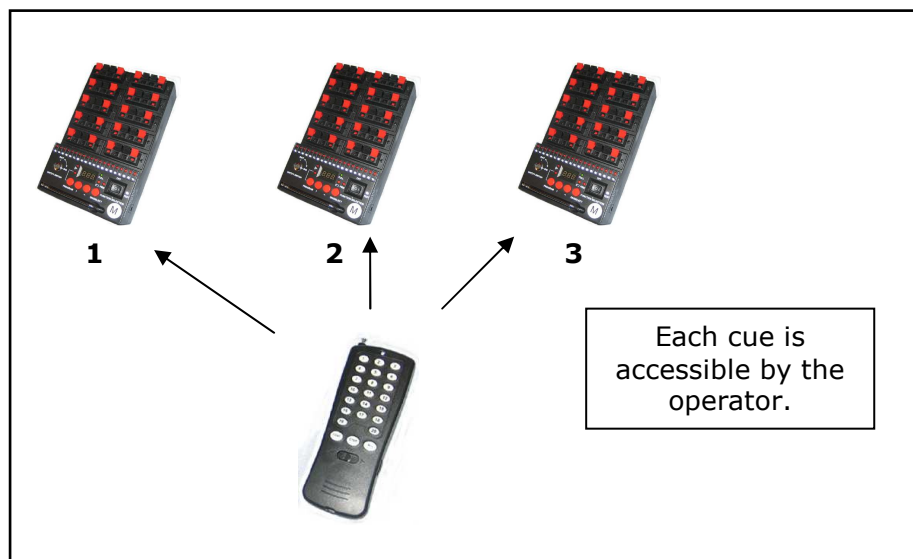
1. Hold OK button until the display reads 0:00.
2. Press RIGHT-ARROW to cycle through the digits.
3. Press UP-ARROW to increment the time delay.
4. Press OK to set the time.

EXPANDING THE SYSTEM

The system is expandable in the following ways:

1) UP TO 3 RECEIVERS GIVING 60 INDIVIDUALLY ADDRESSABLE CUES

Program receiver 1 with the transmitter slide switch in position '1', program receiver 2 with the transmitter slide switch in position '2', program receiver 3 with the transmitter slide switch in position '3'.



60 Cue Configuration

2) UP TO 16 RECEIVERS GIVING 320 CUES

Each receiver will need to be set up with an address in the following way.

1. Press ADD button.
2. Use RIGHT-ARROW and UP-ARROW to set 1 of 16 addresses.
3. Press ADD button again.

All the receivers will need to be programmed with the transmitter in the usual way **except** the transmitter slide switch **must** be in position '4' at all times.

The cues can only be fired in the ALL, STEP and CONT firing modes.

INFORMATION

For CONT mode, all receivers need to have the same time delay.

Note: *This is because for receivers above number 1, a receiver offsets the time it starts sequencing from by the following formula:*

$$\text{Time to sequence begin} = \text{delay} \times 20 \times (\text{receiver number} - 1)$$

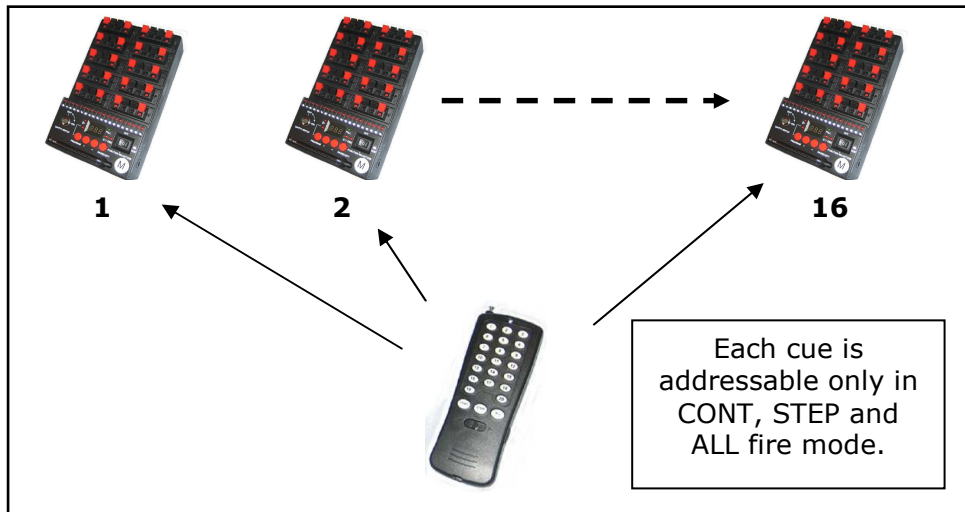
Example: *Assume time delay is set to 1 second and 4 receivers are in the system. When CONT is pressed, all receivers receive the signal at the same time. Receiver 1 starts to sequence immediately. Receiver 2 starts to sequence after 20 seconds. Receiver 3 starts to sequence after 40 seconds. Receiver 4 starts to sequence after 60 seconds etc. There is no communication between receivers, so if, for example receiver 3 is OFF, then receivers 1, 2 and 4 will still operate, albeit with a 20 second gap between receivers 2 and 4.*

CONT and STEP mode will only work ONCE. All receivers will need to be switched OFF and ON again to use those modes again.

Example: *6 receivers are set up giving 120 cues. Press CONT and all cues will fire in sequence with the programmed delay. However, CONT will not be able to be used again until all receivers are switched OFF and ON again.*

Example: *10 receivers are set up giving 200 cues. Press STEP and each cue will fire one after the other on each sequential button press. Holding down STEP will cause multiple cues to fire rapidly. However once all cues are fired STEP will not be able to be used again until all receivers are switched OFF and ON again.*

Example: *16 receivers are set up giving 320 cues. Press ALL and all cues will fire on all receivers. ALL can be used again without switching the receivers OFF and ON again.*



320 Cue Configuration