RoboSHOOT©

X Series

USER'S MANUAL

Revision Sheet

Rev	Date	Revision Description
1.18	10/20/2015	Initial Production Release
1.19	11/19/2015	FW Version 1.1.0 Updates
1.20	3/3/2016	FW V1.2.3 Updates

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BEFORE YOU BEGIN

- SAFETY -

Follow the Safety Guidelines provided as a separate document carefully. The guidelines are provided for your safety, safety of those around you, and for maximum enjoyment of your product. If you cannot find the Safety Guidelines document, don't understand it, or otherwise decide not to read it do NOT use the RoboSHOOT© devices. The guidelines may be available on the Serene Automation website 'www.sereneautomation.com' or may be e-mailed to you by contacting Serene Automation. For your safety and proper care, review them periodically.

- EQUIPMENT CARE AND FUNCTION -

Be sure speedlights and RoboSHOOT© units are secured with alignment pin engaged. Failure to do so may result in misfires, intermittent operation, and/or drop damage.

Never pick up a camera or speedlight by the attached RoboSHOOT© or other device. It could break free and cause significant damage to your equipment.

- LEGAL -

We limit our liability for the purpose of keeping product costs to a minimum and thus providing a cost effective product to you. Use of RoboSHOOT© is at your own risk. By using or allowing others to use this equipment you accept all responsibility and absolve and indemnify Serene Automation from any liability related to its use or misuse. If you do not accept this as a legally binding agreement, do not use the equipment in any way.

FCC Compliance

The RoboSHOOT© units including MX-20, MX-15, RX-20, ad RX-15 comply with FCC standards for Home and Office use.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC WARNING
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful **interference** to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- You are cautioned that any modification, misuse, or use of untested cable may void the user's authority to use this equipment.

EC Declaration

We,

Name: Serene Automation LLC

Address: 100 Whelan Ct
Folsom, California
95630
USA

Declare that the products: RoboSHOOT© X-series Flash triggers (MX-20, MX-15, RX-20, and RX-15) Manufactured under provision of Serene Automation LLC, Meet the following provisions of the EMC Directive (2004/108/EC) and Low Voltage Directive (206/95/EC), and comply with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Disposal recommendations

Always follow local requirements when disposing of electronic waste. These devices and batteries should not be treated as household waste for disposal. They should be taken to an applicable collection point for recycling of electrical and electronic equipment.

By ensuring proper disposal, you will help prevent potential negative consequences to the environment and potential negative health effects that might otherwise result from improper disposal.

Please contact local agencies or authorities for the best method of disposing of batteries and electronic equipment if and when disposal is warranted.

RoHS Declaration

Date: May 30, 2015
We hereby declare that products manufactured for Serene Automation of Folsom California USA, namely, the RoboSHOOT© family of products (MX-20, MX-15, RX-20 and RX-15) are compliant to RoHS Directive 2011/65/EU of the European Parliament and the Council from 08/06/2011 on restriction of the use of certain hazardous substances in electrical and electronic appliances.

Following substances namely are involved:

- Lead (Pb)
- Cadmium (Cd)
- Hexavalent chromium (Cr)
- Polybrominated Biphenyls (PBB)
- Polybrominated diphenyl ethers (PentaBDE, OctaBDE; DecaBDE)
- Mercury (Hg)

Serene Automation, Limited herewith declares that all of our products are manufactured in compliance with RoHS. This claim is based on our own internal analyses, vendor supplied analyses, and/or material certifications of raw materials used in manufacture of all Serene Automation products, we declare that all products comply with and conform to RoHS II regulations of “RoHS Directive 2011/65/EU”.

System Overview

Congratulations on your purchase of RoboSHOOT©! These devices facilitate fully automatic off camera flash and will greatly enhance your flash experience with your Fujifilm Cameras.

The RoboSHOOT© X-series TTL trigger and timing modules enhance your Fujifilm X-Series camera with TTL off-camera flash. The modules are plug-and-play and can be used directly without configuration. And for more advanced use, the MX-20 can be configured via an intuitive user interface right from your Bluetooth© enabled phone - no button sequences to remember! In addition to App controlled off-camera flash trigger, the MX-20 supports a wide variety of advanced technical photography applications requiring precise timing and control.

