



Wireless Pyro Solutions LTD

# WIRELESS FIRING SYSTEM USER GUIDE 3.0-beta



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## 1. INTRODUCTION

Thank you for purchasing Wireless Pyro Solutions LTD wireless firing system. Our system is a safe, reliable and user friendly, designed for wide range of applications and different skill sets.

WPS wireless ignition system allows bidirectional communication between the transmitter and receiver (both wireless and 2-wire), limiting the guesswork involved determining cue continuity for every single receiver. All needed information for the show can be accessed directly from your hand-held WPS mote hundreds of meters away.

For large professional shows, connect your WP Smote to your laptop through USB and have a full control over your show on the computer screen. With the free Pyro Ignition software create your own scripted shows and musicals in matter of minutes.

### 1.1. Glossary

**Channel** – radio communication is divided into different channels, so that each channel can have its own information transmitted without interference. WPS wireless firing system has 99 unique channels, represented with numbers 1-99.

**Cue** – the smallest unit of the system. Each cue has its own two terminals to connect the e-match to. There is no polarity on the e-match, so the two e-match' wires can be connected either way. WPS hobby has 24 individual cues and WPS pro has 144 individual cues (12 x 12cues on each WPS slot).

**Bank** – every 12 cues are grouped together and represent one "Bank". Each Bank is identified by a capital letter A-L. WPS hobby has 2 Banks, WPS pro has 12 Banks.

### 1.2. 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.**

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## 2. SYNCHRONISING RECEIVER MODULES

Every WPS unit has its own MAC address, so that each unit can be differentiated from one another. Once synced, each WPS hobby and WPS pro can communicate to only one WPS mote at any given time.

WPS hobby and WPS pro: Navigate to **Sync** by pressing ↓ or ↑, then choose the channel by pressing ↓ or ↑ again.

WPS mote: Navigate to **Sync** and then choose the channel by pressing ↓ or ↑. Once the channel is selected, press → to start synchronizing.

If synchronization is successful, a confirmation message is displayed:

```
Sync successful!  
CH:4 ID:a
```

CH – the channel receiver will now listen to.

ID – unique identification letter for each receiver module on the same channel.

**Note:** Hold down ↓ or ↑ to fast scroll. Press 1-12 on WPS mote to select channel quicker.

**Note:** Up to 99 individual channels with up to 27 receivers on the same channel (a-z).

**Note:** Limited to 500 receivers synchronized to a single WPS mote at any given time.

**Note:** You can check receivers Channel, ID and battery level any time by pressing and holding ←.

### 2.1. Un-sync

WPS hobby and WPS pro: Navigate to **Sync** and then select the channel by pressing ↓ or ↑.

WPS mote: Navigate to **Sync** and then select the channel by pressing ↓ or ↑. Once the channel is selected, press and hold → to un-sync.

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## 3. POWER AND POWER SAVING

### 3.1. Power

WPS hobby and WPS pro: In case the receiver is ordered with the battery option, a 14.8V 4 cell 3000mAh LiPo rechargeable battery will be already installed inside the unit. To maintain LiPo battery's lifespan, please do not discharge under 15% capacity. **For long term storage, keep batteries at 55-60% charge.**

**Note:** Current battery voltage can be seen by pressing and holding ←.

State Of Charge vs. Lipoly Pack Voltage

% Capacity	4S Pack
100	16.80
95	16.60
90	16.45
85	16.33
80	16.09
75	15.93
70	15.81
65	15.66
60	15.50
55	15.42
50	15.34
45	15.26
40	15.18
35	15.14
30	15.06
25	14.99
20	14.91
15	14.83
10	14.75
5	14.43
0	13.09

Stay in the white region for maximum pack longevity

**Charging:** Connect DC power jack to the on-panel connector. Charger LED will turn red. Once LED is green, battery has been charged. All WPS LiPo packs come with battery management boards for short circuit, over current, over/under voltage, over temperature and cell balancing. Charger only provides Constant Current and Constant Voltage (CC/CV). Charging usually takes around 2 hours.

