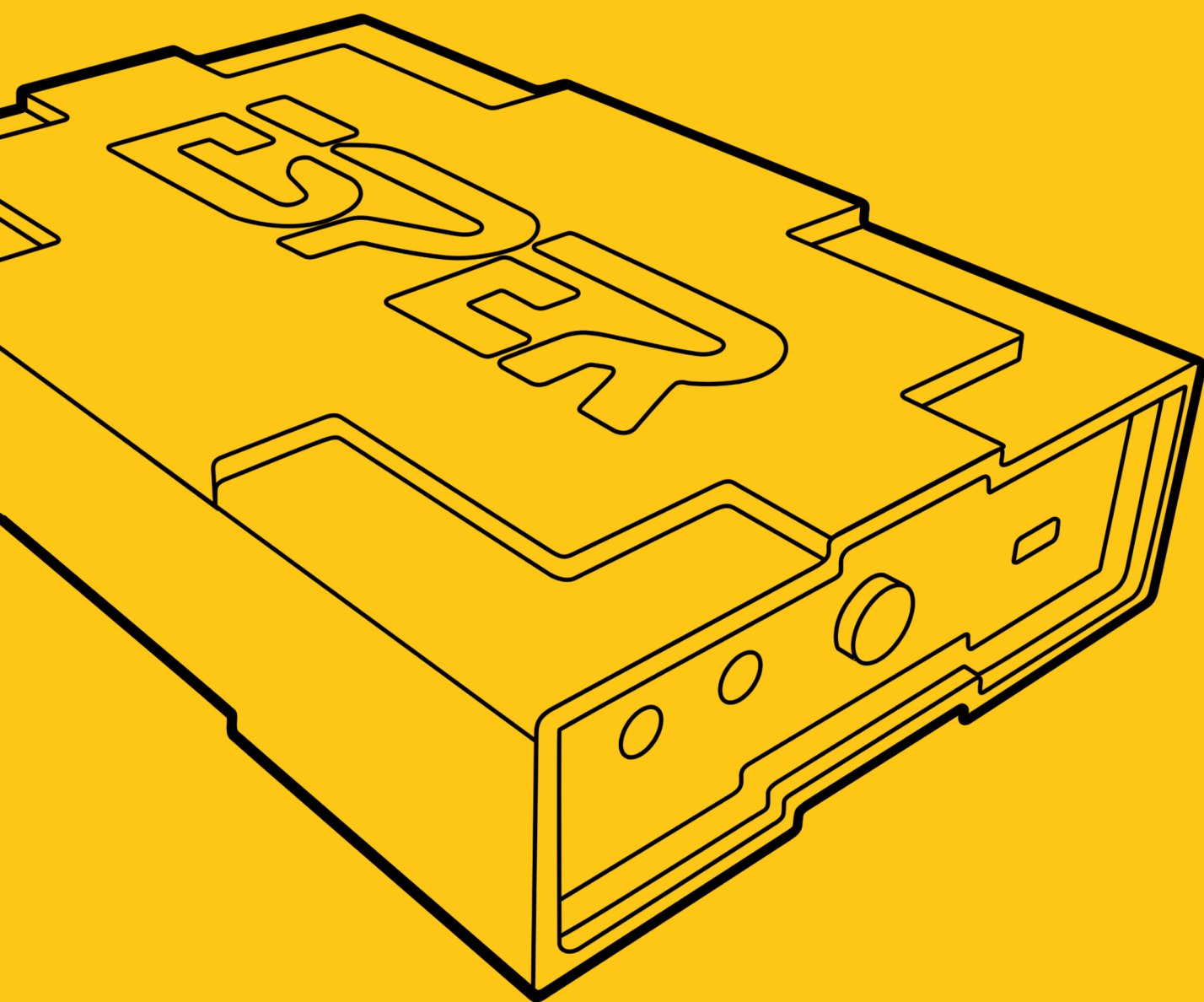


ESPER

TRIGGERBOX



User's Manual

Table of Contents

Overview	2
Accessories	4
Safety Warning	4
Connecting the TriggerBox to Cameras	5
Trigger Modes	7
Connecting the TriggerBox in 'All Trigger' (GREEN MODE)	7
Connecting the TriggerBox in 'Smart Trigger' (BLUE MODE)	8
Connecting the TriggerBox in 'Hybrid Trigger' (GREEN & BLUE MODES)	10
TriggerBox Controller Software	11
Download TriggerBox Software	13
Installing the software	14
Interval Mode	15
Delay Mode	17
Serial Instruction Set	18
Set-up procedure	18
Camera trigger notes	18
TriggerBox command modes	19
Complete commands list	20
Using Flashes	23
Camera combination	27
Troubleshooting	30
Steps to take before contacting support	30
Hardware issues	32
Software issues	32
Firmware	35
Technical Specifications	36
Compatibility	36
Two-Year Warranty	37

Overview

Thank you for buying an ESPER TriggerBox. The TriggerBox allows multiple camera shutters to be released from a computer or a single hardware release cable. Please refer to the instructions below to properly understand the functionality of hardware in your multi-camera setup.

Front



- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Input: 3.5mm 3 Pole Jack Opto-Isolated for connecting the remote shutter release 2. Link: 3.5mm 3 Pole Jack Opto-Isolated for connecting multiple units | <ol style="list-style-type: none"> 3. Mode Switch: Green (All Trigger) / Blue (Smart Trigger) 4. USB-C: Control, Program and Power the TriggerBox via a computer |
|---|--|

Back



5. **Outputs:** 6 x Opto-isolated 3.5mm 3 Pole Jacks for connecting cameras and flashes

What is included:

- ESPER TriggerBox
- 1m USB-A to USB-C cable
- Multi-region universal power supply

If you purchased the ESPER TriggerBox as a bundle it may include additional cabling.

Note: Please check all the contents of your order upon receipt of goods. If you receive a delivery and an item is missing, please notify us within 48 hours of your order collection. Issues raised after this period are subject to possible rejection, resulting in the denial of a replacement of the missing item. You can still return your item/s within 30 days of the date of receipt of your order and receive a refund.

Accessories

Multiple TriggerBox units can be used to trigger an unlimited number of cameras and flashes.

Additional triggers can be purchased at

<https://www.esperhq.com/product/multiple-camera-trigger-triggerbox/>.

Camera connecting cables are available for many different cameras makes and models. Additional camera cables can be purchased at <https://www.esperhq.com/products/?show=all>.

TriggerBox is designed to stack neatly together with the PowerBox units. Multi-camera power solution can be purchased at <https://www.esperhq.com/product/multi-camera-power-supply-powerbox/>.

Safety Warning

To prevent injury to yourself or to others make sure to read the following safety precautions before using the equipment. Please read and follow these instructions:

- Do not disassemble or modify the product.
- Do not expose the product to high temperatures, severe cold or high humidity.
- Keep out of the reach of children.
- Turn off immediately in the event of a malfunction.
- Do not operate the unit in the presence of flammable gas or vapours.
- Do not attempt to disassemble or perform any unauthorised modification.
- Turn off the power of the camera before inserting or removing the trigger cables.
- Make sure the item is intact and that there are no missing parts.
- Turn off the camera and flash, before attaching or removing the ESPER TriggerBox.

Connecting the TriggerBox to Cameras

Follow these 3 steps and you'll get your Esper TriggerBox up and running in no time. By the end, you'll have your cameras connected and ready to start using.

Step 1. Connecting your cameras to the TriggerBox

Each camera is connected to a single output socket of the TriggerBox (**fig.1 a**) via a 3.5mm adaptor cable.



Figure 1. ESPER TriggerBox - Trigger outputs.

Step 2. Linking multiple TriggerBoxes together

Multiple TriggerBoxes can be connected together to allow for the triggering of more than 6 cameras to create larger multi-camera setups. Multiple TriggerBoxes are linked by connecting a 3.5mm stereo cable to the link socket (**fig.2 a**) of the first TriggerBox and then to the input (**fig.2 b**) of the next unit and repeating down the line.



Figure 2. ESPER TriggerBox front panel.

Step 3. Switching between TriggerBox modes

The TriggerBox is switchable between two modes of operation. Switch between the two modes by pressing the 'Mode' LED button (see fig. 3) on the front of the unit.



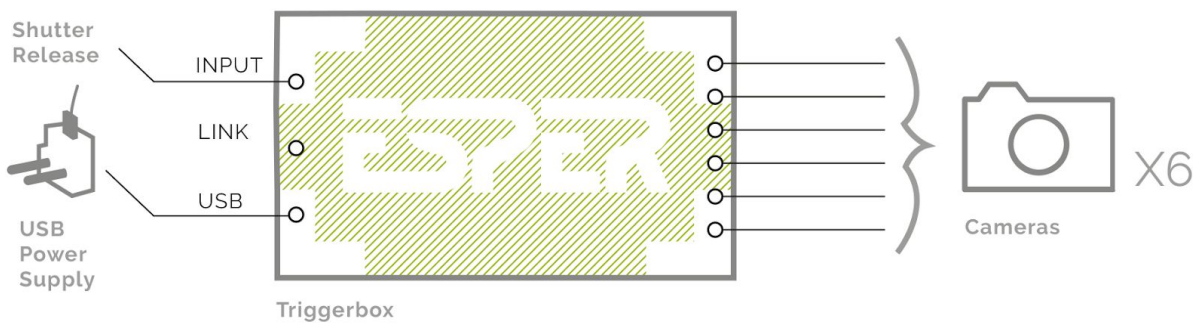
Figure 3. Mode LED switch

- **LED is Green (fig.3 a) : All Trigger mode** - all 6 outputs and the link socket fire at once when a shutter release is connected to the input socket.
- **LED is Blue (fig.3 b) : Smart Trigger mode** - all 6 outputs and the link socket can be fired from a computer or a shutter release plugged into the TriggerBox input. All the outputs can be individually turned on and off, delayed and programmed in sequences, via the USB connection.

