

# World Robot League

## Robot Battle Othello

Consolidated Rules — Junior / Senior · Lightweight (Pro) Only

### 1. Overview

"Robot Battle Othello" is a strategic robot-control competition. Participants drive robots to flip two-color "mission blocks" to their own color and earn points. The event runs as a 1:1 or 2:2 tournament and is intended as a festival in which participants respect each other, share skills, and enjoy the experience together.

Participants compete in two age divisions — Junior (U-12) and Senior (U-18) — and both divisions run under a single class: Lightweight (Pro).

Note: The tournament format may change depending on the number of participants on the day of the event.

### 2. Participant Classification

#### 2-1. Divisions

| Category | Junior                       | Senior                       |
|----------|------------------------------|------------------------------|
| Age      | U-12 (12 years old or under) | U-18 (18 years old or under) |
| Class    | Lightweight (Pro)            | Lightweight (Pro)            |

#### 2-2. Class

- Both Junior and Senior participants compete in a single class: Lightweight (Pro).
- Both retail products and self-made robots are permitted.
- If a retail product is used, all components must remain in their original state. Mixing parts from multiple retail products is prohibited; only parts from a single product may be used. However, batteries, battery cases, cables, communication modules, and decorative pieces from other products are allowed.

### 3. Robot Standards

#### 3-1. General Requirements

- All participants must have their robot fully assembled before the competition. Only robots that pass the "Standards Inspection" performed prior to matches are eligible to compete.

### 3-2. Lightweight (Pro) Specifications — Junior & Senior

| Item                     | Lightweight (Pro) — Common to Junior & Senior                                                                          |
|--------------------------|------------------------------------------------------------------------------------------------------------------------|
| Weight                   | ≤ 500 g (up to +3 g excess allowed). Retail product or self-made robot.                                                |
| Overall Size             | Within 25 × 25 × 25 cm (W × L × H)                                                                                     |
| Defense Structure Width  | 25 cm or less (only one side of front/rear/left/right may be used)                                                     |
| Battery                  | 11.7 V or less. No restriction on battery type (commercial / safety-certified only).                                   |
| Motor                    | Unlimited                                                                                                              |
| Approved Retail Products | probo, roborobo, META, CUBO, KAIROBOT, OLLO, DREAM, Robotry, TRobot, etc. (please inquire for other ready-made robots) |

### 3-3. Defense Structure

- The "defense structure" refers to any part that touches the arena floor other than the wheels.
- Only one of the four sides (front, rear, left, right) of the robot may be used as the defense structure.
- All parts other than wheels and the defense structure must be kept above the arena floor.
- The defense structure width is measured as the maximum straight-line width of the parts touching the floor, and must not exceed 25 cm.
- Defense structures that can change during the match, such as a "lift structure," are permitted. For special structures, please inquire in advance with photographs attached.

### 3-4. Surface and Other Restrictions

- Non-anodized conductive materials are prohibited on the robot's surface. No sharp or pointed parts that could cause injury are allowed.
- Surfaces and the folding sections of joints must be rounded, and their shape must be maintained throughout the match.
- Adhesive material on the robot's surface (including tires) is only permitted if an A4 paper attached and removed from the adhesive surface remains undamaged and leaves no residue.
- Metal parts are prohibited on the robot's outer shell, except for metal bolts used for fastening.
- Robots equipped with the following structures are not permitted to compete: sharp or pointed structures, knives, saw blades, high-speed rotating devices, lasers, electric-

shock devices, adhesion structures, launching mechanisms, liquid or flame. Robots that could cause excessive damage to people, equipment, or the arena are also prohibited.

### 3-5. Wireless Communication

- All wireless communication methods are allowed, except wired communication (IR, Bluetooth, RF, and RC are all permitted).
- To avoid radio interference, participants must use a frequency range different from that of the opposing team.
- The participant is responsible for malfunctions caused by multiple-frequency interference. However, deliberately interfering with the opponent's operation is prohibited and may result in suspension of wireless use.

### 3-6. Power Regulations

- Only commercially available, safety-certified batteries may be used. AC power, liquid fuel, and combustion engines are prohibited for safety reasons.
- Robots in the Lightweight (Pro) class may use any battery type up to 11.7 V or less.
- Self-assembled, refurbished, or swollen batteries are strictly prohibited.
- If charging is required at the venue, only chargers equipped with a "Balance Charge" function are permitted.
- Batteries must be placed inside a Li-Po Guard Safe Bag when charging or storing. Double-bagging is recommended, and participants are strongly encouraged to wear safety goggles while charging.
- Batteries mounted on the robot must be placed in the safest possible location and covered with a "safety cover" that can be easily removed in an emergency.
- If a battery problem occurs, the robot may be immediately removed from the arena and disposed of for safety. All resulting responsibility lies with the participant.