This manual provides an overview of the RoboSHOOT© system. Further details, updated specifications, and tips are available via the Quick Guide on the App and or via Serene Automation at www.SereneAutomation.com.

Features

- Fujifilm-X series compatible TTL off-camera flash trigger with up to four flash groups
- Fully automatic plug-and-play operation
- Flash Group Profiles
- Flash Exposure Lock

Plus, for the X-20 series:

- Manual and TTL flash power under App control
- Manual and automatic speedlight zoom under App control
- Nikon i-TTL compatibility **
- Built-in Intervalometer and Timer via App
- Remote shutter control via App
- Editable Profile Bracketing via App
- Flash sync output for external strobes (RX-20)
- External Triggering via optional remote switch or sensors (MX-20)

** Nikon Compatibility on specific Nikon speedlights see compatibility information at www.sereneautomation.com.

App Control is provided with the RoboSHOOT© MX-20 and requires compatible smartphone. Most Android 4.0 or later smartphones and iPhone 5s or later with iOS 8.1 or later are supported. To be sure your phone is supported, download the free App before your RoboSHOOT© purchase.

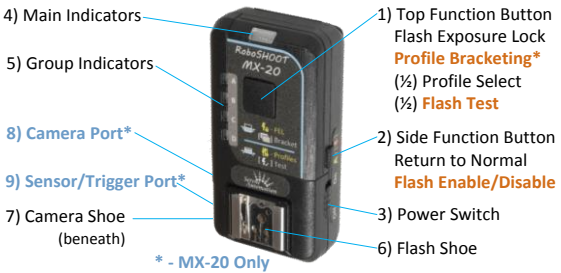
Specifications *(Blue denotes X-20 only)*

Supported Cameras	Designed for current generation Fujifilm X-Series cameras.
Supported Fuji speedlights	All current generation self-powered Fujifilm X-Series speedlights (EF-X8 not supported).
Supported Nikon speedlights	Designed for i-TTL. As of this writing: SB-600, SB-700, SB-900, SB-910 are supported.
Other Speedlights	Nissin i40 (for Fujifilm)
Flash Groups	4 TTL groups, +/- 3 EV relative range adjustment per group.*
TTL Override*	+/- 3 EV exposure adjust from TTL
Master Flash	Assigned to Group A, fully TTL Controlled.
Timer Config*	Exposure Counter, Initial Delay
Intervalometer Config*	Exposure Counter, Initial Delay, Interval, Duration, Profile Bracketing
High-Speed Flash Config*	Mode (Proportional/Fixed delay), Exposure Duration, Delay from trigger, Shutter Mode
Trigger Module Settings*	Trigger Assignment, Trigger Source, Sensitivity, Sensor select. (optional)
Batteries	2 AAA
Battery Life	Unit on and operational - at least 16 hours Unit in standby – at least 5 days
Size (LxWxH)	3.3 x 1.7 x 0.9 in (84 x 43 x 23 mm) + 1/2 in (13 mm) for shoe mount
Weight (without batteries)	Master - 2 oz (56 g), Slave 1.8 oz (50 g)
Master-Slave Range	Approximately 60 to 120 ft (depending on settings and environment)
Radio	2.4GHz Globally License Free ISM Band
Conformance	FCC, CE, RoHS for distribution in United States and European Community.
App Support	iOS© 8.3 or later. Android© 4.0 or Later.

Specifications Subject to change without notice.

*** Requires App (MX-20 only)**

Master (MX) Devices



1) Top function button
   - **Full** Click to activate Flash Exposure Lock – p23
   - **Full Hold** to activate Profile Bracketing – p25
   - Half Click for Selecting Profile – p24
   - Half **Hold** to Test Flashes – p22
2) Side Function Button
   - Click to Clear Active Functions (Return to Normal) - p22
   - **Hold** to Toggle Flash Enable / Disable – p23
3) Power Switch
4) Main Indicators – p17
5) Group Indicators – p18
6) Flash Shoe
7) Camera Shoe - p13
8) Camera Shutter Port **(MX-20 only)** – p19
   Connects to camera shutter release for a variety of functions
9) Sensor Trigger Port **(MX-20 only)** – p19
   For externally triggering a variety of functions

