

<b>General Information:</b>	<b>1</b>
<b>Sponsor</b>	<b>2</b>
<b>Technical requirements</b>	<b>2</b>
Technical assessment	2
<b>Copter Check-in</b>	<b>3</b>
Radio System	3
OSD	3
Failsafe	3
VTX	3
Antennas	4
LED	4
Propeller	4
Motorisation	5
Weight	5
Size	5
Battery	5
<b>General Flying Rules</b>	<b>5</b>
Race Termination	6
Yellow / Red Card	6
Behaviour on the course	6
Practice	6
<b>Qualification</b>	<b>6</b>
<b>Knockout Stage</b>	<b>7</b>
Mid-air before first gate	8
Crash before the finish line	8
Seating	9
Starting beeps	9
False start	9
<b>Commands</b>	<b>9</b>
Land Land Land Command	9
Cut Cut Cut Command	9
Rerun in case of commands	10
Score System	10
Race Ranking	10
Qualification Ranking	10
Additional Points	11
<b>Protest Procedure</b>	<b>11</b>
<b>Selection of the national team F3U</b>	<b>12</b>

Basics	12
Selection rhythm	12
Selection	12
Waiver	12
<b>Terms</b>	<b>13</b>

## General Information:

Participants accept that their name, pictures, videos, recordings of them and their FPV material, their name, class, age, domicile and country can be published on participant-lists, rankings, the venue, the internet, the press and other media if it's in relation to the competition. The participant must be available for interviews and questions. The organizers, locations and sponsors may use the generated content freely.

Flight-safety is of the highest importance.

All multicopter-models that comply with the rules can be used in the competition. A valid liability insurance is required and at least a copy of it must be kept on hand at every SDL-Event.

Every participating pilot has to register an account on the website raceGOD including name, pilot name, profile picture and additional information.

These official rules are available in several languages. In case of conflict, inconsistencies or errors of translation, the english version has priority.

Persons under the age of 18 or those who are under the tutelage require written consent and the signature of the legal representative.

The participation fee per race is CHF 50. If you cancel your registration, the race fee will be refunded in the following cases: illness or accident (with a medical certificate), death in the family. In any case, notification to the SDL via the contact form is necessary at least 72 hours in advance otherwise there won't be a refund. Keep the gentlemen's agreement in mind.

Who participates in more than one race, must join the SMV / AeSC. The model flight group to be joined is the "Swiss FPV Community".

The title Swiss champion and the nomination for the World Championship participation, applies only to citizens of Switzerland or Liechtenstein.

## Sponsor

The Swiss Drone League reserves the right to prohibit participating pilots from wearing clothing and/or equipment with clearly legible advertisements/logos/letters/etc. of sponsors, partners, companies, etc. not active in the Swiss Drone League during stream and/or TV production times. This clause exists to protect existing sponsors and partners who make the Swiss Drone League possible at all.

## Technical requirements

### Technical assessment

The organizer reserves the right to technically assess the copters of the pilot at any time. In this technical assessment the copters are checked for rule compliance and legality. In the technical assessment the FailSafe-Programming and the VTX with the legal 25mW will be checked.

The technical assessment will be carried out with every copter and pilot at the beginning of the event.

The technical assessment can randomly be repeated during the event to discover and sanction manipulations.

Before the pilot can fly on the track, they have to let their equipment be tested. The procedure during check-in works like this:

- **FailSafe** Check. Every copter has to automatically deactivate it's motors 1 seconds after signal loss with the controller.
- **Liability insurance** check. Every pilot has to provide a confirmation for a valid model flight liability insurance on his name (or a policy for all inhabitants of the household).
- **Handing** over of signed waiver.
- **SMV** check. SMV / AeSC membership card control or registration on site.
- **Video transmission** check. To prevent complications the range of allowed video transmission systems is limited to three producers. TBS, ImmersionRC and FuriousFPV
- **LED-lighting** check. At least 32 RGB LED in total. Color switchable to green, blue, Yellow, red.
- **OSD** must comply with the regulations

If all requirements are met, the copter receives a marking and the pilot receives their video-frequency for the qualification as well as their start.

