MakeX Robotics Competition

2019 World Championship

Program Brochure

November of 2019

Made by MakeX Robotics Competition Committee

www.makex.io

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1.City Guardian Mission Announcement

Each participating team needs to complete 3 Automatic Independent Missions, 3 Automatic Alliance Missions, and 1 Manual Alliance Mission, as follows:

Qualification Round

1. Automatic Independent Missions (3)

- 3 Automatic Independent Missions will be announced in the morning of 29th, Nov. on bulletin board of City Guaridian Pits Area

2. Automatic Alliance Missions (3)

- M07 Waste Sorting

- M08 Forest Planting

- M09 City Party

3. Manual Alliance Mission (1)

- M10 Garbage Recycling

Championship Round

1. Automatic Independent Missions (3)

- 3 Automatic Independent Missions will be announced in the afternoon of 30th, Nov. on bulletin board of City Guaridian Pits Area

2. Automatic Alliance Missions (3)

- M07 Waste Sorting

- M08 Forest Planting

- M09 City Party

3. Manual Alliance Mission (1)

- M10 Garbage Recycling

2. Matters Needing Attention

2.1 The contestants and mentors, please bring Passport or other ID cards during the whole competition in case of identity check.

2.2 The contestants and mentors should pay attention to the progress of the competition and check the contents on the bulletin board in time. The competing contestants are required to arrive at the Inspection Area 15 minutes (25 minutes for the Premier and Challenge) and wait in the Waiting Area. If the time interval between the two matches is relatively close, please register at the Inspection Area. The entrance of the Competition Area will be closed when the match starts. Close time is subject to the schedule. If there is a delay, the schedule will be notified again.

2.3 For the contestants of the Courageous Traveler, please install the power management module in advance and be familiar with the use. Please do not block the QR code on the front of the module or take a photo to record the number of the module, which brings convenience for binding. It is easy to generate static electricity during the competition; please make sure to take anti-static measures in advance.

2.4 Parents and mentors are not allowed to enter the Pits Area. Please be aware of personal safety, keep communication, pay close attention to

the end time to pick up contestants at the entrance of the Pits Area on time.

2.5 All competition information and urgent notices will be posted on the bulletin board in the Pits Area. Do not leave the Pits Area without permission to avoid missing important notices. The only place to notify teams about this competition is the seat of the team in the Pits Area. The team is responsible for the missing information caused by the leave from the seat and the influence of the follow-up matches.

Temporally Leave: During the competition, if you need to leave your seats in the Pits Area for some reason, such as temporary out, watching competitions, or joining in non-competition events, please be sure to inform working staff.

Departure: The contestant can leave the venue when the competition ends for the day. When you leave, please carry all your belongings, and clean up the garbage around your seat.

2.6 The contestants are encouraged to design and produce contents such as team introduction, team culture, technical analysis etc. for decoration of the Pits Area, or design and produce inspirational gifts to exchange with other teams. Award judges will enter the Pits Area to make an assessment.

2.7 The power interface is provided in the Pits Area. Contestants can carry the power strip that meets the national standard GB 2099.9-2017 to plug

in. Information desk: The information desk can provide the consulting service of competition information, sales of spare parts, simple medical services.

2.8 The requirement of the size in inspection is the maximum extension size, which refers to the state where all moving parts are extended to the maximum length and width. If there is a single screw fixed structure, please tighten with screws to ensure that the angle cannot be easily changed. Otherwise, it will be regarded as an active structure. Flexible structures (rolling, thick paper, etc.) are included in the inspection size and need to meet the inspection specifications.

2.9 Remodified robot needs to be re-inspected. Excessive behaviour of the rule R32 (cheating) may be triggered once found that the size is exceeded during the competition. The referee keeps the right to disqualify the team for the whole competition.
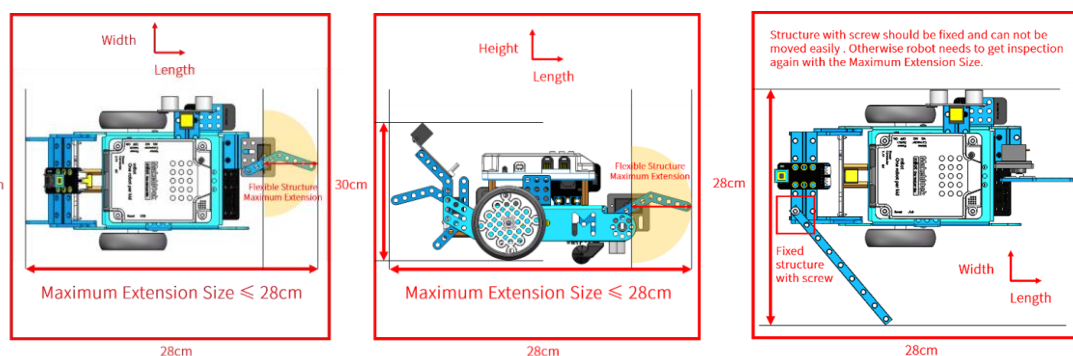
2.10 Contestants are required to bring a paper Engineering Notebook and submit it to the staff during robot inspection in the Inspection Area. All

the submitted notebooks will not be returned. Please make a copy if yours is handwritten Engineering Notebook.

2.11 It is forbidden for the contestants to wear sandals to enter the venue. Long hair should be tied up. Teams of Courageous Traveler and Strong Alliance need to wear their goggles. Otherwise, they will not be able to pass the inspection or enter the Competition Area. The contestant who wears glasses can choose to wear glasses wings. Goggles will be sold on the spot during the World Championship.

2.12 MakeX encourages contestants to participate in the competition independently and master the mechanical structure and procedures of the robot. In the competition, it is not allowed to bring indicative materials (such as printed paper materials) into the Competition Area.

3. World Championship System

MakeX 2019 season has four programs. MakeX Spark is a creativity program, and the other three programs are all based on the alliance system, that is, two teams form one alliance to complete the competition. Adhering to the initial love of creation and passion for practice, hoping that the contestants will be able to improve their practical ability in a comprehensive and effective manner through the MakeX Robotics Competition. The rules and system are updated for the 2019 MakeX World Championship. All the contestants shall read the latest rule guide published on the official website carefully and prepare in advance.

3.1 Alliance Selection Ceremony

In the Alliance Selection Ceremony of City Guardian, the promoted teams will select their alliance team in turn according to their Qualification Round ranking. The formed alliance will be named as "Alliance 1, "Alliance 2", "Alliance 3" … When choosing alliance team, promoted teams ranking top 50% must choose one promoted team ranking bottom 50% as their alliance team. The team is chosen cannot reject.