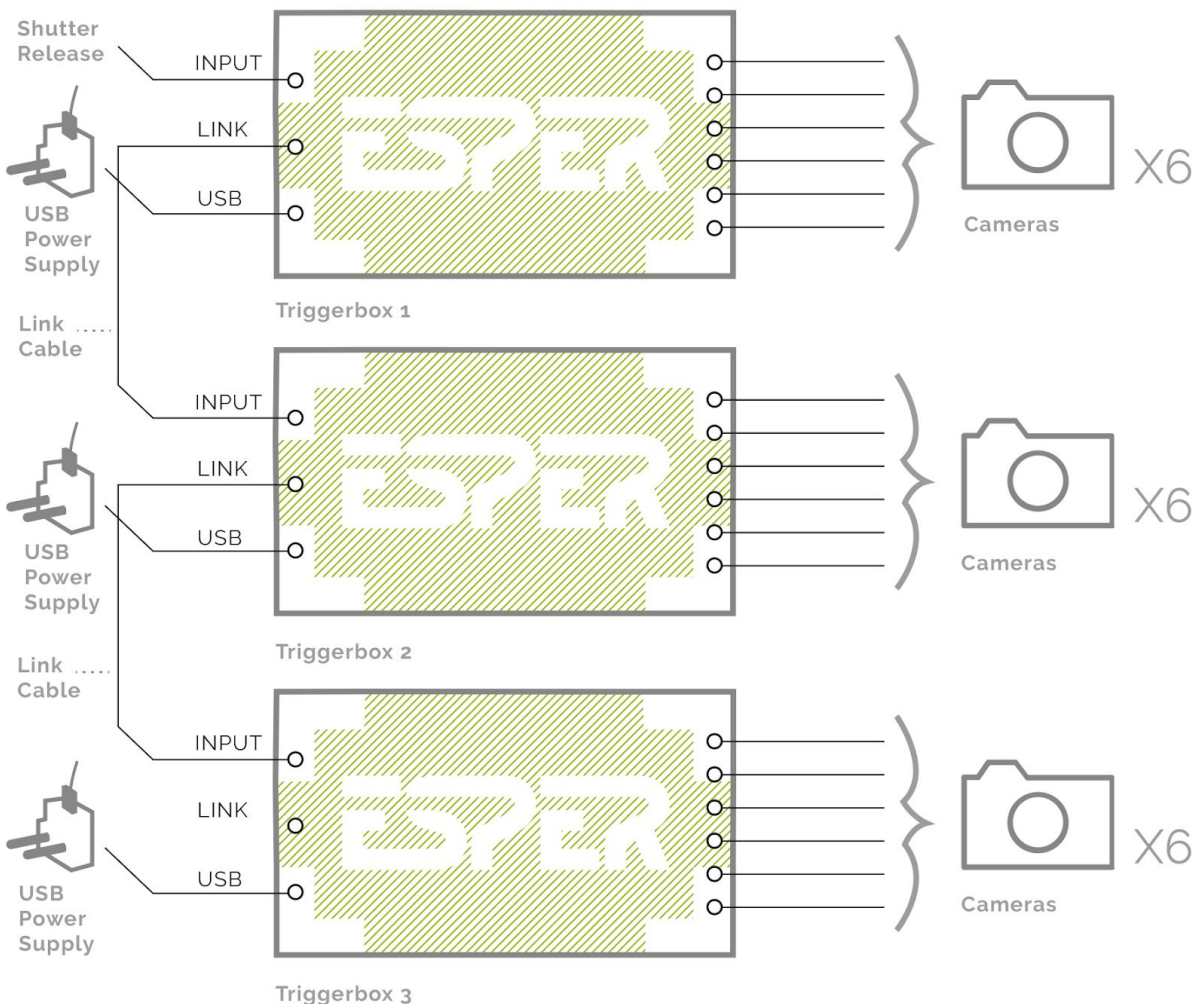
Trigger Modes

Connecting the TriggerBox in 'All Trigger' (GREEN MODE)

1. Connecting a Single TriggerBox - in All Trigger (GREEN MODE)

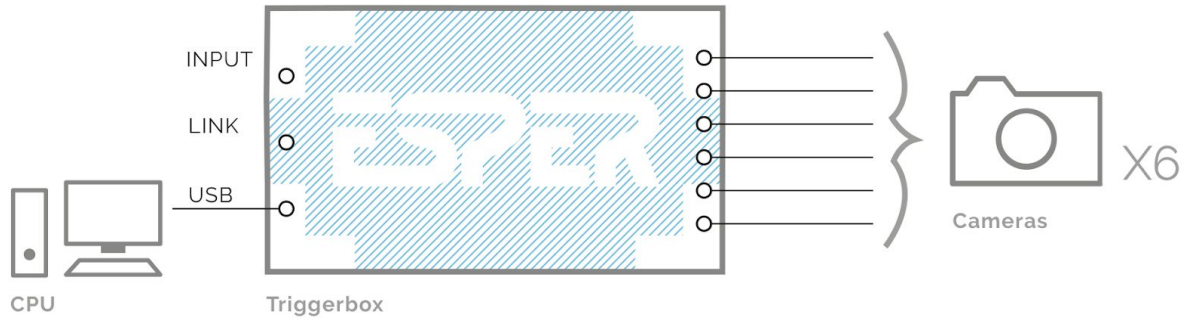


2. Connecting Multiple TriggerBoxes - in All Trigger (GREEN MODE)

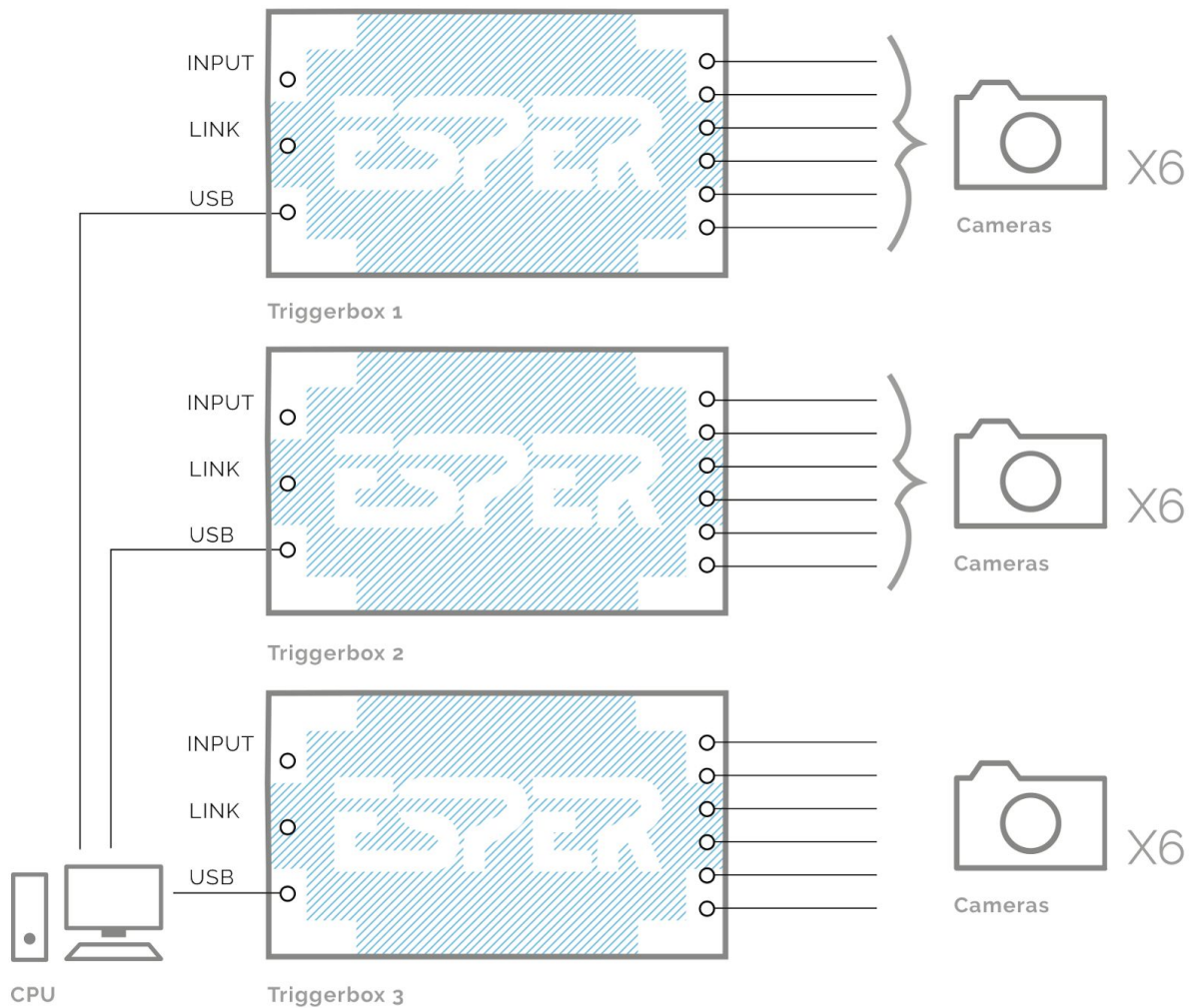


Connecting the TriggerBox in 'Smart Trigger' (BLUE MODE)