## Copter Check-in

At the copter check-in which will take place on the first day of the event, every drone a pilot wants to fly will be checked against the specifications. If everything is okay, the drone will be marked with a sticker. If a pilot makes significant changes or builds a new drone during the event, it has to go through check-in again. The Race Director can order random checks before any heat, and if a drone violates against any of the specifications, the pilot will be disqualified from this heat.

Additional copters can always be checked in between two rounds, but not between two heats!

## Radio System

In order to be able to fly in any circumstances, the pilots need to use the crossfire radio link system. There is the possibility to add external antennas if required. Output power will be limited to 25mw in normal conditions. In some cases, it may be necessary to set it to a higher power level, e. g. with antenna extensions. The output power can be checked randomly by the staff. Disregard can lead to disqualification!

## OSD

There are only 2 things allowed in the OSD:

- Name in the bottom left corner (mandatory)
- Voltage (Full or average) in the bottom right corner

Other OSD things are only allowed during the disarmed state of the drone.

## Failsafe

In case of a failsafe (loss of radio communication between the drone and transmitter) the motors have to come to a complete stop within 1 seconds.

## VTX

- HD Systems like connex are not allowed
- Only the following VTX manufacturers are allowed:
  - FuriousFPV
  - TBS
  - Immersion RC
- During the event only 25mw output power is allowed

## Antennas

- RHCP, LHCP and linear antennas are all allowed.
- The ground stations will be equipped with RHCP antennas.
- In case a pilot does not use RHCP antennas, he can not protest because of timing errors or bad video.

## LED

Every drone has to have 32 individual RGB LEDs. And they have to match the following criteria:

- Easily visible, nothing is covering them
- Solid brightness, no pulsing effect
- Pilot needs to be able to display the 4 following colours: Yellow, Red, Green and Blue
  - Colors are defined by the raceGOD system
- There need to be LED's on every single Arm (16 Arm top, 16 Arm bottom).
- At check-in, all 32 LEDs need to work but before each run there is a 25% tolerance. This means that a minimum of 24 LEDs need to work, and be in the correct colour.
- The LEDs will be checked at copter check-in and the Race Director holds the right to request the pilot to replace the LEDs in case he is not satisfied with the LEDs (for example placement, size etc.) If you are unsure you can always send a picture to SDL and ask for feedback prior to the race.

A variant of the leds can look like this:



## Propeller

Due to safety reasons the propeller size / diameter must be between 5" and 6". There is a tolerance of 0.3" to this rule to allow 6.1" props etc.

## Motorisation

There is no limitation on motor size.

## Weight

- The weight is not allowed to exceed 700g for safety reasons.

## Size

- The motor to motor diameter must be between 180mm and 300mm.

## Battery

- Only LiPo Batteries are allowed.
- The voltage of each cell is not allowed to exceed 4.40 Volts.
- 4S - 6S allowed

## General Flying Rules

- In every heat 4 pilots will fly at the same time
- A pilot is allowed to bring a maximum of two drones to the start. The second drone has to be placed behind the start ramp, if it's not placed there, the pilot is not allowed to swap drones. If the first drone isn't working properly he can swap to his second one.
- If they pilot realises that something is wrong with his drone while already being on stage, he will be given 60 seconds to fix the problem, or swap drones.
- As soon as the pilot is ready to start, his drone can be randomly checked against the specifications. The pilot is not allowed to swap to his second drone if the checked drone does not meet the required specifications. Exception to this rule can be made by the Race Director
- Turtle mode is allowed but each turtle session is not allowed to exceed 5 seconds (to protect cables and prevent drones catching fire). The Race Director will give the cut cut command to the pilot after 5 seconds have exceeded.
- The event organizer explicitly points out that the usage of remote-controlled flight devices under the influence of alcohol or other intoxicating substances (drugs) is against the law in Switzerland and will lead to an instant disqualification from the whole event.
- If a pilot flies the wrong way, or tries to knock out other drones on purpose he will be disqualified from the event for unsportsmanship.