WPS note: Comes with 2200mAh Li-Po battery installed. The battery can be charged through USB when connected to the computer or with a dedicated charger. The red light indicator will turn off when fully charged (fully charged within 5-7 hours).

The battery level is indicated on the battery icon on the right top corner.

### 3.2. Power saving

The backlight intensity of all units can be adjusted by navigating to **Settings -> LCD -> Brightness**. We recommend to lower the brightness settings if the unit is to be in use for a long continuous period. By default the intensity is set to 5.

To save power all WPS units will dim the LCD and go into sleep mode after certain amount of time of no activity. This time (in seconds) can be adjusted by navigating to **Settings -> LCD -> Power saver**. By default all units will dim the LCD after 30 seconds of inactivity.

**Note:** WPS hobby and WPS pro: Power saver will not work when testing cue continuity locally and when armed. Therefore, to avoid excessive battery consumption - exit the Test mode when no longer in use.

**Note:** WPS note: LCD backlit can be quickly switched on or off by pressing and holding ←.

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## 4. ELECTRIC IGNITERS

WPS hobby and WPS pro: Every time a cue is fired, an electric pulse of current triggers the igniter. This pulse length can vary for different igniters. For instance, a professional e-match will fire easily under 0.1s, however, for homemade igniters and Talon clips this time might be longer, up to 2 seconds. Therefore, for every single receiver the pulse time can be adjusted by navigating to **Settings -> Firing -> Pulse time**. By default pulse time is set to 0.1 seconds.

**Note:** If cues are being fired faster than the set pulse time, the current cue's pulse will be multiplexed.

WPS hobby and WPS pro: Each cue is limited to 3.5A of current.

**Grouped banks** – banks that will fire at the exact time as if they were connected in parallel. Any combination of banks can be grouped by navigating to **Settings -> Firing -> Group banks**.

Grouping work in the following format "Group X with Y", where X is the dominant Bank – Bank X will fire Bank Y. For instance, if you want to fire 3 Banks (A,B,C) at the same time, you would set up the following configuration: Group A with B; Group A with C. Once you fire A1, all 3 – A1, B1, C1 will be fired. However, if you fire B2, only B2 will fire, because B is not dominant bank in the example above. This is subject to limitation of how many igniters can fire at the same time, Fire ON time might need to be increased. Grouped banks are disabled if firing in full-auto mode.

**Note:** Continuity is determined by measuring the resistance between cue's two terminals. In some cases a resistance might be too high for the module to declare specific igniter as connected, in this case lowering the Sensitivity level (**Settings -> Firing -> Sensitivity**) might help. The default level is 5.

### 4.1. Maximum e-matches / electric igniters

Cable length*	Parallel	Series
10m / 33 feet	4	13
20m / 66 feet	4	12
30m / 100 feet	4	11
40m / 130 feet	4	10
50m / 164 feet	4	9

\*Assuming 24 AWG RJ45 cable purchased on our website.

**Note:** Assuming professional e-match with resistance of 2 ohms and all-fire current of 0.5A and 14.4V firing voltage, 3.5A peak limit.

**Note:** All values are for reference only and might vary for different setups.

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## 5. TEST

Each cue's continuity can be tested directly on WPS hobby or WPS pro, or remotely from WPS mote.

### 5.1. Local test

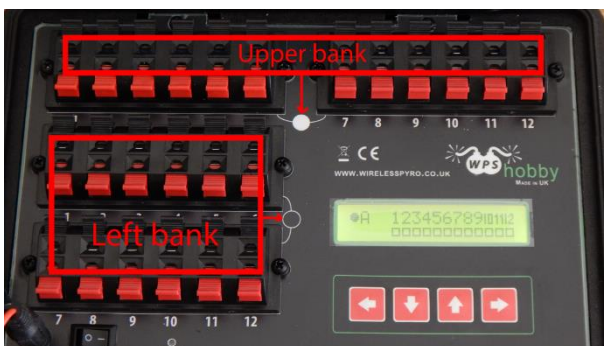
WPS hobby and WPS pro: Navigate to **Test**. Change the bank being tested by pressing ↓ or ↑.