1. Connecting a Single TriggerBox - in Smart Trigger (BLUE MODE)

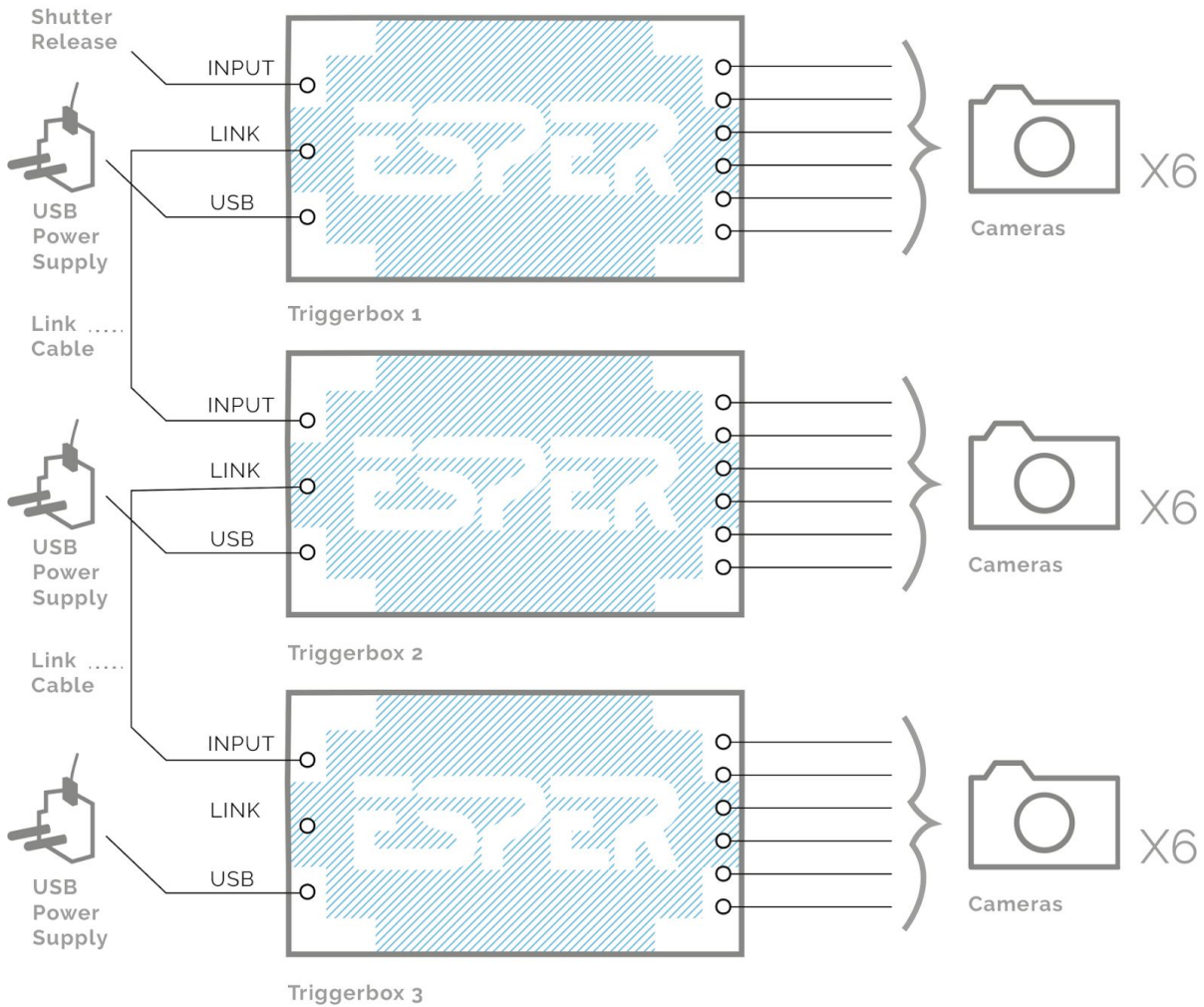


2. Connecting Multiple TriggerBoxes via CPU - in Smart Trigger (BLUE MODE)



3. Connecting Multiple TriggerBoxes - in Pre-Programmed Smart Trigger (BLUE MODE)

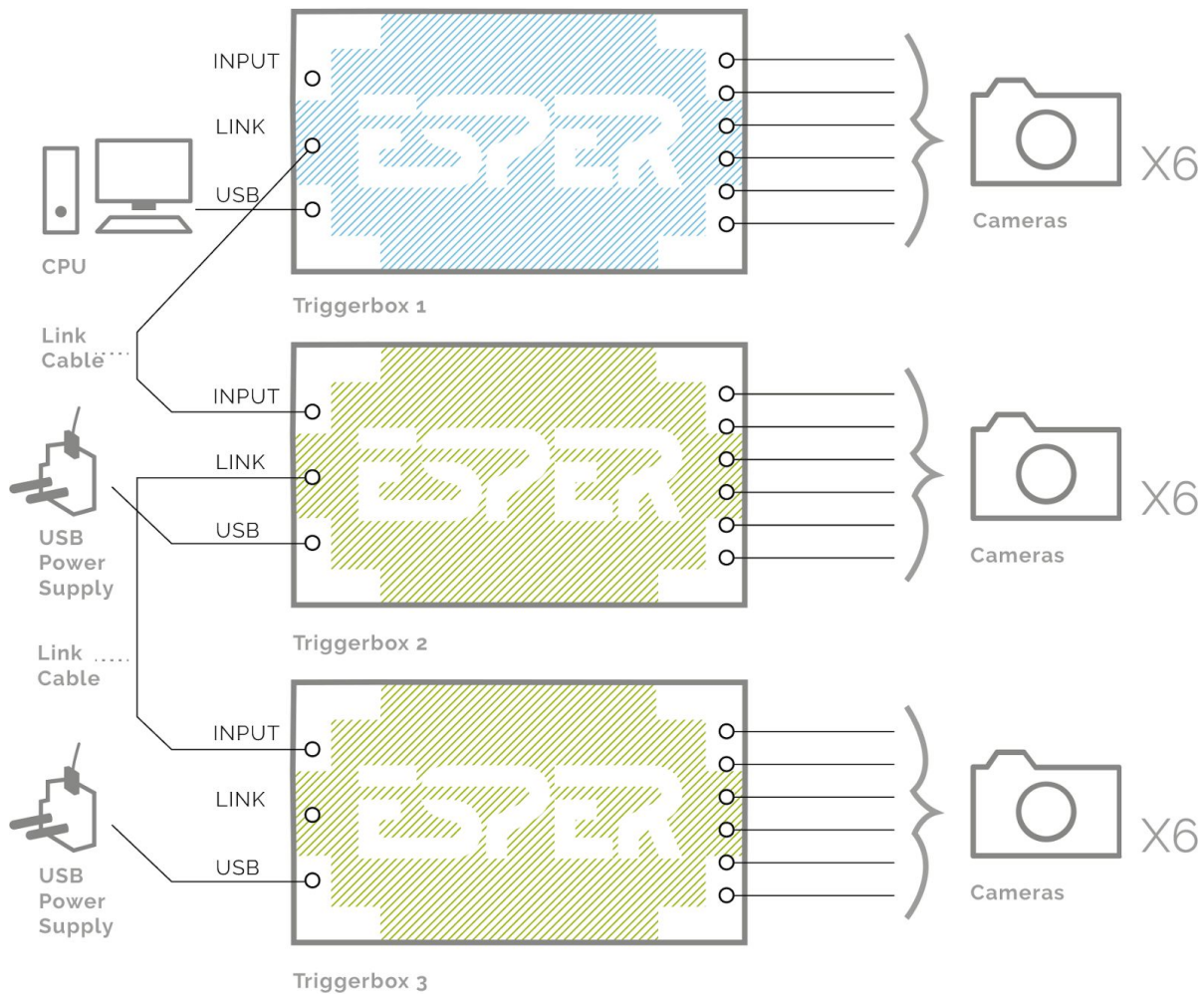
Tip: When in 'Smart Trigger' (BLUE) Mode, it is possible to programme the TriggerBox with a computer and then store the setting 'in memory' for triggering at a later time by a computer or remote shutter release.



Connecting the TriggerBox in 'Hybrid Trigger' (GREEN & BLUE MODES)

1. Connect Multiple TriggerBoxes as a Hybrid Trigger (GREEN & BLUE MODES)

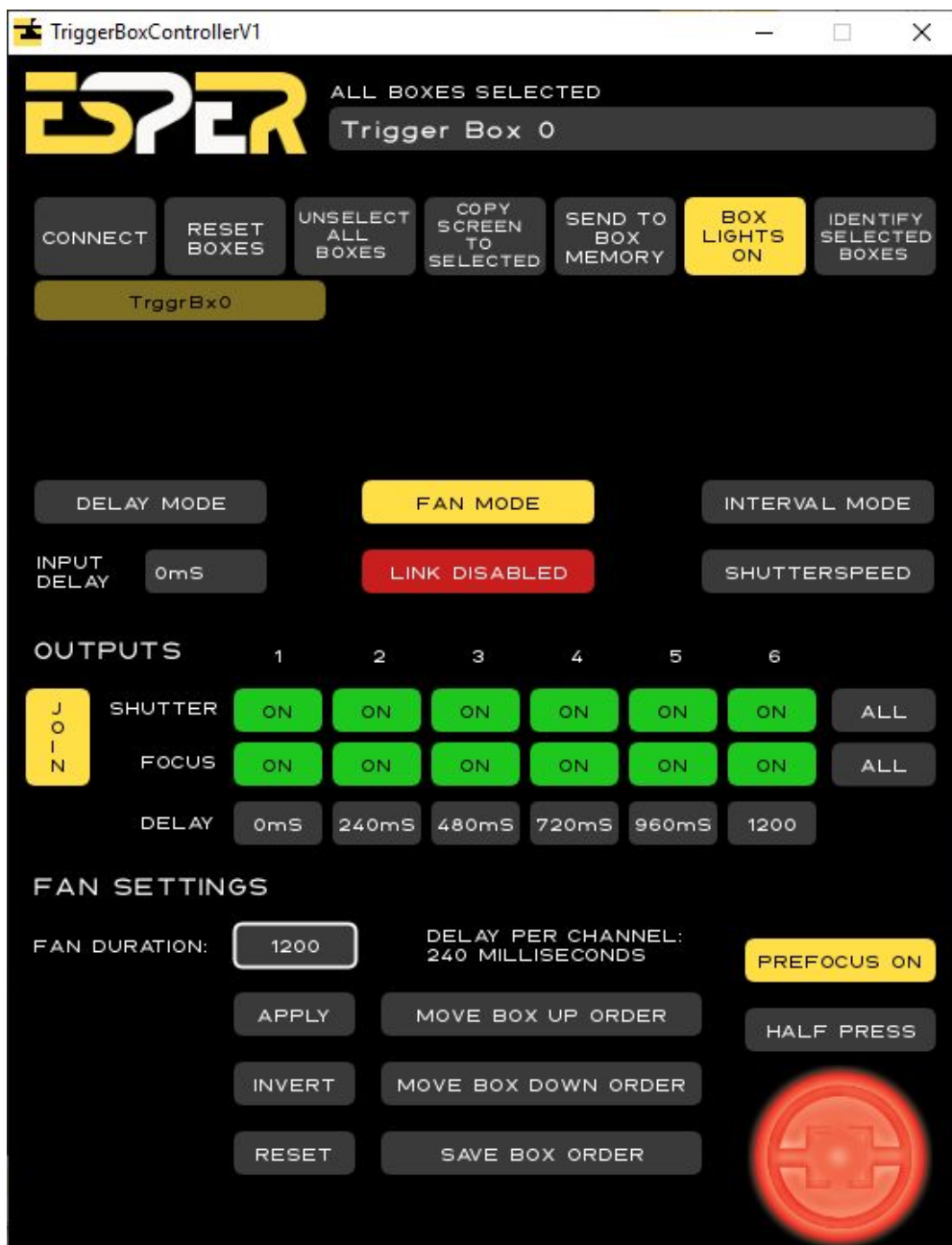
Switch the first TriggerBox in the chain to 'Smart Trigger' Mode (BLUE) and connect to a Computer. Connect flashes and / or camera models and link together with your remaining TriggerBoxes and switch them to 'All Trigger' Mode (GREEN).



