V1.2

ROBOMASTER 2020
ROBOTICS COMPETITION

PARTICIPANT MANUAL

Prepared by the RoboMaster Organizing Committee

Released on May, 2020

Statement

Participants are forbidden from engaging or participating in any actions determined by the RoboMaster Organizing Committee (hereinafter referred to as "the RMOC") as involving public disputes or sensitive issues or causing offence to the public or certain social groups, or damaging the image of RoboMaster; otherwise, RMOC shall have the right to disqualify offending persons permanently from the competition.

Using this Manual

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Release Notes

Date	Version	Changes
May 27, 2020	V1.2	1. Adjusting the time of some sections in the Season Schedule. 2. Adding a new Technical Assessment component – Pilot Theory Exam and Pilot Video Assessment. 3. Cancelling Wild Card Competition and International Regional Competition due to the epidemic. 4. Adding new definitions and updating requirements for participants and participating teams. 5. Adjusting the setup of Open Source Award. 6. Adjusting the weight of each Technical Assessment Section for teams from Hong Kong, Macau, Taiwan and overseas.
December 31, 2019	V1.1	1. Updating the Platform for Communication and Q&A. 2. Updating the setup of the Open Source Award and Organization Award, and the selection criteria for the Organization Award. 3. Updating Appendix 1, including requirements for Mid-Term Robot Assessment Video and Final Robot Assessment Video.
October 15, 2019	V1.0	First Release

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1. Introduction

Founded by DJI Technology Co., Ltd. and designed for young engineers, RoboMaster is a global educational robotics program that includes competitions, campus clubs, cultural merchandise and other initiatives.

The RoboMaster Competition is China's first combat-type robotics competition co-organized by the Communist Youth League of China and Shenzhen Municipal People's Government. It requires participants to go beyond their textbooks to form a robotics team, develop a diverse fleet of robots and participate in team battles. Through the competition, students gain invaluable industrial practice and strategic planning skills. This helps to combine their book knowledge with practice in this field, and enables the most advanced and intelligent robots to be built through intense competition.

More than a robotics competition for students in China, the RoboMaster Competition is a global competition that technology enthusiasts from all over the world can enjoy and take part in. It is committed to increasing the visibility of robotic competition and engineers in the public, and inspiring individuals or groups to pursue their dreams in tech and join in the ranks of tech innovators.

RoboMaster is revolutionizing the way university tech talent is nurtured. On top of promoting robotic tech development, it is also building a comprehensive sharing platform for competition participants. Through competitions and practical experience, they are able to grow, improve, and pursue their dreams of ultimately changing the world.

2. Season Schedule

⚠ The following season schedule is for reference only. The specific time is subject to the latest announcement by the RMOC.

The RoboMaster Robotics Competition is a component under RoboMaster Competition. The season schedule for the 19th RoboMaster 2020 Robotics Competition (hereinafter referred to as “RM2020 Robotics Competition”) among colleges and universities consists of an online schedule and an offline schedule. It is recommended that each team drafts outa 2020 Season Schedule to evaluate its personnel and funding needs. Teams are also advised to stick to a budget when making their robots at the beginning of the preparation stage so as to avoid unnecessary iterations of robots and wasting funds.

Teams must complete the Technical Assessment task of corresponding stage before qualifying for further Assessment, China Regional Competition. Only outstanding teams of China Regional Competition qualify for the Final Tournament.

Teams passing the Technical Assessment will earn a corresponding quantity of RM Product Education Discounts (hereinafter referred to as “product discounts”) provided by the RMOC. For details on the Technical Assessment specifications, please refer to “Appendix 1 - Technical Assessment”. For the quantity of product discounts corresponding to each stage, please refer to “Appendix 2 - Product Discounts”.

