SuperChrono

Quick Start Guide UPDATED VERSION

The SuperChrono is a portable shooting chronograph that will give you reliable velocity readings under any lighting conditions and at any distance, so long as the bullet is travelling at supersonic speed.

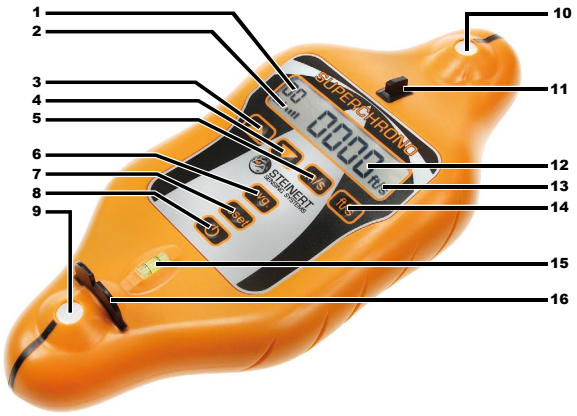
Getting Started

Make sure you have a safe backstop and that you take all the necessary precautions for handling firearms. Unload your gun and remove the bolt before setting up. Always consider safety first and read the legal disclaimer before use.

Battery Installation

Turn the unit upside-down and locate the screws for the battery door. Unscrew these using the Allen key supplied. Remove the door and insert four AA batteries following the polarity marks in the battery compartment. Replace the door and tighten the screws, but do not over-tighten them. Turn the unit on.

How to Operate the Keypad



1. Number in shot string
2. Battery level indicator
3. Previous shot in string
4. Next shot in string
5. Show velocity in m/s
6. Average speed of shots in string
7. Clear memory
8. On/off
9. Sensor
10. Sensor
11. Front sight
12. Bullet velocity
13. Current units
14. Show velocity in ft/s
15. Spririt level
16. Back sight

Setup for Shooting

This is the basic rule for using the SuperChrono:
"Fire every shot from the same position and always shoot at the same point on the target. Place the chronograph ten feet directly in front of the muzzle and one foot under the bullet path. Aim the chronograph one foot under the point of impact."

By doing this you will achieve a parallel setup, with the distance from the sensors up to the path of the bullet a constant one foot, all the way from the gun to the target. *See figure.*

Muzzle Velocity

To set up the SuperChrono to measure muzzle velocity, follow these instructions:

1. We recommend that you use a rest and bench to make sure you fire every shot from exactly the same position.
2. Mount the SuperChrono on a sturdy tripod, using the standard 1/4-20 inch thread hole on the bottom of the chronograph.
3. Place the gun in the rest and aim it at the target. Make sure it is unloaded.
4. Place the SuperChrono at least 10 feet or 3 metres in front of the muzzle.
5. Place the SuperChrono one foot (30cm) directly below the path of the bullet.
6. Using the sights, aim the chronograph one foot (30cm) below the point of impact.
7. Back off a couple of steps and look through the sights to confirm accuracy of aim.
8. Take your shot.

Downrange Velocity

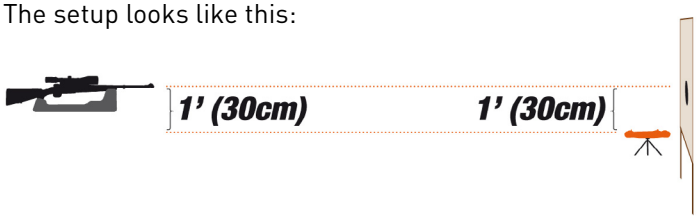
If you want to measure velocity somewhere between the muzzle and the target, follow steps 1-3 above. Then, making sure the range is safe:

1. Place the SuperChrono at desired distance and one foot directly below the path of the bullet.
2. Look through the sights and aim it one foot below the gun.
3. Turn round and aim it one foot below the point of impact.

The setup is now parallel and readings will be correct.

Velocity at Target

The setup looks like this:



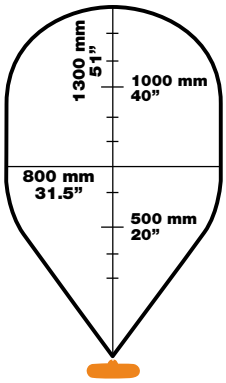
STEINERT SENSING SYSTEMS

Follow steps 1-3 for muzzle velocity. Then, making sure the range is safe:

1. Place the SuperChrono one foot directly below the point of impact.
2. Point the SuperChrono towards the shooting position.
3. Aim it one foot below the gun.