TriggerBox Controller Software

The TriggerBox Controller software allows firing the TriggerBox outputs from a computer as well as accessing the advanced features of the box.

- **Outputs** - 1-6 and the link socket can be selectively turned on and off.
- **Delay** - values can be assigned to outputs 1-6 allowing tighter synchronization between different camera models and with flash/strobe lighting.
- **Sequencing** - sequence up to 8 stages with different settings for a more creative shot.
- **Bulb mode timer** - assigns a fixed length of time to the trigger button press.
- **Intervalometer** - fires all 6 outputs at pre-determined intervals or time periods with bulb ramping.



Top menu:

Function	Description
Connect	Connects all TriggerBoxes switched to 'Smart Trigger' (Blue mode).
Reset Boxes	Resets all TriggerBoxes settings to default.
Select All boxes	Selects all the connected TriggerBoxes. Any changes made on the screen will be made to all the selected boxes.
Copy screen to Selected	The current screen settings will be copied to the selected TriggerBoxes.
Send to box memory	Saves the current settings to the selected boxes memory, when in blue mode the TriggerBox will start up with these settings. Use this to store settings for a permanent fixed installation where there is no need to change settings.
Box Lights On	Switches the mode light on or off for all the selected TriggerBoxes. Useful should a mode light be visible in the shot.
Identify Selected Trigger Boxes	Flashes the mode light of the selected TriggerBoxes to aid identification and naming.

Outputs 1-6:

Function	Description
Join	Links the toggling of Shutter and Focus operations across all outputs.
Shutter	Turns the shutter release off and on for each output.
Focus	Toggles the autofocus line off and on for each output.
Shutter - All	Toggles outputs 1-6 shutters on/off.
Focus - All	Toggles output 1-6 Focus on/off.

Bottom:

Function	Description
Pre-Focus	Toggles the camera to focus before the closing of the shutter - please note if this is running on a battery this will increase the power consumption considerably.
Half Press	Simulates holding down the camera shutter release button to the halfway point.
Big Red Button	Fires the Shutters.

Download TriggerBox Software

To download the TriggerBox Controller software 1.6 click here:

<https://s3-us-west-1.amazonaws.com/espercontrollersoftware/Triggerbox/TriggerBoxController-1.6.zip>

The following are the system requirement for installing ESPER TriggerBox Controller Software and operating and setting the cameras from your PC.

Windows System Requirements

Operating System	Windows XP SP2, Windows Vista, Windows 7, Windows 8, Windows 10. USB with 2.0 port must be standard equipment.
CPU	Processor with 2GHz or faster.
RAM	A minimum of 512 MB of RAM.
Monitor	Monitor Resolution 1024 X 768 or higher.
Free Storage	250 MB or more.

Macintosh System Requirements

Operating System	Mac OS X 10.3.9 or later preinstalled. USB with 2.0 port must be standard equipment.
CPU	PowerPC G4 1GHz or faster.
RAM	A minimum of 512 MB of RAM.
Monitor	Monitor Resolution 1024 X 768 or higher.
Free Storage	250 MB or more.

Installing the software

1. Download the latest version of the ESPER TriggerBoxController software here. The software will download within a zip file (fig. 4.1). Once it has finished downloading right click and extract all to 'TriggerBoxController-1.6' folder (fig. 4.2).

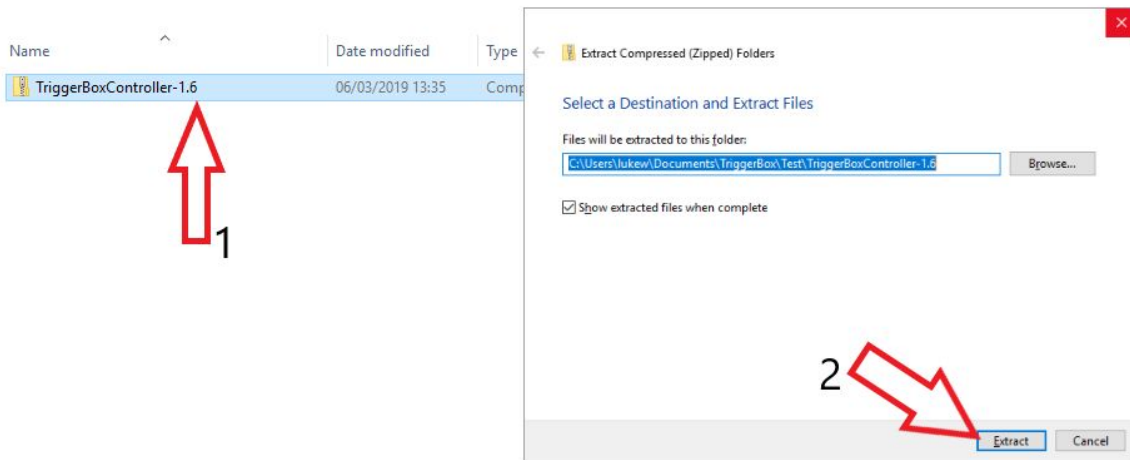


Figure 4. TriggerBoxController software zip file

2. Once extracted, you will see 3 folders and the TriggerBoxController-1.6.jar file. Keep all files & folders in this folder. Double click the TriggerBoxController-1.6.jar file to open the software (fig. 5.1).

Note: When you first run the software it will check you have an up to date version of Java and prompt a download if you don't.

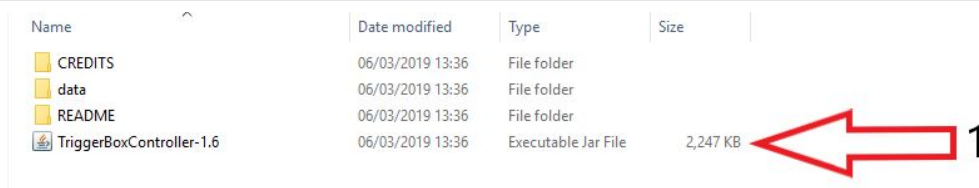


Figure 5. TriggerBoxController Software Extracted

Tip: If the application won't open then check that your version of Java is up to date here <http://www.java.com/en/download/installed.jsp>

3. Once open you need to press 'Connect' on the ESPER software and the available boxes will appear under the 'Connect' button. You can then select one or multiple boxes and alter each boxes settings and fire using the big red button located in the bottom right corner.