In the Alliance Selection Ceremony of Courageous Traveler and Strong Alliance, promoted teams will select their alliance team in turn according to their Qualification Round ranking. The formed alliance will be named as

"Alliance 1, "Alliance 2", "Alliance 3" …When choosing alliance team, promoted teams ranking top 50% must choose one promoted team ranking bottom 50% as their alliance team. The team is chosen cannot reject.

Substitute Alliance Team: In Courageous Traveler and Strong Alliance, promoted teams ranking top 50% can also choose one eliminated team as their substitute alliance team. Promoted teams ranking top 50% can give up the right of choosing one substitute team. The eliminated team being chosen can reject. If eliminated team rejects, the promoted team can continue to choose other eliminated teams as their substitute alliance team. There are a large number of teams in this competition. **In order to avoid the situation that the selection of the alliance cannot be carried out because of some teams' absence,** this supplementary explanation is made:

(1) The promoted team that is not present before the start of the Alliance Selection Ceremony is deemed to voluntarily give up the right to choose. The promoted team that is not present at the end of the Alliance Selection Ceremony is deemed to voluntarily give up the follow-up competition.

(2) In case that promoted team gives up the follow-up competition, the promotion quota will be extended to the following team according to the qualification ranking. If such a situation happens, the staff will go to the Pits Area to inform the following team. Promotion quota will be extended again to the next if this team loses contact.

3.2   Elimination Tournament

In Elimination Tournament of Challenge and Premier, the alliance can choose either alliance team or substitute alliance team to compete, but the final ranking result of Elimination Tournament can only be given to alliance teams. Substitute team of winner alliance (Champion, Runner-up & Second Runner-up) will receive a special award for their participation. If alliance chooses the substitute alliance team to compete, an alliance must replace the power management module of substitute alliance team robot with the module of alliance team robot within timeframe to ensure that the referee system can properly control the competing robots. If the power management module is out of control from the system due to its own reasons,   the participating alliance shall take all the responsibility.

Match schedule of Elimination Tournament is shown as below. Teams get 2 wins or 1 win & 2 ties will be promoted to next round. For details about ranking, please refer to Competition Guide for Courageous Traveler.
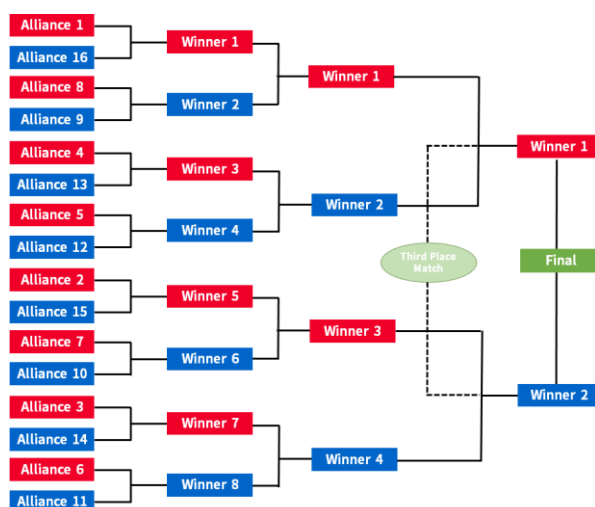
4 Competition Schedule

November 28th: Registration, Inspection, Presentation, Practice

Time	Activity	Location	Considerations
10:00-21:30	Registration, Inspection, Presentation	Pits Area Info Desk	Please ensure the robot size meets the requirements in advance. Please keep the number bib safely.
14:00-17:30	Practice	Competition Area	With the practice tickets received during registration.

Reminder：After the registration and inspection, all teams, please bring your robot and go to the shooting point (next to the Pits Area I) to take official photos. Teams of Courageous Traveler and Strong Alliance must attend the Presentation.

November 29th: Opening Ceremony，Qualification Round

Time	Activity	Program	Location	Considerations
9:00-12:00	Opening Ceremony	All	Stage	All contestants need to

				participate.
13:00-18:30	Qualification Round	All	Competition Area	

Reminder：Each team should pay attention to the Qualification Round schedule announced by the MakeX Committee in the morning of November 29th, get in touch and communicate about the alliance strategy with the alliance teammates in advance.

The Qualification Round time schedule is only for reference. The actual time is subject to the onsite competition progress.

November 30th: Qualification Round, On-site Skill Test, Alliance Selection Ceremony, Awarding Ceremony

Time	Activity	Program	Location	Considerations
8:30-10:15	Qualification Round	All	Competition Area	Please arrive 15 minutes in advance for pre-match inspection.
10:30-12:00	Annual Awards Roadshow	All	Stage	All nominated teams and individuals, please be present in

				advance.
13:00-17:00	On-site Skill Test	All	Pits Area	Please see the reminders below.
13:00-15:00	Outstanding Mentor Award Selection, Talk&Share	All	Stage	The nominated mentors should be present in advance.
15:00-17:00	Arena Contest	All	Competition Area	Unadvanced teams can register to participate.
17:00-18:00	Alliance Selection Ceremony	All	Stage	Please pay attention to the on-site notice to get the specific location for each program.
18:00-18:30	Awarding Ceremony	Starter	Stage	Special Awards & Top Eight of Annual Points

Reminder 1: Please refer to the appendix for the On-site Skill Test and the

Arena Contest. Eliminated teams of Challenge & Premier please also be

present at the Alliance Selection Ceremony. Those teams selected as substitute alliance team can continue participating in the follow-up competition.

Reminder 2: During the On-site Skill Test, teams not participating in the On-site Skill Test will not be allowed to enter the Pits Area. Please carry the necessary materials and robots to participate in the event in the competition area. Any need for items from the Pits Area, please contact the staff.

December 1st : Elimination Tournament, Championship, Closing and Awarding Ceremony

Time	Activity	Program	Location	Considerations
8:30-11:30	Championship Round	Starter	Competition Area	Pre-match Inspection is necessary for every single match.
	Elimination Tournament	Challenge Premier		
10:50-11: 30	The Third-place Battle	Premier		
11:30-12:00	Awarding Ceremony for Special	Challenge Premier		Winners please pay attention to the official

	Awards			announcement.
13:30-14:00	The Third-place Battle	Challenge		
14:00-15:00	Champion battle	Challenge Premier		
15:30-17:00	Awarding Ceremony	All	Stage	The winning teams, please send representatives for awarding.

5. Spark Competition

5.1 Spark Schedule

Date	Time	Event	Location
November 28th	10:00-21:30	Registration	Pits Area
November 29th	8:00-9:00	Theme Announcement	Competition Area
	9:00-10:00	Onsite Construction	
	13:30-18:30		
November 30th	8:00-10:30		
	13:30-17:00	Exhibition	
December 1st	8:30-12:00	Roadshow	
	12:00-12:30	Team Awards Ceremony	Stage

Reminder: The above time nodes are all the standard time nodes. All the contestants need to be present in advance.

