2026

V1.0

MAKEX

ROBOTICS COMPETITION

RULES GUIDE

MakeX Starter

Creativity · Teamwork · Fun · Sharing

Date	Version	Modifications Record
2025.10	1.0	MakeX Starter Signal Rise Rules Guide First Publish.

CONTENTS

1. Introduction

1.1 About MakeX

MakeX is an international robotics competition platform designed for young people worldwide. Originating from China, it is centered on STEAM and engages youth through various forms such as robotics competitions, STEAM carnivals, innovation showcases, and international exchange events. These activities allow participants to experience the joy of creation in practice and inspire their passion for technology.

The MakeX Robotics Competition upholds the spirit of Creativity, Teamwork, Fun, and Sharing, combining challenge and enjoyment. It encourages young people to embrace Science (S), Technology (T), Engineering (E), Arts (A), and Mathematics (M), and to apply this knowledge to real-life situations — exploring boldly and solving problems with creativity and teamwork.

1.2 MakeX Spirit

Creativity: We advocate curiosity and innovation, encouraging all contestants to create unique, high-tech works with their talents and challenge themselves to achieve continuous progress.

Teamwork: we advocate solidarity and friendship, encouraging all contestants to develop a sense of responsibility and an enterprising spirit, and sincerely working with their partners for win-win development!

Fun: We encourage contestants to build a positive, healthy mindset in the competition. Enjoy the journey and grow in the process.

Sharing: we encourage contestants to have an open mind as a maker and share their knowledge, responsibility, and joy with everyone, including their teammates and competitors.

MakeX spirit is the cultural cornerstone of the MakeX Robotics Competition. We hope to provide a platform for all contestants, mentors and industry experts to exchange ideas, study and grow up, and help young people acquire new skills during

creation, learn to respect others in teamwork, gain an enjoyable life experience in the competition, take delight in sharing with the society their knowledge and responsibility, and work hard to achieve their grand aspiration of changing the world and creating the future !

1.3 About MakeX Starter

MakeX Starter is a multi-mission competition program for teenagers aged 6-13.

The competition integrates the automatic stage and the manual stage, which greatly enhances the fun and participation experience of the competition. The concept of multiple missions and the alliance cooperation design fully exercises the abilities of critical thinking and strategic planning of contestants, as well as improves the ability of communication and cooperation between alliance teams.

2. Competition Application

2.1 Participation Requirements

Participants: The number of contestants is 1-2 for each team, with 1-2 mentor(s).

Age: Team members must be teenagers or children between the ages of 6-13 (born between January 2, 2012 and December 31, 2020), and the mentor must be at least 18 years old.

Team Roles: Everyone in the team can play their respective roles as operator, observer. The operator is responsible for operating the robot, and the observer is responsible for assisting the operator to complete the game.

Identification Symbols: Each team must have a team logo, team name, and team slogan. Teams are encouraged to use uniforms, flags, posters, badges, base decorations, etc., to show the team culture.

2.2 Registration and Application

Contestants and mentors who meet participation requirements can register on the designated competition web page on the MakeX official website (www.makex.cc/en).

Each team should register with one registration form.

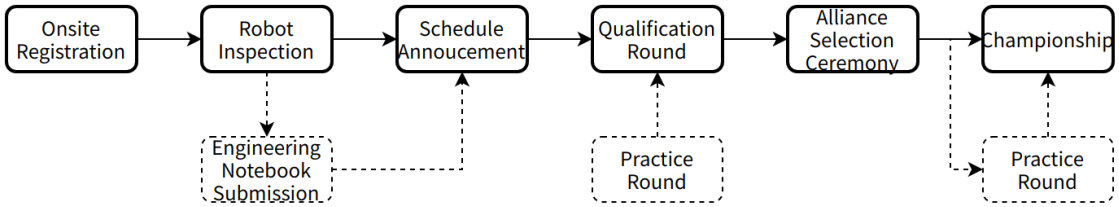
If a participating team wants to change their members before the competition, which leads to inconsistency with the registration information, it should inform the MakeX Robotics Competition Committee in advance to finish re-registration.

For more details about the registration and application, please refer to the **MakeX Registration & Competition Application Guide**

3. Competition Procedure

Participating teams shall pay close attention to related notices and the Competition Guide published before each competition. If the rules have some updates in the competition guide, the latest rules will be adopted for the competition. MakeX Competition Committee reserves the right and final interpretation to amend competition rules and systems based on the actual situation of different competitions.

The schedule for each competition is determined by the actual situation and generally includes the following procedures.



* Note: The solid line frame refers to the necessary procedure of each match, while the dotted line frame refers to the non-essential procedure. Please keep abreast of updates.

Onsite Registration

When a team arrives at the venue, mentors and contestants should show ID cards or other valid certificates (e.g., passports) for onsite registration and to get the competition pack. Mentors must inform team members about the fire exit, match schedule, arena, pits area, etc. On-site registration and robot inspection will be

closed once the match schedule is announced.

Robot Inspection

Teams are required to check their robots and team markers before the competition and complete the "**Appendix 3: Robot Self-Inspection Form**" according to the actual data. Teams are required to check their robot against the Self-Inspection items to make sure it meets the requirements associated with robot construction. During the robot inspection time, the inspectors will randomly check the robot and team markers against the completed Robot Self-Inspection Form. Teams that do not provide the completed Robot Self-Inspection Form will not be accepted for inspection; For teams that provide complete inspection materials, the inspector will stick the inspection sticker of the match to the robot, and the inspection sticker cannot be removed after sticking, if there is any special reason that causes the inspection sticker to be broken, please take the initiative to communicate with the organizing committee and explain the reason.

Before the official match, participating teams are obligated to conduct self-inspections on their robots and mutual inspections on the opposing robots and make necessary corrections promptly before entering the arena.

Once in the competition area, malicious complaints are not allowed (for the definition of malicious complaints, please refer to section 6.3 Operational Rules - R33). Teams must follow the referee's instructions and raise their hands to confirm that both robots are correct before the match begins. After this point, unless filing a complaint, no further on-site inspections of the robots are allowed.

Schedule Announcement

The committee will announce the match schedule at least 30 minutes ahead of the competition through the online official website and onsite announcement. The schedule includes a match-up chart, match session and specific time, red alliance and blue alliance, etc. If the two matches are too close, please sign up at the Result Approval Area.

Engineering Notebook Submission

Each team is required to submit 1 paper copy of their team's engineering notebook to the MakeX staff. If you are unable to submit the original version, please prepare your own copy. The engineering notebook will be used as an important basis for the selection of the special awards; teams that do not submit engineering notebooks are by default, excluded from engineering notebook-related awards. The paper version of the engineering notes will not be returned after submission. For suggestions on how to write the engineering notes, please refer to "**Appendix 2: Engineering notebook guideline**". Not all competitions will include engineering notebook-related award selection. Please refer to the content of the Competition Guide distributed before the competition for the awards.

Practice Round

Teams that have finished their robot inspection can participate in the practice round. The schedule will be announced at the entrance in the form of notices, and teams are required to queue in line before the entrance. Not all competitions have a practice round, which can be determined based on the actual situation.

Waiting for the match

During the regular competition, the venue will be equipped with a waiting area and the MakeX staff will announce or post the number of waiting matches in the pits area. Participating teams should pay attention to the notification of waiting matches and go to the corresponding waiting area according to the notified waiting matches.

Qualification Round

Normally, each team will participate in 4 matches during the Qualification Round in a regular competition, during which alliance teammates will be allocated randomly. The number of qualifications matches for teams to participate in may vary between different competitions, which is decided by the MakeX Committee according to the practical situation.

Teams will be ranked according to the following principles after the Qualification Round:

(1) Rank according to the sum of teams' scores from all qualification rounds; the

team with the higher total qualification round score will have a higher ranking.

(2) If the above condition is the same, the team with a shorter total completion time during the qualification round ranks higher;

(3) If the total score and completion time of the qualification round are the same, two teams that rank the same will have an additional match (only for the automatic independent missions) until the winner is decided.

Promotion proportion for each competition

In the 2026 season, the promotion proportion for each competition is 50%. Take up even teams to advance.

Example: the actual participating teams are 129, 129 ÷ 2 = 64.5, then take an even number of teams up and promote to 66 teams.

Alliance Selection Ceremony

During the alliance selection ceremony, promoted teams will select their alliance team in turn according to their ranking in the qualification round. During this procedure, teams must abide by the following rules:

Each promoted team shall assign one representative to participate in the alliance selection ceremony. When being chosen by other teams, promoted teams ranking top 50% can refuse only once, and those teams ranking bottom 50% cannot refuse. If the team is refused by another team, they can continue to choose another team until the alliance is formed.

The promoted teams that are not present before the start of alliance selection are deemed as voluntarily giving up the right to choose an alliance, and those who are not present before the end of the alliance selection are considered to be voluntarily quitting the championship round. If the promoted teams quit amid the alliance selection ceremony, the promotion places will be given to the following teams according to the ranking in the qualification round.

During the alliance selection ceremony, each team representative will have 30 seconds to make their decision when it is their turn, and if they are not selected within the 30-second time limit, they will lose the right to select and will move on to

the next team in order.

Championship Round

Normally, after the alliance selection ceremony, each alliance will participate in 2 matches during the Championship Round in a regular competition. The number of championship matches may be increased or decreased depending on the actual situation of different competitions. Red and blue teams will be chosen by the alliance teams themselves. The alliance teams will be ranked according to the following rules.

(1) The alliance with the higher score of the single match will rank higher.

(2) If the best score of the single match is equal, the alliance with the shorter completion time ranks higher.

(3) If the above conditions are the same, the alliance with the same ranking will complete an extra match (finish all the missions) until the winner is decided.

4. Competition Details

The theme of the 2026 MakeX Starter is "Signal Rise".

Signal is the starting point of communication and connection. From ancient methods of transmission to modern intelligent networks, it has always been the driving force behind the development of civilization. In this season's "Signal Rise", robots will simulate the processes of signal capture, transmission, and decoding to complete a variety of missions. They will showcase the beauty of technological communication and interconnection, inspiring young people to explore the boundless possibilities of the intelligent world to come.

4.1 Introduction

MakeX Starter is a multi-mission-based competition and requires blue and red teams to ally to participate.

The competition lasts 4 minutes and is divided into an automatic stage and a manual stage. The teams in the alliance can decide the time for each stage. There are 2 scoring times in each match. Teams shall complete the automatic mission during the

automatic stage. When both teams in the alliance agree to switch from the automatic stage to the manual stage, the referee will stop the timing, and the match will enter the scoring time after the automatic stage. After scoring, the manual stage begins, and teams shall complete the manual mission during the manual stage. After the end of a single match, the competition enters the scoring time after the manual stage, and the referee calculates the scoring for each stage according to the status of props at the scoring period.

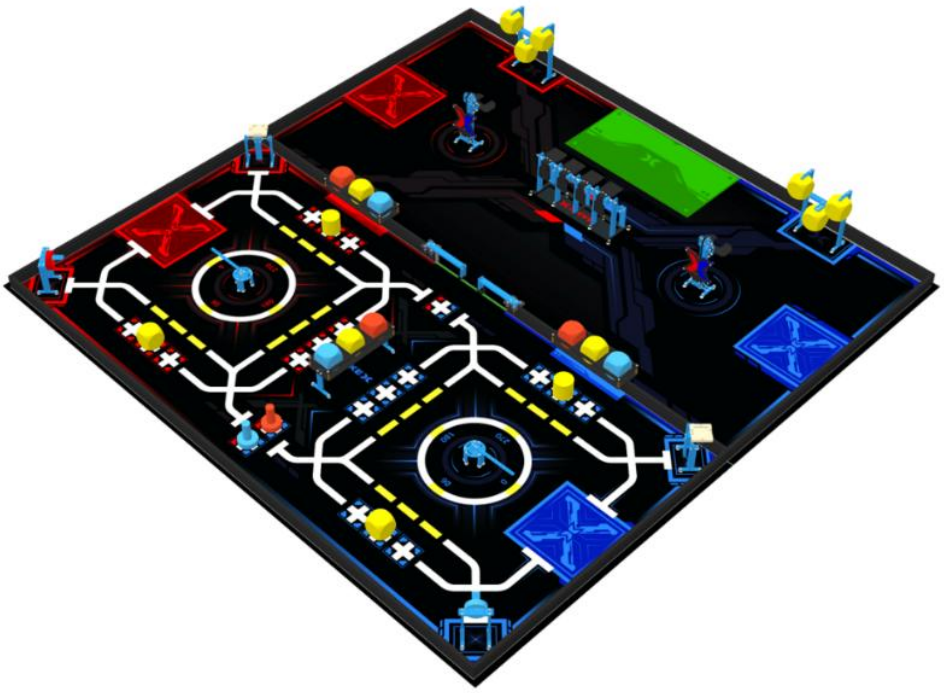


Fig. 4 .1 Competition Arena Isometric View

4.2 Arena

MakeX Starter Arena consists of a map and a frame. The internal size of the frame is 2335 mm*2335 mm, and the external size of the frame is 2365 mm*2350 mm.

The map consists of two parts, including the automatic mission area and manual mission area, together with the starting area, resource storage area, resource exchange area, manual loading area, etc.

Fig. 4 .2-1 Areas on the Competition Arena

Arena in detail:

Starting Area

There is one red and one blue starting area in the automatic mission area, which is a rectangle with a side length of 300mm.

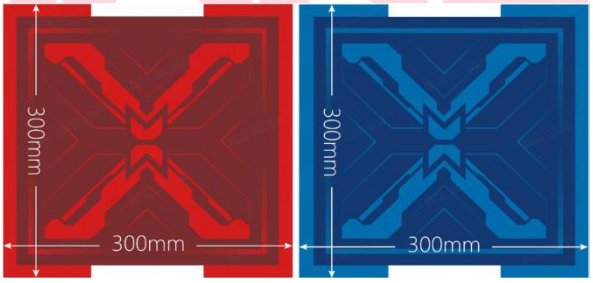


Fig. 4 .2-2 Starting Areas in the Automatic Mission Area

There is one red and one blue starting area in the manual mission area, which is a rectangle with a side length of 300mm.