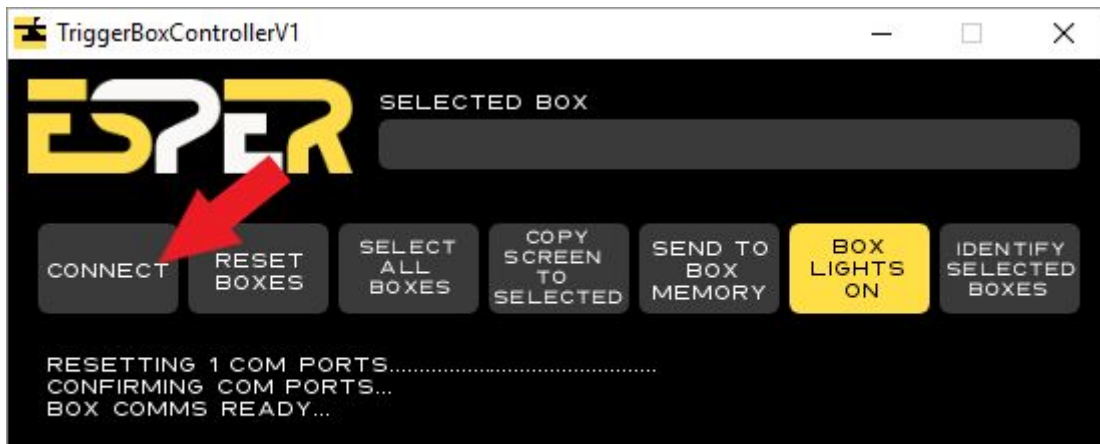


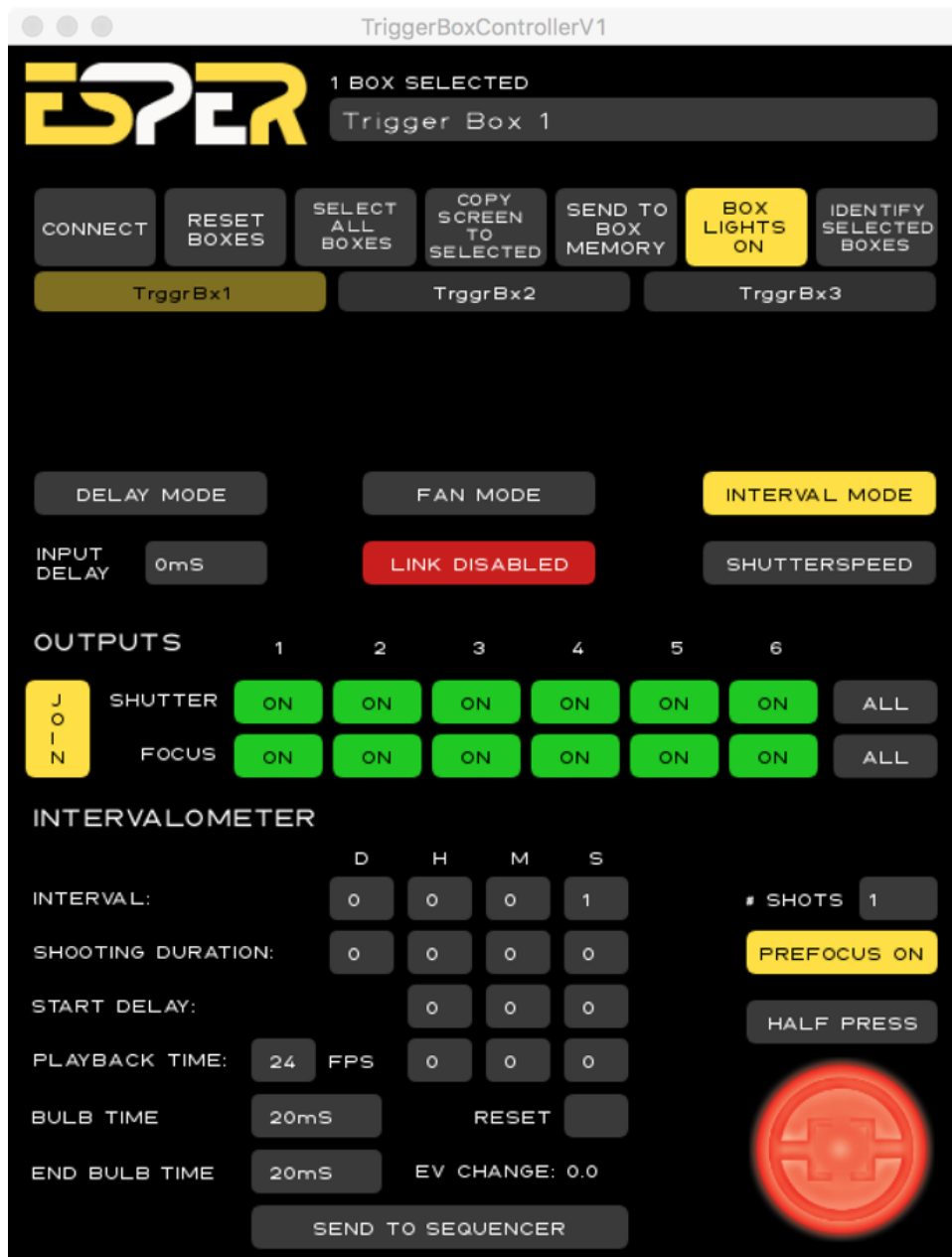
Figure 6. TriggerBoxController software - connecting a TriggerBox

Interval Mode

Interval Mode allows the TriggerBox to be used as a multi-channel intervalometer all 6 outputs fire at once on all the connected TriggerBoxes. To allow for the creation of multi angle time lapse sequences, useful in both research and creative applications.

The intervalometer can set the interval between shots, the total duration of shooting, the total number of shots, the total playback time of the clip, delaying the start of shooting, exposure ramping by varying the bulb time over the duration of shooting.

The intervalometer can also be used to step between sequence stages in delay mode allowing for the construction of complex sequences of images from different angles over a period of time.



- **Interval** - the interval between shots.
- **Shooting duration** - the total duration of shots.
- **Start Delay** - Delay the start of intervalometer shooting by up to 23 hrs 59 mins and 59 secs.
- **Playback Time** - set the frame rate (fps) and total playback time of the sequence.
- **Bulb Time** - set the length of the shutter button press- note this setting is carried across to both delay mode and fan mode.
- **End Bulb Time** - set the length of the bulb time.
- **Reset** - zeros intervalometer settings.
- **Send to sequencer** - the fire signal from the intervalometer is sent to the sequencer to allow the automatic stepping through of sequencing settings.
- **# shots** - total number of shots.

Delay Mode

Sequencer

The TriggerBoxController can run an 8 step sequencer - the sequencer moves to the next step by either pressing the red button or connecting an external trigger to the input connection.

Add Sequence Stage

Add another sequence stage. Once added, you are able to add in delays different from the previous sequence.

Remove Sequence Stage

Removes the last sequence added. All settings will also be removed once the sequence is deleted.

Repeat Stage

Repeats stage - Please Note stage repeats are only available when controlling the TriggerBox from the TriggerBox Controller software - if the sequence settings are saved to the box memory and the TriggerBox is triggered using a wire remote the TriggerBox will cycle to the next sequence step when it receives a signal at its input.

Serial Instruction Set

Everything you need to know about controlling ESPER TriggerBox from your own software. Learn about set-up procedure, camera trigger notes and command modes.

Set-up procedure

1. Connect TriggerBox to the computer.
2. Ensure box switch is set to blue mode.
3. Ensure OS has identified TriggerBox as USB Serial Port (Windows)/ FT232R USB UART (Mac).
4. Drivers should install automatically. If not, the latest COM port drivers can be found at: www.ftdichip.com/Drivers/VCP.htm

Any TriggerBox running firmware 1.2 will communicate at 115200baud, no stop bits, no parity bit. Instructions to the TriggerBox must be printed using standard ASCII encoding. Any instructions sent to the box must end with a \n (newline) character. The TriggerBox acts as a basic COM port, which must be opened and closed after every session. The specifics of opening and closing COM ports are platform/software dependant, refer to your software/library user guide.

The first character of an instruction specifies either an action to be performed immediately, e.g. "S" to fire shutters, or defines a programmable parameter, e.g. "s000111" to enable only the last three shutter outputs. TriggerBox settings can be saved to the internal memory (EEPROM) through the "O" command. Upon power-up the box will recall saved settings, negating the need to program again.

Any timing value sent to the TriggerBox is in milliseconds, and has a valid range of 0 to 30,000 milliseconds.

Camera trigger notes

Many cameras require that their focus input is asserted before they will react to a shutter signal. This depends on the make, model and camera settings. If possible, it is advised to set the camera to full manual exposure mode and disable autofocus to achieve the most consistent timings.

Different cameras respond at different rates to the combination of asserting the focus line followed by the shutter line. Therefore, it is sometimes required to insert a delay between the focus command and shutter command.

Tip: Many common camera model performance values can be found at <http://www.imaging-resource.com/cameras/reviews/>. While these values may not be definitive for every use case, they are a good starting point.

While the focus line is asserted, most cameras will not respond to communication via USB or physical button presses on the camera. Therefore, it is critical that the focus line is de-asserted using "F0" before attempting to download images or change settings. Some camera models require that the focus line is de-activated between each shot when using mirror-lockup or bulb mode.

TriggerBox command modes

The TriggerBox has two command modes, Simple Mode and Sequence Mode.

Simple Mode

Simple mode allows the user to enable individual focus and shutter outputs and upon receipt of an "S" command will release the enabled outputs.

Example Simple Mode six camera command string:

<set-up>

m0 (set box to Simple Mode)

s111111 (enable all shutter outputs)

f111111 (enable all focus outputs)

<each shot>

F1 (focus camera)

<wait camera response time value> (allow camera to respond to half button press)

S (release shutter)

F0 (release focus)

Sequence Mode

Sequence mode allows the user to specify up to eight stages. Each stage allows every output's shutter and focus line to be enabled as well as an assignable output delay. The default sequencer setting only has one sequence stage. The first stage is labelled zero. Up to seven subsequent stages can be added using the command "P".

A shutter release command will cause the sequencer to advance to the next stage.

A select stage command "jx" allows the sequencer to be started from stage x.

Example Sequence Mode command string:

<set-up>

m2 (set box to Sequencer Mode)

```
<program stage 0>
s111111 (enable all shutter outputs for this stage)
f111111 (enable all focus outputs for this stage)
d100 200 300 400 500 600 (assigns each output delay to 100 200 300 400 500 600 milliseconds)<br>
```

```
<program subsequent stages>
P (add stage)
j1 (select stage 1)
s111111 (enable all shutter outputs for this stage)
f111111 (enable all focus outputs for this stage)
d0 0 0 0 0 0 (assigns each output delay to 0 milliseconds)<br>
```

```
<fire shutters>
j0 (selects sequence point 0)
F1 (focus camera)
<wait camera response time value> (allow camera to respond to half button press)
S (release shutter)
F0 (release focus)
```

Complete commands list

Tip: All commands that do not return a data string will return "tenFour", with the exception of the fire the shutters command. It is advised to wait for the TriggerBox to print "tenFour" before issuing another command.