Slave (RX) Devices

1) Top function button
   - **Full Hold** to Change Group Assignment – p21
   - Half **Hold or Click** to Test Flash - p22
2) Side Function Button
   - Presently Unused
3) Power Switch
4) Main Indicators – p17
5) Group Indicators – p18
6) Flash Shoe
10) External Sync Port **(RX-20 only)** – p19

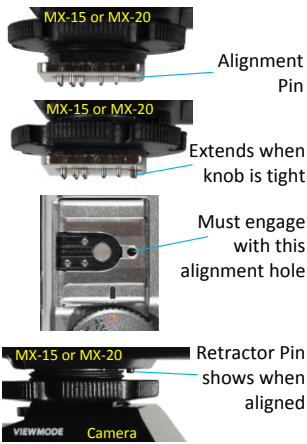
   To trigger external Low Voltage Strobes – Read and follow all Safety guidelines carefully. Use only as recommended by the strobe manufacturer and in conjunction with RoboSHOOT© safety guidelines. We strongly recommend use with a voltage isolator intended for external strobes and never connect directly to strobe. Never under any circumstance connect to any voltage greater than 6V.

Getting Started

Connecting the modules

Note: Be sure all batteries are fresh!

1) Attach MX-15 or MX20 Master to Camera.



2) Attach Speedlights to RoboSHOOT© Flash Shoe. ***Make sure alignment pin is engaged if present.***

3) Turn on RoboSHOOT© devices.

4) Turn on Speedlights.

5) Turn on Camera. Turning on the camera activates and synchs RoboSHOOT© devices and wakes the speedlights. Should a speedlight not support wake up, you may need to cycle power on that speedlight.

IMPORTANT: Secure the Master on Camera Tightly and ensure **ALIGNMENT PIN IS ENGAGED WITH ALIGNMENT HOLE.** Make sure all modules and speedlights are tightly secured with Alignment Pin engaged, if present. Failure to do so may result in intermittent operation and/or drop damage.

Always turn off a speedlight when attaching or detaching it!

Camera Settings

Any camera setting that works with an external speedlight will be a good place to start. Consult the owner's manual for your camera when in doubt.

Typically, settings similar to below should be used:

- Start with Single Frame Modes - Single, multiple-exposure, or special effects. Don't start with multiple fps shooting, bracketing, panorama, and video modes as they may disable flash.
- Use Standard Flash Modes - Forced, 2nd Curtain, or Slow Synchro. For your convenience it is suggested not to use Suppressed Flash: instead use the RoboSHOOT© Flash Enable/Disable buttons for this.
- Flash Exposure Compensation – The camera and App provide flash compensation settings. They are additive. Use whichever you find most convenient. We recommend against using compensation provided on the speedlight itself.
- Shutter Speed – Most current X series cameras support up to 1/180s and leaf shutters up to 1/200s flash active. The RoboSHOOT devices easily cover this range.
- The most creative results are usually achieved in Aperture Priority, Shutter Priority, and especially Manual Camera Modes.

Speedlight Settings

To utilize TTL be sure to use Speedlights fully TTL compatible with RoboSHOOT©. These should be set to TTL mode normally with compensation set to +/- 0. In addition, set Zoom to Auto if you want the camera or App to control zoom (available via MX-20 only). For supported manual or supported TTL-incompatible speedlights set the speedlight to manual.

Consult www.sereneautomation.com for current information about compatible speedlights.

Unsupported speedlights should not be used. Speedlights with unknown support status may or may not operate even in manual mode. Worse, damage to the speedlight or RoboSHOOT© device could occur. For any speedlight with unknown support status, always use manual mode and ensure voltages on the shoe do not exceed 6V. If in doubt, do not attempt to try a speedlight that is not officially supported.