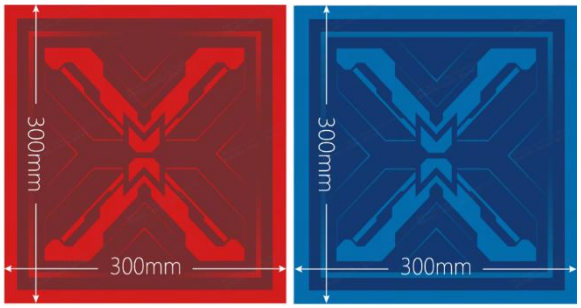


Fig. 4 .2-3 Starting Areas in the Manual Mission Area

Resource Storage Area

Resource storage areas are the areas shown in the diagram. These areas are divided into cylinder storage areas, yellow cube storage areas, and red and blue cube storage areas. Each resource storage area contains three resource drop points, each with a side length of 95mm.

Resource Storage Area Dimensions: 304mm × 95mm

Resource Storage Point Dimensions: 95mm × 95mm

Quantity: 3 in the red camp and 3 in the blue camp

Location: As shown in the diagram below

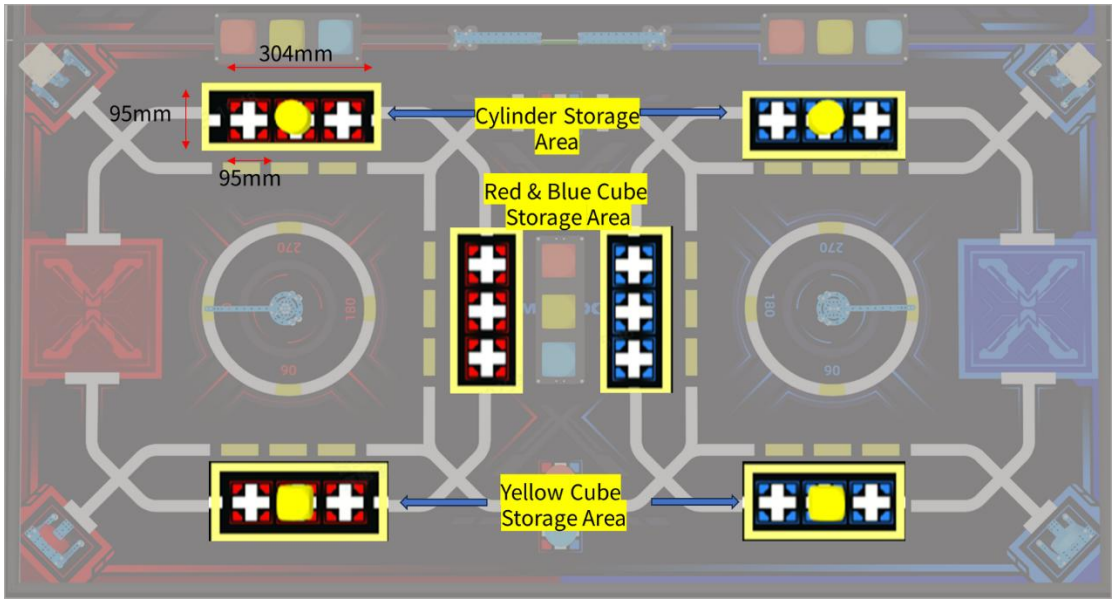


Fig. 4 .2-4 Resource storage area

Resource exchange area

The resource exchange area is the area shown in the diagram.

Size: 95mm* 95mm

Location: Located in the center of the automatic mission area, close to the manual mission area

Amount: 1 in total.

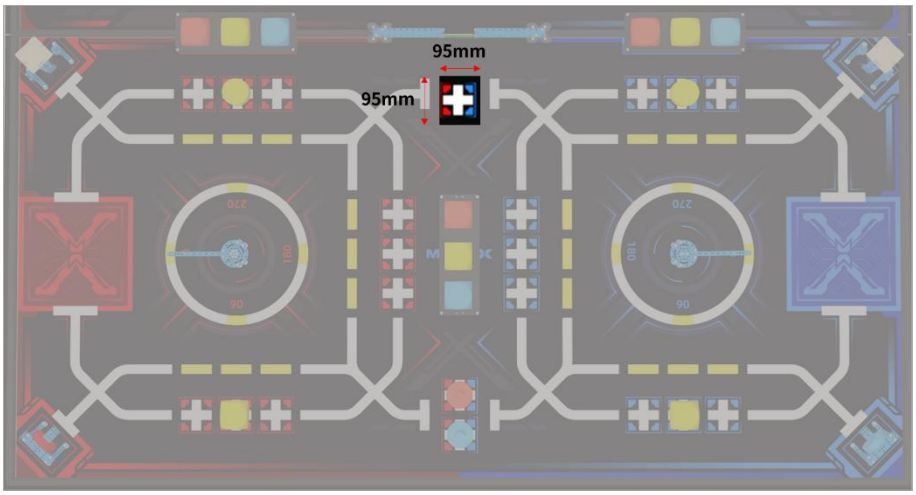


Fig. 4 .2-5 Resource exchange area

Manual Loading Area

The green area shown below is the Manual Loading Area.

Size: length 625mm* width 325mm

Location: On one side of the Manual Mission Area

Amount: 1

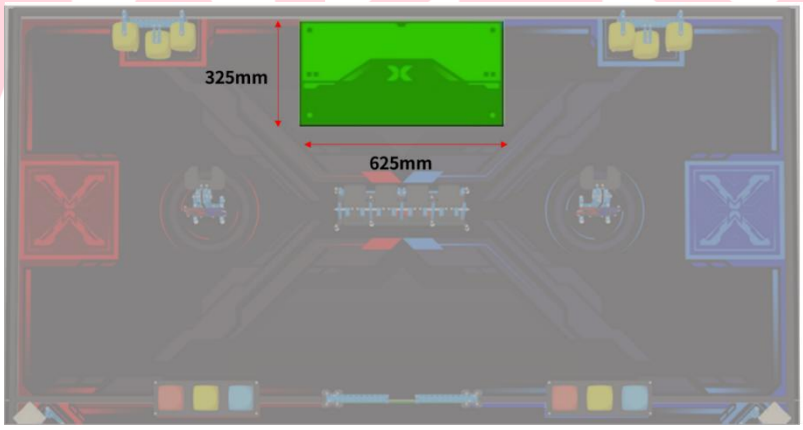


Fig. 4 .2-6 Manual Loading Area

4.3 List of Props

Props include scoring props and mission props; the introduction is as follows:

Scoring Props:

Name: Data Cube

Introduction: Red, blue or yellow round corner cube with a side of 70mm, hereinafter referred to as red/blue/yellow cube.

Size: maximum size length is 70mm(±3mm)

Quantity: Yellow*12, Red*3, Blue*3

Color and Material: Red, Blue, Yellow; EVA

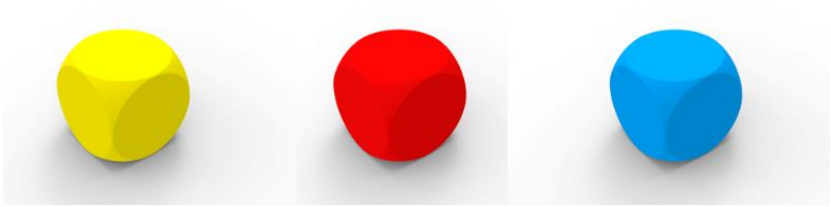


Fig. 4 .3-1 Data Cube

Name: Resource Cylinder

Introduction: Yellow Cylinder with a diameter of 70mm, height 200 mm.

Size: Diameter of 70mm, height 200 mm.

Quantity: 2

Color and Material: Yellow, EVA

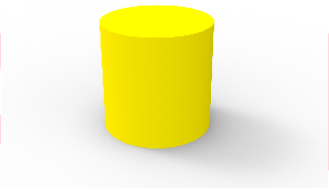


Fig. 4 .3-2 Resource Cylinder

Name: Energy Ring

Introduction: Red/blue ring with an outer diameter of 70mm (±2mm) and an inner diameter of 40mm, hereinafter referred to as the red ring/blue ring.

Size: The outer diameter is 70mm (±2mm), and the inner diameter is 40mm.

Quantity: Red*3, blue*3

Color and Material: EVA

Fig. 4 .3-3 Energy Ring

Name: Central Pointer Device

Introduction: An irregular structure assembled from blue metal components,

featuring a cylindrical base and pointer;

Size: Base dimensions: 72mm diameter, 68mm height. Pointer length from rotational center to opposite end: 174mm. Single-hole beam total length: 188mm. One in the red camp and one in the blue camp.

Color and Material: Blue metal components

Fig. 4 .3-4 Central Pointer Device

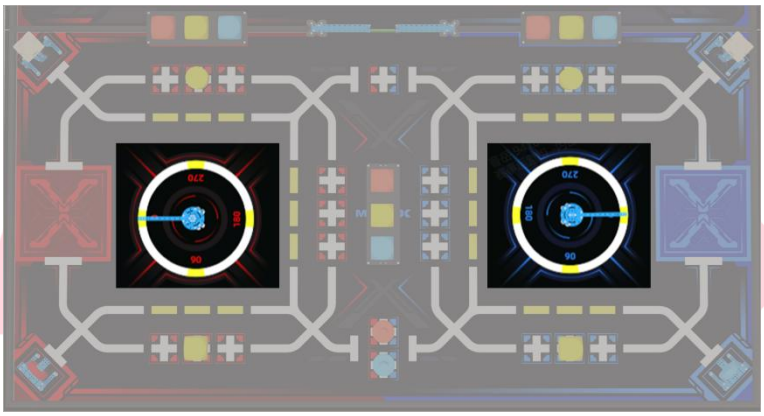


Fig. 4 .3-5 Location of Central Pointer Device

Name: Team Marker

Introduction: It is a 3D prop, with no limitation of material, recommended to use a laser cutting machine or 3D printer to produce. The height shall be less than or equal to 100mm, and the vertical projection on the ground shall be less than or equal to a circular area with a diameter of 60mm.

Size: Height≤100m, diameter≤60mm

Quantity: Red team*1, Blue team*1

Color and Material: No limitation.

Mission prop (Automatic mission area)

Name: Storage Area

Introduction: A three-dimensional platform constructed from black MDF and dowels,

designed for storing resource cubes.

Size: 312*104*40mm (length, width, height), one in the red camp, one in the blue camp.

Color and Material: blue metal parts, black acrylic

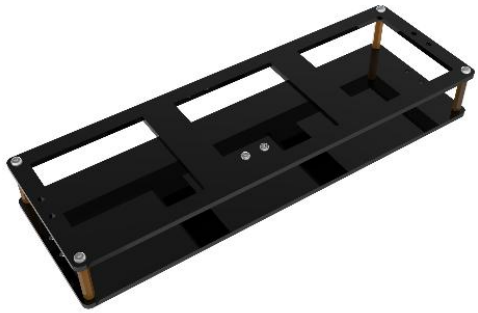


Fig. 4 .3-6 Storage area

Location: Positioned on the central frame at the junction of the automatic mission area and the manual mission area

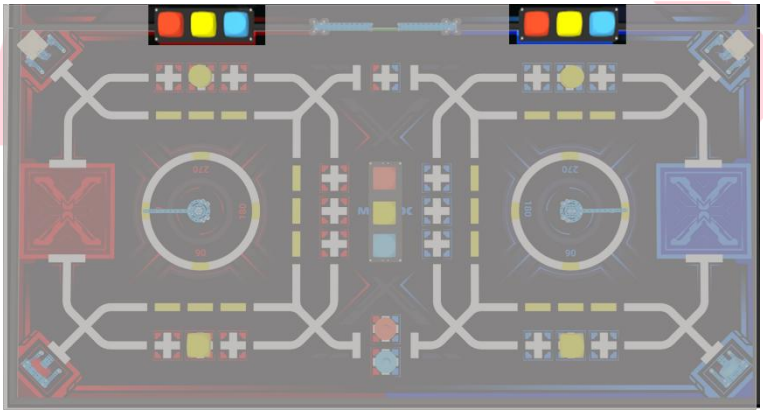


Fig. 4 .3-7 Location of Storage Area

Name: Resource Exchanger

Introduction: A three-dimensional platform constructed from black MDF and dowels, designed for storing resource cubes.

Size: 312*104*40mm (length, width, height), one in total.

Color and Material: blue metal parts, black acrylic

Fig. 4 .3-8 Resource Exchanger

Location: Located at the center of the automated mission area.

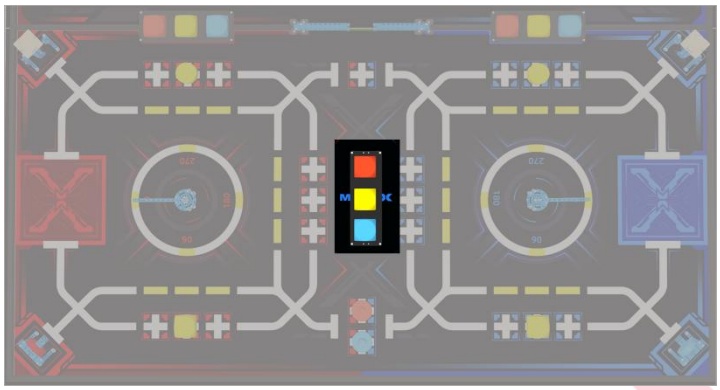


Fig. 4 .3-9 Location of Resource Exchanger

Name: Ring-Hanging Device

Introduction: A three-dimensional structure constructed from blue metal components, designed for storing resource rings.

Size: 110*104*135mm (length, width, height), one for the red camp, one for the blue camp.