Table 2-1 Online schedule

Schedule	Parameter	Category	Entry Qualification
October 15, 2019, 12:00 - November 15, 2019, 12:00	Registration on Official Website	Teams from mainland China; Teams from Hong Kong, Macau, Taiwan and overseas	Log in the RoboMaster website and complete the registration as required.
November 22, 2019, 12:00 - November 23, 2019, 12:00	Technical Assessment -Rules Exam	Teams from mainland China; Teams from Hong Kong, Macau, Taiwan and overseas	● Receive the product discounts corresponding to the section. ● The team will receive permission to submit a Season Schedule.
November 24, 2019, 12:00 - November 28, 2019, 12:00	Technical Assessment – Season Schedule	Teams from mainland China	● Receive the product discounts corresponding to the section.
December 16, 2019, 12:00 - December 19, 2019, 12:00		Teams from Hong Kong, Macau, Taiwan and overseas	

Schedule	Parameter	Category	Entry Qualification
			● The open-source teams with the top five highest scores for their open-source Season Schedules will each receive a set of the RM2019 version Standard Robot Referee System (VTM not included) ● The team will receive permission to submit a Mid-Term Robot Assessment Video.
January 13, 2020, 12:00 - January 16, 2020, 12:00	Technical Assessment - Mid-Term Robot Assessment Video	Teams from mainland China	● Receive the product discounts corresponding to the section. ● Qualify for the Referee System Exam
March 16, 2020, 12:00 - March 23, 2020, 12:00		Teams from Hong Kong, Macau, Taiwan and overseas (optional)	
March 6, 2020, 12: 00 - March 7, 2020, 12: 00	Technical Assessment - Referee System Exam	Teams from mainland China	● Qualify for borrowing a set of the Standard, Hero, Engineer, and Sentry referee system ● Qualify for submitting a Technical Proposal
March 27, 2020, 12: 00 - March 28, 2020, 12: 00		Teams from Hong Kong, Macau, Taiwan and overseas	
March 9, 2020, 12: 00 - March 11, 2020, 12: 00	Technical Assessment - Technical Proposal	Teams from mainland China	The team will receive permission to submit a Final Robot Assessment Video.
April 6, 2020, 12: 00 - April 8, 2020, 12: 00		Teams from Hong Kong, Macau, Taiwan and overseas	
May 29, 2020, 12:00 - May 30, 2020, 12:00		Teams from mainland China	Qualify for submitting a Pilot Assessment Video

Schedule	Parameter	Category	Entry Qualification
Subject to the latest announcement.	Technical Assessment – Pilot Theory Exam	Teams from Hong Kong, Macau, Taiwan and overseas	Failing the Pilot Assessment does not affect the qualification of the team and the pilot for participating in the competition. The Pilot Assessment includes the Pilot Theory Exam and Pilot Video Assessment.
Subject to the latest announcement.	Technical Assessment - Pilot Assessment Video	Teams from mainland China	● The team qualifies for entering its Aerial Robot into the stage. ● The pilot qualifies for operating an Aerial Robot.
		Teams from Hong Kong, Macau, Taiwan and overseas	
Subject to the latest announcement.	Technical Assessment - Final Robot Assessment Video	Teams from mainland China and Teams from Hong Kong, Macau, Taiwan and overseas	Qualify for borrowing the full set of Referee System and participating in the China Regional Competition
Subject to the latest announcement.	Team's preferred divisions	Teams from mainland China	-
Subject to the latest announcement.	Technical Assessment –Season Summary	Teams from mainland China and Teams from Hong Kong, Macau, Taiwan and overseas	Give out China Regional Competition and Final Tournament certificates and cash prizes

Table 2-2 Offline schedule

Schedule	Parameter	Category	Eligibility
Subject to the latest announcement.	Regional Competitions	Teams from mainland China	● Teams from mainland China that pass Final Robot Assessment Video qualify for the regional competition. ● Teams may choose their divisions or accept the arrangements of the RMOC. The RMOC will decide which team has the prior right to choose their divisions based on their total Technical Assessment score rankings.
Subject to the latest announcement.	Final Tournament	Teams from mainland China; Teams from Hong Kong, Macau, Taiwan and overseas	Teams with top ranks in the China Regional Competitions qualify for the Final Tournament

- Due to the impact of the epidemic situation, the Organizing Committee decided to cancel the RM2020 International Regional Competition in order to cooperate with the national epidemic prevention work.
- Teams from Hong Kong, Macau, Taiwan and overseas that meet the epidemic prevention and control regulations in mainland China can choose to pass the Final Robot Video Assessment at the same time with the teams from mainland China to participate in the RM2020 China Regional Competition.
- Teams that give up this season's offline events can participate in Online Assessment.

