



# LACERTA FBC

Universal Flatbox Controller  
for stand alone or computer use.

The Lacerta Flatbox controller is designed to light up your flatfield box only when the shutter of your camera is already open. This avoids flatfield artefacts from slow mechanical shutters as met in DSLRs and some CCDs. To achieve this, the FBC synchronizes your flatfield box with your camera shutter. It can operate in standalone mode or via Ascom/PC.

## input connectors:



## Power supply:

12V DC (9-15V) Plug size: 5.5/2.1mm, center positive polarity (with polarity protection) The circuit is protected by a 1.1A regenerative PTC fuse.

**USB:**

To use the FBC with a Windows PC, it is needed to install the FTDI driver. The driver installer can be downloaded here:

[https://www.ftdichip.com/Drivers/CDM/CDM21228\\_Setup.zip](https://www.ftdichip.com/Drivers/CDM/CDM21228_Setup.zip)

There are three different functions using the USB port:

1. Via USB you can connect to an appropriate software (we recommend APT), and synchronize controlled flashing of your flatfield device to the shutter of your CCD (or DSLR)
2. Through the associated serial (COM) port, you can send commands to FBC using the provided Windows App. This allows synchronizing your flatfield device to the shutter of your DSLR. An extra remote shutter control is not needed.
3. You can update the device firmware.

**Dslr In:**

2.5mm stereo jack. For signal from an external exposure control device (eg. LACERTA MGEN).

**Connections of outputs:****Flatbox Out:**

RCA connector to commercial flatboxes.

## DSLR Out:

3.5mm stereo connector for transferring the exposure signal to DSLR cameras.



## Using Standalone mode:

Connect the DSLR In connector or the USB port to receive the shutter signal from your DSLR control unit (Lacerta MGEN or a remote shutter controller), and connect the DSLR out to transmit the same shutter signal to your DSLR. Power up the FBC (the LEDs light up in a sequence) and your DSLR in bulb mode. The 3 potentiometers on the unit are used to set the desired values. Trigger an exposure on your DSLR control unit. After receiving the incoming exposure signal, the shutter of your DSLR opens and the Flatbox lights up according to these settings. When the shutter signal ends, your DSLR shutter will close. The length of your shutter signal, when programmed on the external device, should be longer than the values of Delay + Flash.

### Delay(ms):

Sets the delay time after the exposure signal has been received, before the Flatfield device is started.

### Flash(ms):

The illumination time of the flatfield device connected.

### **Brightness(%):**

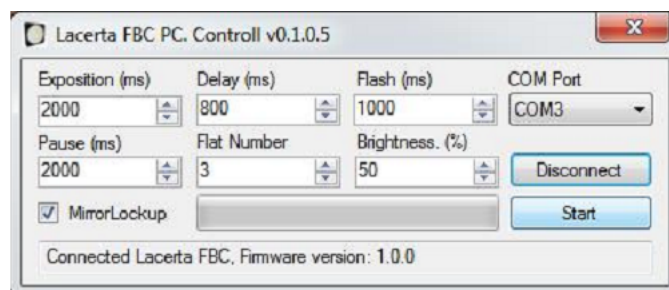
Brightness of illumination, using fast PWM dimming.

### **Mirror Lockup button and Led:**

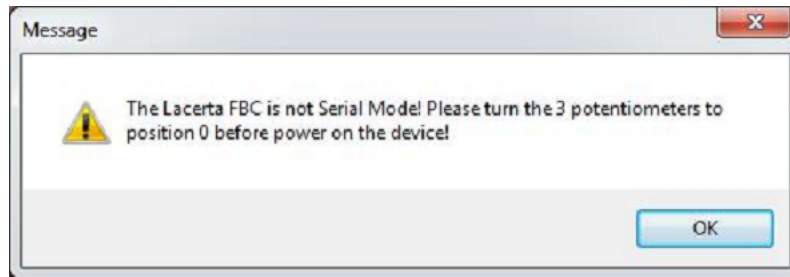
Press and hold 1s to the Mirror Lockup button. The function LED is turned on. If the mirror lockup function is activated on the camera, it must also be activated on the **LACERTA FBC**. So that it does not turn on Flatbox lighting due to the first exposure signal. The setting is stored in the device.

### **Standalone use with a computer:**

With the little FBC Windows App, it is possible to control your DSLR and the FBC from your computer. Copy Lacerta\_FBC.exe to a folder on your PC, and start it by double clicking on the name. The control window opens where you can set all necessary parameters. To use the FBC with PC, all three potentiometers must be turned to 0 before switching on (FBC is set to serial mode). So the FBC "knows" that we want to use serial communication via the USB port using the FBC App or an appropriate program (APT). If the Mirror Lockup function was activated, its control Led will not turn on, as this function is controlled by the App now. You can set the exposure time (Exposition (ms)), the illumination delay (Delay (ms)), the illumination time (Flash (ms)), the break between the shots (Pause (ms)), Number of shots (Flat Number ), the intensity of the illumination (Brightness (%)), and whether or not a Mirror-Lockup is used.



After connecting, the program checks the connected device. When connecting another device, the connection is interrupted. After connecting Lacerta FBC successfully, it shows the device firmware version number. If the Lacerta FBC is not connected in Serial mode, you will receive a warning:



### **Usage with CCDs:**

Lacerta FBC can be used with CCD cameras, in that case an appropriate software must control your CCD exposures, controlling its shutter and filterwheel to enable running flatfield sequences, and at the same time controlling the FBC box. Currently APT (Astrophotography Tool) has FBC control implemented. Connect FBC via the USB port and use the controls provided by APT.

### **Firmware Update mode:**

To upload a new firmware into FBC, connect it to a PC and use the **LACERTA MOTORFOCUS V1 Firmware updater**. To enter firmware update mode, press and hold the mirror lockup button for some seconds, while powering it on. After a few seconds, the PWR LED lights up and flashes. This signals the device is in Upgrade mode and can start receiving the new firmware. After updating, remove the power cord and restart the FBC normally.