5.2 Theme Discussion

After posting the theme and receiving the single page of the theme content,

each contestant in the team should read and understand the theme content. The participating teams should determine the project theme based on a full understanding of the meaning of the theme. After discussion and communication together, each team is encouraged to have a brainstorm, make full use of the team's creativity, plan the construction of the projects and carry out the division of team labour.

5.3   On-site Construction

The participating teams independently construct the projects in the Competition Area of My City. In this stage, the contestants need to complete the following contents in the given time:

1.   With the theme of this competition, it is recommended to use mBlock to code and construct creative hardware projects, including mechanical parts, electronic parts, and exterior decoration parts;

2.   Design the content of the exhibition board (the exhibition board will be provided by the committee and will be used for the exhibition of the projects. After the competition, the team can leave the venue with these projects). The board content is to suggest to include the name, the origin of the creative idea, the function, the name and introduction of the team, and so on. The content is not limited and can be displayed by writing, drawing, by attaching small objects or the other interesting ways.

5.4 Exhibition

The exhibition includes teacher scoring and accessible voting. After the construction time, contestants from other programs can vote on-site for each project. The teams also can vote for each other. The teacher scores the projects for all the participating teams.

Before the start of this part, the participating teams have a certain amount of time to design and decorate the booth. The team can decorate the booth with the materials they carry, including the team logo, team flag, and other decorative materials. Besides, we encourage the participating teams to showcase the team culture through props such as clothes and accessories. The specific process of the exhibition is as follows:

1. Teacher Scoring: The teacher will score the projects in batches. In this process, the participating teams must introduce the project to the judges, including the theme of the work, the source of the creativity, demonstrate the function of the work, and display the projects in combination with the contents on the board. During the presentation process, the teacher can ask questions about the project, and the contestant needs to answer and give introductions fully.

2. Accessible voting: After the completion of the on-site construction, all the teams participating in all the programs can vote on the projects, and the participating teams of this competition can also vote. Each contestant can receive one vote credential by team number. The contestant can vote after

understanding the work and communicating with the team. Voting can be done during the exhibition. The result of votes is not included in the competition score. The most popular team with the highest number of votes (must be more than 10 votes) can get a HaloCode Set Prize.

5.5   Roadshow

This is the expert review part. **According to the score ranking in the exhibition, a certain proportion of participating teams will be promoted to the Roadshow.**

Before the start of Roadshow, the participating teams will draw lots to determine the order of the Roadshow. The contestants will go on stage in turn. Each team will have a Roadshow time up to **5 minutes**. The staff will give a signal about the time progress to the contestants, judges, and audience.

In this part, the participating teams can prepare Roadshow PPT or other materials in advance. The Roadshow content may include the name, the theme, the source of the creativity, the function of the project, and the experience of the competition. In addition, it is highly recommended to fully demonstrate the team culture. The roadshow is including but not limited to PPT, storytelling, singing, or performance. In the process, expert reviews will score according to the evaluation criteria.
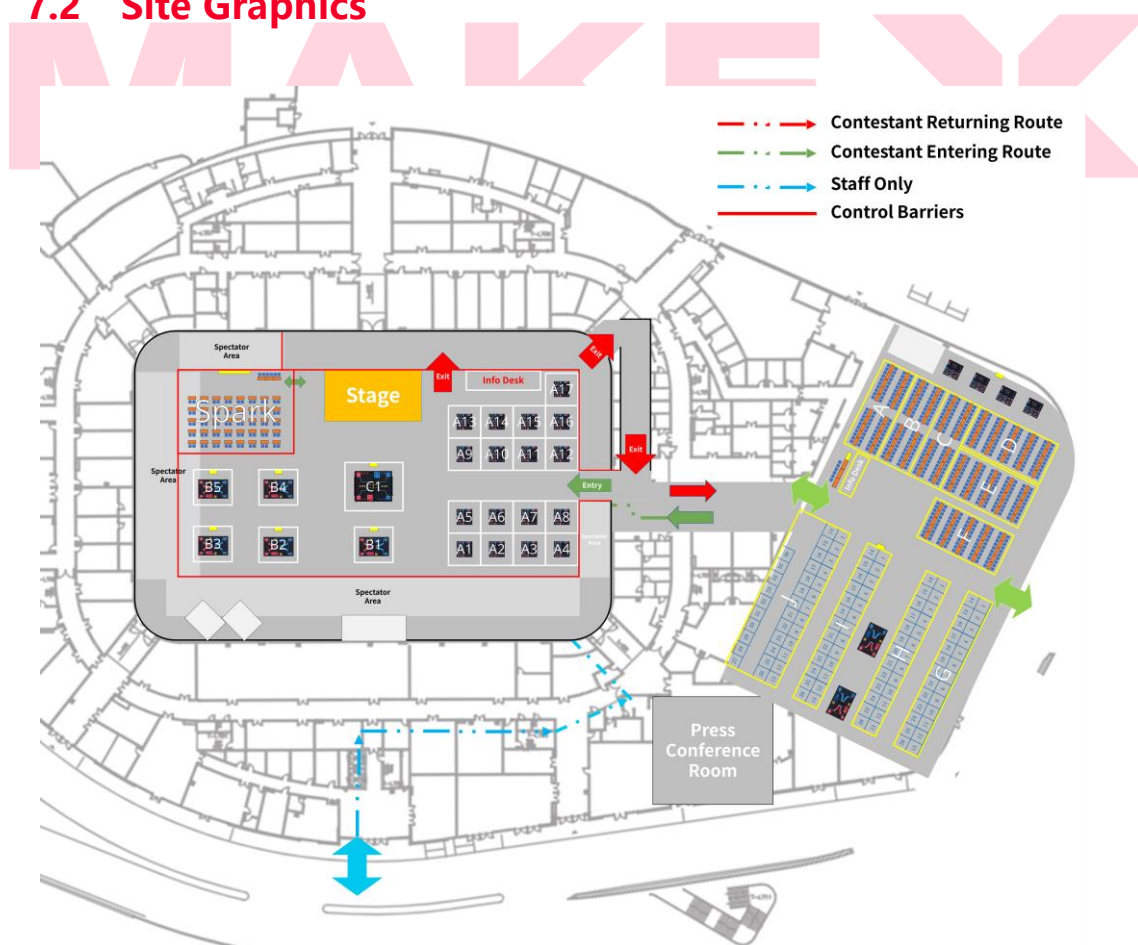
6.Presentation Requirements

- Courageous Traveler and Strong Alliance team should bring the robot to attend the Presentation and submit one paper Engineering Notebook.

- No Presentation for the City Guardian. Each team, please submit one paper Engineering Notebook to the staff during Inspection.

- The Engineering Notebook is not returned. Please make another copy if you want to keep it.

- All team members (except mentors) must be present together during Presentation.