3. Participation

Teams are divided into three types: teams from mainland China, teams from Hong Kong, Macau, Taiwan and overseas, and Chinese and Foreign Joint Teams. The category of and entry procedure for a Chinese and Foreign Joint Team is determined based on the geographical locations of the colleges or universities.

3.1 Participants

The RoboMaster Competition advocates teamwork and encourages participating members to actively take on important roles within their team. The RMOC will select Outstanding Captains, Outstanding Supervisors and give out other awards to recognize the participants who have made positive contributions to the RoboMaster competition. Please refer to the table below for the roles and responsibilities of the participants:

For participants who have submitted their registration information to the registration system before May 2020, their status registration can be extended from "before August 2020" to "before December 2020".

Table 3-1 Participant roles and responsibilities

Roles	Role Instructions	No. of Persons	Status	Responsibilities
Supervisor	● The main person in charge of the team, responsible for the formation and management of the team ● Responsible for guiding the team in robot-building. ● Cannot simultaneously assume the roles of advisor and Regular Member	1-5	As regards the institutions of higher education who produce graduates before August 2020, they must already employ faculty with qualifications for research and teaching (if necessary, you need to produce relevant evidence at the competition site)	● Responsible for the personal and property security of the team ● Coordinating on-campus resources, guide the team in developing project plans, controlling preparation progress, help the team successfully conclude the match ● During the matches, the Supervisor must actively cooperate with the work of the RMOC

Roles	Role Instructions	No. of Persons	Status	Responsibilities
Advisor	● Team Advisor ● Cannot simultaneously assume the roles of Supervisor and Regular Member	0-5	Full-time junior college students, undergraduates, postgraduates, and doctoral degree candidates in colleges and universities, as well as engineers, researchers and faculty members working in enterprises, research institutions, or as freelancers	● Provide guidance and support to the team on strategy, technology, management, etc. ● An advisor can undertake robot-building tasks and handle other competition-related matters.
Regular Members	● Including Captain, Vice Captain, PR Manager, Project Manager, Business Manager and General Members, see the table below for details ● They are not allowed to assume both the roles of Advisor and Supervisor.	10-35	Full-time junior college students, undergraduates, postgraduates, and doctoral degree candidates in colleges and universities, with proof of student identity up to August 2020.	See the table below for details

Roles	Role Instructions	No. of Persons	Status	Responsibilities
Reserve Member	The reserve members of the team will be temporarily engaged in personal study and growth, and may become Regular Member after being observed and promoted by the team.	0-20		Assist the Regular Member with completing the matches, but do not qualify for any awards

Table 3-2 Regular Member' roles and responsibilities

Roles	Role Instructions	Quantity	Responsibilities
Captain	● Core team member, the team's technical and tactical leader ● The main liaison with the RMOC ● The Captain cannot assume both the roles of Project Manager and PR Manager	1	● Responsible for the division of labor, overall planning and tactical arrangement and adjustment ● Attend Captains Meetings, represent the team in confirming match results, and participate in appeal processes and attend to any appeal during the competition. ● Responsible for the legacy and development of the team after the competition
Vice Captain	Core team member	0-3	● Along with the team leader, forms the core management team ● Assists the Captain with the management of the team
Project Manager	● Core team member ● Overall manager of the project	1	In charge of sorting out project tasks, coordinating fund, materials, personnel and other resources, helping establish sound team management regulations and institutions, planning and managing the overall project subjects (including goals, progress, costs, etc.)

Roles	Role Instructions	Quantity	Responsibilities
PR Manager	Person in charge of promoting the team	1	Responsible for integrating the team's PR resources, establishing a sound publicity system, planning and implementing promotional activities through multiple channels, and improving the influence of the team and RoboMaster events
Business Manager	● Manages business canvassing ● Can be undertaken by people occupying other roles.	0-1	Responsible for integrating the team's internal and external resources, writing and improving investment plans, finding partners through various channels, providing technical support, arranging for fund sponsorship, etc.
General Members	Assumes none of the above roles	3-32	-

3.2 Participating Team

Teams must adhere to the following rule:

1. If any two or more teams do not meet any one requirement under the "Five Differences" Rule, they shall be treated as the same team.

   The "Five Differences" Rule: Different team names, different team members, different supervisors, different affiliated institutions (college or other educational institutions), and different robots.

