



RC – Drone Soccer

Revised on March 24, 2026

Introduction: Drone soccer is a 3V3 team-based technology competition. Each team consists of three players who control their respective spherical drones for offensive and defensive confrontations, scoring by passing through the opponent's goal in the air. It tests the team's piloting skills, real-time strategy, and collaborative capabilities.

Group

- A. Junior
- B. Senior

1 Drone Requirements

1.1 Size and Weight Limits

- A. Drone weight description: The remote controller is not included in the drone weight.

	Junior	Senior
Drone Size	Size (including protective cover) $\geq 100\text{mm}$ and $\leq 220\text{mm}$	
Drone Weight	$\leq 150\text{g}$ (including cover and battery)	$\leq 300\text{g}$ (including cover and battery)
Remote Controller	Any type, transmission power and frequency band limited to 2.4GHz	
Number of Drones	3 official competition drones (each team may carry 3 spare drones)	
Drone LED Marking	Drones must carry LED lights that can switch between at least red and blue	

- B. The forward drone must always display the color consistent with its team during the match.

1.2 Safety Instructions

- A. Failure to comply with safety rules will result in the team's disqualification, and all their participating drones will lose eligibility for subsequent matches.
- B. Equipment and operation must comply with Chinese laws and regulations.
- C. Only electrically propelled drones are allowed. Batteries must have standard data specifications.
- D. Drones are subject to battery inspection. Batteries must have clear production



qualification marks.

- E. Drones must be affixed with participation ID.
- F. Drones must not have sharp or potentially dangerous structures. The use of metal propellers is prohibited.
- G. Team members must always be able to take over control of the drone in an emergency.
- H. Teams must always follow the referee's instructions. Entry into the flight area is only permitted with the referee's approval.
- I. The referee may suspend the flight based on the situation.
- J. Team members must respond to safety questions posed by the referee.
- K. The use of automatic recovery systems such as "turtle mode" to help the drone self-level after a crash is allowed.

2 Competition Field

- A. As shown in Figure 1, the competition field size is at least 6m long, 3m wide, and 3m high. It is covered by a safety net. Doors are provided on both sides for participants to enter and exit.

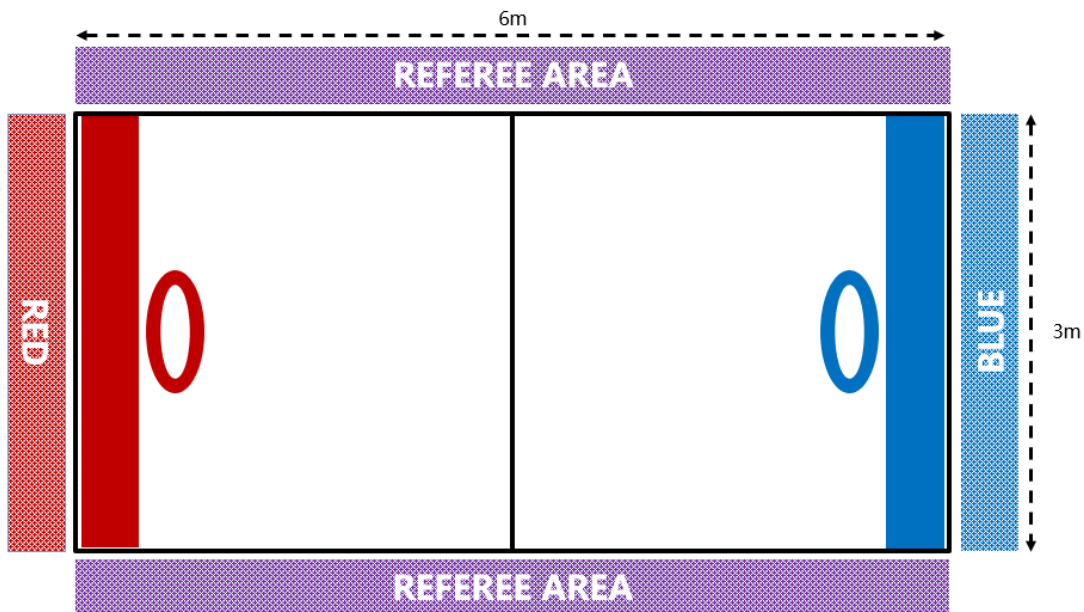


Figure 1: Schematic diagram of the field layout

- B. Goals: The circular hoop goals for both sides have an inner diameter of 45cm (± 2) and an outer diameter of 65cm (± 2). They are placed 1m from each end of the field. The bottom edge of the goal is approximately 150cm above the ground, and the top edge is approximately 85cm from the top of the field.
- C. Take-off Zone: The red and blue areas (width 40cm) in the field are for equipment debugging and take-off.