Color and Material: blue metal parts

Fig. 4 .3-10 Ring-Hanging Device

Location: The lower-left and lower-right corners at the edge of the automatic

mission area

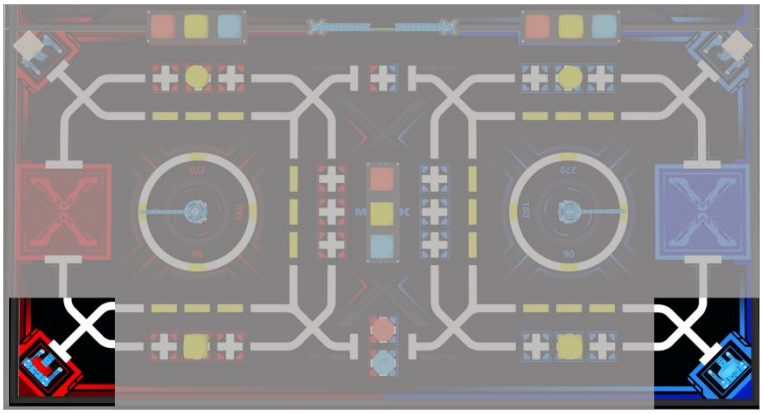


Fig. 4 .3-11 Location of the Ring-Hanging Device

Name: April Tag Display Stand

Introduction: A three-dimensional structure constructed from blue metal components and OSB board, designed to hold April Tag labels. For details on April Tag content, see Appendix 5.

Size: 110*112.5*135 mm (length, width, height), one for the red camp, one for the blue camp.

Color and Material: blue metal parts, OSB board

Fig. 4 .3-12 April Tag Display Stand

Location: The upper-left and upper-right corners at the edge of the automatic mission area

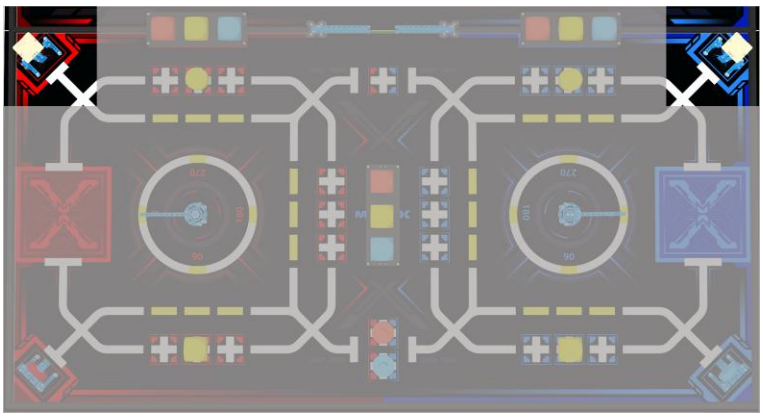


Fig. 4 .3-13 Location of the April Tag Display Stand

Name: Signal Tower

Introduction: EVA material protruding pillar

Size: The base diameter is 70mm, the pillar body diameter is 29mm, and the overall height is 100mm. One for each red and blue camp.

Color and Material: Red/Blue/Yellow EVA

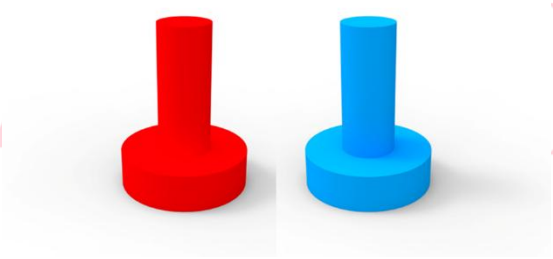


Fig. 4 .3-14 Signal Tower

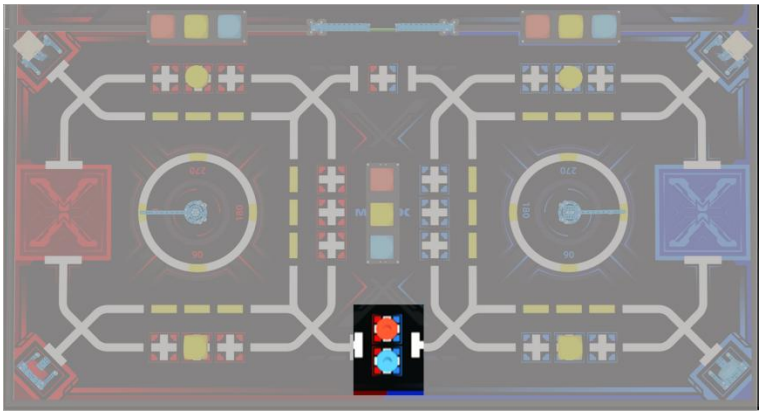


Fig. 4 .3-15 Location of the Signal Tower

Name: Pulley Device

Introduction: A three-dimensional structure composed of blue metal components and black MDF panels, designed to separate the automatic mission area from the

manual mission area.

Size: 200*53.5*70 mm (length, width, height). A total of 2.

Color and Material: Blue metal components, black MDF panels

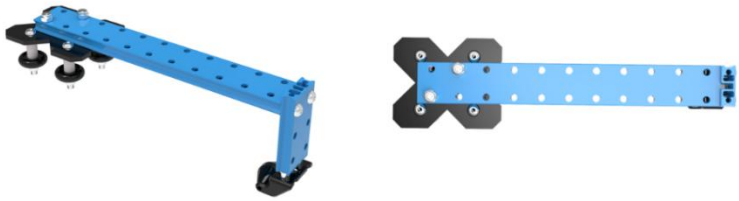


Fig. 4 .3-16 Pulley Device

Mission prop (Manual mission area)

Name: Flipping Platform

Introduction: A three-dimensional installation constructed from blue metal components, acrylic panels, and black MDF is positioned at the center of the manual mission area.

Size: 420*135*186 mm (length, width, height). A total of 1.

Color and Material: Blue metal components, acrylic panels, black MDF

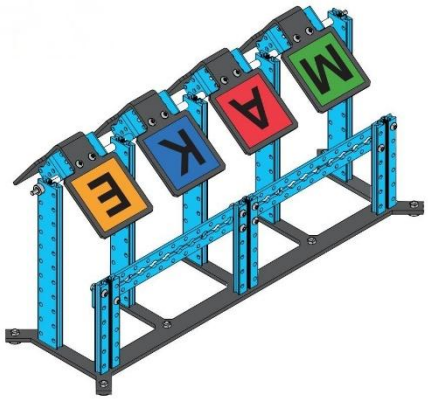


Fig. 4 .3-17 Flipping Platform

Name: X Tower

Introduction: The three-dimensional installation, constructed from blue metal components, acrylic panels, and black MDF, is positioned on both sides of the flipping platform in the manual mission area.

Size: 140*130*240 mm (length, width, height). A total of 2.

Color and Material: Blue metal components, acrylic panels, black MDF

Note: In its natural state, the X-shaped plate side can freely drop to the bottom, while the other side remains raised.

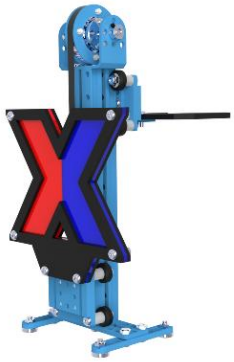


Fig. 4 .3-18 X Tower

Name: Supply Device

Introduction: A three-dimensional structure built from blue metal components, designed for storing resource cubes; positioned at the edge of the manual mission area.

Size: 180*100.5*265 mm (length, width, height). A total of 2.

Color and Material: Blue metal

Fig. 4 .3-19 Supply Device

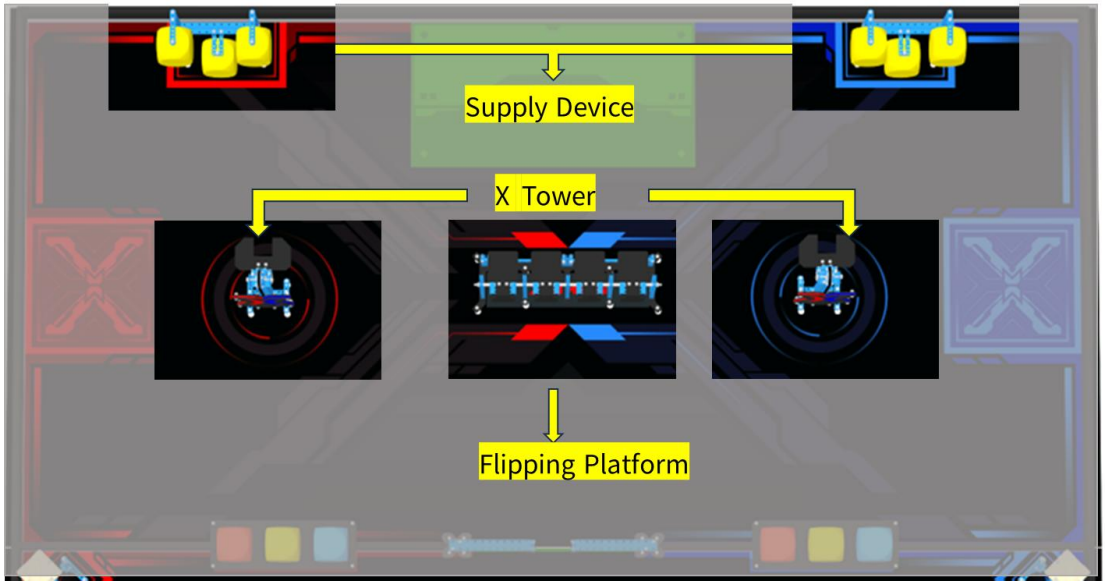


Fig. 4 .3-20 Location of Supply Device

*Note: All arenas and props have some reasonable tolerance.

4.4 Missions Introduction and Scoring State Judgement

Participants will engage in various missions, including Independent Missions, Alliance Missions, and potential Mysterious Missions.

Independent Mission: Designated as M01-M04, the scores for Independent Missions are exclusively attributed to the respective team undertaking the mission.

Alliance Mission: Identified as M05-M08, Alliance Missions require collaborative efforts, and the resulting scores are collectively awarded to the two allied teams.

Mysterious Mission: This mysterious mission is unveiled exclusively during major competition events, adding an element of surprise and strategic complexity.

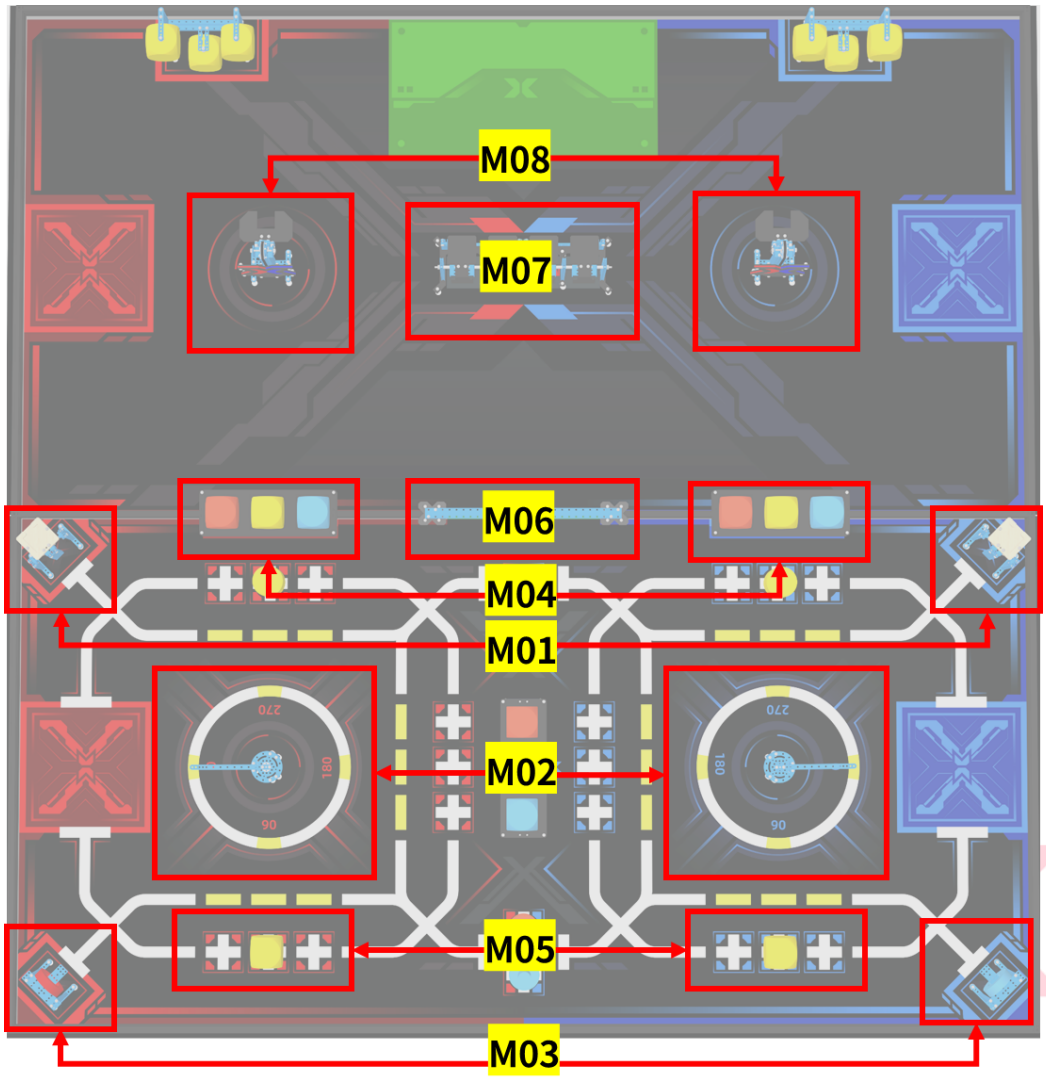


Fig. 4 .4-1 Missions in the automatic and manual areas

In a single match, each team is required to complete 4 independent missions, and 4 alliance missions:

Stage and Time	Mission Type	Mission Name
Automatic Stage (Duration: x seconds, where 0<x≤240)	Independent Mission	M01 Signal Activation
		M02 Signal Decoding
		M03 Energy Ring Connection
		M04 Data Cleanup & Resource Exchange
	Alliance Mission	M05 Data Sharing
		M06 Channel Switching

Manual Stage (240-x Seconds)		M07 Data Lighting
		M08 X Signal Launching

M01 Signal Activation

Mission Type: Independent Mission

Mission Background: In the future communication hub, the signal base serves as the crucial trigger. Once the cylinder is correctly positioned, the April tag penal stands upright, initiating the primary transmission from the signal source.