The setup is now parallel and readings will be correct.

Detection Area



The detection area is 51 inches (130 cm) high and 31.5 inches (80 cm) wide. The precision of the device is the same at all points within the detection area.

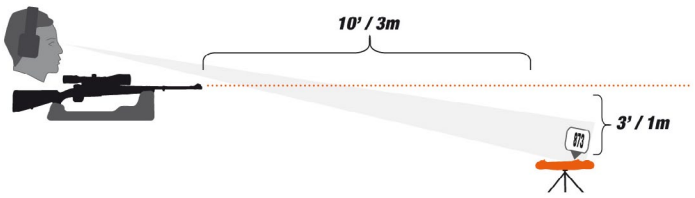
Frequently Asked Questions

Why parallel setup?

- If the setup is not parallel, the bullet will travel on a path longer or shorter than that between the two sensors and the reading will not be correct. This applies to any two-sensor setup, whether it is acoustic, optical, electromagnetic or radar.

Do I always have to place the chronograph one foot below the bullet path?

- No, you can place it at any level from immediately below the path of the bullet to 1.3m (51inches) below the path of the bullet. See illustration (above) for detection area. The detection area may be smaller than shown if you are shooting light loads or when there is rain or snow. The display is angled 15 degrees towards the shooter. If you wish to monitor individual shots from the shooting position, place the device 1m below the path of the bullet.



Do I always have to place the chronograph directly below the path of the bullet?

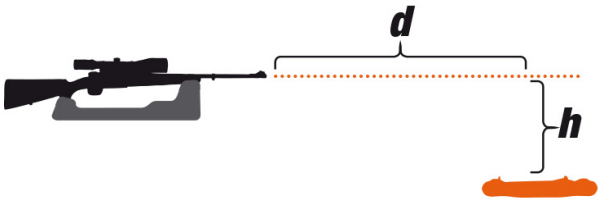
- No, you can place it up to 15 inches or 40 cm to the side of the path of the bullet. See illustration for detection area. If you place the unit 15 inches to the right, aim it the same distance to the right of both the gun and the target. If the distance up to the path of the bullet is one foot, aim it one foot below the gun and the point of impact. The setup is now parallel and readings will be correct.

Why place the chronograph at least 10 feet or 3 metres in front of the muzzle?

- This is to avoid detecting the muzzle blast itself. The muzzle blast depends on the load. You will get correct readings from a supersonic .22 LR very close to the muzzle. For a large magnum load you may have to increase the distance to 12 or 15 feet, four to five metres.

What happens if I position the chronograph very close to the muzzle?

- Three things can happen; unreliable readings, display scorched by the muzzle blast, or no reading at all because the chronograph is in the sound shadow. To avoid the sound shadow, the SuperChrono must be further from the muzzle than its height from the ground, i.e. the distance from the muzzle to the back end of the unit, *d*, must be greater than the height from the top of the unit to the gun, *h*. This is shown in the figure below:



What happens if I aim the chronograph above the parallel line?

- The velocity reading will be too high.

What happens if I aim the chronograph below the parallel line?

- The velocity reading will be too low.

How critical is aiming error?

- The key factors are distance from the chronograph to the target and bullet speed. A load with a true velocity of 1250 ft/s over the sensors, and with the chronograph aimed one yard too high at 100 yards, will give a reading of 1257 ft/s. This deviation increases with bullet speed. A bullet travelling at 3350 ft/t with the same aiming error will result in a reading of 3451 ft/s. The deviation is 101 ft/s and accuracy is 97%. Reduce aiming error to one foot, and deviation is reduced to 33 ft/s and precision increased to 99%. The sights on the SuperChrono are designed to be precise. With a little practice, you will soon be able to aim it to achieve close to the system accuracy of 99.5%.

Are the readings affected by temperature and variations in the speed of sound?

- No.

Must the chronograph always point towards the target?

- The SuperChrono detects shots either way, so you can position it whichever way you find it easier to aim.