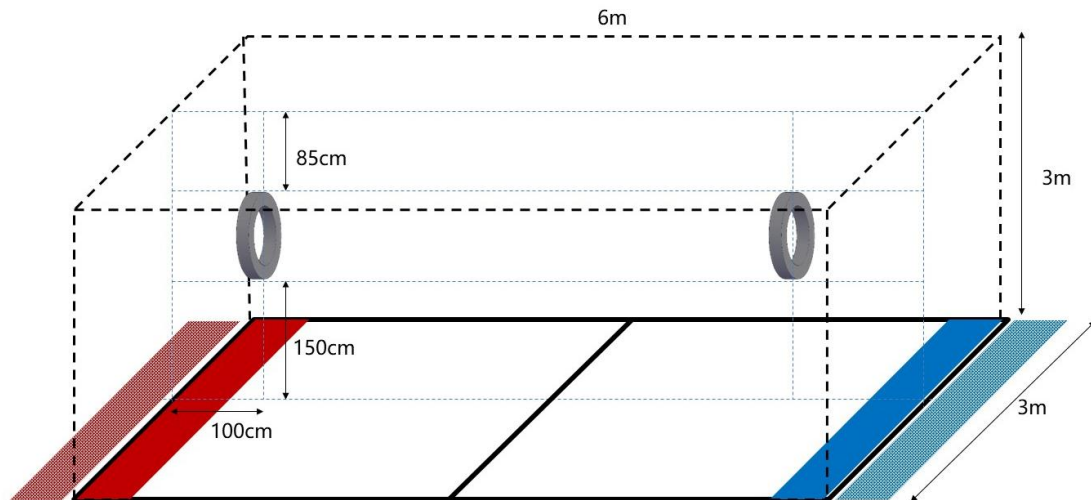


Figure 2: 3D schematic of the field

3 Competition Rules

3.1 Competition Procedure

- A. Each competition lasts 3 minutes.
- B. Each team is allowed a maximum of 3 drones on the field, consisting of one striker and two defenders.
- C. **Except during timeouts or pre-competition preparation, the roles (striker/defender) of the drones cannot be changed during the competition.**
- D. A goal is scored when the striker's drone ball completely crosses the opponent's goal line from the front. Goals are not counted if the ball is on the goal line or partially crosses the line.
- E. Each valid goal is worth 1 point. Own goals do not count.
- F. After a valid score, the scoring team's striker drone ball must retreat behind its own center line before initiating the next attack.
- G. Collisions between drones are permitted during the competition.
- H. Defender drones must not completely cross the midfield line into the opponent's half.
- I. Operators from both sides must not leave their designated operating areas.

3.2 How the Competition Starts

- A. Team members enter the field, place their drones in their designated area (ensuring they are ready for takeoff), and then exit the field.
- B. Teams prepare in their designated operating areas and wait for instructions from the referee.
- C. After confirming both teams are ready, the referee counts down 3, 2, 1, and



blows the whistle. Both teams take off simultaneously upon the whistle, and the competition begins.

3.3 Timeouts

- A. During the knockout stage, a timeout may be requested by the captain under the following circumstances. Timeouts last 30 seconds, and each team is allowed a maximum of 1 timeout per competition.
 - a) When the striker drone loses flight capability;
 - b) When the team needs to change batteries;
 - c) When the team needs to replace a drone with a backup.
- B. The referee will pause the competition under the following circumstances and resume after the ruling.
 - a) Penalty kick ruling;
 - b) Red card issued.
- C. **Timeouts requested by the team are only applicable in the knockout stage.** The referee may pause the competition at any stage for safety or ruling-related situations.
- D. During a timeout, teams may exchange remote controllers and rearrange the striker player, but must ensure the striker drone displays the corresponding color identification.

3.4 Resuming the Competition

- A. To resume the competition, both teams must place their drones in the takeoff zone (ensuring they are ready for takeoff) before the timeout ends.
- B. Teams await the referee's instruction, take off, and the competition continues.

3.5 Violations and Penalties

- A. During the competition, refusing to obey the referee's commands, failing to comply with safety rules, or engaging in behavior inconsistent with the competition may result in disqualification or team penalties.
- B. **Penalty Kick Ruling:** A penalty kick is taken by the striker against one defending player from the opposing team. The kick must be completed within 5 seconds of the referee's signal. If it exceeds 5 seconds, the penalty kick is invalid.
- C. When a penalty kick is awarded, the competition clock is paused, and the penalty is executed immediately.
- D. During the execution of a penalty kick, all drones except the attacking striker and the designated defending drone must land and stop rotating.