Starting Condition: The initial mission area will feature an April Tag Display Stand. The April Tag penal will be in a natural downward state. The cylinder resource area contains three resource drop points, one of which holds a yellow cylinder. The specific placement of the yellow cylinder and the information displayed on the April Tag will be determined by prop cards drawn before the match. (The image below shows only one possible arrangement.)

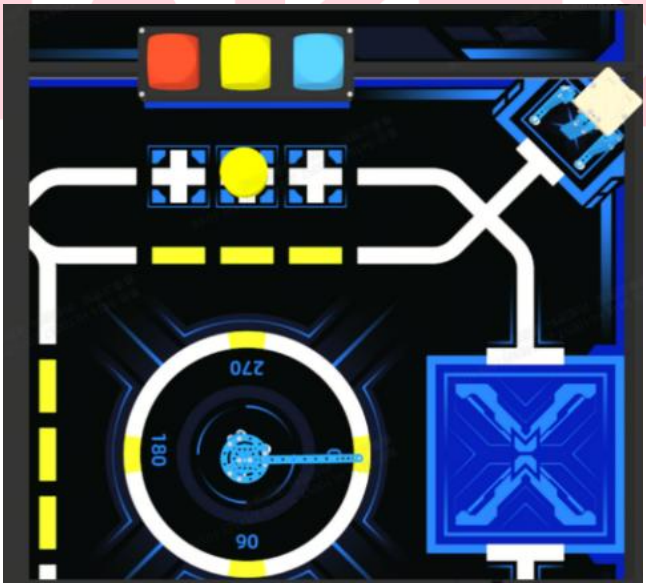


Fig. 4 .4-2 M01 initial placement

Mission Score: The successful removal of the yellow cylinder from the resource drop point to the square area under the April Tag display stand is valued at 20 points

Scoring Judging: At the scoring time after the automatic stage:

a. The vertical projection of the yellow cylinder is completely moved into the square area under the April Tag Display Stand.

b. The yellow cylinder and the April Tag Display Stand have no direct contact with the robot.

c. The April Tag Display Stand is in the upright position, and its vertical projection is at least partially within the square area.

If all the above conditions are met, the corresponding yellow cylinder will be scored.

Arena Definition: The arena encompasses the map, the upper surface and the internal edges of the frame. It explicitly excludes the external surface of the frame, the desktop, the ground, and any other adjacent areas.

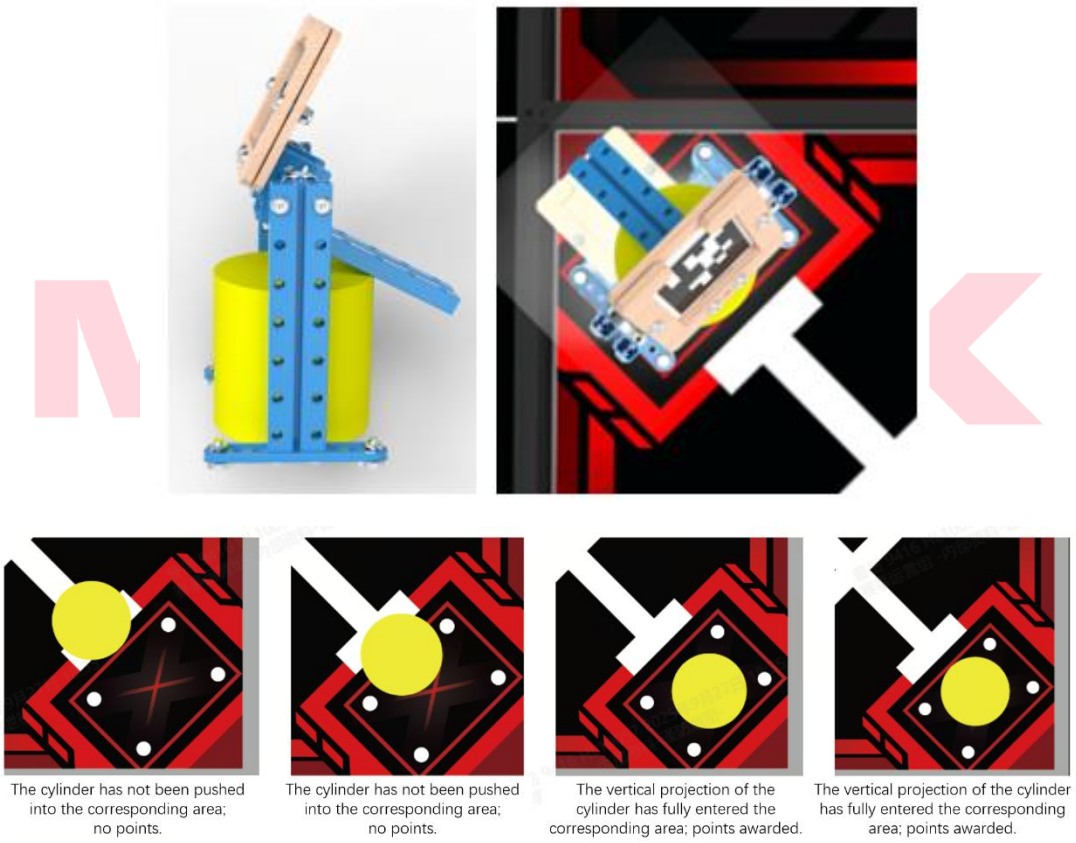


Fig. 4 .4-3 M01 Scoring Judging

M02 Signal Decoding

Mission Type: Independent Mission

Mission Background: The acquired signals must be decoded, with the central pointer serving as the signal reception device. The robot must precisely adjust the pointer according to the instructions from the April Tag in mission M01 to connect to the

correct signal channel.

Starting Condition: The central pointer device's pointer points to the yellow area corresponding to 0° on the map.

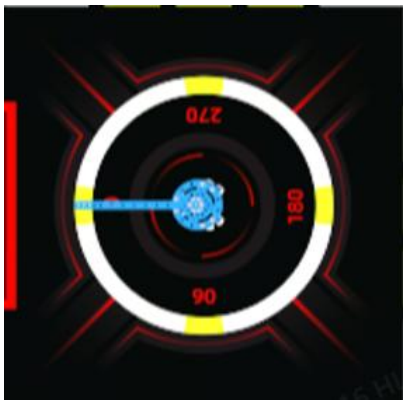


Fig. 4 .4-4 M02 initial placement

Mission Score: The pointer remains within the yellow area of the corresponding angle, scoring 50 points.

Scoring Judging: At the scoring time after the automatic stage:

a. The pointer of the central pointer device points to the angle in the April Tag within mission 01.

b. The vertical projection of the pointer remains entirely within the yellow area of the corresponding angle;

c. The central pointer device has no direct contact with the robot;

d. The central pointer device remains in an upright position;

If all the above conditions are met, then the mission is scored.

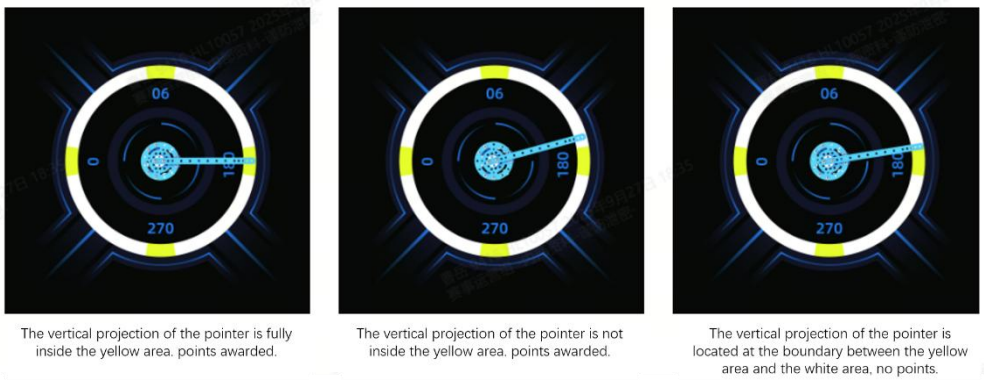


Fig. 4 .4-5 M02 Scoring State

M03 Energy Ring Connection

Mission Type: Independent Mission

Mission Background: The signal tower requires the energy ring's activation to fully illuminate. The connection of the energy ring symbolizes the completion of the signal chain, marking the full activation of the communication system.

Starting Condition: One ring of the team's color is suspended from the ring device, tightly fitted against it as shown below. The signal tower is positioned with red on top and blue below, as shown below.

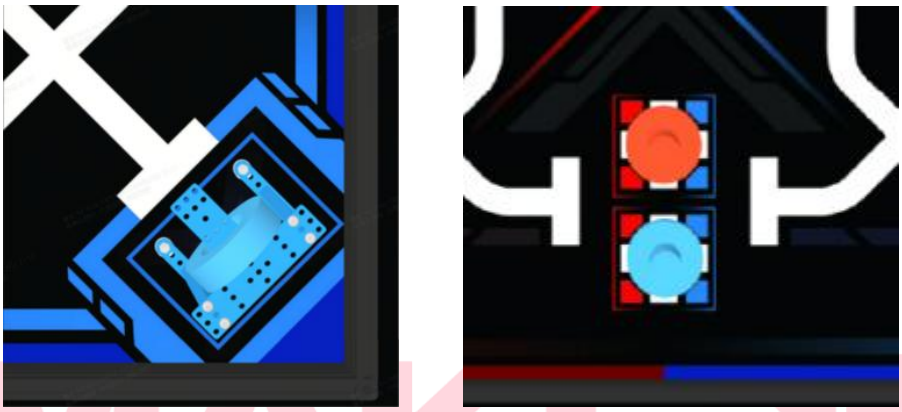


Fig. 4 .4-6 M03 initial placement

Mission Score: Successfully transferring your own color's ring to a signal tower of your own color earns 30 points.

Scoring Judging: At the scoring time after the automatic stage:

a. The vertical projection of the signal tower remains upright within the initial resource point without direct contact with the robot;

b. The color of the ring matches the color of the signal tower and does not come into direct contact with the robot;

c. The ring shall be fully inserted onto the corresponding colored signal tower.

If all the above conditions are met, the corresponding ring earns points.

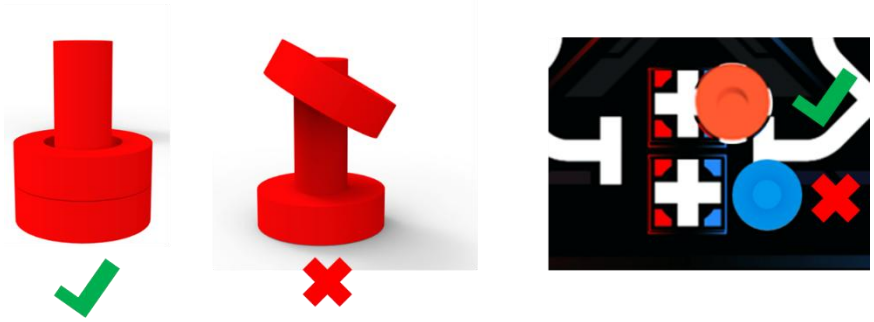


Fig4.4-7 M03 Scoring State

M04 Data Cleanup & Resource Exchange

Mission Type: Independent Mission

Mission Background: During data transmission, external interference cubes (opponent cubes) and neutral cubes (yellow cubes) obstruct signal flow. These must be cleared and categorized to ensure the purity of information channels. Simultaneously, data swapping is required to exchange for one's own core information modules. The robot must complete the swap and return the core data cubes to storage slots to restore stable system operation.

Starting Condition: The storage area is fixed above the flat aluminum plate at the center of the manual mission area and the automatic mission area. The storage area's cube positions correspond to the cylinder resource points on the automatic mission area map. Inside the storage area are placed: one cube of the own color ①, one cube of the opposing team's color ②, and one yellow cube.

The Resource Exchanger is positioned at the center of the automatic mission area, displaying one cube of your own color ③, one cube of the opposing team's color, and one yellow cube.

The cube positions are determined by prop cards drawn before the match. The diagram below illustrates one possible arrangement using the blue team as an example.

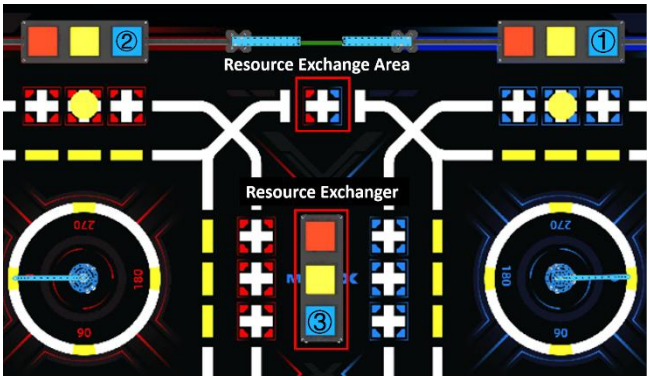


Fig. 4 .4-8 M04 initial placement

Mission Score:

- Keep your own color cube ① in the storage area at its initial position: 10 points per cube;
- Move the yellow cube to the manual mission area: 20 points per cube;
- Remove opponent's color cube from storage area: 20 points per cube (opponent's color cubes can be placed in resource exchange area to swap for your own color cubes);
- Embed your own color cube ② from the resource exchange area and your own color cube ③ from the resource exchanger into the storage area: 30 points per cube;

Scoring Judging: At the scoring time after the automatic stage, determine points based on the following four conditions:

a. Your own color cube ① remains in its initial position;

b. The vertical projection of the yellow cube is fully within the manual mission area;

c. The vertical projection of the opposing team's cube is fully outside its initial position;

d. Your own color cubes ② and ③are fully embedded in the storage area;

e. None of the above cubes or the storage areas are in direct contact with the robot.

If the corresponding conditions are met, the corresponding cube gets points.