2. A team can apply to participate in different competitions in the RoboMaster series (including the Robotics Competition, Technical Challenge, AI Challenge, and Provincial Competition).

   Applications have to meet the respective application requirements of the different competitions.

3. The RMOC will deem a team participating in different competitions in the same season as the one and same group, in handling the various competition processes (including free material supply, material purchases, and participation support). A team cannot be broken up after completing registration for the season.

The below shows the definition, participation rights and entry procedures for each type of teams.

Table 3-3 Types of participating teams

Teams from mainland China	
Definition	University or college participating teams that pass the registration review, meet the relevant competition entry requirements and are geographically located in mainland China within the specified period.
Participation Rights	Qualified for the 2020 Season competitions, awards application and promotion.
Entry Procedures	1. Competition processes carried out in accordance with the standards for teams from mainland China.  Competition processes include free material supply, material purchases, and participation support. 2. To participate in the China Regional Competitions, with outstanding teams advancing to the Final Tournament.
Teams from Hong Kong, Macau, Taiwan and overseas	
Definition	University or college participating teams from Hong Kong, Macau, Taiwan and overseas that pass the registration review and meet the relevant entry requirements within the specified period.
Participation Rights	Qualified for the 2020 Season competitions, awards application and promotion.  Due to their different education systems, senior high school students are allowed to participate in teams from Hong Kong, Macau, Taiwan and overseas, but their number must not exceed 20% of the total number of team members.
Entry Procedures	1. Competition processes are carried out in accordance with the standards for teams from Hong Kong, Macau, Taiwan and overseas. 2. Teams can choose to participate in China Regional Competition (teams with higher ranks will advance to the Final Tournament.), or Online Assessment.
Chinese and Foreign Joint Teams	
Definition	Teams formed between a university or college from mainland China and a university or college from Hong Kong, Macau, Taiwan and overseas that pass the registration review and meet the relevant entry requirements within the specified period.

Participation Rights	Qualified for the 2020 Season competitions, awards application and promotion.
Entry Procedures	1. If the school's geographical location is in mainland China, its team is subject to the competition processes in accordance with the standards for teams from mainland China. 2. If the mainland school forms an Intercollegiate Team with another team whose university or college is located in Hong Kong, Macau, Taiwan or overseas, the team is subject to the competition processes in accordance with the standards for teams from Hong Kong, Macau, Taiwan and overseas. An Intercollegiate Team must meet the entry requirements for Intercollegiate Team stated in "3.3 - Other Requirements".

3.3 Other Requirements

R1 Any team participating in different competitions must use the same team name. A team's name must be in the format of "XXX Team", where "XXX" shall be the team's self-chosen name. The total length of the team name should not exceed 16 English letters or 8 Chinese characters. The team name must not include the school name or its abbreviation in Chinese/English, or such Chinese characters as "队", "团队" and "战队" which mean "team" in English, or other special symbols such as "*/-+". The team name must reflect the positive and pioneering spirit of the team and comply with relevant state laws and regulations. If the RMOC determines that a team's name does not align with the spirit of the competition, it has the right to require the team to change its name.

R2 A participating team must be attached to a university or college, and must meet the requirements for the roles, number and identity of participants stated in "3.1 - Participants".

R3 In principle, each college or university is only allowed to have one qualified team for one competition (challenge). Institutions having multiple campuses in different cities, making it difficult for certain students to compete as a team, are allowed to have a team with members from different campuses provided it has been verified by the RMOC. Teams must obtain authorization from their university or college to participate in the competition and submit the proof to the registration system. Refer to the registration system for the authorization letter template. If a college or university has more than one team applying, priority for registration shall be given to the team that has received the authorized stamp of the college or university (campus). The applicant must ensure that its registration information is complete and accurate, and that it will undertake the corresponding responsibilities. The applicant must bear all consequences caused by any missing or inaccurate information. For special circumstances, the applicant may contact the RMOC, which will handle the case based on actual circumstances. The RMOC reserves the right of final interpretation.

R4 Any two to five schools that do not have their own individual teams can form an intercollegiate team.