- E. The following situations will result in a penalty kick being awarded:
- Operating the drone to take off before the referee's start signal;
 - After a score, the scoring team's drone ball initiates the next attack without all its drones retreating to its own half;
 - A defending player's drone remains inside the goal ring to block a score;
 - Any player's drone passes through its own goal.

3.6 Warnings

- A. The following situations will result in a warning:
- Unauthorized personnel entering the operating area;
 - Players exhibiting unsportsmanlike conduct;
 - Deliberately delaying the competition;
 - Slight movement of the drone ball (without leaving the ground) before the competition start signal.

3.7 Yellow and Red Card Penalties

- A. The following situations will result in a yellow card:
- Two similar warnings;
 - Changing the striker player outside of a timeout period;
 - A defender crossing the midfield line;
 - A defender defending behind the goal line;
 - Players exchanging remote controllers during the competition;
 - Serious unsportsmanlike conduct;
 - Deliberately interfering with the competition.
- B. The following situations will result in a red card:
- Serious violent behavior;
 - Dangerous behavior or dangerous actions;
 - Receiving 2 yellow cards in a single competition.
- C. A player receiving a red card must be sent off (one of the three on-field players), and that player cannot participate in the remainder of the competition (including penalty kicks). The captain decides which on-field player is sent off.
- D. If all 3 players on a team receive red cards and are sent off, the team's score for that competition is reset to 0, and the opponent team is declared the winner.

3.8 Competition Format

- A. Teams are automatically grouped for round-robin group stage competitions, advancing to knockout rounds. Each competition lasts 3 minutes. Scores are



tallied at the end. The winning team receives 3 points, tied teams receive 1 point each, and the losing team receives 0 points. After the group stage, the top 2 teams from each group advance to the knockout stage based on group rankings.

- a) If teams are tied in points for qualification ranking, a group playoff will be held;
 - b) Determine qualification slots based on head-to-head results between tied teams;
 - c) If head-to-head results cannot determine qualification, a playoff competition is required (refer to 3.9);
 - d) Based on the playoff competition results, the qualification slot is determined.
- B. In the knockout stage, each competition also lasts 3 minutes. The winning team advances to the next round.
- C. There are no ties in the knockout stage. If a tie occurs, the team that scored first wins. If it cannot be determined, a tie-breaker is played according to 3.9 until a winner emerges.
- D. If a tie occurs in the championship or third-place competition, a penalty shootout will be held according to 3.10.

3.9 Tie-Breaker & Extra Competition

- A. Each tie-breaker competition lasts 1 minute.
- B. All 6 drones (3 from each side) are considered strikers. After the competition starts, both sides continuously attack the opponent's goal; there are no defenders.
- C. A goal is scored when the striker's drone ball completely crosses the opponent's goal line from the front. Goals are not counted if the ball is on the goal line or partially crosses the line.
- D. After a valid score, the scoring team's striker drone ball must retreat behind its own center line before initiating the next attack.
- E. The first team to score 3 goals wins.
- F. If neither team reaches 3 goals when time expires, the winner is determined as follows:
 - a) The team that scored 2 goals first wins;
 - b) If neither team scores 2 goals, the team that scored 1 goal first wins.
- G. If a team's drone ball moves from its position before the competition start signal, that team will be deemed to lose.
- H. Collisions between drones are permitted during the competition.



3.10 Penalty Shootout

- A. In the championship or third-place competition, if the score is tied after regulation time, a penalty shootout will be conducted (the two teams take turns, performing 3 attacks each. The attacking and defending players are designated by the teams).
- B. The team scoring more goals in the penalty shootout wins.
- C. If the score is tied again, the next round of the penalty shootout continues until a winner is determined.

4 Declarations and Objections

- A. There is no objection to the referee's decisions.
- B. During the enforcement of the rules, if there is any misunderstanding, the team captain may raise an objection with the referee.

5 Flexibility of Rules

These rules should be sufficiently flexible to accommodate changes in the number of participants and the content of the competition, provided the concepts and fundamentals of these rules are adhered to.

6 Liability

- A. Participating teams are always responsible for the safety of their drones and for any accidents caused by their team members or machines.
- B. The RobotChallenge Organizing Committee and its personnel are not responsible for any accidents caused by participating teams or their equipment.



Appendix 1: Knockout Round Yellow and Red Card Penalties

Offense		Team ID	Team ID	Team ID	Team ID
Two warnings					
Changing forward outside timeout					
Defender crossing midfield					
Defender defending behind goal					
Exchanging controllers during play					
Serious unsportsmanlike behavior					
Deliberately interfering with match					
Serious violent behavior					
Dangerous behavior or actions					
Two yellow cards in one match					
Penalty Result	Yellow:				
	Red:				