Empty square – NO continuity

Filled square – OK continuity

Blinking empty square – cue has been programmed in the script but is not present.

Blinking filled square – cue has not been programmed in the script but is present.



WPS hobby: WPS hobby banks are represented with either filled circle (Upper bank) or an empty circle (Left bank). You can set which physical bank location represents which bank letter by going **Settings -> Firing -> Change banks**. Then press → to change either Upper bank or Left bank settings. Change the Bank letters by pressing ↓ or ↑. Confirm by pressing →. You can set any letter (A-L) to represent any of the banks, however, both banks cannot have the same bank letter. By default Upper bank is A, Left bank is B.



WPS pro: WPS pro banks are clearly labelled as capital letter A-L. 6 cues on the main panel A1-A6 are internally linked to the WPS slat on the Bank A.

In this case cues A1-A6 are in parallel and continuity cannot be tested for each individual cue separately (in case both - panel and WPS slat cues at Bank A used at the same time).

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## 5.2. Remote test

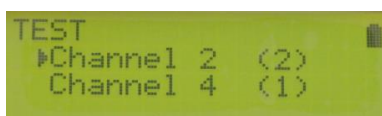
WPS mote: Navigate to **Test mode**.

**Note**: WPS mote will communicate only to the modules that it has been synchronized to.

**Advanced**: The number of times WPS mote tries to communicate to every single receiver before timeout can be modified at **Settings -> Advanced -> ACK retries**. By default it will take 5 attempts before timeout. Increase this number for longer range or busy channels.

### 5.2.1. Test overview

In test overview you can see all active receiver modules on every active channel. The number in brackets represent # of active modules on that channel. In this instance, there are two receiver modules on Channel 2 and single receiver module on Channel 4.




```

TEST
▶Channel 2 (2)
Channel 4 (1)
  
```

### 5.2.2. Single channel battery and signal strength test

To check the signal strength and battery levels for each individual module, choose the channel in *Test overview* by pressing ↓ or ↑ and then hold → to enter. The same can be achieved by pressing and holding buttons 1-12 for the corresponding channel. You can refresh the test by pressing →.



```

TEST CH:2
a 12.3V -15 P
b 12.4V -24 H
  
```

*First* column represents the module ID.

*Second* column represents the battery voltage.

*Third* column represents the signal strength between the receiver module and WPS mote.

*Fourth* column represents the receiver module type (P – WPS pro, H – WPS hobby).

**Signal strength**: Signal strength measures the quality of the communication between WPS mote and the receiver units. Measured between 0 and -100 dBm, 0 being the best signal strength and -100 – the worst. If you experience low signal strength even in close range, try changing the channel and/or elevating the receiver module above the ground. In case 2-wire connection is used, signal strength is set manually to 0.

#### Warnings:

- Low battery voltage – if battery voltage on the receiver goes below a user set threshold an exclamation mark (!) will be displayed next to the voltage. For both WPS hobby and WPS pro the threshold voltage can be set manually by navigating to **Settings -> Advanced -> Low batt**. By default the low battery threshold is set to 14.8V
- Low signal strength – if signal strength between the receiver module and WPS mote is below the user set threshold an exclamation mark (!) will be displayed next to the signal strength. Signal strength threshold can be set manually in WPS mote by navigating **Settings -> Advanced -> RSSI thresh**. By default low RSSI threshold is set to -80 dBm.

