



USER MANUAL

Vela One revision C

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Important notices

Safety

This flash uses voltages of up to 200V, which can cause dangerous shocks. Components remain live even when not connected to power and with batteries removed, and retain this charge for weeks or more. Parts, including LED mounts and terminals are live even when not triggering. Do not open the flash unless you know what you are doing, including the procedures to safely discharge a large capacitor.

Protecting your LEDs

The Vela One uses very high currents that can damage the LEDs if not used with care. Never attempt to alter the circuitry or firmware, as the LEDs can be destroyed instantly and are very expensive to replace. The flash does have safeguards to prevent most damaging usage, but care should still be taken, especially in burst mode. Rapid repeat triggering in burst mode can damage the LEDs irreparably. Use a reset delay with your trigger, and turn the flash off when setting up your sensors and triggers.

Care for your flash

The exterior of the flash can be cleaned with a damp (not wet) cloth. Do not drop or immerse in water. The front polycarbonate panel can be removed for cleaning, by removing the four screws on the front. Do not touch any components inside the flash while screen is removed. Do not remove the luminaire (lighting board) as dangerous voltages are present. The LEDs can be damaged by touch. Ensure screen is completely dry before reattaching, and take care to not over-tighten the screws.

Controls

1. Power on/off

Remember to turn off your flash when not in use.

2. 5V/3A power in

3. Trigger 3.5mm

4. Trigger 2.5mm

5. Test

Fires the flash

6. Count

The number of times that the flash will fire each time it is triggered. See “Burst mode” for more details.

7. Length

The duration of the flash pulse in microseconds. The equivalents in fractions of a second:

0.5 μ s	1/2000000
1 μ s	1/1000000
2 μ s	1/500000
3 μ s	1/333333
4 μ s	1/250000
5 μ s	1/200000

8. Interval

When in burst mode, the gap between each shot in microseconds. This is measured from start to start. It can be adjusted between 10 μ s (100 kHz) and 250 μ s (4 kHz)

Getting started

Power

The Vela One flash needs four AA batteries. We recommend rechargeable NiMH batteries, but all types will work.

Alternatively you may use an external power adapter (available separately). This must provide 5V at 3A. Lower current devices will allow the device to power on, but cannot charge the flash circuit so it will not fire.

Trigger

The Vela One flash has two trigger sockets, which can be used for either input or output, which allows other flashes to be connected and triggered simultaneously. These are compatible with most flash or camera triggers. They operate as switches, and are triggered by connecting the two poles of the socket.

IMPORTANT: do not connect the trigger sockets to a power source, as this can seriously damage your flash.

Your first high-speed shot

You will need:

- Your Vela One flash
- A trigger, such as Vela Pop or Camera Axe, with a cable
- A camera and tripod
- A dark room
- A table
- A subject to photograph

First, arrange your subject. We like to shoot fruit with air guns, but you might like to smash lightbulbs, blow up sweets or something else. For this shot, start with the subject on the table and the Vela One flash on the table next to it, just out of shot, or on another tripod. Keep it very close for your first shot: ideally under 60cm or 2 feet.

Set up your camera and tripod. Set the camera to manual, with a high ISO such as 1600 to start. We will be triggering this manually with a long exposure, as the flash will be freezing the action. Use a shutter speed long enough to give you time to perform the action such as shooting or smashing the subject. Try 2 seconds, which is plenty of time to fire the gun. A cable release is a very good idea here to avoid shaking the camera.

Connect your trigger to its cable according to the device's instructions. For Vela Pop, just insert the small plug into the trigger and the larger into the Vela One. You can use either of the trigger sockets on the flash, depending on whether you have a 2.5mm or 3.5mm plug. Set up the trigger according to its instructions and place it near to the subject.

At this point you should have a Vela One connected to a trigger. Press the power button on the Vela One and you should see the green LED light up. If it stays yellow then change the batteries soon. Set the count to 1 and the length to 5 μ s. Press the test button (the lightning bolt) and it should flash. If it doesn't wait 5 seconds and try again. This normally only happens the first time after it has been sitting unused for a long time, as the capacitors will have discharged. Don't worry about looking at the flash: the pulse is too short to damage your eyes.

Now check the trigger. If it's a sound trigger then clap your hands and see that the Vela One flashes.

Now it's time to check the lighting. Start with quite a wide aperture. Check your focus and turn off the lights. Press the camera shutter release, then clap your hands (if you're using a sound trigger) while the shutter is open. If the trigger is working properly then the Vela One should flash. Adjust the exposure based on the photograph, using the histogram display if preferred and repeat until you are happy with the lighting.

If you are shooting something, you will need to adjust the timing of the trigger. This takes quite a bit of trial and error, and is best performed by just firing the gun without a target (apart from the backstop, of course) and adjusting the timing to place the projectile perfectly. If you're using Camera Axe with a projectile sensor then you can just program the correct distance to place it perfectly.

Modes of operation

Standard mode

Standard mode is when Count is set to 1. This is the most popular mode, and it flashes once when triggered.

Burst mode

If you set the Count to a value above 1, then whenever it is triggered the flash will fire the specified number of times, with a gap specified by the Interval knob. This gives a multiple-exposure effect, and is great with projectiles.

High-frequency strobe

In burst mode, or when the pulse length is set to a value above 1 μ s, then you must wait at least 1 second between each trigger event. However, if the count is set to 1 and the length is set to 0.5 or 1 μ s, then high-frequency mode is enabled. This allows the flash to be triggered at speeds up to 50Hz for long periods. The reasons the restrictions are in place is to minimise the chance of damage to the LEDs. Unlike burst mode this doesn't trigger repeatedly by itself, it just removes the restriction that prevents repeated high-speed triggering.

Getting in touch

If you have questions, comments or suggestions, you can get in touch via email on hello@vela.io. We're @VelaLabs on Twitter, Facebook, Instagram and Flickr. Please do share your photos in our Flickr group.

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