General Commands:

Command	Description
S	Fire the shutters. If the box is in Sequencer Mode, it will move to the next available stage.
F1 / F0	Assert or de-assert the focus outputs, according to the current focus enable settings.
bxxxx	Set bulb time (how long the shutter control line is asserted in milliseconds).
B	Print "BulbTime:[xxxx]."
d8 23 456 99 32 1	Set the current sequencer stage delay values. (also prints "updating stage delay tables").
D	Print the current sequencer stage delay array "Delays:[12 23 34 45 56 67]".

f111000	Set the current focus to enable array.
s000111	Set the current shutter to enable array.
V	Print "FocusArray:[EN EN EN DIS DIS DIS]".
G	Print "ShutterArray:[DIS DIS DIS EN EN EN]".
*calling_ESPER_triggerBox	Puts box into "find me mode" - it will print TriggerBox:[box_id] every 100mS until a '^' char is sent. This is used by the TriggerBoxController GUI to enumerate boxes on startup.
E	Prints freeMemory():[815] - the number of bytes of free memory in box's RAM.
O	Writes the box's current settings to EEPROM, so that settings will be recalled the next time the box is powered up.
R	Box will read the settings from its EEPROM into RAM. This also happens on box startup.
nExample Name	Set the box's internal name.
N	Print "BoxName:[Example Name].
l1 / l0	Turn front mode light on or off.
L	Print "Light:[EN/DIS]".
m0 / m2	Set mode to simple mode or sequencer mode.
M	Print Mode:[0].
z123	Set input delay to 123 millis.
x897	Set link delay to 897 millis.
Z	Print "InDelayMils:[0]".
X	Print "LinkDelayMils:[0]".
i34	Set box id to 34. This is used by the TriggerBoxController GUI to enumerate boxes on startup.
I	Print "BoxID:[34].
k1 / k0	Enable or disable the link output.
K	Print "chainEnable:[EN/DIS]".
q	Resets each value of EEPROM back to default - prints each index it resets, to indicate progress. Complete at 1023, takes around ten seconds.
Q	Print each value of each EEPROM address.

p	Prints "Version x.x" referring to firmware.
---	---

Sequencer Specific Commands:

Command	Description
Y	Move to next enabled sequencer stage, or wrap round to zero stage if at the final activated stage.
j3	Moves the sequencer to its 4th stage (zero start index).
J	Print "STG_NDX:[3]".
P	Activate the next available sequencer stage. Prints "ERR:tooManyActiveStages" if eight stages are active.
U	Deletes current stage. Subsequent stages, if present, move to fill the gap. Prints "ERR:notEnoughStages" if only one stage is active.
W	Print "NM_ACTV_STG:[1]" (number of active sequence stages).
w	Print the sequencer in easy to read format.
T	Reset the sequencer to default.

Using Flashes

The TriggerBox is capable of triggering a flash/strobe unit as well as your cameras. Any flash that can be connected directly to a camera is safe to be connected to the TriggerBox.

Note: If you are unsure if your flash is compatible with the TriggerBox contact us. Some older flashes & strobes trigger at significantly higher voltages than the TriggerBox is designed to operate with.

Connecting your flash to the TriggerBox

Setting up your flashes with the TriggerBox is straight forward and doesn't take much time at all.

1. Connect your cable from your flash to a TriggerBox output (**fig. 7.a**) This is typically a 3.5mm - 3.5mm jack cable connecting from the sync connection of the flash unit to a TriggerBox output. In this guide, we will use output 6.



Figure 7. TriggerBox rear outputs panel 1-6

2. Once you have hooked up your flash unit, you can plug all your cameras into the TriggerBox and connect the TriggerBox to your PC via a USB cable.

3. Launch the TriggerBoxController software and press connect on the software.

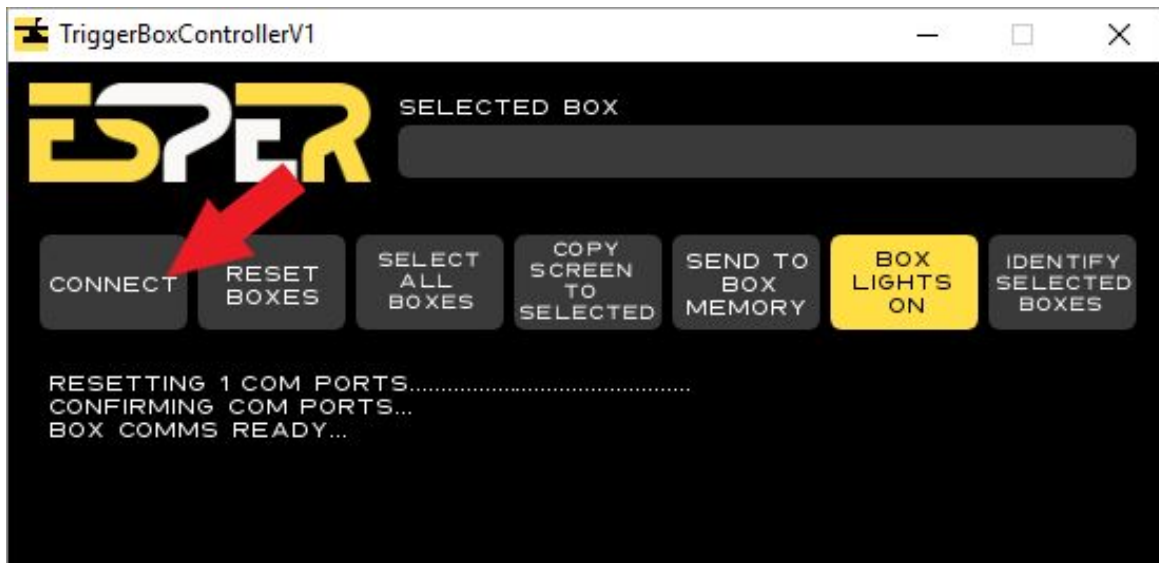


Figure 8. TriggerBoxController software

4. Once the TriggerBox is connected to the software, conduct a test shot by pressing the red button at the bottom right of the screen. If the flash fires then it is receiving a signal. If it doesn't fire it is not receiving a signal. Check the cable is seated correctly and try again. If again it doesn't fire change the cable connecting the flash to the TriggerBox. If you are still experiencing problems, please get in touch letting us know the make and model of your flash/strobe and we can advise on its compatibility.

5. Hopefully, all the cameras in your setup will have captured an image. If not, the first thing to check is that the settings on all the cameras are identical. With multi-camera setups, it is critical that all the camera shutters are open at the same time so it is important to ensure all the cameras are set to Manual Focus and use a slow shutter speed (such as 1/10). If all your camera settings are the same and some cameras are still not getting a proper exposure you will need to delay the firing of the flash.

Capturing the flash during the exposure

1. Flashes are much more responsive than cameras. In order for your multi-camera setup to capture the flash reliably, you may have to delay the TriggerBox output that is connected to the flash. This will ensure the flash fires once all your cameras shutters are open. The delay can be programmed using the TriggerBoxController software.

2. The delay value can be worked out through a simple calculation using:

- Your cameras shutter lag (response time)
- Half of the shutter duration

Your cameras shutter lag can be found online via Imaging Resource who hold all information about most camera models including full specification. Simply type in your camera model and view Full specification.

Canon SL2 Review

Camera Reviews / Canon Cameras / Canon EOS

Tweet Share

REVIEW *i*

SL2 Overview Optics Exposure Performance Samples Gallery Field Test Image Quality Conclusion Prices

Navigate Review ▾

24.20 Megapixels	Canon EF/EF-S	APS-C size sensor
------------------	---------------	-------------------



Basic Specifications	
Full model name:	Canon EOS Rebel SL2 (EOS 200D)
Resolution:	24.20 Megapixels
Sensor size:	APS-C (22.3mm x 14.9mm)
Kit Lens:	3.06x zoom 18-55mm (29-88mm eq.)
Viewfinder:	Optical / LCD
Native ISO:	100 - 25,600
Extended ISO:	100 - 51,200
Shutter:	1/4000 - 30 sec
Max Aperture:	4.0 (kit lens)
Dimensions:	4.8 x 3.6 x 2.7 in. (122 x 93 x 70 mm)
Weight:	23.6 oz (668 g) includes batteries, kit lens
Available:	07/2017
Manufacturer:	Canon
Full specs:	Canon SL2 specifications

SL2 SUMMARY
Canon's compact "mini DSLR" gains some much-needed upgrades. With a higher-resolution APS-C

Figure 9. Imaging Resource website

The method to calculate the delay needed for your flash to be captured can be found below. This can be used for all cameras:

$$\text{Camera Shutter lag} + 1/2 \text{ Camera Shutter Speed} = \text{Flash Delay}$$

Below is an example of finding the flash delay when using Canon 200D cameras at 1/10 shutter speed.

First, you will need to convert the cameras fraction shutter speed to milliseconds by dividing 1 over the bottom number and then multiplying by 1000. So in this example 1 divided by 10 = 0.1 and 0.1 multiplied by 1000 = 100 so the cameras shutter is open for 100mS.

$$61\text{mS (Shutter Lag)} + 50\text{mS (1/2 Shutter Speed)} = 111\text{mS (Flash Delay)}$$

3. Once you have calculated your flash delay, you need to load it to the TriggerBox via the TriggerBoxController software. Simply enter the value in the delay box for the output you have the flash connected to; in our example, the flash is connected to output 6 and the calculated delay value of 111mS has been entered.