- Mentors and parents are not allowed to join in the Presentation.

- Teams not attending the Presentation cannot participate in the formal competition.

- For more Presentation material and Engineering Notebook requirements, please check the Competition Guide.
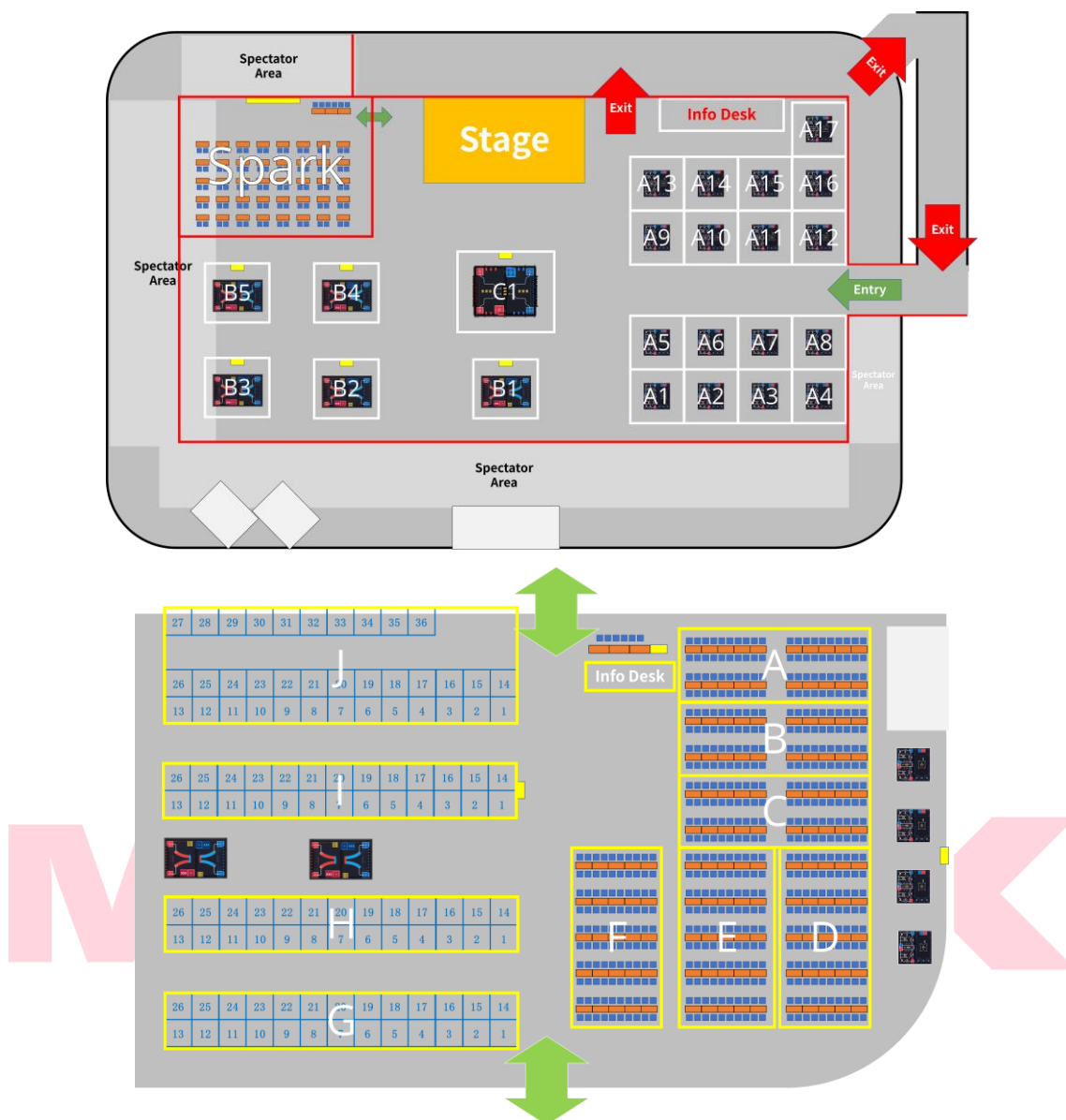
7.Pits Area

7.1 Pits Area Introduction

Each team has its own space in the Pits Area where teams can rest and debug robots. Teams can make decoration and publicise their teams in this area. All essential notifications will be broadcast and publicized at the Pits Area. If the mechanical parts or electronic parts are damaged, please go to "MAX Store" at the entrance of the Spectator Area to buy new ones. Please refer to the appendix for the Booth Decoration Notice.

7.2 Site Graphics

Seat Map(D E F Area)

1	2	3	4	5
10	9	8	7	6
11	12	13	14	15
20	19	18	17	16
21	22	23	24	25
30	29	28	27	26
31	32	33	34	35
40	39	38	37	36
41	42	43	44	45
50	49	48	47	46

Seat Map (A B C Area)

1	2	3	4	5		6	7	8	9	10
20	19	18	17	16		15	14	13	12	11
21	22	23	24	25		26	27	28	29	30
40	39	38	37	36		35	34	33	32	31

● Get the seat numbers: Contestant can get seat numbers at registration.

- Check-in: For each zone of the Pits Area will have an exclusive team manager. Please ask the corresponding team manager for any help according to the seat number.

7.3 Safety Considerations

1. Robots are strictly prohibited from having the following materials or parts:

- Flammable gas, fire or smoke generating equipment, hydraulic oil or hydraulic components, switches or contactors containing Mercury;

- Hazardous materials (such as lead);

- Any material processed in any manner during the competition；

- Ballasts and counterweights that do not guarantee safety, such as sand, muy be scattered in the competition；

- Materials that may cause unnecessary entanglement of the robot;

- Material with sharp edges and angles that can easily cause injury;

- Use materials made from animals(for health and safety reasons) ;

- Materials containing liquids or gelatinous substances (except glue or lubricating oil that meets the requirements);

- Materials that may delay the competition once being released, (e.g. coffee beans, soybeans, rice, etc.) ;

- Any spare part that the electric current on the robot may be conducted to the arena;

2. Prohibition of chasing in the Pits Area.

3. Please pay attention to protect property security. Please prepare your own laptop anti-theft lock.

4. The Pits Area does not allow any adult other than the staff to enter during the competition. If an unknown person is found, please inform the working staff. All team members should carry or wear proper credential.

5. Electricity Safety: The Pits Area provides power interface. Team members can carry a power strip that complies with national standards: GB 2099.9-2017.

- Please bring your own adhesive tape to fix the wires of power strip, and make sure that the wires are not easy to trip over others.

- Make sure that the plug is securely connected. When connecting the power strip, please be careful not to touch the metal tab with your hands.

- Any power strip that has a damaged appearance shall not be used.

- It is strictly forbidden to put any small mechanical parts or metal objects into the power strip.