M05 Data Sharing

Mission Type: Alliance Mission

Mission Background: Within information networks, public signals must pass through unified relay stations to be amplified and shared. Robots must transport shared yellow cubes from their resource zones and embed them into the resource exchanger, simulating the process of signals converging from dispersed states to unified nodes. This not only symbolizes centralized information processing but also demonstrates the vital role of shared resources in network interconnectivity.

Starting Condition: A yellow cube is placed at one of the three resource points within the team's cube resource area. The cube positions are determined by prop cards drawn before the match.

Fig. 4 .4-9 M05 initial placement

Mission Score: Successfully embedding the yellow cube completely into the resource exchanger counts as 30 points per cube.

Scoring Judging: At the scoring time after the automatic stage:

a. The resource exchanger remains upright and does not come into direct contact with the robot.

b. The yellow cube is completely removed from the initial area.

c. The yellow cube is fully embedded in the resource exchanger's groove and does not come into direct contact with the robot.

If the above condition is met, the corresponding yellow cube scores get points.

M06 Channel Switching

Mission Type: Alliance Mission

Mission Background: The robot must open the gate from the automatic mission to

enter the manual mission area, simulating the process of signals passing through the gateway into the new channel. This action symbolizes network access and communication connectivity, serving as a critical link for the smooth transmission of information.

Starting Condition: The pulley device assembly between the automatic and manual mission area is positioned at its maximum extendable point.

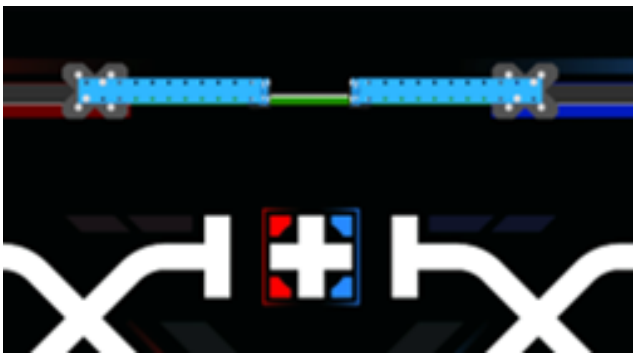


Fig. 4 .4-10 M06 Initial placement

Mission Score: The vertical projection of the robot fully enters the manual mission area; each robot gets 30 points.

Scoring Judging: At the scoring time after the automatic stage:

a. The vertical projection of the robot is completely in the manual mission area.

b. The robot has no direct contact with the pulley device.

The corresponding robot is scored if the above determinations are satisfied.

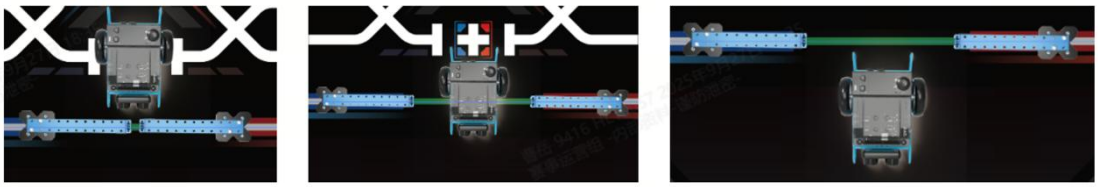


Fig. 4 .4-11 M06 Scoring State

M07 Data Lighting

Mission Type: Alliance Mission

Mission Background: Within information networks, public resources only yield tangible benefits when properly guided and activated. The robot must push the yellow cubes into the shadowed area beneath the flipping platform to raise the stand,

simulating how information converges from dispersed states into public nodes and transforms into visual feedback.

Starting Condition: Two supply devices each hold three yellow cubes, totalling six yellow cubes. The remaining two yellow cubes depend on whether the red and blue teams can move their respective props into the manual mission area. The flipping platform is initially positioned at the center of the manual mission area, with the signboard in a naturally downward-hanging state.

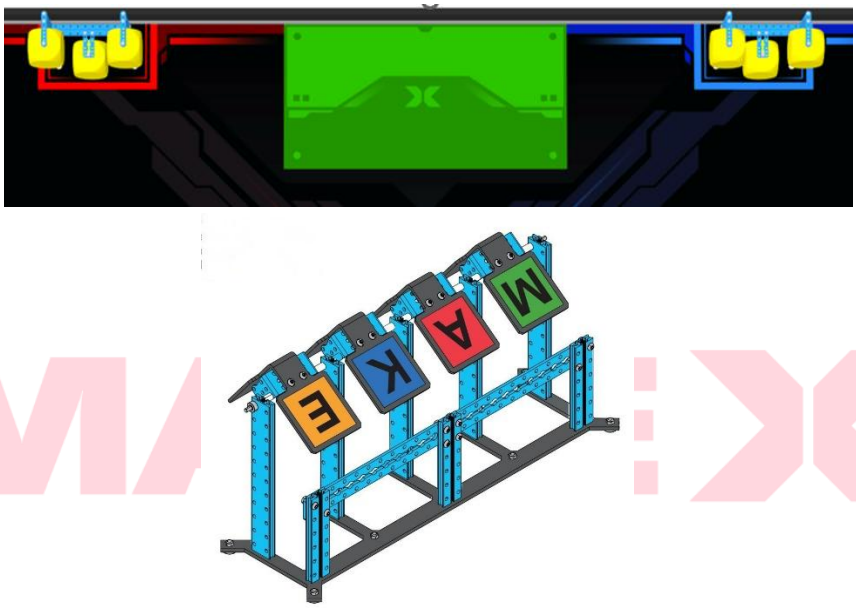


Fig. 4 .4-12 M07 initial placement

Mission Score: The signboard of the flipping platform is in an upright position: 20 points per unit

Scoring Judging: At the scoring time after the manual stage:

a. The vertical projection of the bottom yellow cube is entirely within the shadow area below the flipping platform;

b. The yellow resource cube on the second layer is in direct contact with the base of the signboard;

c. The signboard is in an upright position (with the letter information side approximately at a 90° angle to the arena map);

d. The acrylic flipping platform and the yellow cube have no direct contact with

the robot.

If all the above conditions are met, the corresponding signboard gets points.

- **Note:** The observer is only allowed to contact cubes within the manual loading area, but must not manually place cubes onto the robot. The observer must not directly or indirectly contact the robot within the manual loading area.

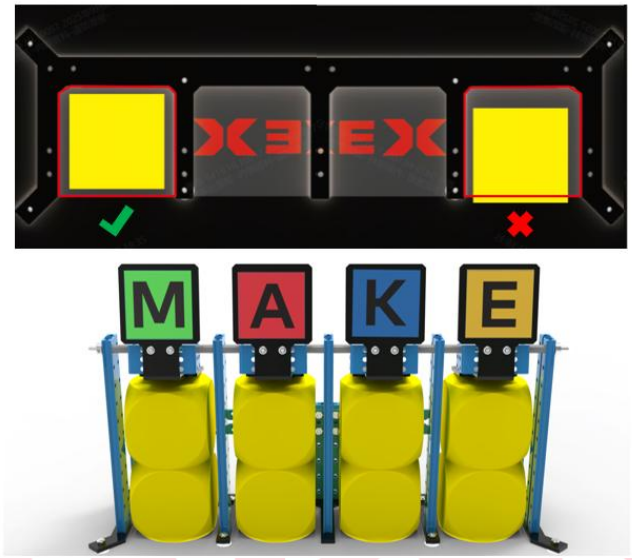


Fig4.4-13 M07 Scoring State

M08 X Signal Launching

Mission Type: Alliance Mission

Mission Background: The robot completes the final signal transmission mission, symbolizing the process of information propagating from its source across the entire network. Through coordinated operations at every stage, dispersed resources and data are integrated, activated, and relayed, achieving global interconnection. Successfully place a team marker and raise the X signal.

Starting Condition: Before the match begins, contestants shall place their team markers within the manual loading area, with the specific placement determined by the contestants themselves. Team markers are self-made props (see Section 5.2 Team Marker Production Specifications for detailed size requirements).

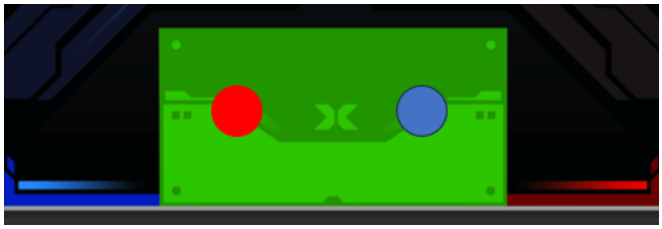


Fig. 4 .4-14 M08 initial placement

Mission Score: Each successfully placed team marker counts as 30 points. Successfully flipping all M07 signboards and raising both X signal towers grants an additional 100 points.

Scoring Judging: At the scoring time after the manual stage:

a. The X tower is raised to its highest position;

b. The vertical projection of the team marker aligns with the crossbar of the X tower's lifting frame (including the four screws securing the crossbar);

c. There is no direct contact between the X tower, the team marker, and the robot.

If all the above conditions are met, the corresponding team marker will be scored.

Fig. 4 .4-15 M08 Scoring State

Note: No direct or indirect contact is permitted with team markers.

Mysterious Mission

In different competitions, there may exist mysterious missions that are different from existing missions (M01-M08). Details of mysterious missions may be published in the competition guide before the competition.

4.5 Scoring Explanation

The referee counts the scores only in two scoring times, which are after the automatic stage and after the manual stage. During the match, the referee monitors the process and records warnings and violations.

Independent Mission Score

Mission	Scoring Prop	Single Prop Score	Maximum Score
M01 Signal Activation	Yellow Cylinder	20 pts/each	20 pts
M02 Signal Decoding	Pointer	50 pts/each	50 pts
M03 Energy Ring Connection	Red/Blue Ring	30 pts/each	30 pts
M04 Data Cleanup & Resource Exchange	● Own-color cube ① ● Yellow Cube ● Opponent-color cube ● Own-color cube ② ● Own-color cube ③	● 10 pts/each ● 20 pts/each ● 20 pts/each ● 30 pts/each ● 30 pts/each	110 pts

Alliance Mission Score

Mission	Scoring Prop	Single Prop Score	Maximum Score
M05 Data Sharing	Yellow Cube	30 pts/each	90 pts
M06 Channel Switching	Robot that fully enters the manual mission area	30 pts/each	60 pts
M07 Data Lighting	The signboard of the flipping platform	20 pts/each	80 pts
M08 X Signal Launching	● Team marker ● The flipping platform and X tower	● 30 pts/each ● 100 pts	60 pts 100 pts

After a single match, the referee will confirm the scoring with the teams. The score contains three parts: independent mission, alliance mission and violation deduction. Single match score will be recorded for the ranking of the qualification or championship round.

Qualification Match:

Single match score: self-team independent mission scores + alliance mission scores – violation deduction

Maximum scores= 210pts+390pts-0pts=600pts

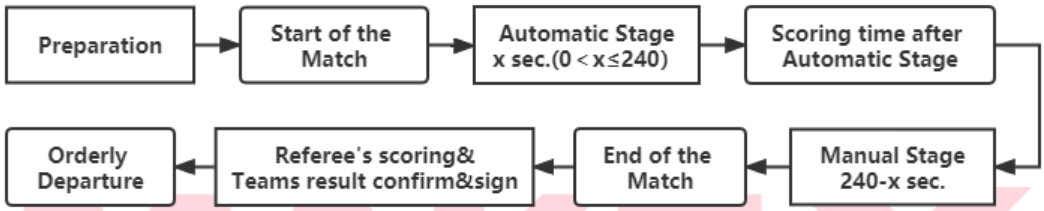
Championship Match:

Single match score: red team independent mission scores + blue team independent mission scores + alliance mission scores – both teams' violation deduction

Maximum scores = 210pts+210pts+390pts-0pts=810pts

4.6 Single Match Flow

The single match lasts for 240 seconds. For any team, the match stages and switching times are as follows:



Preparation

Before the single match, contestants shall arrive at the competition area ahead of schedule and prepare under the guidance of the referee.

(1) Power on the robot and place it completely in the starting area in the automatic mission area. With Bluetooth controller is powered on and placed in the starting area of the manual mission area or outside the arena frame. Place the team's self-made marker in the manual loading area inside the manual mission area.

(2) One representative will be appointed by their team to draw a prop card and then place the props of M01, M04, and M05 accordingly.

(3) Check the standard of the arena and props placement.

(4) Waiting for the referee's instruction.

Automatic Stage

The automatic stage begins after the referee's five-second countdown.

(1) After the automatic stage starts, the robot completes the automatic missions in the automatic mission area by running the automatic program. During this period, the contestant can send a restart or modification request to the referee at any time.

(2) After the automatic stage starts, the alliance can apply for switching the stage from the automatic to the manual stage. Once the competition switches to the manual stage, robots are not allowed to go back to the automatic mission area. The alliance has only one chance to apply for a stage switch, in which the alliance both agree to proceed to the Manual stage. The alliance shall apply for switching the stage to the manual mission area from referees, and with the referees' permission, the match will move on to the scoring time after the automatic stage.

(3) The duration of this stage is 0 ~ 240 seconds, and the specific duration depends on the stage-shifting application initiated by the alliance.

Scoring time after the automatic stage

When the alliance applies stage switching, and, with the permission of the referee, the match will stop timing and enter the scoring time after the automatic stage. During this period, the alliance can't contact their robots; the robots have to maintain the state under the stage switching application and wait for the referee to complete the scoring.

Manual stage

After the referee completes the scoring of the automatic stage, the referee issues the "transferring robots" command:

(1) Standing position: the contestants shall stand according to the position requirements in "**6.3 Operation**".

(2) Robot position transfer: the red and blue team shall move their robots from the automatic mission area to the starting area in the manual mission area (only allowed to place the robot). If "M06" has been completed during the automatic mission stage, the robot does not need to return to the starting area and can directly

wait for the instruction to begin the manual mission.

After the robots are placed, the referee will issue the command “**manual stage start**”; the manual stage will start, and the alliance can process the manual mission.