### 3-7. Motor Regulations

- There is no motor-torque limitation for the Lightweight (Pro) class (Unlimited).
- Please inquire in advance for the use of any special motor types.

### 3-8. Standards Inspection

- All participating robots must complete the "Standards Inspection" within the designated time. Robots that fail to meet the standards will be disqualified.
- If modifications or corrections are required after inspection, re-inspection must be completed within the designated time. Failure to do so results in disqualification.
- Inspection is conducted with the robot powered on and held in its "standard posture." The participant is responsible for measurement errors caused by improper fixation. Bring a remote controller if needed.

## 4. Match Regulations

### 4-1. Competition Method

- A total of 11 mission blocks — each with two different colors — are used. The objective is to flip all the blocks to show your own color.
- Layout: 5 mission blocks in your territory, 5 in the opponent's territory, and 1 in the central neutral zone.
- Each match lasts 2 minutes. If a team flips all 11 blocks to its own color and reaches 11 points first, a "cold game" is declared and that team wins.
- At the end of the match, 1 point is awarded for each matched color; the team with more points wins.
- If a "disqualification loss" or "forfeit loss" is declared, the match ends immediately.

### 4-2. Scoring

- The criteria for points and the final authority for judgment lie with the referee.
- A mission block must be completely touching the ground to count as a point. A point is not awarded if the robot or block is resting on top of another object.
- Each participant's first warning is verbal. Each subsequent accumulated warning grants the opposing team 1 additional point (added to their score after the match).

### 4-3. Start of the Game

- The robot starts from a designated position on the "square line" drawn on the floor, facing the opponent's territory.
- On the referee's start signal, the robot must turn 180° and remove the "start target" (yellow rubber cone) from the arena to officially begin the match.
- If the start target is not removed and the robot makes contact with a mission block or the opponent's robot, it is considered a "start violation" and immediate disqualification is declared.

### 4-4. Slipdown Regulations

- Parts other than the wheels and one side of the lift structure must not touch the arena floor. Violations result in a "slipdown" declaration. Intentional slipdowns are penalized with a "warning."
- If a robot is in a slipdown state during the match, 2 minutes of repair time is granted; every 2 minutes of repair time results in a 1-point penalty. If repairs are not possible, the violation results in a "disqualification loss."

### 4-5. Ring-Out Regulations

- If a robot falls out of the arena on its own, it is declared "ring out" and disqualified.

- If a mission block belonging to your team is knocked out of the arena, the team is declared "ring out" and disqualified.
- If a mission block knocked out by the opponent hits your team's robot, the match is immediately stopped, the block is returned to its previous position, and the match resumes from the starting position.

#### 4-6. Time Regulations

- Participants may request a "time" from the referee in case of a rule violation, malfunction, or other robot issue. A 2-minute repair time is granted; every 2 minutes results in a 1-point penalty.
- A "time" requested for an important proposal or objection during the match is not penalized. However, if the referee does not accept it as a valid time, a warning is given.

#### 4-7. Standing-Down Regulations

- If a robot does not move for more than 5 seconds, the referee may immediately declare "standing down." If the robot does not recover within a 5-count after the declaration, it is treated as a KO loss.
- In "pair" (2:2) matches, standing-down is not declared and the match continues.
- Even if some robots are flipped over or unable to move, the referee may choose, at their discretion, not to declare standing-down and allow the match to continue.

#### 4-8. Attack Regulations

- Basic blocking while in motion is allowed.
- All forms of attack — pushing, grabbing, pulling, lifting, and flipping — are prohibited.
- Rotary weapons, drum-type weapons, and related components are not allowed. Violations result in the match being stopped and the attacking robot receiving a warning or immediate disqualification.
- If a team flips or pushes the opponent's robot out of the arena, the attacking team is disqualified for violating the attack regulations.

#### 4-9. Driving Regulations

- During driving, only the wheels and one side of the defense structure may be in contact with the ground. Violations result in 2 minutes of repair time and a 1-point penalty; if repairs are not possible, the robot is disqualified for violating the driving regulations.
- Robots must be able to move normally in at least two of the four directions (forward, backward, left, right). The referee may request a verification test before or during the match, and robots that fail will be disqualified.