Tips

- Always start a shoot with fresh batteries and carry spares.
- Speedlights may have different recycle times. You will be more satisfied using similar and faster recycle times.
- Speedlight types may have different color temperatures. Many times the color temperature variation and color gels can be used to your creative advantage. For consistency use the same type of speedlight in all groups.
- Metering type (Spot, Center-Weighted, or Multi-Average) is more reactive when using flash. Spot metering is especially useful when using Flash Exposure Lock. Remember, the camera will try to achieve middle-gray in the metered area.
- When TTL operation is employed it can be used as another auto exposure mode. For example, If Exposure (M mode) and ISO are all manually set, the photographic exposure will still be controlled by the camera as it automatically adjusts flash power.
- Aperture or Program mode may show Flash Exposure Compensation in the display preview but not change exposure. This is due to shutter speed limiting. To avoid this, use other modes along with exposure meter and histogram.

Main Indicators

The main indicator color and blink rate indicate specific conditions. Typically, Blue indicates radio activity, Yellow indicates timing activity, Orange is a warning, Red indicates flash control, activity and status, and Green indicates ready status.

MX-20 / MX-15 Master Units	
Color / Pattern	**Indication**
Pulsing	Ready with Camera Power On
Blinking	Camera off
Fast Blinking	Check Flash Settings
Slow Pulsing	Low Power Standby
Pulse	Shutter Release
Other	Flash Exposure Lock or Profile Select Active
Single Pulse	Focusing
Blinking	Intervalometer, Timer, or Bracketing (MX-20 only)

During firmware updates, different indications apply: Yellow and blue main LEDs indicate activity. Group LEDs indicate progress.

RX-20 / RX-15 Slave Units	
Color / Pattern	**Indication**
Pulsing	Ready / Connected to Master
Blinking	Not Connected to Master
Blinking	Check Flash Settings
Slow Pulsing	Low Power Standby
Pulse	PC-Sync

Group Indicators

These provide status for the group or attached speedlight. On the slave they also indicate which group the slave is assigned to.

All Units	
Color / Pattern	**Indication**
Slow Pulsing	Standby
Blinking	Charging
On	Ready
Slow Blinking	Flash/Group Disabled
Profile Select Mode (MX Units Only)	
On (MX units)	Indicates Profile Number
On at varied Brightness	Relative Group Power values

External Ports

External Ports appear on the X-20 devices only. On the MX-20 a Camera Port and Trigger/Sensor port is present, while on the RX-20 a flash sync port is present. Use only approved connections on these ports. If an overvoltage is connected it is not only unsafe, but it also voids all manufacturer warranties. Consult Safety guidelines before using external ports. ***When using any port Read and follow all related Safety guidelines carefully. Never connect to any voltage greater than 6V.***

MX-20 Ports

The Camera Port provides an optically isolated shutter and focus release. When doing profile bracketing, App or Sensor triggered exposures, or any timing functions connect a shutter release cable from this port to your camera. If you only have a mechanical release, several vendors offer electro-mechanical release adapters.

The Trigger/Sensor port is used to initiate a timing function (Timer / Intervalometer), Profile Bracketing, or High Speed Capture sequence. A sensor or switch contact can be used to act as trigger. A detailed specification for this port is available for those who wish to provide a custom sensor or trigger device.

RX-20 Port

The External Flash Sync port on the RX-15 provides an optically isolated interface for low voltage sync inputs. This is used to trigger external Low Voltage Strobes – ***Use only as recommended by the strobe manufacturer and in conjunction with RoboSHOOT© safety guidelines. We strongly recommend use with a voltage isolator intended for external strobes and never connect directly to strobe unless it is known to be compatible.***

Stand Alone Operation

Using the MX-15 or MX-20 (without using smartphone)

Fully automatic TTL off-camera flash is supported without a user interface. No cables are required unless you wish to activate the shutter from the device (MX-20 only). Just connect the units as indicated in 'Getting Started', set the camera and flash modes, and you are ready to begin shooting.

You can do quite a lot without using a smartphone:

- Flash Enable / Disable
- Flash Exposure Lock
- Profile Selection
- **Profile Bracketing***
- **Sensor Activated Exposures***
- Flash Test
- Group Selection

*** - MX-20 only, shutter release cable required.**

Group Assignment on Slaves

The Master is always on Group A. To change a slave to a specific group, push-and-hold the top button fully on that slave *(see page 12).*

Customization *(MX-20 Only)*

Note: Several Features, Defaults, and Button functions can be customized via App settings and may function differently than described here. (see 'Settings' info on the in-App info pages for more details).