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### 5.2.3. Single channel cue test

To test cues for a single channel, choose the channel to be tested in *Test overview* by pressing ↓ or ↑ and then → to enter. The same can be achieved by pressing buttons 1-12 for the corresponding channel.

You can refresh the test by pressing → and change the Bank being tested by pressing ↓ or ↑.



Empty square – NO continuity

Filled square – OK continuity

Half-filled square – partial continuity, which means that at least one module in the selected channel for the specific cue does not have continuity and at least one does.

Blinking empty square – cue has been programmed in the script but is not present.

Blinking filled square – cue has not been programmed in the script but is present.

Blinking half-filled square – partial continuity, but cue has been programmed in the script.

**Note:** You can switch between active channels quickly by pressing and holding ↓ or ↑.

**Note:** By pressing 1-12 you can check the banks quicker. (1-A, 2-B ... 12-L).

**Note:** If WPS pro and WPS hobby are used on the same channel, banks that are not defined in the WPS hobby will not count as “NO continuity”, only the banks that are defined will be tested.

### 5.2.4. Individual cue test

In case of partial continuity you might want to find out which specific cues do not have continuity. This can easily be done by pressing and holding buttons 1-12 to test the corresponding cue. Press ← to return to *Single channel cue test*.



In this example Cue A7 has got continuity on module with ID “a”, but no continuity on module with ID “b”.

## 5.3. Remote test via 2-wire [in beta – functionality not guaranteed]

New generation WPS mote and WPS pro/hobby receivers support 2-wire communication via 3.5mm and XLR connector breakout cables. Attach 2 wires to green and yellow crocodile clips. For long distances, twisted pair shielded cable is required, attach black crocodile clip to the shielding.

Navigate to **Settings -> Comms config** to select preferred communication medium. Wireless – only uses radio to communicate; Wire – only uses 2-wire cable to communicate; Auto – uses both for redundancy. Default setting is wireless.

## 5.4. Simulator

WPS hobby and WPS pro: In case simulator mode is active all cue continuity will be overridden with “full” cues. In order to activate the Simulator, navigate to **Settings -> Firing -> Simulator**.

**Note:** Even if Simulator mode is active, physical cues will still fire as usual.

## 5.5. Scripted musical shows and computer control

Connect your WPS mote with USB cable to the computer whilst on. All necessary drivers should be downloaded automatically. Navigate to **PC Control**. Open PyrolgnationControl software and follow further instructions.

**Note:** In order to fire cues from the computer software, key switch must be in “Fire” position.

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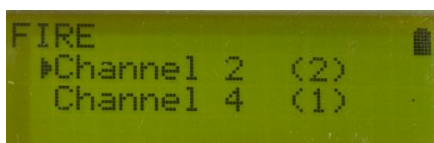
## 6. ARMING THE SYSTEM AND FIRING CUES

### 6.1. Arming the system

All receiver modules are armed when WPS mote is entered in **Fire mode**. Fire mode can be only accessed if the key switch is in "Fire" position. Once the system is armed all of the receivers will wake up and display the option to exit the Fire mode. At this point, if any button is pressed on the receiver, it will automatically disarm itself. You can disarm the system from the WPS mote by either turning the key switch back to Test position or by returning to the main menu.

### 6.2. Firing cues remotely

To fire a channel, choose the channel by pressing ↓ or ↑ and then → to enter. The same can be achieved by pressing buttons 1-12 for the corresponding channel.



#### 6.2.1 Manual firing

Fire individual cues by pressing buttons 1-12. Once the button is pressed all modules on the selected channel will fire. The last fired cue on each channel will be shown with an underscore. You can press buttons in any order you like. Change the active firing bank by pressing ↓ or ↑.



**Note:** Switch between active channels quickly by pressing and holding ↓ or ↑.

**Note:** Switching between channels will not lose the firing history. However, re-arming the system will create a new firing session with its own firing history.