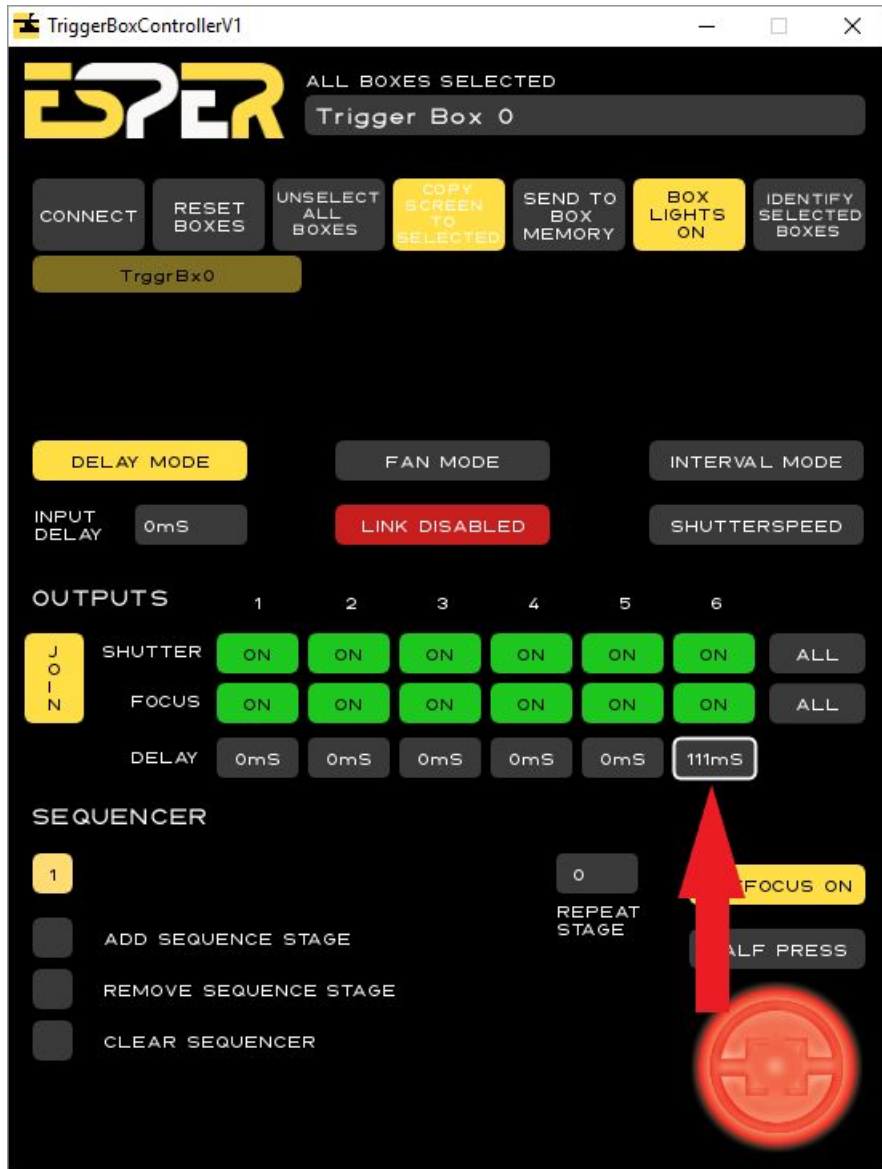


Figure 10. TriggerBoxController software with flash delay on output 6

By using this method your flash/strobe will fire roughly within the middle of the exposure window. The delay value may still need fine-tuning as some cameras shutter lag can vary with every exposure. The above calculation will get you a good starting point which you can then increase or decrease in 5mS increments to ensure a good exposure every time.

Tip: View Imaging resource website <https://www.imaging-resource.com/>

Camera combination

We understand that not everyone has the same camera models within their setup and some people who want to use different cameras for different reasons. The effect of using different camera models and brands means you will have different shutter lags which will cause some cameras to fire quicker than others causing the cameras to not be synced. But don't worry. We will go over this and how to resolve it in this guide!

Getting Setup.

1. The first step that you need to take is getting all your cameras connected to the TriggerBoxes. If you need a guide on this please follow our Connecting the TriggerBox to Cameras guide.
2. Now you've got all your cameras connected to the TriggerBoxes, you need to launch the TriggerBoxController software and connect the TriggerBoxes to the software.

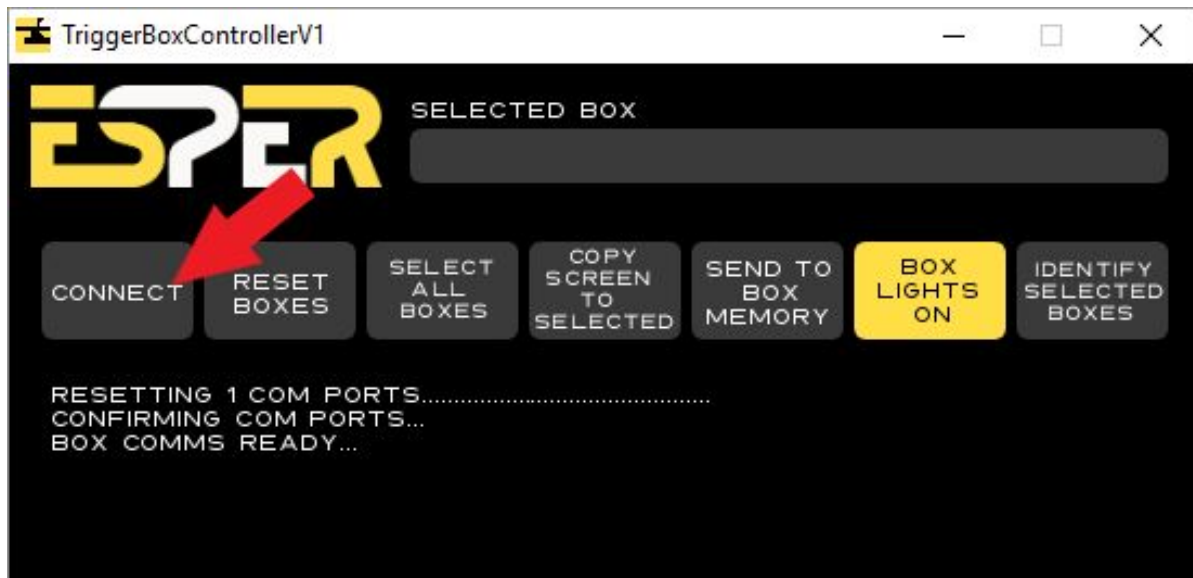


Figure 11 - TriggerBoxController software

Finding your cameras shutter lags.

3. Now that your TriggerBoxes are all connected to the software, you need to look up the shutter lags of the cameras that you are using. These can be found on your camera manufacturers website or you can use Imaging Resource.
4. Hit the search button in the top right-hand corner and type in your camera model. Suggestions will start to appear for what you have typed. Once you have found your camera model click it and you will be taken to the page with information on your camera model. View your cameras full spec.

Canon SL2 Review

Camera Reviews / Canon Cameras / Canon EOS

Tweet Share

REVIEW *i*

SL2 Overview Optics Exposure Performance Samples Gallery Field Test Image Quality Conclusion Prices

Navigate Review ▾



Basic Specifications	
Full model name:	Canon EOS Rebel SL2 (EOS 200D)
Resolution:	24.20 Megapixels
Sensor size:	APS-C (22.3mm x 14.9mm)
Kit Lens:	3.06x zoom 18-55mm (29-88mm eq.)
Viewfinder:	Optical / LCD
Native ISO:	100 - 25,600
Extended ISO:	100 - 51,200
Shutter:	1/4000 - 30 sec
Max Aperture:	4.0 (kit lens)
Dimensions:	4.8 x 3.6 x 2.7 in. (122 x 93 x 70 mm)
Weight:	23.6 oz (668 g) includes batteries, kit lens
Available:	07/2017
Manufacturer:	Canon
Full specs:	Canon SL2 specifications

SL2 SUMMARY

Canon's compact "mini DSLR" gains some much-needed upgrades. With a higher 24MP APS-C

Figure 12 - Imaging Resource camera information page

5. You now need to look for the section on shutter lag. This is found under 'Performance Timings'. Look for Shutter Lag (prefocused) and there you will see your cameras shutter lag in seconds.

Shutter Lag (manual focus): 0.069 seconds

Shutter lag (full AF, with flash): 0.29 seconds

Shutter Lag (prefocused): 0.061 seconds

Shutter Lag (notes):

Startup Time: 0.6 seconds

Play -> Record Time: 0.4 seconds

Figure 13 - Imaging Resource performance timing section

6. Once you have got all the delays for the different camera models, you need to work out the differences between the cameras. For Example:

If you have 2 different camera models; 1 with a delay of 113ms and another with a delay of 61ms; you need to subtract the fastest cameras (61ms) from the slowest cameras (113ms). The answer that you get is the delay that you need to apply to the fastest cameras so that they fire at the same time as the slow cameras.

$$\text{Slowest camera (113ms) - fastest camera (61ms) = delay (52ms)}$$

Assigning the delays.

7. Now that you have got your delay for the fastest cameras in your array, you need to assign it to the outputs that your fast cameras are connected to. If you have the fast cameras connected to ports 4, 5 & 6 you would assign the delay to these ports so that they would fire at the correct time.



Figure 14 - TriggerBoxController software

You are now ready to fire and should have all your cameras in sync when firing. If your cameras are still out of sync by a little bit, try increasing or decreasing the delay and see if this helps.

Troubleshooting

Find step-by-step guides to help you solve the most common TriggerBox problems.

Steps to take before contacting support

We at ESPER are proud of our high-quality products, but we are even more pleased with how well received these tools are. However, there are times when certain TriggerBox arrays might not be giving you the results you want. A lot of times, the limiting factor in the performance of any multi-camera system is the cameras themselves or the incorrect settings on your camera (active AutoFocus and quick shutter speeds being the most common issue).

Here are some steps you can take to hopefully save yourself the time it takes to submit a ticket and have our support team look into your issue. These are steps we would recommend you take anyway. We'll also let you know what information you can provide that will speed up the troubleshooting process for you and us both, in case none of these work for you.

STEP 1. Ensure your cameras are set correctly for multi-camera use.

Prosumer DSLR / mirrorless cameras are great pieces of modern engineering and design - however they are designed to be used in isolation so to optimise them for use in multi-camera setups they need to be set in very specific ways.

So to ensure the cameras are set correctly for multi-camera use follow these steps:

- 1. Confirm the cameras are in manual (M) exposure mode.**
Manual exposure mode will give you total control over the exposure settings and prevent the cameras from making decisions about the exposure which may delay the shutter release.
- 2. Confirm the AutoFocus (AF) is disabled on all cameras and lenses (if applicable)**
If AF is 'on' the camera will always try and acquire focus before they take the shot and in a multi-camera array, they won't all AutoFocus at the same time. Which means that the cameras won't all fire at the same time.
- 3. Check your shutter speeds**
In a multi-camera array, the typical shutter speeds you should be aiming for are between 1/5 and 1/15. Anything faster than this and you run the risk that all the cameras shutters will not be open at the same time.

Assuming a flash/strobe is being used the shutter speed will not affect the exposure as this will be determined by the flash duration.

- 4. Confirm all the cameras/lens apertures (f-number) are set to the same value.**
This is important as the aperture leaves in the lens close before taking the shot so if they are

not all the same value then they may delay the cameras firing. Recommended values are f8-f11.

5. Confirm all the cameras iso and white balance values are set the same

This is more to ensure the exposures are even across the cameras.

STEP 2. Fault finding the connections.