- Be careful not to spill water or beverage into the jack of power strip.

- In case of any insecurity situation, please notify the working staff promptly.

7.4 Practice Arena

- MakeX Committee will set a certain number of practice arenas according to the practical situation. The practice arena is generally located in the Pits Area.

- Adhering to the principle of fairness, a practice arena session being used for each team is 10 minutes. If your time is out, please consciously leave the field and queue up again.

- Please take good care of the props when using the practice arena. If there is damage, you may need to compensate according to the cost.

8. Awards

8.1   Special Team Award

During the world championship, the special awards below will be given to teams according to their onsite performance. There's no need for the application. The award judge will go around on the Competition Area and Pits Area to give full judgment.

City Guardian Team Award

Award	Qty.
Outstanding Appearance Design Award	2
Engineering Notebook Award	4
Alliance Collaboration Award	2
Team Culture Award	2
Competition Spirit Award	2
Rookie Award	1

1) Awarding List Announcement will be published at 12:00, Nov. 30th, in the City Guardian Pits Area.

2) Awarding will be held from 18:00 to 18:30, Nov. 30th on Stage.

Courageous Traveler & Strong Alliance Team Award

Award	Qty. of Courageous	Qty. of Strong Alliance

	Traveler	
Outstanding Appearance Design Award	2	2
Engineering Notebook Award	4	4
Best Automatic Program Award	1	1
Best Modification Award	1	1
Alliance Collaboration Award	3	3
Technology Innovation Award	1	1
Team Culture Award	2	2
Competition Spirit Award	2	2
Rookie Award	1	1

1) Awarding List Announcement will be published at 10:00, Dec. 1st in the Courageous Traveler & Strong Alliance Pits Area.

2) Awarding will be held during 11:30-12:00, Dec. 1st on Stage.

My City Team Award

Award	Qty.
Best Creativity Award	2
Business Application Award	2
Function Design Award	2
Appearance Design Award	2

1) Awarding List Announcement will be published at 10:00, Dec. 1st in the Spark Competition Area.

2) Awarding will be held during 12:00-12:30, 1st Dec. on Stage.

Considerations:

1) For details of team awards judging criteria, please check the latest version of the Competition Guide for each program.

2) Teams should pay close attention to the Awarding List Announcement. All awarding representatives should gather in the designated areas of the Stage 15 mins before the Awarding starts. MakeX Committee will assign representatives directly for any team that cannot be on time or present.

8.2 Annual Awards & Roadshow

Award	Roadshow Time	Location
Opensource Innovation Award	10：30-12：00 Nov. 30th	Stage
Ambassador Award		
MakeX Spirit Award		
Outstanding Mentor Award	13：00-15：00 Nov. 30th	

Considerations:

1) For details of Annual Award judging criteria, please check《2019 MakeX World Championship Annual Award Application》.

2) The nomination list of Annual Award Roadshow will be announced

around Nov. 15th on MakeX official website. The nomination quantity

for each award is subject to the final release. MakeX Committee will

contact all nominated applicants within one week after the release.

Please keep your phone and email in contact.

3) The results of the annual awards will be announced and presented

at the Closing and Awarding Ceremony.

8.3 Closing and Awarding Ceremony

The following awards will be awarded during the Closing Ceremony:

Category	Programs & Award Name	Qty.	Time
Champion, Runner-up, Second Runner-up	City Guardian-Elementary Group	2 for each category	15:30-17:00 Dec. 1st Closing Ceremony
	City Guardian-Intermediate Group	2 for each category	
	Courageous Traveler	2 for each category	
	Strong Alliance	2 for each category	
	My City	1 for each category	
	Annual Points Ranking	1 for each	

		category	
Annual Awards	MakeX Spirit Award	1	
	Opensource Innovation award	2	
	Ambassador Award	3	
	Outstanding Mentor Award	3	
	Founder Award	1	

Considerations:

1) The sequence of awarding is subject to actual conditions.

2) The winners' list of Annual Award is subject to the final release.

3) All awarding teams should gather in front of the Stage 15 mins before the Closing Ceremony starts. MakeX Committee will assign representatives directly for any team that cannot be on time or present. After the competition, teams of City Guardian, Courageous Traveler, and Strong Alliance can log in MakeX official website to download e-certificates on the personal profile page. E-certificate for My City, Annual Awards, Annual Awards Nomination will be delivered in December.

9. Venue Address and Logistic Information

Onsite registration venue: Guangzhou Asian Games Town Gymnasium

Address: 33 Xingya Avenue, Panyu District, Guangzhou city

Considerations: The onsite registration at the venue will be closed at 21:30 Nov. 28th. All teams shall finish onsite registration, robot inspection, and presentation on time.

Competition Date: Nov 29th - Dec 1st

Venue: Guangzhou Asian Games Town Gymnasium (33 Xingya Avenue, Panyu District, Guangzhou)

Transportation:

- Metro: 770m walking from Line 4 Haibang Station (Exit A). Or take a taxi, a total of 0.8 kilometres, which cost about 8 yuan.

- Bus: Asian Games Town Gymnasium Station. Route "番 111", "番 148b", "番 162b".

Accommodation:

Teams that make a reservation from MakeX Committee should pay attention to the official notifications. Other teams should reserve the hotels by themselves and make transportation arrangements for the venues. There may be traffic congestion or traffic control during the competition date. Please arrive at the competition venue in advance.

The blue P logo is the pick-up and drop-off point for the competitors to take the vehicle by themselves. No parking is allowed here. Only the landing is allowed. After getting off the bus, contestants can enter the Pits Area according to the guidelines. The social vehicle entering the venue requires a vehicle pass stamped by the venue. The green P logo is the pick-up and drop-off point for the contestants that purchased the National Travel logistics solution (can be parked).

During the official competition date from November 29th to December 1st, the mentors and spectators are not allowed to enter the Pits Area. After entering the East Gate, please go to the entrance of the gymnasium on the second floor (star sign) for security inspection then enter the main venue to watch the competition.

Appendix I On-site Skills Test in MakeX Starter

After the Qualification Round of City Guardian, all promoted teams must participate in the On-site Skills Test before the Alliance Selection Ceremony begins. At the On-site Skills Test session in City Guardian, MakeX Committee will announce the mission and time frame on the spot. The participating teams should build projects and write programs to complete the mission within the given time.

The mission and rules for the On-site Skills Test in City Guardian shall be subject to the on-site announcement.

Procedures of the On-site Skills Test:

1) Captains of participating teams entering the Championship Round gather in front of the stage;

2) MakeX Committee announces the mission on site;

3) Participating teams reach the designated area to build projects and write programs;

4) Participating teams complete the mission;

5) MakeX Committee releases grades and scores of each participating team.

The participating teams' completion of the mission determines the weighting factor that the teams will be granted. The weighting factor will

affect the final result.