- The pilots will fly first and then spot the next heat. The first heat will be spotted by the last heat. If a pilot is not ready to spot, they can be disqualified from that round.

## Race Termination

- If under any circumstances the race needs to be interrupted, the only valid sign comes from the race direction.
- The only exception for this rule is in case of an emergency!§

## Yellow / Red Card

- Pilots can be sued with yellow cards
- If a pilot receives more than one yellow card per day, he will be disqualified for the current day with a red card
- Yellow cards can be given for any reasons like:
  - Flying outside the defined flying area
  - Flying to dangerous /
  - Disregard the orders from the race direction

## Behaviour on the course

- All pilots are expected to behave well and professional.
- Any unfair or unsportsmanship will lead to an immediate disqualification of the whole event. For example if a pilot attacks another pilot or the Race Director verbally or physically.
- The Race Director can disqualify pilots from the event if they violate against any of the above mentioned points.

## Practice

- There will be at least one practice heat at each event.
- Practice heats will be randomly seated.
- Practice heats are 90 sec long. After 90 seconds are over, the pilot is allowed to finish his ongoing lap but he must finish his lap within 30 seconds.
- The pilots will be called out individually by the raceGOD system to avoid midair collisions.

## Qualification

- There will be at least 3 qualification heats during each event. If time allows it, there will be more.
- Each qualification heat lasts 90 seconds. The timer for each pilot begins when he crosses the start-finish gate for the first time.
- After 90 seconds are over, the pilot is allowed to finish his ongoing lap but he must finish his lap within 30 seconds.
- For each heat, the number of laps flown and the total time used to fly the completed laps will be noted.
- For the rankings, the best 60% of all heats will be counted. For example if we fly 5 qualification heats:  $0.6 * 5 = 3$ . So the best 3 heats will be summed up.
  - If the 60% rule doesn't give a whole number, the number will be rounded down. For example if we fly 6 qualification heats:  $0.6 * 6 = 3.6$ . So the best 3 heats will be summed up.
- The rankings will be sorted by the number of flown laps first and by the total times used to complete those laps secondly.
- After qualification, the top 32 Pilots will proceed to the knockout stage.
- If two or more pilots get the same qualification result, the best heat will be used as a tiebreaker. If they are also the same, their second-best heat will be used and so on.

## Knockout Stage

The knockout stage will be based on a double elimination system. This means that every pilot gets a second chance. If a pilot fails to get first or second place he will be placed in the loser bracket, from which he can still fight his way back into the finals. If a pilot fails to get first or second place while being in the loser bracket, he will be knocked out of the competition. The below picture shows a graphical illustration of the knockout stage. The Grey boxes represent the winner bracket while the red boxes represent the loser bracket.

The flown laps will be determined by dividing 60 seconds by the fastest training time. This value can be mathematically ceiled or floored by the Race Director. For example: The fastest qualification time was 14s, Therefore  $60 / 14 = 4.29$ . The race will either go for 4 or 5 laps, based on the Race Director decision.



## Mid-air before first gate

If there is a mid-air before the first gate, which at least leads to two crashed drones, there is an immediate rerun.

If the mid-air is not clearly visible, there will be a review at the end of the heat.

The decision then is up to the race direction if a rerun will be granted or not.

## Crash before the finish line

In case a drone does not make it to the finish line in a knockout race the result will be based off completed laps during the flown heat and then by qualification position.

## Seating

The first round of the knockout stage will be based off the qualification result.

## Starting beeps

To minimize the risk of early / jump starts the starting beeps will be randomized. That means the first 3 beeps will come in an exact space of 1 second. The fourth and final beep which indicates that pilots are allowed to take off will follow in the next 4 seconds.

