



PERUN

V2 *OPTICAL*

Manual

Table of contents

| | | |
|------|--------------------------------|---|
| 1. | Basic information | 2 |
| 2. | Programming | 2 |
| 2.1. | Programming firing modes | 3 |
| 2.2. | Active brake (AB) | 3 |
| 2.3. | Precocking | 3 |
| 2.4. | Li-Po protection | 4 |
| 2.5. | Double shot | 5 |
| 2.6. | Calibration mode | 5 |

1. Basic information

Perun V2 *Optical* allows you to replace traditional, mechanical switches in version 2 gearboxes with modern, microcontroller steered MOSFET electronic device based on optical switches. Complete lack of moving parts provides great reliability in any situation and allows you to be confident, that your replica will not fail you in the heat of the action. Perun V2 *Optical* will also enhance your weapon with lots of features it did not have before.

Warranty – 1 year from the purchase date

Allowed battery voltage - 7V to 17V, which permits use of the following battery types:

Li-Po, 2 to 4 cells (7.4V to 14.8V)

NiMH/NiCd, 8 to 10 cells (9.6V to 12V)

Li-Fe, 3 to 4 cells (9.9V to 13.2V)

Perun V2 should never be run without a fuse!

Power consumption when idle: 1 mA

Do not leave your replica with the battery plugged in for a longer period of time (more than a few days), because of the risk of complete battery discharge (which will permanently damage the battery).

2. Programming

Enter the programming mode by quickly switching the selector from “SEMI” to “AUTO” and back twice or the other way round, from “AUTO” to “SEMI” and back twice. In order to be able to enter the programming mode, the selector must have been at rest for at least two seconds. Successful entering into the programming mode is signaled by a sound signal. Whether we enter the programming mode starting from “SEMI” or “AUTO” selector position is relevant, if we are about to program firing mode (safe, semi, burst or auto). In case of other settings (AB, precocking etc.), it does not matter where the selector initially was.

After entering the programming mode, the settings are being changed by pressing the trigger correct amount of times and then saving the settings by holding the trigger until a confirmation in a form of a sound signal can be heard.

In case of features available after 7, 8, 10, 11 and 12 trigger pulls, one long sound signal means, that if we hold the trigger now to save the settings, the feature has been disabled so far and now will be enabled. Three short sound signals would mean the opposite – the feature was enabled until now and after saving the settings it will be disabled. Pressing the trigger more than 12 times and saving allows to exit programming mode without making any changes.

Video showing different features of Perun V2 Optical and explaining how to use them is available under the link below or the QR code shown here:

<https://youtu.be/Z-3x6Ax3GAg>



2.1. Programming firing modes

*Programming firing modes – enter the programming mode for “SEMI” or “AUTO” selector position and **pull the trigger 0 to 6 times**, then hold the trigger until a sound signal can be heard to save the settings.*

Perun V2 allows the mechanical trigger lock to be retained. Because of that, with selector in “SAFE” position the replica will always remain safe (provided that the mechanical lock works properly). On both other selector settings („SEMI” and „AUTO”) any firing mode can be set, independently.

For example, to change firing mode for selector in “SEMI” position, quickly switch from “SEMI” to “AUTO” and back to “SEMI” twice. Entering the programming mode will be confirmed by a sound signal.

After entering the programming mode choose firing mode:

- Safe – save changes right after entering the programming mode.
- Single shot (semi) – pull the trigger once.
- 2-5 round burst – pull the trigger 2-5 times.
- Full auto – press the trigger 6 times.

Save changes by pulling and holding the trigger until a sound signal can be heard. All the changes will be stored in memory and valid also after disconnecting and connecting the battery again.

2.2. Active brake (AB)

*Active brake – enter programming mode for any selector position, **pull the trigger 7 times**, and hold the trigger until a sound signal can be heard to save the settings.*

Active break (AB) is a feature, which if enabled, stops the motor after each shot (in single fire mode) or after the last shot of a burst. This prevents main spring from remaining compressed and in case of replicas with lower muzzle energy and high rate of fire, prevents the problem of unwanted double shots in single fire mode.

Note that the use of active brake makes the motor heat up faster and accelerates wear of motor brushes. Therefore it is recommended to only keep AB on, if it is necessary. If not, it is much better to turn it on only at the end of the day, to fire just a few shots in single fire mode, so that the spring will remain uncompressed during storage.

While precocking is enabled, the AB setting is irrelevant.

2.3. Precocking

*Precocking – enter programming mode for any selector position, **pull the trigger 8 times**, and hold the trigger until a sound signal can be heard to save the settings.*

When precocking mode is enabled, the piston will remain in rear position after each shot with spring compressed and ready to fire. This works for single fire, burst and full-auto.

With the use of optical sensor, microcontroller checks sector gear's position and rotational speed. In case of replicas with high rate of fire, when the trigger is released Perun V2 will not power the motor any longer and only apply some active braking to set the piston in the right position, not letting it to overspin. In slower configurations, it calculates what amount of power would be just enough to set the piston in the rear position, taking into account the momentum of the motor and gears, and transfers that amount of power to the motor. This saves battery energy and decreases wear to motor brushes. Battery voltage and number of shots fired before the trigger was released is also taken into account.

The process is automatic, but due to some differences between replicas, fine adjustment is possible, by the way of precocking power feature described below.

It is recommended to turn precocking off at the end of the day and fire a few shots in single fire mode with AB on, so that the spring will remain uncompressed during storage.

*Precocking power – enter programming mode for any selector position and **pull the trigger 9 times**. Change the precocking power by switching the selector between "SEMI" and "AUTO" positions. Hold the trigger until a sound signal can be heard to save the settings.*

To precisely adjust the precocking power in replicas with different motors, main springs and gears, there is a possibility to choose one of 5 precocking power levels, where the 1. is recommended for replicas with highest rate of fire and 5. for those with lowest RPS rate.

Correct precocking power level should be individually selected for each replica through experiment, so that both in single fire mode, as well as in full-auto the trigger will remain in rear position. If precocking is enabled, but time between pulling the trigger and shot being fired is too long, select a higher precocking power level. This should be done, until optimal trigger response is achieved. Should a too high precocking power level be selected, malfunctions like overspin may occur, or a necessity to pull the trigger twice to fire a shot. In that case, choose lower precocking power level. In case of replicas with extremely high rate of fire use of precocking may lead to malfunctions even at precocking level 1, especially in full-auto firing mode. This may happen if motor's and gear's speed is too great, for the active brake be able to stop them on time. In that case, we suggest to disable precocking and turn AB on instead, since the trigger response will be quick anyway.

2.4. Li-Po protection

*Li-Po protection – enter programming mode for any selector position, **pull the trigger 10 times**, and hold the trigger until a sound signal can be heard to save the settings.*

Batteries should never be discharged below certain level. Perun V2 offers a feature which warns its user that his Li-Po battery is almost completely discharged and should be changed.

With Li-Po protection enabled, Perun will automatically detect number of Li-Po cells in connected battery and if voltage for that number of will drop below safe limits, short sound signals will be heard every 30 seconds.

2.5. Double shot

*Double shot – enter programming mode for any selector position, **pull the trigger 11 times**, and hold the trigger until a sound signal can be heard to save the settings.*

When double shot feature is enabled, if single fire mode is used, shots will be fired both after the trigger has been pulled and released.

2.6. Calibration mode

*Calibration mode - enter programming mode for any selector position, **pull the trigger 12 times**, and hold the trigger until a sound signal can be heard to save the settings.*

Enabling this function will make Perun V2 enter calibration mode at next start-up. This feature is meant mainly for technicians and more information about it can be found in installation manual.