(3) During the manual stage, the contestants shall divide the roles of the observer and the operator, and stand in the designated station area to complete the relevant missions. For specific standing requirements, please refer to the correct position of the contestants in "**6.3 Operation**". During the manual stage, the observer and operator can apply to the referee for role transposition. For specific transposition requirements, please refer to the correct transposition of contestants in "**6.3 Operation**".

(4) If the alliance applies to the referee to end the match before the match time, the referee gives the instruction of "over" and stops the timing, the match will end ahead of schedule; Or when the 4 minutes run out, the referee will take the initiative to issue the command of "end of the match”.

During the whole match, the contestants can restart, repair and modify the robot according to the rule requirements, and the match time will not stop during this period. Except for safety issues, the contestants shall not apply to the referee for suspension of the match.

Referee's Scoring and Contestant's Results Confirmation and Sign

The referee will count the scores after the match. If there is no objection to the competition, the representatives of both alliances must confirm the match's result by signing on the scoring sheet. If there is any objection to the result of the match, the participating teams do not need to sign; they should immediately object to the on-duty referee and communicate positively without signing to confirm the result.

After results confirmation, contestants shall actively assist the referee to restore the props and leave the arena with their robots and Bluetooth controller in an orderly manner.

5. Technical Requirements

5.1 Robot General Specification

The Robot General Specification are prepared for better preparation for teams and ensures a fair and safe competition standard. We suggest that the team program and construct the robot under a fully comprehensive understanding of this specification. All participants' robots must follow the Robot General Specification strictly, and any against from the requirement will be asked to rectify. The robot might be disqualified if seriously against the specification.

Robot Mechanical Specification

T01. Each team can use only one robot for inspection. After inspection, the team can only use the inspected robot for the match. It is strictly forbidden for teams to change robots and for teams to use robots that have not passed inspection.

T02. During the single match, the robot's main-board, chassis, wheel or tracks are not replaceable; the rest of the parts can be replaced.

T03. During the single match, the length and width of the robot shall not exceed the size: 300mm, and the robot's height shall not exceed 300mm. The diameter of the wheel (including the rubber tyres) shall not exceed 70mm.

a. The size of the robot is defined at the maximum extension state. A robot should be inspected when all movable structures are at an extreme state (including the state after modification)

b. When the robot is in an extreme state, any structure shall not exceed the size of 300mm(width)*300mm(length)*300mm(height).

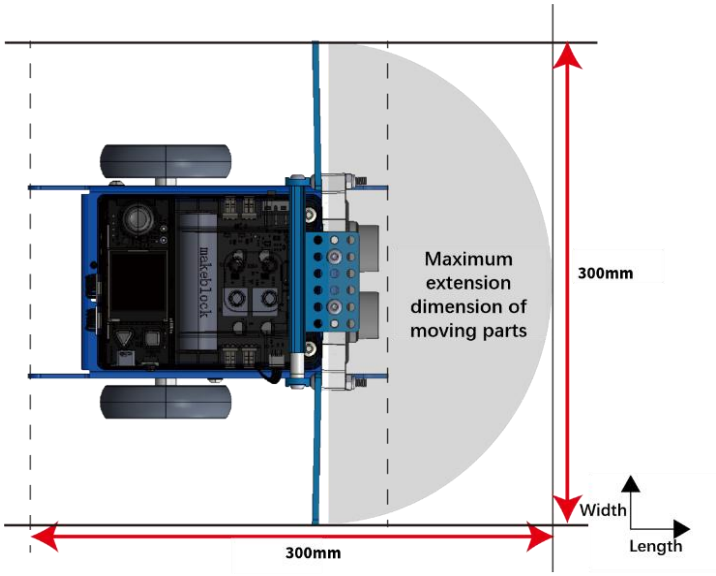


Figure 5.1-1 Maximum extension state (Top View)

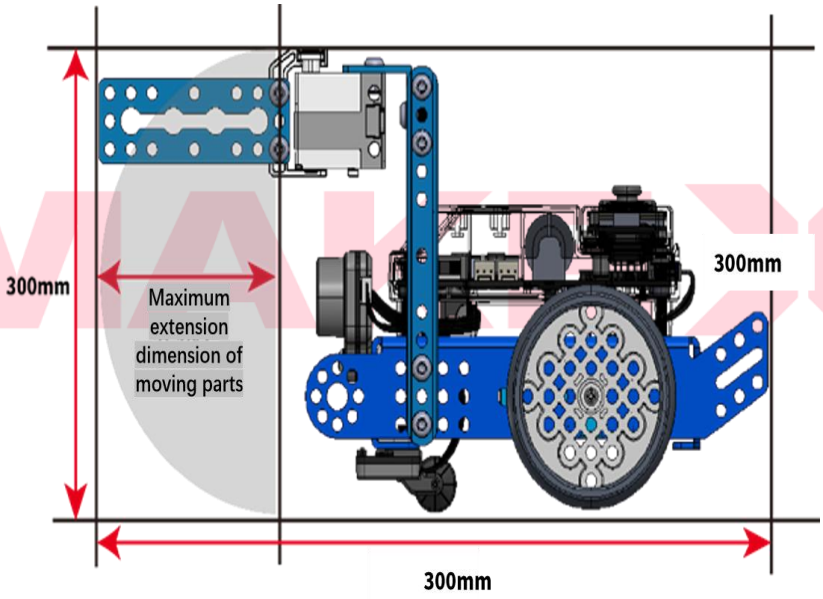


Figure 5.1-2 Maximum extension state (Side View)

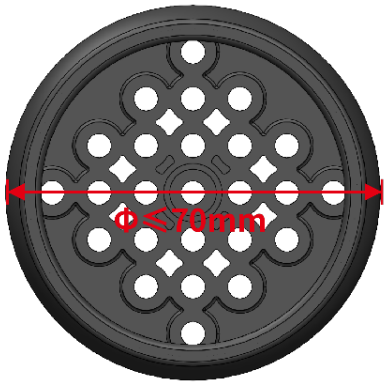


Figure 5.1-3 Wheel Size

T04. During the whole competition, robot weight should not exceed 2.5kg at any time, including the weight of the battery and all modification parts, but not the team marker.

T05. Teams can use self-made mechanical parts by 3D printing or laser cutting. Teams must not use commercial structures with mature designs, including but not limited to multi-DOF robotic arms or hands.

Robot Electronic Requirements

T06. To ensure the fairness of competition and prevent the team from using high-performance devices, the team should use devices which perform not over the following specifications:

Device Type	Parts Name	Specs	Remark
Main-board & Extension Board	ESP32-WROVER-B	Processor: Xtensa® 32-bit LX6 Dual-Core Communication Mode: Console: Main-board to Extension Board Digital Signal: Smart Servo port PWM: DC Motor port	
Sensor	Vision Sensor	View angle: (calculated by sensor diagonal): 90° Valid focus: 3.05 ± 5% mm, Refresh rate: <60fps Power Source: 3.7V lithium battery or mbuild power module Power range: 1-2W	Types and quantities are not limited. Robots are prohibited from using any sensors that can interfere with the sensory capabilities of other robots
	Ultrasonic Sensor	Value range: 5–300 (cm) (The value 300 is reported when the value exceeds the range.) Value error: ±5% Operating current: 26 mA	
	Dual RGB Color Sensor	Detection range: 5–15 (mm) from the object to be detected Operating current: 70 mA	
	Line Follower Sensor	Voltage: DC 5V Working height: 5mm-15mm	
Motor & Servo Motor	Encoder Motor	180 Optical Encoder Motor Voltage: 12V	Must not modify any motor or

		Zero Load RPM: 350RPM±5% Gear Ratio: 39:6	servos' internal mechanical and electrical design. Allows external welding without changing the performance of the motor. The maximum total amount is 6.
	DC Motor	Dual-shaft TT motor Voltage: DC 6V Zero Load RPM: 200PRM±10% Gear Ratio: 1:48	
		High-speed TT motor Voltage: DC 6V Zero Load RPM: 312RPM±10% Gear Ratio: 1:48	
	Smart Servo	MS-1.5A smart servo motor Voltage:4.8-6V DC Torque: 1.5kg/CM	
		9g small servo Voltage: 4.8-6V DC Torque: 1.3 -1.7kg/cm	
Wireless Communication	Bluetooth Controller	Frequency: 2402-2480MHz, Antenna Gain: 1.5dBi, Working Current 15mA	
	Bluetooth Module	Bluetooth Version: BT4.0 Frequency:2402-2480MHz Antenna Gain: 1.5dBi Power: ≤4dBm Working Current: 15mA	Must not connect with any device other than the Official Bluetooth Controller. Including but not limited to manually triggering sensors.
Battery	Internal Battery	18650 Battery Configuration: 3.7V 2500mAh Output: 5V 6A	Must not be modified. The team should be responsible for any accidents for the modification. Only one internal battery and one external battery are permitted. External battery packs must be securely fastened inside the device. External Battery Pack Diagram
	External battery	21700 Battery Battery Capacity: 3.7V 8000mAh Discharge Rate: 3C	

Robots shall comply with technical requirements. The uncompliant robot is not

allowed to compete in the competition, and the team must modify the robot until it meets the requirements.

5.2 Team's Marker Specification

The specifications of the Team's Marker are below:

T07. The self-made prop should be a 3D structure without material limits. It is suggested to be fabricated with a laser cutting machine or 3D printer. The height should be≤100mm, and the vertical projection of the prop should be within a circular area of ≤60 mm in diameter. To complete the mission, the horizontal bar of the X Signal must be pressed down to raise the corresponding X Signal. Therefore, the team marker must possess sufficient weight. Specific weight requirements are not stipulated; teams are responsible for their own fabrication.

T08. The prop is aiming to show the spirit of the team. MakeX Robotic Competition Committee encourages teams to use personalized or designed patterns, letters, and characters, but must be in a positive manner, overall, representing the team culture, theme or competition. The content must follow the local law or regulations, and the referee has the right to reject the prop during the inspection.

The team's marker must pass the inspection and pre-match check before bringing it to the competition area.

6. Rules of Competition

6.1 Penalty explanation

Explanations and categorization of penalties are defined in the following sections:

Violation

E01. The referee immediately announced the violation to the team and deducted 20 points from the team as soon as it found a violation. During the violation, the competition will be timed normally.

Invalid Prop

E02. From the moment that non-compliant contact with the mission prop and

scoring prop occurs, it will trigger the invalid prop, and the referee will announce that the prop is invalid. The invalid prop will be removed from the arena by the referee, and cannot continue to get points. The referee has the right to determine whether the final state of the prop before invalid can be scored or not according to the contents of to rule guide. During the scoring time, if a scoring prop is in contact with the robot, it will not be counted as a score, regardless of whether it is in a scoring position or not.

Disqualification from the single match

E03. The results of this match are invalidated, but this decision does not affect the outcomes of other matches.

Disqualification of the entire competition

E04. The team shall be disqualified from continuing to participate in the current match or subsequent matches. All match results shall be invalidated, and the team shall forfeit its eligibility to continue participating in this tournament and its eligibility for awards.

6.2 Safety

Robot Safety

R01. The team's design and construction of the robot should follow the technical requirements.

R02. All parts of the robot shall be used safely.

R03. The robot shall not behave in any active behavior of parts separation (bouncing or shooting parts).

R04. During the competition, the robot shall not use any material to stick the arena props (including but not limited to double-sided tape or glue).

R05. The referee has the right to reject a dangerous robot for competition. The referee has the right to disqualify a team for the entire competition, depending on the dangerous level of the robot.

Team's Safety

R06. Under the guidance of the mentor and after reading this guide, contestants can

proceed to prepare for the competition and design and construct their robot.

R07. In the preparation process, the team shall not perform any dangerous action.

R08. The Team should pay attention to safety when using dangerous tools (screwdrivers, sharp knives) and must use them under the guidance of their mentors.

R09. During the competition, contestants with long hair should tie it up; teams are prohibited from wearing slippers into the competition arena.

R10. During the competition, teams should not press the arena heavily or engage in any behavior like damage to the arena or props.

If the above requirements are not met, the referee may refuse the team entry to the competition arena and require the team to rectify the issues until they are resolved. The referee may also, based on the level of danger, decide whether to disqualify the team's entire match results on the spot.

6.3 Operation

Contestant standing position and switching rules

R11. During the whole match, the contestants shall stand in the designated area to finish the match. During the automatic stage, the contestants have to stand in the designated area at the automatic mission area. During the manual stage, an operator and an observer for each team are required to stand in the area shown in the figure below. Contestants are not allowed to compete for the competition out of the operation area. If a team only has one contestant, the contestant can choose only one role. The contestant cannot act in two roles at the same time. (eg, the operator cannot use the Bluetooth controller in the observation area and operate the robot) The dimension of the operation area may vary according to the actual size of the competition venue.

R12. In the manual stage, if the operator and the observer need to exchange their roles, they should apply to the referee and announce, “Red Team apply to switch roles” or “Blue Team apply to switch roles”. After the Referee's permission, the current operation shall be stopped, and the contestants go to the corresponding operation area to continue the competition. During the switch of roles, the

competition will be timed normally. When the operator applies to switch as an observer, he/she shall first put down the Bluetooth controller at the starting area before going to the observer area.

- Violation will be issued for the following behaviors: during the manual stage, contestants switch roles without the referee's permission; after applying to switch roles, the operator changes position with the Bluetooth controller; during the manual stage, contestants operate their robot with the Bluetooth controller in the observer area.