Requirements for the On-site Skills Test:

1) Teams being advanced to the Championship Round will participate in the On-site Skills Test in City Guardian. Alliance Selection will start after the On-site Skills Test.

2) Materials and tools necessary for the On-site Skills Test are the same as City Guardian competition equipment kit. Participating teams themselves shall get the materials and tools ready.

3) Before being allowed to build their projects, all the participating teams should ensure all the mechanical and electronic components are confined to individual components. Participating teams shall start assembling ONLY after their components pass inspection.

4) Before being allowed to write programs, all the participating teams should ensure all the existing programs are cleared. Participating teams shall program on-site.

5) The scores that participating teams earn in the On-site Skills Test in City Guardian determine the grades and weighting factors they will be granted.

6) Electronic communication devices are NOT allowed in the On-site Skills Test in City Guardian. Mentors and parents shall not enter the test area during the session.

Notes on grading:

- ● S Championship Round   Weighting Factor 2.0

- ● A Championship Round   Weighting Factor 1.8

- ● B Championship Round   Weighting Factor 1.5

- ● C Championship Round   Weighting Factor 1.0

For instance, Team X10010 and Team X10020 form Alliance A. In the On-site Skills Test, if Team X10010 earns a Grade *S*, and Team X10020 a Grade *B*, the final score of Alliance A will be calculated as:

Final Points = Championship Round Points*[（2.0+1.5）÷2]

Appendix II On-site Skills Test in Challenge

After the Qualification Round of Challenge of the 2019 MakeX World Championships, all promoted teams must participate in the new on-site assessment before the Alliance Selection Ceremony begins. At the On-site Skills Test session in Challenge, MakeX Committee will announce the mission and time frame on the spot. The participating teams should build projects and write programs to complete the mission within the given time. At the On-site Skills Test session, MakeX Committee will announce the mission and new prop necessary on the spot.

Procedures of the On-site Skills Test:

1) Captains of teams entering the Elimination Round gather in the designated area.

2) MakeX Committee announces the mission and new prop added to the Elimination Round on site.

3) Teams, taking their robots, reach designated area to build projects and write programs.

4) Teams modify their robots to be compatible with new prop within the time frame.

5) Robots should be placed in the designated area after the test ends.

Requirements for the On-site Skills Test:

1) Teams entering the Elimination Round will participate in the On-site Skills Test in Courageous Traveler. Alliance Selection will start after the On-site Skills Test.

2) Materials and tools necessary for the On-site Skills Test are the same as the Courageous Traveler competition equipment kit. Participating teams themselves shall get the materials and tools ready.

3) Electronic communication devices are NOT allowed in the On-site Skills Test. Mentors and parents shall not enter the test area.

4) Robots should stay in the test area after the test ends. Taking robots outside the test area is prohibited.

5) Before the on-site test ends, teams should complete their project for later inspection of the committee staff.

6) After the on-site test ends, all teams should leave the test area, just leaving the robots there.

Details of the new prop, including dimension, weight, shape, and more, will be published when the on-site test begins.

The Courageous Traveler Elimination Round will include a new mission relating to the prop used in the on-site test. Completing the mission can score specific points. More details will be unveiled at the beginning of the on-site test.

Appendix III Similar Robots Penalty Statement

For the similar robot evaluation and judgment, the MakeX Robotic Competition Committee has set up an Evaluation Committee of Similar Robots to take photos of each participating robot and make comparative analysis during the Inspection Stage.

Similar robot suspicion:

In any stage of the competition, if the participating robots are identified as a suspect by the committee, or reported by other teams and relevant personnel, they shall be subject to the similar robot review.

The reporter shall inform the Evaluation Committee of Similar Robots of the names and ID of the two teams with the suspicion, and the similar robots shall enter the review process.

The behaviour of the contestants shall conform to the spirit of the MakeX Robotic Competition, and it is not allowed to report the opponent or other teams maliciously.

Similar robot review:

The robot is divided into five parts: launching structure, transmission structure, receiving structure, clamping structure, and other structures. Each part shall be reviewed from the aspects of structural parts, electronic parts & procedures.

Evaluation dimensions of structural parts: Overall shape of the structure, Type and Model of Structural parts, Position (relative to other parts, relative to the geometric centre of chassis), Number of Structural parts.

Evaluation dimensions of electronic components and programs: motor Interface and connection method, number of program lines, type of statement block (in mblock), the arrangement order of Statement block.

Scoring standard: four evaluation dimensions of structural parts, electronic parts& procedures are combined with five dividing structural parts to score, with a score of 1-5 for each small direction.

1 = identical or extremely similar, 2 = high similarity, 3 = medium similarity, 4 = low similarity, 5 = completely different or very low similarity.

The full scores of structural parts, electronic parts and procedures are 100 points respectively. If there is no corresponding structure, it will be recorded as the average score of other parts. If the total score of any aspect is lower than 60, it will be judged as the similarity. If the total score of the two aspects is higher than or equal to 60, it will be judged as different.

Special circumstances: If the program submitted by the team to the MakeX Robotic Competition Committee is obviously inconsistent with

the function and realization method that the robot can realize, the team will be disqualified directly.

Similar robot judgment

If the members of the Evaluation Committee of Similar Robot decide that the robot does not have the same identity, the robot and the relevant teams will not be affected.

If the Evaluation Committee of Similar Robots determines that the robots are identical and the punishment occurs before the start of the qualifying stage, the relevant teams need to modify the robots within a limited time until they pass the evaluation; otherwise, the qualification will be cancelled.

If the Evaluation Committee of Similar Robots determines that the robots are identical and the penalty occurs after the start of the qualifying stage, the relevant teams will be disqualified directly.

Statement:

● The MakeX Robotic Competition Committee and the Evaluation Committee of Similar Robots keep the informant's information strictly confidential.

● The MakeX Robotic Competition Committee and the Evaluation Committee of Similar Robots declare that they will keep the construction scheme of the participating robots strictly confidential and will not distribute them in any form (photos, videos, etc.) without

authorization.

- The MakeX Robotics Competition Committee and the MakeX Evaluation Committee of Similar Robots have the final interpretation of this penalty.

# Appendix IV Booth Decoration Notice

Dear contestants,

In 30 days, the annual final will begin! Are you having fun in 2019? Did you gain a lot from participating in the MakeX Robotics Competition? MakeX has been paying close attention to your growth. From the teams that are willing to share with others on MakeX forum to the teams that learn to make team uniforms, team emblems and posters, we can see that you pay more and more attention to the building of team culture. In this regard, we want to give you a bigger stage to show. Now we have set up our own display space for the high-level team. We hope you can use this base to show your team culture to the fullest.