**Advanced:** When firing a cue by pressing a button, a fixed number of duplicate pulses are sent to the transmitter, the number of pulses can be changed at **Settings -> Advanced -> Contin fire**. By default it is set to 3 pulses. The higher the number of pulses – higher the probability that at least one packet will arrive to the receivers, but limits how fast two sequential cues can be fired. For reliable transmissions, set Contin fire to AC (0), this will ask for an acknowledgment from each receiver, but will decrease the accuracy and firing speed.

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### 6.2.1.1. Step firing

Step through all cues by pressing →. This will fire all cues one by one on every press of →. First press will always be the first cue on the channel. Every next cue will be the cue on the right from the last cue. Once the last cue on the channel is reached, the next press will automatically switch to the next active channel.

In this example, once L12 is fired on Channel 2, A1 on Channel 4 will be next, since there is no active receiver module on Channel 3, it will be skipped.

By default every → press will fire the next cue and it does not matter if it is empty or full, but there is an option available to skip empty cues and step only on partial/full cues.

This option can be set by navigating to **Settings -> Firing -> Skip empty**.

### 6.2.1.2. Sequence firing

Automatically fire cues with fixed time delay of 0.1 – 60 seconds. This mode can be activated by pressing and holding → for 3 second. To stop the automatic sequence firing, press → again. The default time delay can be set by navigating to **Settings -> Firing -> Sequence**.

However, once sequence firing is active, you can adjust the speed by either pressing buttons 1-12 (represents delay in seconds), or by pressing ↓ or ↑ to decrease or increase the delay whilst the sequence firing is still active. Similarly to the step fire, once all cues on the selected channel are fired the next active channel is selected. Skipping empty cue option is also available.

### 6.2.1.3. Timer

The on screen timer can be enabled by navigating to **Settings -> Firing -> Timer**. Timer will start counting as soon as first cue is fired. In order to pause the timer press and hold ← once in Fire channel view. Timer will continue as soon as any cue is fired. ELP – Elapsed, timer will reset after each fire - useful for timing gaps between effects.

## 6.2.2 Firing from a script

Once you enter Fire mode a summary of available receivers and their cues is displayed. If script is downloaded on the WPS mote you will also see script summary.

```
FIRE - OVERVIEW
1 module on 1 ch
13 cues, 10 scrip
Script: 90% match
```

As you can see from the image above, 13 cues are found, but only 10 are scripted. Because one of the scripted cues are not present on the receiver, script is matching by 90%. This is particularly useful as a final test before starting a large show with multiple receivers on multiple channels.

```
FIRE
#Manual
Full-auto script
Semi-auto script
```

If script is present, by pressing → a Fire menu is displayed. From here, you can either select Manual firing (section 6.2.1.), Full-auto script or Semi-auto script.

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### 6.2.2.1. Full-auto script

Full-auto script allows to fire a fully automatically. In order to fire in this mode a script must be present on both WPS mote and all receiving modules.

```
FIRE 00:06 4/10
CH:1 B5 in 00:03:5
CH:1 B6 in 00:04:5
Start
```

This mode can be accessed by navigating to **Fire -> Full-auto script**. You can start/pause show by pressing →. At the top of display, current elapsed time is displayed. Next to it, how many cues have been already fired out of all. In the middle you can see next two scripted entries and the time till those cues fires. You can fire the next cue without waiting for the countdown by pressing ↓.

**Note:** Pressing ← will not stop the script, this feature allows to fire manually while script is running. In order to fully stop the script, either exit the fire mode completely or turn the key-switch back to Test position.

**Note:** In this mode, script is fired from within receivers, allowing higher timing resolution. Accuracy up to 1ms (1/1000 second). WPS mote only acts as a start/pause controller.

WPS hobby and WPS pro: Navigate to **Settings -> Firing -> Script POLS** (Script Pause On Lost Signal) to define default state of the receiver if WPS mote becomes unresponsive. ON – receiver will pause the script if WPS mote stop transmitting for 1 second; OFF - receiver will keep firing the script. Default state is set to ON.