Clear

Currently active functions can be cancelled by pressing the side button *(see page 11).* This causes operations such as Flash Disabled, Flash Exposure Lock, and Profile Bracketing to deactivate and return-to-normal. Turning the camera on also performs this clear operation.

Flash Test

To Test fire each TTL speedlight ½ push-and-hold the top button until the Main LEDs strobe or the TTL flashes fire at a low power level *(see page 11).*

A ½ click on this button may also perform flash test if Profile Selection is disabled (this is the default). This can be changed in the App Settings prior to connecting to the unit.

Enabling or Disabling Flashes quickly

Push-and-hold the side button to enable/disable flash *(see page 11).* The Main LEDs will strobe when the command is accepted and the Group LEDs will indicate current status. To re-enable the flashes, just repeat the push-and-hold or click the button to clear. Turning on the camera or engaging another device function will also re-enable all groups.

Flash Exposure Lock

Flash Exposure Lock (FEL) is engaged by fully clicking the top button *(see page 11).* If an exposure was previously taken, the reference power may be already available for use. Otherwise, the next exposure will be used for the reference. If a camera mode change occurs (power, operating mode, aperture, or ISO), the reference will be cleared and again the next exposure will set the exposure reference.

Exit FEL by clicking the side button or turning the camera off/on.

Selecting a Profile

Profiles are a snapshot of the four Flash Group settings. There are four independent profiles. Each stores the four Group settings and Master TTL offset.

Profiles selection is activated by a ½ click of the top button *(see page 11).* Then a full click will select the next profile. The Group Green LEDs indicate which profile is active (A is profile 1, D is profile 4). The group Red LED brightness indicates the relative power levels of the current profile.

Note: On the MX-20 the profile selection is deactivated by default. This default can be changed via App Settings before connecting to the device.

Default Profile TTL Power values (blank is zero).

	Group				Master
Profile	A	B	C	D	
1					
2			-1 1/3		
3				-1 1/3	
4	-2	-2/3	-2/3		-2/3

Profile Bracketing

Profiles Bracketing (MX-20 only) takes four exposures sequentially, one for each profile. To use profile bracketing, a shutter release cable must be connected between RoboSHOOT© and your Camera. The camera shutter release button is configured by default to start the bracketing sequence.

Profile Bracketing is engaged by a full push-and-hold of the top button until the LEDs strobe *(see page 11).* The Main Yellow LED will periodically pulse three times indicating this mode is active.

Exit Bracketing by clicking the side button or turning the camera off/on.

Button Lockout

If the Main LED flashes red every time a button is pressed, the buttons are locked out. This mode allows you to prevent unwanted button operations. Lockout mode is toggled by a 5 second push-and-hold on the top button (fully pressed) and side button at the same time. The main LEDs will blink red when lockout is engaged and green when it is disengaged.

App Control

Using a Smartphone unleashes the power of your MX-20 RoboSHOOT©.

To obtain your app, just download it from the Apple App Store or Google Play. Search for 'RoboSHOOT'.

On Android, first pair with the RoboSHOOT© device to connect to it. This only needs to be done once. To do this, turn on the MX-20 (Master) and go to Settings->Bluetooth and select 'Search (or Scan) for devices'. After a few moments, select 'RoboSHOOT' from the list of discovered devices. A dialog asking if you wish to Pair with it should be shown shortly. Select to Pair with the device. It is now ready for connection when you start the App.

On iOS, there is no need to pair. Just make sure Bluetooth is on. If you do attempt to pair, you may get a device unsupported message. This is normal and can be ignored.

The App contains many settings, in-App info, and help which cover much more than what is in this manual.

App Start-up

You will be presented a connect screen after the App starts much like this:

From here, you can set App and Device level settings or just connect. Any settings changes you make will be saved for the next time you run the App. If no device is available, Demo Mode will run. In Demo Mode, connection is simulated and an info view with text bubbles will show how to navigate. They can be dismissed by pressing the <Dismiss> box.

Although there is no interaction with the RoboSHOOT© device while in demo mode, you can still explore the App. No interactions will take place, however, and the screens will be somewhat static.