## False start

All pilots who start too early, will be disqualified from the current heat. This means they will have 0 completed laps. They could potentially still get first or second to proceed in the knockout stage if enough other pilots don't complete any laps and their qualification time is better. Pilots who start too early will be disqualified after the heat, there will be no rerun.

Gentleman rule, if the pilots who start too early will go through the first gate as last pilot with a gap of at least 3 seconds they will not be disqualified.

## Commands

The commands are to be given by the Race Director and followed without hesitation. Because those are safety commands, a pilot which does not follow it can be disqualified from the whole event. A command can either be directed to all pilots or a single pilot. If the command is for a single pilot it will be directed by the seat number (1-4).

## Land Land Land Command

The Land Land Land command means that a pilot has to land immediately but safely. Examples when this command will be given:

- A battery is not properly attached anymore and is therefore a safety issue (because it can fly through the net)
- A drone catches fire

## Cut Cut Cut Command

The Cut Cut Cut command means that all pilots have to disarm immediately.

Examples when this command will be given:

- A person enters the flying area

- There is a fire on the stage or in the track

## Rerun in case of commands

When any command is given there will be a rerun but only for the pilots who were still in the air at the time the command was given and only for the pilots who didn't cause this command. For example if a drone catches fire, the pilot of this drone isn't allowed to fly in the rerun.

## Score System

For the seasonal ranking the best results from the maximum number of races minus one race count:

## Race Ranking

Points will be given for the final ranking after the race is completed according to the following table:

Rank	Points
1.	100
2.	80
3.	70
4.	60
5.	50
6.	40
7. - 10.	30
11. - 16.	25
17. - 24.	20
25. - 32	15

## Qualification Ranking

There will also be points for the fastest lap during the qualification stage according to the following table:

Rank	Points
1	10
2	9
3	8
4	7
5-8	6
9-12	5
13-16	4
17-20	3
21-32	2
33-40	1

## Additional Points

Furthermore for the following achievements there will be points:

Achievement	Points
Pilot completes the given laps in qualification	1
Best lap time during qualification and knockout stage	5
Best time for a complete heat for the given laps during qualification or knockout stage	5

## Protest Procedure

If a pilot wants to protest he has to do this after the heat. He has to fill out the protest form (which is attached at the end of this document) together with his spotter. Incomplete protest forms will be ignored. Protest forms can only be filled out by one of the pilots in the heat in question. After the protest form is filled out, the race direction will make their decision. It is not possible to protest against the decision of the race direction. The protest form must be handed to the Race Director before the drones in the next heat take off. If there is a rerun, it will be held at the end of the round.

## Selection of the national team F3U

### Basics

- Framework regulations for model flight competitions and championships of the SMV
- Regulations F3U
- Specifications for national teams

### Selection rhythm

From January 2020, a selection will be made every year, which will apply to the next EM or WM.

### Selection

- The participation is open to all pilots who have been members of the Swiss FPV Community, the SMV and the AeCS for at least six months before the World Championship.
- The selection of the national team is based on the SDL overall ranking.
- The first three pilots in the selection ranking are the national team (Competitors)
- The pilots confirm their participation by signature. Thereby they commit themselves to participate in the World Championships of this year. The national team will then be confirmed by the SMV board.
- The pilots of the national Team, their assistants as well as the team leader are under the supervision of the SMV Board.

### Waiver

- If a selected pilot does not participate at the World Championships, the pilot next in line in the selection ranking will be promoted to the national team.
- If a member of the national team withdraws, the next in line in the selection rankings will also move up.

## Terms

<b>Term</b>	<b>Explanation</b>
Lap	One lap on the racetrack from the start / finish gate to the start / finish gate.
Heat	A heat is one race flown on the racetrack
Round	A round is a series of races / heats. For example the first round of the knockout stage is race 1.1 to 1.8.

## Protest Form

<b>First Name</b>	
<b>Last Name</b>	
<b>Pilotname</b>	
<b>Reason for Protest</b>	
<b>Heat Nr. (Shown on raceGOD screen)</b>	
<b>Signature</b>	