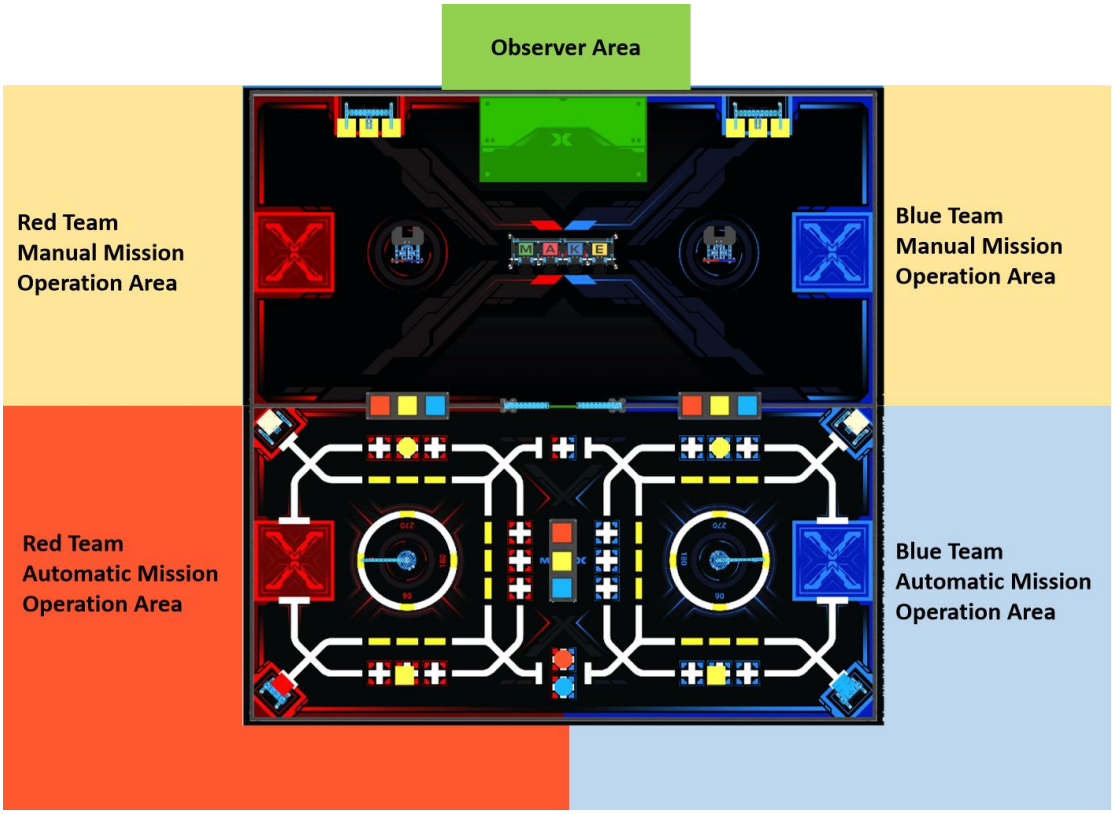


Fig 6.3-1 Contestant Standing Area

Robot Start, Reset & Modification Rules

R13. Contestants shall activate their robot after the referee announces the start of the competition. If the robot is moved in advance, the robot will be treated as "robot starts in advance". The robot has to be completely in the starting area when starting.

R14. During the competition, the contestants can restart and modify the robot at any time by applying to the referee. With the referee's permission, the contestant can restart and modify their own robot. Competition timing will not stop during the

restarting or modification.

R15. If the Contestants want to restart or modify their robot, the contestant of the Red/Blue Team should raise their hand to the Referee and announce, “Red/Blue Team requests a Reset”. After the Referee responds, “Agree Red/Blue Team to Reset”, the robot can be taken out by contestants for a reset or modification. The team can’t reset their robot without the referee’s permission.

R16. During the automatic stage, the contestant can contact their robots directly with the referee’s permission. During the manual stage, only the operator can contact the robot directly after the referee’s permission.

R17. After reset or modification, the robot shall start from the starting area, and shall completely enter the starting area.

R18. The modification area is the starting area and out of the arena.

R19. If the robot is located in an area that is out of the reach of the contestant, the contestant may raise their hand to the referee and call out "Red/Blue request the referee to pick up the robot" and the referee will pick up the robot on their behalf, and the team will be responsible for the penalties for any infractions that occur as a result of the referee picking up the robot on his/her behalf.

- Violation will be issued for the following behaviors: the robot starts in advance; starting the robot without being completely in the starting area; resetting or modifying the robot without requesting it from the referee; failing to modify in the modification area; during the manual stage, the observer directly or indirectly contacts the robot.

Rules about competition props

R20. In the whole process of a single match, the vertical projection of the scoring prop shall not completely leave the arena at any moment. Otherwise, the prop is invalid and cannot be placed back in the arena.

R21. Observers are allowed to have direct contact with the cubes that are fully in the manual loading area.

- Direct contact: any part of a contestant's body (including hair, hands, etc.),

hanging accessories, or identification that exists in contact with the props in the arena is considered direct contact;

- Indirect contact: When the contestant applies for a reset to retrieve the robot, at the moment of contestant has contact with a robot, there is physical contact between the robot and the props.
- Violation will be issued for the following behaviors: during the match, except in R21 situations, contestants directly or indirectly contact scoring props or mission props in the arena.
- Invalid props will be issued for the following behaviors: during the match, the contestant directly or indirectly contacts the scoring props and the scoring props that were contacted will be invalidated and removed from the arena.
- Special case: During the match, if a robot contacts the M06 prop pulley device and raises a reset request at the moment, it will trigger a penalty for indirect contact with the mission prop.

Robot activity area during the competition

R22. During the automatic stage, the robot should complete the missions in the automatic mission area; the vertical projection of the robot can be partially in the manual mission area. If the robot's vertical projection has fully entered the manual mission area, the robot must not return to the automatic mission area. During the manual stage, the robot shall complete the missions in the manual mission area; the vertical projection of any part of the robot shall not be completely or partially in the automatic mission area.

R23. In the automatic stage, the robot can operate in its own area and the alliance mission area.

- Violation will be issued for the following behaviors: during the manual stage, the vertical projection of the robot completely or partially enters the automatic mission area; during the automatic stage, the robot completely enters the other team's independent mission area.
- Disqualification from the single match will be issued for the following behaviors:

during the automatic stage, the robot enters the other team's independent mission area and refuses to restart the robot; during the automatic stage, the robot repeatedly (3 times or over) enters the other team's independent mission area

Using electronic communication devices and programming tools during the competition

R24. The contestant is only allowed to use the Bluetooth controller to control their own robot during the manual stage.

R25. Contestants are not allowed to bring computers, Tablet PC or any other programming devices into the competing area; during the competition time, teams are not allowed to use electronic communication devices (including but not limited to mobile phones, intercoms, etc).

- Disqualification from the single match will be issued for the following behaviors: bringing programming devices into the competing area, refusing to send the devices out of the competing area or continuing to use them after the reminder of the referee; using the electronic communication device and refuse to stop the action after the reminder of the referee; during the automatic stage, using the blue-tooth controller to operate their robot.

Rules about the arena during the competition

R26. During the competition, the contestant shall not deliberately press or hit the arena.

R27. During the competition, contestants and robots are not allowed to destroy the arena elements on purpose.

- Violation will be issued for the following behaviors: deliberately pressing or hitting the arena; destroying the arena elements on purpose;
- If any scoring advantage is gained as a result of this infraction, the score is invalid, and the scoring prop associated with the act will be removed from the arena.

Arrival at the Arena on Time

R28. Teams shall arrive at the competition area on time according to the actual

competition schedule. If the whole competition schedule changes, please refer to the actual notice on-site.

- Disqualification from the match will be issued for the following behaviors: the team that does not show up in the competing area more than 5 minutes before the actual competition schedule.
- Disqualification of the entire competition will be issued for the following behaviors: the team is unable to participate in the competition after on-site registration and robot inspection. The match that the team is involved in will continue as usual

Improper Use of Robots

R29. During the entire competition, after the team's robot has passed inspection, the team is only permitted to use the inspected robot for all matches. Teams are strictly prohibited from: replacing their robot with another one; using any robot that has not passed inspection; using another team's robot; or exchanging robots with other teams.

- Penalty for this behavior: Disqualification of both teams from the entire competition.

Damaging Another Team's Robot

R30. During the entire competition (including matches, waiting periods, and debugging sessions), it is strictly forbidden to intentionally damage or destroy another team's robot in any form.

If the referee panel or organizing committee confirms—through on-site observation, video review, or post-match inspection—that a team has engaged in behavior that caused damage to another team's robot, the violation shall be deemed established.

- Penalty for violation: Disqualification of the offending team from the entire competition. In severe cases, the organizing committee reserves the right to record the violation and restrict the team's eligibility to participate in future competitions organized by MakeX.

External Mentoring

R31. During the whole process of the competition, the team should not have any external mentoring.

- Penalty for this behavior: Warning for the first time, a violation for the second time. The team will be disqualified from a single match if a serious situation.

Egregious Behaviors

R32. It will be regarded as Egregious Behaviors if a Team or a person related to the team engages in, but not limited to, any of the following circumstances. In the case of Egregious Behaviors, the referee has the right to disqualify the score of the entire competition.

- Impolite behaviors (abuse, bad words, unnecessary physical contact).
- Seriously affecting the competing area and the safety of the audience. Interfering with the process of competition.
- Seriously violating the spirit of competition (e.g., cheating).
- Repeated violations or ignoring the Referee's warning, blatantly violating.
- Malicious Complaints

Abnormal Situation

R33. Including but not limited to the following situations:

- Potential Safety Risk: The competition venue emerges problems that might affect the safety of competing areas, teams or robots.
- Damage or missing of Arena elements and props: The arena and its elements and props are damaged or missing accidentally, which leads to the competition not continuing.
- Re-competition: Referees have the right to discuss and determine if a Re-competition is necessary according to the specific situation.

The uncertainty of the arena, props

R34. Due to the uncertainty of manufacturing and processing, all arenas and props may have minor errors (dimension, weight, color and flatness, etc.). Teams shall consider these minor errors when constructing their robots to adapt to different props and arenas. Contestants can apply to change the props before the competition

if there are some adaptable props available. Robots should be able to adapt to some unchangeable elements, such as a folded arena, light change, etc. The team should debug their robot to adapt to these unchangeable elements.

Malicious Complaints

R35. In a single match, it is prohibited for contestants to make malicious complaints against the opposing team.

- Malicious complaint: After entering the competing area, if the complaining team confirms the need to raise a complaint with the referee, and the referee verifies and determines that the complained-about team has not committed any actual rule violations, the complaining team will be deemed to have made a malicious complaint.
- The robot of the offending team will be disqualified from a single match.

7. Appeal and Arbitration

7.1 Results Confirmation

Results Confirmation

When a single match ends, after the referees finish the scoring, both teams need to confirm the results with the referees and then sign on the score sheet. Once the results have been confirmed and signed off, the committee will no longer accept any appeals regarding that competition.

Dispute Settlement

If the participating team members still have objections to the match results and do not agree with the on-duty referee's explanation, they may choose not to sign to confirm the results. However, they must document the situation in the signature field of the results confirmation form before leaving the venue.

7.2 Appeal Procedure and Valid Appeal Period

Appeal Procedure

Appeals should be lodged within the “valid appeal period” by the prescribed procedure and follow the civil participation spirit. The captain of the team needs to fill in the Appeal Form, and then cooperate with the Arbitration Commission to investigate the actual situation. During the investigation, only the appealing contestants or the designated teams are allowed to cooperate. The Arbitration Commission has the right to communicate with the appealing party alone, avoiding the mentor, the parents of the contestants, their relatives, or friends. The appellant should express facts clearly and objectively, not over-emotionally.

Valid Appeal Period

Normally, the appeal should be lodged within 30 minutes after the end of the appeal match. Please check the Competition Guide for a specific effective appeal period before the competition. The appellant and the respondent must be present at the designated place on time.

Appeal Response

Not all the appeals will be accepted, the Arbitration Commission have the right to determine whether to accept the appeal or not according to the actual situation. Normally, the Arbitration Commission responds to the appeal after the end of the competition on the same day or before the start of the competition on the next day.

7.3 Invalid Appeal

Overdue Appeal

Appeals that are not lodged within the "valid appeal period" will be considered invalid and inadmissible. If the appellant fails to be present on time or leaves without any reason during the investigation, the appeal will be considered invalid. If the respondent fails to be present on time, the Arbitration Commission will directly determine the arbitration result and render it as a final result.

Appellants out of Stipulation

The appellants must be the participating contestants, and the appeal of another

person is inadmissible. The Arbitration Committee will caution the offending team if parents, mentors, or other persons outside of the stipulation participate in the arbitration process without the permission of the Arbitration Committee.

- Penalty for this behavior: Warning for the first time, a disqualification will be given for multiple invalid warnings.

Vague Appeal's Requests

If the Arbitration Commission is unable to understand the appeal or conduct the normal investigation due to the emotional factor of the appealing party, the offending party will receive a verbal warning.

- Penalty for this behavior: Warning for the first time, a disqualification will be given for multiple invalid warnings.

Uncivil Appeal

Neither side shall engage in uncivil behavior nor offensive actions and remarks.

- Penalty for this behavior: Warning for the first time, a disqualification will be given for multiple invalid warnings.

7.4 Arbitration Procedure

Arbitration Procedure

The Arbitration Commission consists of the head referee, the arbitration consultant, and the competition technical head. The Arbitration Commission is responsible for accepting the appeals and conducting arbitration investigations, to ensure the smooth progress of the competition and the fairness and justice of the competition results. The playback videos and photographs of any competition may be inaccurate due to the shooting angle, which is only used as a reference but not as arbitration evidence.

Arbitration Results

The arbitration results can be divided into “maintaining the original result of the match” or “re-match”, and the two teams shall not appeal again. If the arbitration result is a "re-match", the two teams shall have a re-match according to the time and arena stipulated in the Appeal Form. If either team fails to reach the arena within 5

minutes after the beginning of the match, the team shall be deemed to quit the match.

Additional Remarks

The Arbitration Commission determines the final arbitration result, and neither side shall dispute the result of the appeal anymore.

8. Statement

The official language for MakeX is Chinese. English or other language translations are prepared to facilitate the Team's preparation process. All documents translated into English are for reference only.

The MakeX Robots Competition Committee reserves the final interpretation of the MakeX Robots Competition - Rules Guide for Signal Rise.

8.1 Rules Explanation

In order to ensure a fair competition and high-quality competition experience, the MakeX Robotics Competition Committee has the right to update and complement these Rules Guide regularly, and issue and implement the latest version before the competition.

During the competition, all matters not stated in the Rules Guide shall be decided by the referee team.