### 6.2.2.2. Semi-auto script

This mode can be accessed by navigating to **Fire -> Semi-auto script**. This mode works similarly to step-mode, but follows programmed script pattern instead of incremental. By pressing → you can activate the countdown, once that cue is fired, timer will stop. By pressing → again, it will fire next cue and so on until all cues in the script have been fired. Pressing ← will restart the script back to the beginning. If the countdown has not reached 0, you can press → to fast forward and fire the next cue without waiting.

You can skip the pausing by holding down → (It will follow the script just like full-auto mode until you release →).

**Note:** In this mode, script is fired from the WPS mote. Timing accuracy is up to 100ms (1/10 second).

### 6.2.2.3. Countdown Full Auto (FA) [in beta – functionality not guaranteed]

WPS mote: This mode uses GPS module to detect GPS time and start Full-Auto script at the specified time. For this mode to be active, there needs to be active GPS signal and GPS assist must be enabled (**Settings -> GPS assist -> GPS-A timings -> ON**). Furthermore, time needs to be specified at **Settings -> GPS assist -> Start time**. Use ↓ or ↑ to adjust timings, press → to confirm and move to the next value. To cancel setting up time, press ←.

Once GPS-A timings have been enabled and Start time set, go to **Fire -> Countdown FA** and a countdown will be initiated. To cancel, press ←. Once time is reached, Full-Auto script mode will be activated.

## 6.3. Firing cues locally

Both WPS pro and WPS hobby allow to start scripted show from receiver itself and step fire through cues using external trigger. Firing accuracy is up to 1ms (1/1000 second). In this case WPS mote is only necessary to transfer the show. Once the show is saved in the WPS pro/WPS hobby memory, script can be fired without a transmitter. Key-switch must be in Green position to enter this mode.

### 6.3.1. Delayed start

In order to access this feature, a script must be transferred to the receiver first. This feature can be found by navigating to **Fire -> Delayed start**. Once you enter Delayed start, a delayed countdown will begin. The delay in

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seconds can be set in **Settings -> Firing -> Script delay**. Default value is set to 30 seconds. You can cancel the countdown by pressing ←.

Once countdown finishes, script will begin. You can pause it by pressing → or stop the show by pressing ←.

### 6.3.2. External trigger start

In order to access this feature, a script must be transferred to the receiver first. This feature can be found by navigating to **Fire -> Ext trig start**. Once a pulse is received, script will begin and a clock will start on unit's display. Providing external trigger pulse while script is running will pause the script. You can start script again by providing another external trigger pulse. Exit mode by pressing ← or pause it manually from the panel by pressing →.

**Note:** XLR breakout connector is required. For using launch button from our website, connect Red and White crocodile clip on the corresponding ends of the cable. Alternately, an external pulse of 9-12V can be applied (positive terminal to white crocodile clip and black to the negative).

### 6.3.2. External trigger step fire

This feature allows to step fire through all cues by providing an external pulse similarly to remote step fire. In order to access this feature, navigate to **Fire -> Ext trig step**. Once you enter this mode unit will wait an external pulse signal. Each external trigger pulse will fire next cue one by one.

**Note:** XLR breakout connector is required. For using launch button from our website, connect Red and White crocodile clip on the corresponding ends of the cable. Alternately, an external pulse of 9-12V can be applied (positive terminal to white crocodile clip and black to the negative).

### 6.3.3. Countdown script start [in beta –functionality not guaranteed]

This mode uses GPS module to detect GPS time and start Full-Auto script at the specified time. For this mode to be active, there needs to be active GPS signal and GPS assist must be enabled (**Settings -> GPS assist -> GPS-A -> ON**). Furthermore, time needs to be specified at **Settings -> GPS assist -> Start time**. Use ↓ or ↑ to adjust timings, press → to confirm and move to the next value. To cancel setting up time, press ←.