Overview

At the top of each function page or view is a bar with two icons on it:

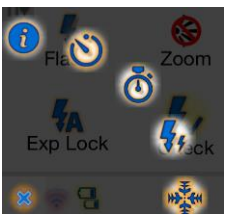
The App Icon (left side) accesses a quick guide. Use it to get quick information about RoboSHOOT© it is a good reference for experienced users and also great place to start to get more detail.

The Function Settings (right side) provides access to all the settings for this view (in this case, Flash Groups).

On the bottom of each function page or view is a status and navigation bar:

There are several icons on it, but, only one is clickable: the '**+**'. This brings up a Navigation menu as shown below. The other icons on the bar provide status about Radio Signal Strength, Battery Power (Master and Slaves), Flash and Camera, Shutter, and External Trigger.

The previously mentioned Navigation menu provides access to information about the current function and lets you go to any primary function page: Flash Groups, Timer, Intervalometer, High Speed Capture, or External Trigger (respectively, sweeping from left to right on this image of the Navigation Menu).

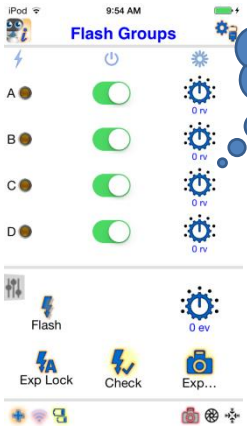


Notice the far left icon on this Navigation menu is an 'information' icon. This takes place of the Flash Groups icon here because we are currently on the Flash Groups function page.

For other function pages it is located in place of the that page's navigation icon.

Note, even though a function is running you can still select another function. A message will indicate the function that is running as a reminder. No parameter changes are allowed until the function is stopped.

Flash Groups



Supports drag and click

Flash groups are controlled by simply adjusting the group knobs and buttons. **To set relative power from one group to the next you can adjust the power knobs. Exposure is still set according to TTL levels, thus, the relative group power settings will not affect the overall exposure.** So, setting all levels to -2 EV, for example, is the same as setting all to 0, or whatever number you choose. But, setting Group A to -2 and Group B to +2 will result in a 4EV difference in requested power from the speedlights in those groups. However, by clicking instead of turning the knob, you toggle between TTL and manual. Manual bypasses TTL and will affect overall exposure.

Note: if you drag your finger off a knob, the knob's pointer will follow your finger. This allows for much more precise settings. Clicking toggles between automatic and manual modes.

TTL requested power can be overridden by adjusting the Master knob. This always affects overall flash exposure when any knobs are in TTL mode and a ready speedlight is assigned to that group.
The left side indicators are similar to the flash ready on your speedlight, except they indicate ready for the entire group.

At the bottom third of the page you find controls for Flash Enable, Overall TTL Power Offset, Flash Exposure Lock, TTL Flash Test, and Shutter Release.

Profile tray and zoom controls may or may not be visible, according to the settings. By default, neither is shown. To modify the settings click the settings icon in the upper right corner.

Zoom controls, if visible, allow you to set the speedlight zoom for each group. It can be set as a specific mm value or as a multiple of the current lens setting. This gives you finer control over your subject illumination.

The profile tray allows you to select and edit profiles, which may be used individually or for bracketing.

Timer

The timer lets you take time delayed exposures with a delay of your choosing. Useful, if you need to trigger a timed exposure remotely, such as a shot with you in the picture and since it is triggered with your App there is no need to rush to get into position!

The timer mode also allows you to take a sequence of triggered shots, one exposure for each trigger, with or without delay. This is ideal for stop-motion photography. It's also great for candid shots where you might trigger an exposure when a loud noise is heard.

Other uses of triggered exposure are fireworks and other events that might be triggered via sensor. Of course, you have to take in account shutter delay when attempting these and set your sensor for proper detection.

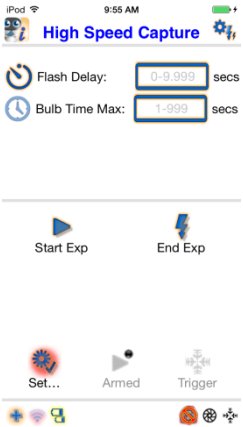
Intervalometer

The intervalometer lets you take bracketed, time-lapse, or multi-shot sequences. You can optionally include flash in these sequences. By clicking the Frames icon, you toggle between Intervalometer and Profile Bracketing modes.