After the camera settings are confirmed it is then worth running a test with the TriggerBox in green mode to see if all the shutters open at the same time.

If there are still problems then it's down to fault finding the connections:

1. Swap the cable with one that was working

Connect a working trigger cable to the camera that's not firing. If this fixes the issue then it was an issue with the trigger cable. If not go to 2...

2. Keeping the cable the same swap the problem camera to one that is firing

If you find that the swapped camera works then it is either; a) an issue with the camera settings on the camera that wasn't firing, so double-check the camera settings (go to step 1) or b) a fault with the problem camera, in which case consult your camera's documentation.

If you are still experiencing problems then you will need to check the TriggerBox outputs, so go to 3...

3. Take a camera and cable combination that is known to work and plug into the output socket that is not firing.

If it fixes it look at the problematic camera and cable combination. If not then it is a fault with the TriggerBox output socket and you will need to contact our support team - see below.

What information you can provide when raising a support ticket.

Going through the steps above solves around three-quarters of the support tickets we receive. If this does not help, then here's what you can provide for us during your ticket submission in order to make your support experience as quick and seamless as possible.

1. **Tell us who you are** - knowing your name and which company you're from means we can personalise the support you receive.
2. **Describe the issue as clearly and as simply as possible** - explain which product you are having an issue with, the process you are going through and what isn't working as you expect.
3. **Tell us the steps you have taken already to try to resolve the issue** - not only just this helps us narrow down the reason for the issue it also stops us from advising things you've already tried
4. **Let us know the make and model of the cameras you are using** - knowing the type of cameras you are using makes our troubleshooting efforts so much easier and therefore much faster.

5. **Send us some pictures or video** - they say a picture (or series of pictures) speaks a thousand words. If you can illustrate your problem in a video or by sending us some examples of the problem that's a great way to get the issue across.

Hardware issues

Issue: TriggerBox not responding to Serial commands.

Fix 1: After opening a serial port connection to the box, wait 3 seconds for the box to initialise before sending further commands.

Fix 2: Make sure any serial strings sent to the box end with a newline character.

Issue: Cameras do not respond to shutter signal via serial commands.

Fix 1: Make sure cameras are receiving a focus signal that precedes the shutter signal. Even if using cameras in manual focus mode, they still require a focus signal to simulate a half-press of the button. This causes the camera to perform all its metering functions.

Fix 2: Check the bulb time is set correctly. 20 milliseconds is a good starting point. Refer to the serial instruction set for details of how to set bulb time.

Fix 3: Check the coupler. If the camera has not recognised the coupler properly it will show a warning message. In most cases, if such a message is shown, the camera's shutter will not release.

Issue: TriggerBox is not powering up. Mode button doesn't light up anymore.

Fix 1: Make sure the USB-C cable is fully inserted into the TriggerBoxes USB-C port. A loose connection can cause the TriggerBox to not power up. Try turning the USB-C cable around the other way also.

Fix 2: Try a different USB cable and power supply if available. If powering via PSU try connecting it to a PC USB port.

Issue: Cameras not firing in green mode using a wired/wireless remote.

Fix 1: Connect the TriggerBox to the TriggerBoxController software and see if each TriggerBox fires correctly. If it does, your shutter remote is most likely causing issues. Try swapping it out with a new one. We recommend the Pixel RC-208.

Software issues

Issue: TriggerBox is not found by the computer when using the TriggerBoxController Software.

Fix 1: Ensure the box is in blue mode, selectable via the switch on the front face. Check the PC has recognised the TriggerBox as a serial interface in Device Manager. If on a Mac, check that the TriggerBox is recognised as a FT232 in network interfaces settings.

Fix 2: Try turning the USB-C cable around the other way. Blow into the USB port to clear any dust that might be on the connection

Fix 3: Try removing COM ports that are no longer in use from your PC. This is done by going to device manager, click the View tab at the top and show hidden devices. Go down to the COM ports section and remove any COM ports that are no longer being used.

Fix 4: If the device manager is showing the TriggerBox as a COM port try updating your PC/Laptops COM port drivers. They might be out of date. This can be done via - Right-click the COM port in device manager ---> automatically update driver software. If that doesn't work download them manually through here. Make sure you get the correct version for your OS.

Note: If none of the above fixes your issue with the software not finding your TriggerBox please send your latest log files (TriggerBoxController > data > logfiles) to support@esperhq.com

Issue: Save to memory button isn't working. Settings are not saving to the TriggerBox.

Fix 1: Download V1.6 of the TriggerBoxController software. This issue has now been fixed. You can download it through here.

Note: This was a known issue with V1.3 of the TriggerBoxController software. Thank you to everyone who let us know about the issue.

Issue: TriggerBoxController software is not opening on Mac.

Fix 1: You need to give the software permissions to run on your Mac. To do this hold Ctrl and right-click the .jar file and click open. A dialogue box will open asking if you want to run it, click open and the software will run.

Note: You will not need to do this every time you want to run the software.

Issue: Cameras fires when TriggerBox connecting to TriggerBoxController software.

Fix 1: Turn your cameras off while starting up your setup and connecting the TriggerBoxes will stop this from happening.

Note: This is a known issue and we are working on fixing it. This will be fixed in V1.4 firmware.

Issue: TriggerBoxController GUI sometimes enters an idle state. Can't press red button/change settings. Hard reset required. Only applicable when using in parallel with SmartShooter.

Fix 1: In SmartShooter there's an option to disable the 'Canon ESDK' that can improve the reliability of the cameras USB connection. That could be causing the TriggerBox's USB connection to stop.

Fix 2: Computer may be entering sleep mode. This could disrupt the USB connection to the box. Set the computer's power/sleep settings to never standby while using TriggerBox.

Issue: Interval mode settings are not saving to the TriggerBox memory.

Fix 1: Interval mode is only software-based and not physically built into the TriggerBox. There is nothing for the settings to save to and be recalled from.

Note: If you add any settings in delay mode as well as interval mode and tried to save none of the settings will save. You can only save settings to the box memory from Delay mode.

Issue: Camera received focus signal but doesn't receive shutter signal through the software. Cameras fully trigger when in green mode.

Fix 1: Try increasing the bulb time. This is the duration that the TriggerBox holds down the camera's shutter release input. Some cameras need a pulse in the region of 100ms - 200ms. Start with 150ms and see how that performs. Bulb time can be found within the interval mode setting.

Note: If your camera fires multiple times after changing the bulb time, try lowering the time inputted to where the camera fires once.

Issue: TriggerBoxController software doesn't open. I get an error message saying 'The Java JAR file could not be launched. Check the console'.

Fix 1: The most likely cause for this message to appear is your not running the latest version of Java on your Windows or MAC. Download the latest Java version from [here](#) and install it. You will most likely have to restart your machine for the update to take effect. Retry launching the software and it should open.

Firmware

TriggerBox v1.3 firmware (released on 20th August 2018) is required to access the new features in their development of Breeze Multi-Camera v2.0.

Firmware Update Instructions

To update the firmware to the latest version,

1. Connect TriggerBox to the computer.
2. Ensure the TriggerBox switch is set to Smart Trigger (blue mode).
3. Ensure OS has identified TriggerBox as USB Serial Port (Windows)/ FT232R USB UART (Mac).
4. Drivers should install automatically. If not, the latest COM port drivers can be found at www.ftdichip.com/Drivers/VCP.htm
5. Open the latest version of the TriggerBoxController software and click connect.

The TriggerBox Controller software will check the firmware version of each TriggerBox that is switched to blue. If an update is available, the TriggerBoxController will present the option to install the latest firmware to the TriggerBox.

Once the update is underway the front light will go out for up to thirty seconds while updating, then a confirmation dialogue box will appear.

This happens once for every TriggerBox connected to the computer.

Note: At present, firmware updates are only supported in a Windows environment.

If you experience any problems running the TriggerBoxController software or performing the firmware updates please contact us: support@esperhq.com.

Technical Specifications

Dimensions	113mm W x 40mm H x 175mm D
Weight	485g
Enclosure	High Impact Lexan Polycarbonate with 5251 Aluminium Face Plates
Enclosure Finish	Matt Black Textured
Face Plate Finish	Matt Black Anodised
Power Input Connection	USB Type-C
Power Input	5VDC
Power Consumption	250mA
Input	3.5mm Jack
Link Output	3.5mm Jack
Outputs 1-6	3.5mm Jack

Compatibility

TriggerBox works with SLR and DSLR cameras and strobes. This includes cameras and strobes that come with a female sync port connection.

- Canon, Fujifilm, Olympus, Panasonic, Pentax 2.5mm-3.5mm Jack
- Nikon MC-DC2 Trigger Cable
- Nikon 10-pin Trigger Cable
- Canon N3 Shutter Release Cable
- Sony Multiport Trigger & Data Cable
- Sony Multiport Trigger Cable
- 3.5mm-3.5mm Jack - Trigger Link

Two-Year Warranty

ESPER TriggerBox has been manufactured to the highest standards of quality. We guarantee that this product will not contain any defects caused by manufacturing processes, workmanship, or materials for two years. This guarantee starts from the date of purchase or thirty days after replacement, whichever occurs later. ESPER at its discretion, either repair or replace prepaid, returned equipment free of charge. The warranty does not cover damage or defect caused by misuse, neglect, accident, alteration, abuse, improper installation or maintenance.

The warranty shall only apply if the ESPER TriggerBox is used in conjunction with a compatible camera and flash equipment, as to which, ESPER, shall have no responsibility. The warranty covers all defects encountered in normal use of the ESPER TriggerBox, and does not apply in any of the following cases:

1. Loss of or damage to the ESPER TriggerBox due to abuse, mishandling, improper packaging by you, alteration, accident, and/or electrical current fluctuations.
2. Failure to follow operating, maintenance or environmental instructions prescribed in ESPER TriggerBox user's manual.
3. Without limiting the foregoing, water damage, sand/corrosion damage, dropping the unit, scratches, abrasions or damage to the body, or damage to the cables will be presumed to have resulted

See Terms of Sale for full details: <https://www.esperhq.com/terms-conditions/>.