Participants: The teams of MakeX-Challenge and MakeX-Premier

Decoration Area: The booths of MakeX-Challenge and MakeX-Premier

Decoration Requirement:

1. Must not exceed the size of the booth, in case the adjacent booth is affected.

2. Material is not limited, it can be photo, poster, light board, roll-up banner and KT board etc.

3. Must not block the pedestrian passage, large-size inflatable doll and archway are not recommended.

4. Be careful when using electricity, must not use the high-power electric appliance.

5. Decoration object should not block the team's name and number in
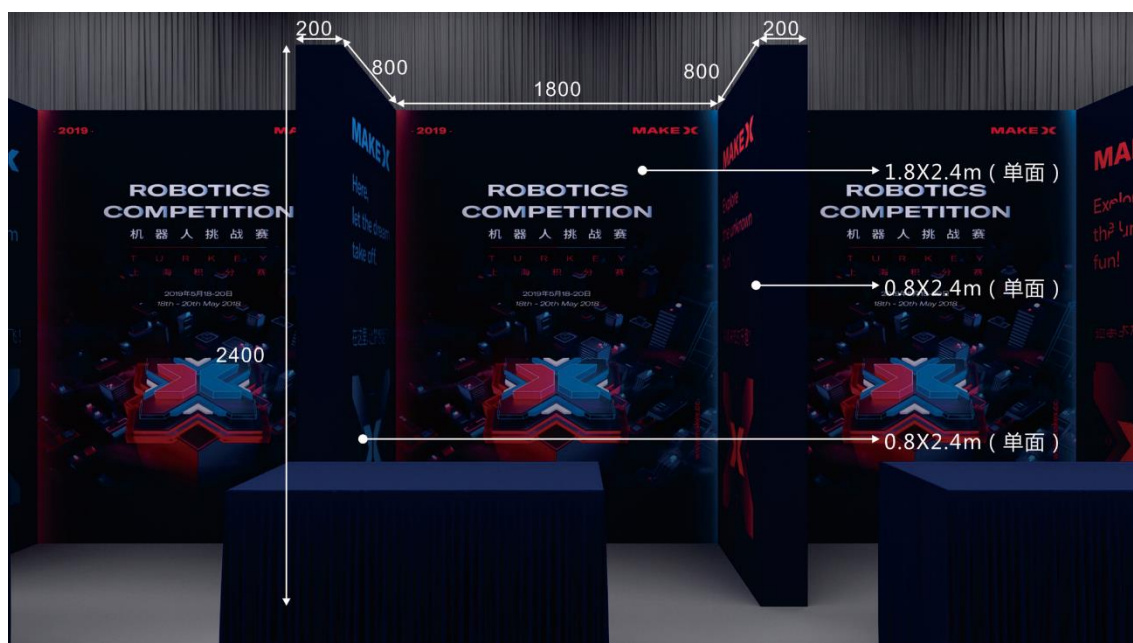
the booth.

6. MakeX Robotics Competition Committee will assess the booths of all teams; the results will affect individual awards, as well as the selection of propaganda ambassador of the year.

7. It is encouraged for teams to introduce themselves, and display their team badge, team flag, team shirts and photos of team members, etc., these elements are part of the criteria of the evaluation.

Appendix V Arena Contest

The Arena Contest is designed to provide players with a richer competitive experience. If the participating teams are not well ranked in the Qualification Round, they can compete in the Arena Contest and regain the glory.

Participant： Eliminated teams in Qualification Round

Venue： Competition Area

Groups： Strong Alliance、Courageous Traveler、City Guardian

Overview：

Sign up for the contest in the form of the alliance including two teams（single registered teams will be randomly assigned by Committee）. Each team or alliance has two chances, and the duration of every single match is 90s. Each team in the alliance needs to use one token. The winning alliance automatically becomes the owner, gets the token and stays on the arena waiting for the next alliance to challenge them. The winner can play directly without using another token.

The token is accumulated continually for the contest winner. If an owner loses the contest midway, he will lose all the tokens accumulated during his time as the owner. If there is an owner leaving the field halfway, he will take away half of the tokens accumulated as the owner. The other half of the tokens will be invalid and recycled.

Introduction：

Strong Alliance Guard：

This contest is a purely manual competition. When the competition begins, you can attack the bottles on the opponent's field. At the beginning of the contest, there are a total of 240 balls (120 each side), and they will not be reallocated at the end of each match. There are 22 bottles in each side (10 in the upper layer and 12 in the lower layer).

One point is obtained when the lower red/blue bottle is in the knocked down state, or the bottom of the bottle is completely out of contact with the ground. When the upper bottles fall into the lower layer in the knocked down state or the bottom is completely out of contact with the ground, one point is obtained. At the end of the contest, the bottle still in the upper layer is not scored regardless of its state. 3 points for each yellow bottle knockdown.

Courageous Traveler Guard：

This contest is a purely manual competition. When the competition begins, you can attack the bottles on the opponent's field. At the beginning of the contest, there are a total of 120 balls (60 each side) and all of them will not be reallocated at the end of each match. There are 18 bottles in each side (8 in the upper layer and 8 in the lower layer，2 yellow bottles are placed in the safe zone.).

One point is obtained when the lower red/blue bottle is in the knockdown state, or the bottom is completely out of contact with the ground. When the upper bottles fall to the lower layer and are in the state of being knocked

down, or the bottom is completely out of contact with the ground, one point is obtained. At the end of the contest, the bottle in the upper layer is not scored regardless of its state. 3 points for each yellow bottle knockdown.

City Guardian Guard:

This competition is a purely manual competition with 16 rings in a fixed position on the arena. When the contest starts, the team can push the ring into the classified area A.

One point will be obtained when a yellow ring completely enters its right area, and two points will be obtained when a green ring enters its right area.

Result determination:

Strong Alliance Guard:

When the competition time ends at the 90s, the alliance with the more points wins. If the two sides have the same points, this is a tie. The owner will not be changed if there is a tie, and the challenge side will be able to get back the token handed over for this contest. When the match time is less than 90s, and one alliance has knocked down all opponent's bottles (i.e., scored 26 points), it is regarded as 'KO'; the match can be ended directly.

Courageous Traveler Guard:

When the competition time ends at the 90s, the alliance with more points wins. If the two sides have the same points, this is a tie. The owner will not be changed if there is a tie, and the challenge side will be able to get back

the token handed over for this contest. When the match time is less than 90s, and one alliance has knocked down all opponent's bottles (i.e., scored 22 points), it is regarded as 'KO'; the match can be ended directly.

City Guardian Guard:

When the competition time ends, the alliance with the more points wins.　If the two sides have the same points, this is a tie. The owner will not be changed if there is a tie, and the challenge side will be able to get back the token handed over for this match.