#### 4-10. Other Regulations

- When a match is restarted after being stopped, or at the beginning of the match, it always resumes from the initial start position. Intentional violations result in a warning.
- If the battery of a robot becomes even slightly detached during the match, the match is immediately stopped and 2 minutes of repair time is granted. A 1-point penalty is given after the match; if repairs are not possible, a TKO loss is declared.
- Participants must not touch their robot during the match without the referee's permission. Violations may result in a warning or disqualification at the referee's discretion.
- Overly defensive play may result in a warning at the referee's discretion.
- When the referee signals "stop," participants must immediately stop operating and halt their robots. Failure to comply may result in a warning.
- If all robots from both teams become entangled and the match cannot proceed, the referee may declare a "stop." The match then restarts from the start position, and participants must immediately cut motor power.
- In the case of referee error or difficult judgment, video review and discussion among the main and assistant referees may lead to a reversal of decisions and results.
- The referee retains the authority to reverse decisions and restart a match even after a win-or-loss declaration if a clear error or new evidence is found.
- If a participant or related person challenges, disrespects, or protests the referee's authority, a warning is given on the first offense; continued non-compliance results in immediate disqualification.
- During or after the match, when the referee explains a ruling or rule, participants must acknowledge understanding with a simple nod and "yes."

#### 4-11. Match Terminology

The following terms are used during matches. Participants must familiarize themselves with these terms in advance.

Ready, Start, Point, No-Count, Standing-down, Ring-out, Torque-Off, Distance (Tteol-eo-jyeo), Yellow-Card, Time, Stop, Game-Over (Geu-man), Win (Seung), Attention (Cha-lyeos), Bow (In-sa), Disqualify, Game-Over.

#### 4-12. Unspecified Issues

- Any issues not specified in these regulations will be decided in consultation with the judges on the day of the competition.

### 5. Robot Modifications

- If a robot needs modification due to a defect after the standards inspection, it must be done with the referee's permission (in-match modification results in a 1-point penalty). Unauthorized modifications result in disqualification.

## 6. Evaluation Method

### 6-1. Basic Evaluation

- Within the allotted time, the team with more points, or one that achieves a decision victory, disqualification win, or forfeit win, is declared the winner.
- Depending on the situation, a "rumble" match involving multiple robots may be held to determine rankings. In a rumble, even fallen robots may be attacked; any participant who is rung out or downed is immediately eliminated, and the last robot remaining in the arena wins.

### 6-2. Tie Evaluation

- If both teams score simultaneously and the match ends in a tie, the team that scores the next additional point wins that round.
- If the match remains tied after all rounds, a 1-minute overtime begins immediately with no battery replacement or repair time. The team that scores 1 point first wins on a "golden point." Warnings not converted to points in the main match carry over to overtime.
- If overtime is still tied, the winner is determined by the following priority: (1) fewer warnings, (2) lower total robot weight, (3) younger total team age.

### 6-3. Disqualification

- Competing with another participant's robot.
- Disobeying the referee's instructions or decisions.
- Violating robot specifications during the match.
- Leaving the arena or the designated waiting area without the referee's permission.
- Using profanity or engaging in violent behavior.
- Engaging in disruptive or cheating behavior that interferes with the match.
- Failing to compete after all other matches have ended.
- Records of disqualified participants will not be recognized.
- Modifying the robot's motor, weight, or size during the match to violate the regulations results in deletion of all awards and permanent suspension from future participation.

## 7. Arena & Mission Blocks

### 7-1. Arena Specifications

| Item       | Specification                                                                              |
|------------|--------------------------------------------------------------------------------------------|
| Arena Size | Approx. 198 × 198 × 30 cm (tolerance ±5%). Built from 22T coated plywood with a PET floor. |

|                                 |                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------|
| <b>Mission Block (Circular)</b> | Diameter 12 cm × thickness 20T, ≤ 25 g, EVA foam, different color on each side.               |
| <b>Mission Block (Center)</b>   | 12 × 12 × 20T cm, ≤ 30 g, EVA foam.                                                           |
| <b>Mission Block Layout</b>     | 5 in own territory + 5 in opponent's territory + 1 in the central neutral zone = 11 in total. |
| <b>Start Target</b>             | Rubber cone, 13 × 18 cm (≤ 30 g) or 8 × 8 cm (≤ 15 g).                                        |

- The arena is built from five 70 × 70 cm 22T coated square plywood pieces and four 70 × 70 cm 22T equilateral-triangle coated plywood pieces. The arena floor is PET.

## 7-2. Start Target Position

- The start target is placed within a designated circle (8–13 cm in diameter) located on the rear edge behind the start position.

## 7-3. Robot Start Position

- The robot's start position is the designated spot inside its own team's area.

# 8. Miscellaneous

## 8-1. Event Matches

- If all official matches finish early, "rumble" and other event matches may be held for all participants.

# 9. Contact

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