Bracketing is great for many types of photography including macro, portraits, and even street scenes. It assures repeatable results using a variety of settings. This goes well beyond the capabilities of your camera's built-in intervalometer when utilizing flash.

Note, if during the first exposures the shutter release cable is not detected the intervalometer sequence will abort automatically. Check cable and camera connections.

High Speed Capture



High Speed Capture enables you to take elusive high speed events such as a projectile in mid-air, a balloon popping, a glass shattering, suspended water drops, or similar subjects.

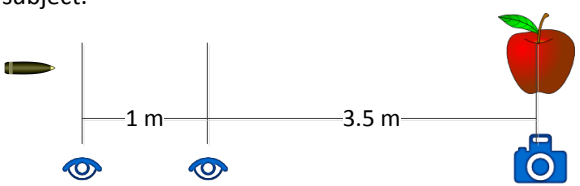
This type of exposure usually requires a sensor (optional), bulb mode, and a dark environment. Other than that, RoboSHOOT© takes care of the complexity.

To use this capability, set up your darkened environment and get ready to take the shot. Using the high speed capture settings page, set the values as needed and take a reference shot ('Set Ref' button) to set exposure levels for the next shots. Then, when you are ready, press 'Armed'. When the sensor detects an event, the speedlight is triggered, optionally with a delay.

The delay mode can be changed by pressing the Flash Delay Icon. The modes are: Fixed Delay or Proportional Delay.

Fixed Delay fires the flash a fixed time after the trigger event. For example, a time of 0 can be used to fire the flash as soon as possible after a noise is heard by an audio sensor connected to the MX-20. You can use this to capture events such as a balloon bursting.

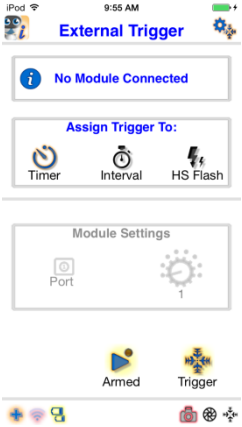
Proportional mode fires the flash a multiple of the time between two trigger events. In the following example, two sensors 1m apart are 3.5m from the subject.



The proportional delay factor is 3.5m / 1m = 3.5. This allows you to position the camera without knowing how fast the projectile is moving. A custom sensor would be required for this method.

Parameters for shutter control are also provided. See the in-App guide for more information.

External Trigger



The External Trigger lets you set up a sensor to trigger an action. This is used in any situation where you wish to autonomously trigger the flash, start the intervalometer, or take an exposure caused by some sensed event.

The sensor will be detected when you plug it into the External Trigger Port (ECP) on the Master.

Sensor modules such as an Audio Detector, Optical Detector, or Digital Trigger are available on a per request basis subject to availability. You can also plug in a switch to the Trigger Port to trigger from switch closures or provide your own sensors. A detailed specification for trigger port sensors is available upon request.

System Reset

To Reset the unit to factory defaults, *press-and-hold* the top button fully, the side button, and turn the unit on. Hold these buttons for about five seconds until the Red LEDs blink five times rapidly. The unit is reset to factory defaults.

Firmware Upload

To initiate a firmware upload on an MX-20 device **first, remove it from the camera and turn it off**:

- *press-and-hold* the side button with the top button ½ way and turn the unit on.
- Once the LED cycle through all LEDs is complete release both buttons.
- Start the App and connect to the MX-20.
- The App will start in Updater mode, Check for an update and install it if available.

You can cancel an upload if it hasn't yet begun by restarting the MX device while *pressing-and-holding* any button. It will then halt and resume normal operation the next time you restart again.

RX devices are uploaded automatically when the Master (MX) device gets new firmware and you sync the RX devices with the MX device.
See www.sereneautomation.com for details.

Troubleshooting

Make sure batteries are fresh and devices are powered. Otherwise, turn off devices and follow this procedure.