Once GPS-A timings have been enabled and Start time set, go to **Fire -> Countdown FA** and a countdown will be initiated. To cancel, press ←. Once time is reached, Full-Auto script mode will be activated.

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## 7. SCRIPT TRANSFER

### 7.1. PC to WPS mote transfer

#### Transfer via PyroIgnitionControl software:

Connect your WPS mote with a USB cable to the computer. All necessary drivers should be downloaded automatically, if not locate the driver folder and run the executable file. Navigate to **PC Control**. Connect to the Pyro Ignition Control software:

- 1) Settings -> Options -> Ignition system and select necessary ComPort (usually the last one).
- 2) Then confirm the ComPort by going Settings -> Connect. WPS mote should now display "Connected!".
- 3) Window -> Ignitionsystem or press F7 -> Transfer show. If successful, you should see a confirmation message.

#### Transfer via WPS uploader (<http://wirelesspyro.co.uk/wps-uploader>):

Connect your WPS mote with a USB cable to the computer. All necessary drivers should be downloaded automatically, if not locate the driver folder and run the executable file. Navigate to **PC Control**. Open WPS uploader and select the COM port (usually the last one). Follow further instructions:

<http://wirelesspyro.co.uk/notes/using-wpsuploader>

WPS mote: You can now view the script on by going **Script -> View script**.

```
SCRIPT 1-3/10
CH:1 B1 00:01:000
CH:1 B2 00:02:000
CH:1 B3 00:05:000
```

Check that script is accurate and without errors. You can scroll through the script by pressing ↓ or ↑.

### 7.2. WPS mote to receiver transfer

In order to transfer the show to the receivers – navigate to **Script -> Transfer script**. All receivers for all channels should be turned on. If show was transferred successfully, you will see a confirmation message with 100%.

```
SCRIPT
Transfer finished!
Transferred: 100%
```

WPS hobby and WPS pro: Test that script was accurately transferred by navigating to **View script**.

### 7.3. Disable banks

Navigate to **Script -> Disable banks**. You can scroll through all enabled banks in your script by pressing ↓ or ↑. If you want to disable a specific Bank press → and change it to either ON or OFF position. Press ← or → to save your current configuration.

### 7.4. Delete script

WPS mote: Navigate to **Script -> Delete**.

WPS hobby and WPS pro: Navigate to **View script**. Hold down → for a second to view delete menu.

Have a question? Let us know and we will help.

Email: [support@wirelesspyro.co.uk](mailto:support@wirelesspyro.co.uk)

Phone: +44 (0) 7842 783136



## 8. SOFTWARE UPDATES

***WPS mote:*** Connect your WPS mote with USB cable to the computer whilst on. All necessary drivers should be downloaded automatically, if not locate the driver folder and run the executable file. Navigate to **PC Control**. Follow further computer instructions (<http://wirelesspyro.co.uk/notes/how-wps-update-manager-works>)

***WPS hobby and WPS pro:*** Navigate to **Settings -> Advanced -> Wireless update**. Connect your WPS mote to the computer through USB cable and navigate to **PC Control**. Follow further computer instructions.

**Note:** Current software version can be seen by navigating to **About**.

New versions are free to download on our website at <http://wirelesspyro.co.uk/updates>.

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## 9. ERROR CODES

WPS mote: 1 – EEPROM write cycles reached limit; 2 – flash write cycled reached limit; 3 – radio initialization failed; 4 – flash initialization failed; 5 – RAM initialization failed; 6 – keypad stuck.

WPS hobby and WPS pro: 3 – radio initialization failed; 4 – flash initialization failed; 5 – keypad button stuck; 7 – sensors are not calibrated; 6 – mosfet check has failed. In case of Error 6 please **proceed with caution**, as one of the firing mosfets have likely failed closed, please get in touch for more information.

*Have a question? Let us know and we will help.*

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