This Rules Guide is the basis for refereeing, and the referee team has the right to adjudicate during the competition.

8.2 Disclaimer

All Contestants in the MakeX Robotics Competition should fully understand that safety is the most important issue for the sustainable development of the MakeX Robotics Competition. To protect the rights and interests of all contestants and organizers, according to relevant laws and regulations, all contestants registered for the MakeX Robots Competition should acknowledge and abide by the following

safety provisions:

(1) Contestants should take adequate safety precautions when constructing the robots, and all parts used for constructing the robots should be purchased from legal manufacturers.

(2) Contestants should ensure that the structural design of the robots considers the convenience of the inspection and actively cooperate with the host of the competition.

(3) When modifying and using the parts with potential safety hazards for the Robots, it must conform to the national laws, regulations and quality & safety standards. Those operations should be manufactured and operated by persons with relevant professional qualifications.

(4) During the competition, the teams should ensure that all the actions such as construction, testing and preparation will not do harm to their own team and other teams, referees, staff, audiences, equipment and arenas.

(5) In the process of construction and competition, if any action that may violate the national laws, regulations or standards occurs, all consequences will be borne by the contestants themselves.

The competition kits and parts sold and provided by the supporter, Shenzhen Makeblock Co., Ltd., shall be used according to the instructions. Shenzhen Makeblock Co., Ltd. and MakeX Robotics Competition Committee will not be responsible for any injury or loss of property caused by improper use.

8.3 Copyright Declaration

Appendix 1. Awards and Annual Points

According to the competition scale and team number, the competition will be classified into Points Race/Regional Competition, National Competition, International/Intercontinental Competition, and Global Finals. Each team can voluntarily sign up for all kinds of Points Race all year round to accumulate annual points. The accumulation of annual points is based on the Team Number. The plan for annual points for MakeX Starter is as follows:

Teams who participate in the single Points Race can obtain annual points (total points in all qualification rounds + total score of the best single match in the championship round)* competition type coefficient

Competition Level	Rank Coefficient
Points Race/Regional Competition	Sum of Scores*0.01
National Competition	Sum of Scores*0.02
International/Intercontinental Competition	Sum of Scores*0.03

Teams that have won the champion, runner-up, second runner-up and other awards can obtain additional annual points. For the details of the award list, please refer to **MakeX Awards Guide.**

Category	Awards	Regional /Points Race	National	International/ Intercontinental
Special Award	Champion	15	30	45
	Runner-up	10	20	30
	Second runner-up	5	10	15
	Innovative Design Award	-	5	10
	Engineering Notebook Award	-	5	10
Comprehensive Award	Outstanding Mentor Award(Personal)	-	-	-

	Promotion Ambassador Award(Group)	-	5	10
	Technology Sharing Award(Group)	-	5	10
	MakeX Spirit Award	-	-	10

Take a 4+1 competition format as an example (4 rounds in Qualification, 1 round in Championship), if team X10000 wins the championship and all the match results show as below:

Qualification Round 1	**Qualification Round 2**	**Qualification Round 3**	**Qualification Round 4**	**Total Points in Qualification Round**
300	200	400	350	1250
Total Points in Single Championship				
500				

*Annual points that team X10000 can obtain from this competition = (1250+500) *0.01+15 = 32.5

Appendix 2. Engineering Notebook Guideline

***Instruction:**

1. The value of an engineering notebook: It helps the team establish files and record the whole learning process. Therefore, it is necessary to record engineering notebooks during the entire preparation for the competition.

2. Engineering notebook submission: Teams can use online documents or handwriting. Either way, each team must submit a paper version onsite.

> Paper engineering notebook: Each team must submit one printed copy to the judging panel on-site for programs with an assessment session. For programs without an assessment session (Starter and Explorer), each team must submit one printed copy of the engineering notebook to the staff at the robot inspection area. Teams unable to submit the original document should prepare and submit a photocopy instead.

3. An engineering notebook will be required for evaluating all awards. The evaluation criteria are in the MakeX Awards Guide.

Basic Requirements for Cover

The team's name, team number, and competition program must appear on the cover of the engineering notebook.

Basic Requirements for Contents

1. Clear content

Creating content brings convenience for the judges to review and quickly find the corresponding section.

2. Process records (Mandatory)

Every improvement of the robots should be recorded from prototype design, and construction, to debugging. Keep pictures of all manuscripts, design drawings, calculation processes, circuit diagrams, etc., and insert them into the engineering notebook in the form of pictures.

1) Schedule of robot building progress

2) Design inspiration/sketch

3) Technical principle (it can be disassembled into different parts)

4) Production step by step (with clear pictures)

5) Problems encountered and solutions

Examples of problems:

What technical failures did you encounter? Why did you fail? How did you solve the problems finally?

What efforts have you made for the robots? What improvements have been achieved?

Does your project progress schedule go as planned? What accidents or delays have occurred? How to fix it?

Have there been any disputes among the team members, and how to settle them in the end?

3. Project summary

1) The structure and function of the project (with pictures and text enclosed)

2) The technical innovations of the project

3) Competition strategies for scoring and defence

4. Team introduction

1) A brief biography of each team member and their role on the team

2) Culture displaying (logo, team flag, slogan, posters, T-shirt, etc.)

3) Excellent achievements sharing (Stories)

5. Feelings and other things you want to share (optional)

1) Achievement in the competition (Technical)

2) Growth in the competition (Spiritual)

3) Suggestions for competition

Appendix 3. Robot Self-Check Form

Seat No.:_____

MakeX Starter Signal Rise

Robot Self-Check Form

Please follow the requirements of the self-check form and check the box if your robot meets the requirements. And submit the signed self-checklist during the inspection day. Thanks for your cooperation.

Team Number: _____ Team Name: _____
Actual attended Team Member: _____
Mentor Name: _____

1. Basic Information
Robot Mainboard Code: _____ (A 12-bit code consisting of numbers and alphabets, please find in the "Setting" section from the CyberPi)
Robot Size: Length_____mm, Wide_____ mm, Height _____ mm. (Robot size shall not exceed length 300mm, width 300mm, and height 300mm. Please measure your robot and fill in the actual maximum extension size)
Robot Wheel Diameter: _____ mm (Shall not exceed 70mm)
Robot Weight: _____kg (Shall not exceed 2.5kg)
Team Marker: Length_____ mm, Wide_____ mm, Height _____mm. (Height ≤ 100mm, vertical projection of the prop should be within a diameter of ≤ 60mm square area)
2. Equipment
Name and quantity of sensors: The type and quantity are not limited. Robots are prohibited from using any sensors that may interfere with the perception capabilities of other robots.
Name and quantity of motors: **Name and quantity of servos:** The total number of motors and servos is limited to a maximum of 6.

Wireless control: Version of Bluetooth: BT4.0 ▢Yes			
Name and parameters of battery: (18650 Lithium-ion, 3.7V 2500mAh) ▢Yes **Use External battery: (21700 battery pack 3.7V 8000mAh Discharge Rate: 3C)?** **▢Yes/▢No**			
3. Others			
No.	Items	Specific Requirements	Meet requirements
1	High-power Equipment	Dangerous high-power equipment is not allowed to be used by the Teams during the competition and the preparation of the competition.	▢Yes
2	Energy Storage Device	If the robot uses energy storage devices (springs), etc., it is safe to use.	▢Yes
3	Safety and Protection	Any structures that may hurt humans during the operation must be protected in appropriate manners.	▢Yes
4	Damage of Arena	Any robot operation must not damage the arena.	▢Yes
5	Forbidden Materials	Prohibited materials: flammable gases, equipment with risk of fire, hydraulic parts, parts containing mercury, exposed hazardous materials, unsafe counterweights, designs that may cause entanglement and match delays, sharp edges, materials containing liquids or gels, any part that may conduct electrical current from the robot to the field, robots without prohibited materials	▢Yes
6	Self-made Parts	Teams can use self-made parts by 3D printing or corrugated cardboard, wood, acrylic, Rubber bands, etc. All self-made parts cannot have the producer's logo.	▢Yes
7	Mechanical Parts	Teams can use self-made mechanical parts by 3D printing or laser cutting. Teams must not use commercial structures with mature designs,	▢Yes

		including but not limited to multi-DOF robotic arms or hands.	

Our team has checked our robot according to the self-check form, filled in the actual data on this form and submitted it to the MakeX Robotics Committee. We promise that we will participate in the competition in the above state and will report any changes in time. During the competition, if the robot does not comply with the requirement or our team uses any in-compliance robot, the competition result will be disqualified, and all responsibilities will be taken by the team without objection.

Mentor or contestant Signature：_____

Date: _____

Appendix 4. MakeX Starter Score Sheet

MAKEX ROBOTICS COMPETITION

2026 MakeX Robotics Competition MakeX Starter Signal Rise Qualification Round Scoring Sheet

Match Information: Arena No.: _____Session No.: _____

Red Team No.: Blue Team No.:

Independent Mission				
Red Team			Blue Team	
Point	Qty.	Mission	Qty.	Point
(20pts/each)	Max. 1	M01 Signal Activation [The cylinder enters the square area]	Max. 1	(20pts/each)
(50pts/each)	Max. 1	M02 Signal Decoding [The pointer points to the correct angle.]	Max. 1	(50pts/each)
(30pts/each)	Max. 1	M03 Energy Ring Connection [The ring fully slipped over the signal tower.]	Max. 1	(30pts/each)
(10pts/each)	Max. 1	M04 Data Cleanup & Resource Exchange (The own color cube in its initial positions)	Max. 1	(10pts/each)
(20pts/each)	Max. 1	(Yellow cube enters manual area)	Max. 1	(20pts/each)
(20pts/each)	Max. 1	(The opponent's color cube completely move out from its initial position)	Max. 1	(20pts/each)
(30pts/each)	Max. 2	(The own color cube is fully embedded in the storage area)	Max. 2	(30pts/each)
		Sub-Total		

Alliance Mission		
Mission	Qty.	Point
M05 Data Sharing The yellow cube in the central rack	Max. 3	(30pts/each)
M06 Channel Switching The robot fully enters the manual mission area	Max. 2	(30pts/each)
M07 Data Lighting The flip board stays in an upright position	Max. 4	(20pts/set)
M08 X Signal Launching X sign fully rises up	Max. 2	(30pts/each)
Bonus point The flip boards and two X towers missions are fully completed.	Max. 1	(100pts/set)
Sub-Total		

Red Team Penalty	Blue Team Penalty

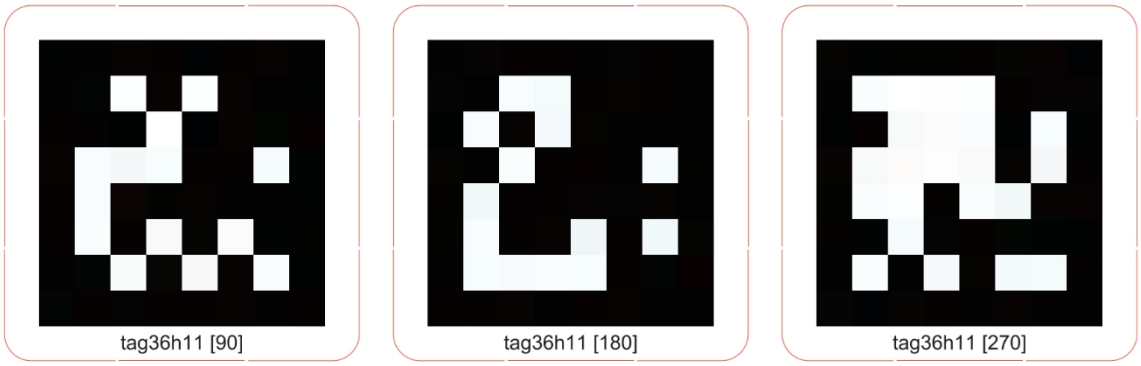
Match Score		
Item	Red Team	Blue Team
Independent Score		
Penalty Deduction		
Alliance Score		
Total Score		
Total Competition time:	Minutes	Seconds

Red Team Representative Signature	
Blue Team Representative Signature	
Referee Signature	

Teams may scan the QR code below to obtain the scoring sheet. The contents of the scoring sheet may be updated during the season based on adjustments to the competition rules. Please refer to the latest version published online. The QR code remains valid at all times.

MakeX Starter Signal Rise Score Sheet

Appendix 5. April Tag Diagram



Appendix 6. Arena & Prop Assembly Instructions

To ensure all participating teams correctly assemble the competition venue according to uniform standards, we are now implementing an online arena assembly guide QR code. Subsequent updates to competition setup requirements will be synchronized with the online version immediately.

All organizations and participating teams must strictly adhere to the online assembly guide as the sole authoritative version. The current paper-based setup guide serves only as a temporary reference. We will gradually phase out paper manuals to further enhance the efficiency and accuracy of information updates.

Scan the QR code to access the latest setup instructions and ensure compliance with current standards to avoid unnecessary errors caused by outdated information.

2026MakeX Starter Signal Rise Arena Introduction

Appendix 7. Starter Prop Cards

Teams may obtain prop cards by scanning the QR code below. Prop card content may be updated throughout the season; please refer to the latest version published online. The QR code remains valid at all times.

MakeX Starter Signal Rise Prop Cards

Appendix 8. Competition Resources

Competition resources include, but are not limited to, official resources provided by the committee, such as the Competition Guide, Equipment Instructions, Rules Videos, etc.

The contestants are obliged to keep abreast of the updates of competition resources before the competition, and any problems caused by the contestants' failure to keep abreast of the updates shall be borne by the contestants themselves. All official competition resources will be updated on the MakeX Website.

MakeX Robotics Competition Committee will revise and improve the Rules Guide with the progress of the competition, and the new version will be announced in MakeX Website. The contestants and mentors can download the latest version on the MakeX Website.

MakeX Website Download https://www.makex.cc/en/information/download.

MakeX Official Website: https://www.makex.cc/en.

Any Feedback & Questions Please Sent to:

makex_overseas@makeblock.com

MAKEX

Official Website：https://www.makex.cc/en

Official Email：makex_overseas@makeblock.com