Schedule：

Time	Event	Location
10:30-14:00	Registration	Info desk
15:00-16:30	Competition	Competition Area
16:30-17:00	Knockout or awarding (If there is no knockout, you can award the prize directly)	Competition Area
17:00-17:30	Awarding	Competition Area

Considerations：

Registration stage：

Please register at the Info desk for the competition in the specified time, and each registered team will get two tokens. Registering in the form of an

alliance, if you cannot find the alliance teammates, the staff will randomly assign the teammates. If there is only one team left, this team will not be able to participate.

Contest stage：

The contest will begin at 15:00, which requires all the registered teams to be presented at 2:30. The awarding ceremony for top 4 with maximum tokens will be hosted at 16:30 (the actual time is subject to the on-site notice).   If multiple alliances with the same points exist, there will be a lottery for a single-elimination tournament (subject to the decision of the staff on-site).

Award stage:

Alliance prizes awarding ceremony.

Appendix VI Instructions for Power Management Module

1. How to use

1）Module Self-Test

· The module self-test whenever it is powered, it will check the hardware status to detect whether the wireless module is normal.

· Normal: The module will shortly buzz

·Abnormal: The digital tube displays the letter "Er" and the buzzer sounds 3 times.

2）Module Restore Default Parameter Settings

· When an unexpected power failure occurs at the end of the competition, or other abnormal conditions occur, it may happen that the power management module will not switch back to the default channel after the competition is over. In this case, the power management module needs to restore the default parameter settings.

· When this module works abnormally, you can also try to repair by restoring the default parameter settings.

· In the power-off state, press the multi-function button FUN, connect the battery to power on the system, the buzzer sounds long (2S), the digital tube displays "20" (default channel), the system works normally, and the factory default parameters are restored.

3) Switch power output status

·In daily training, you can switch the power supply status of the power system by pressing the button to simulate the situation in the official competition to debug the hardware and software of the participating robots.

·The long-press function is valid only when the wireless module is the default channel (the digital tube displays "20" is the default channel)

·Press and hold the multi-function button FUN (2~3s) to switch the 12V power output status. The 12V power output indicator lights red to the on state and off to the off state.

4）Switch between manual/automatic competitions

· In daily training, you can switch between manual and automatic competitions by pressing the button to simulate the situation in the official competition to debug the hardware and software of the participating robots.

·Double-click the multi-function button FUN to switch between automatic and manual (in the automatic competition, the status indicator WORK blue is always on; in the manual competition, the status indicator WORK is steady green)

·After double-clicking the button, the status indicator WORK will start to flash, and the status will be switched after 3s. It is recommended that the relevant personnel leave the vehicle as soon as possible after the indicator light starts to flash, so as not to be injured by the moving vehicle.

2. Suggestions for Installation and Use

·Please make sure to use the power management module's bracket for installation.

·Wiring to ensure a stable connection, pay attention to the wiring mode (confirm that the power management module and the main control use 5V universal cable to communicate)

·Adjust the position of the antenna to prevent it from interfering with the movement of other moving devices, and try to avoid the antenna too close to the large area of metal materials;

·When the number displayed by the digital tube is not "20", it means that the module is not in the default channel, and it is necessary to perform the operation of restoring the default parameter setting.
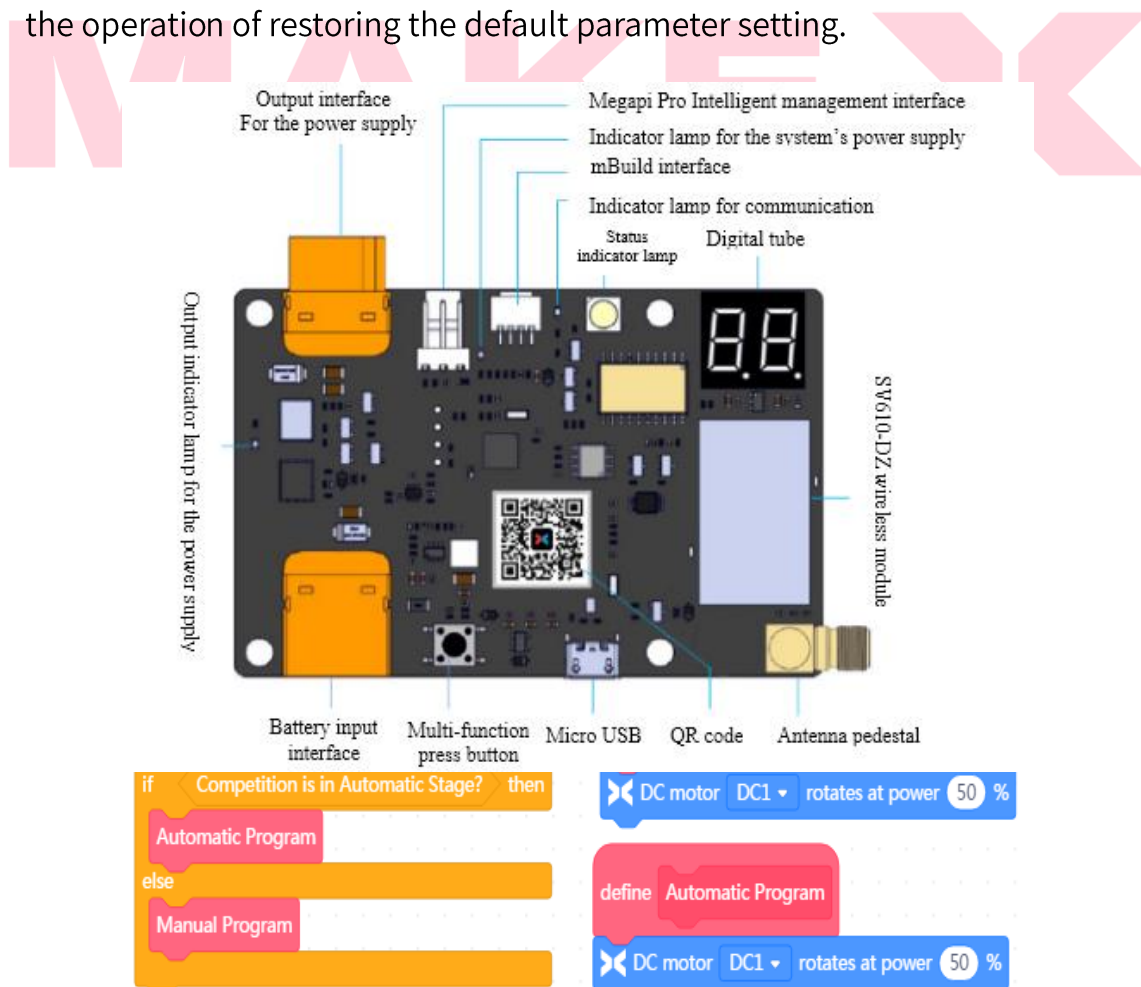
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