A. Before establishing an Intercollegiate Team, members must consider all their respective circumstances and communicate with each other thoroughly about team planning. Any operating and R&D costs, personnel arrangements or disputes arising therefrom must be handled by the Intercollegiate Team itself, for which the RMOC bears no responsibility.

B. After an Intercollegiate Team has been established, it can only participate in the RoboMaster 2020 Robotics Competition in the name of the Intercollegiate Team. If an Intercollegiate Team is disbanded after passing the registration review, the team will be deemed to have voluntarily dropped out of the competition.

C. The Intercollegiate Team's name should be "XXX Intercollegiate Team" instead of "XXX Team." An Intercollegiate Team is required to upload an Intercollegiate Team Declaration issued by its college or university to the registration system. Refer to the registration system for the template of the Intercollegiate Team Statement.

D. For an Intercollegiate Team consisting of Hong Kong, Macau, Taiwan and overseas team members, if more than 50% of the total number are regular members from Hong Kong, Macau, Taiwan and overseas, the Intercollegiate Team shall be categorized as a Hong Kong, Macau, Taiwan and Overseas team. Otherwise, the Intercollegiate Team shall be categorized as a mainland China team. Refer to "Table 3-3 Types of participating teams" for details of participation rights and entry procedures for different participating teams.

R5 Any team member is only allowed to participate in one team in the RoboMaster 2020 season.

Penalties:

1. The RMOC will reject the registration of any team that does not meet any of R1-R4. The registration can be resubmitted after the team has amended it to meet the requirements.
2. If any member of a team does not meet the identity requirements stated in R2, a Verbal Warning will be given to the team. If the Verbal Warning is ineffective, according to the seriousness of the situation, the highest penalty that can be given to the offending party is disqualification.
3. If R5 is not met, the highest penalty that can be given to the offender and offending team is disqualification.

3.4 Seeded Teams

3.4.1 China Regional Competition

The representative teams of the competition organizers are determined as seeded teams.

The RM2020 Robotics Competition sets the team ranking. The RMOC will calculate (up to the third decimal place) and rank the total points by a certain weight (see Table 3-6) based on the teams' results from previous RoboMaster competitions (see Table 3-4) and their total Technical Assessment scores for the current season (see Table 3-5). The total Technical Assessment score for the current season is derived from each round. Please refer to "Appendix 1 -

Technical Assessment".

The number of seeded teams in each division is determined by the actual number of entries in that division and the overall grouping. The list of seeded teams will consist of top-scoring teams in the particular division. During the Group Stage, each group should in principle only have one seeded team.

Table 3-4 Past Results and Points

Past Results	Points
Regional Competition Third Prize	1
Regional Competition Second Prize	2
National Third Prize	3
Final Tournament Top 32	4
Final Tournament Top 16	5
Final Tournament Top 8	6
Third Runner-Up	7
Second Runner-Up	8
First Runner-Up	9
Champion	10

Table 3-5 RM2020 Robotics Competition Total Technical Assessment Scores and Aggregate Points

Scores	Points
X < 45	0
45 ≤ X ≤ 100	(x-45) / 5.5

Table 3-6 Point Weight

Point Item	Weight
The scores from the previous year	50%
The scores from the previous two years	30%
Total Technical Assessment score for the current season	20%

For example, if a team won a spot on the Final Tournament Top 16 in the 2018 season and the Final Tournament Top 8 in the 2019 season, and its total Technical Assessment score for the current season is 85, then the team's total score for the 2020 season shall be 5.595.

3.4.2 Final Tournament

Please refer to the latest version of the RoboMaster 2020 Robotics Competition Participant Manual released by the RMOC.

3.5 Platform for Communication and Q&A

The RMOC provides many Q&A channels as shown below. For further contact information and Q&A rules of the RMOC, please send email to robomaster@dji.com.

Table 3-7 Platform for Communication and Q&A

Channel	Office Hours	Remarks
Forum: bbs.robomaster.com	Office hours: 10:30-12:30, 14:00-19:30 on weekdays	-
Email: robomaster@dji.com		-
Tel: 0755-36383255		-
QQ: 2355418059		When sending a friend request, please indicate "competition + college name + designation + name"
WeChat: rmsaiwu		

4. Award System

4.1 Final Tournament

The name of the award will be adjusted later, subject to the actual certificate issued.

The awards for the Final Tournament are as follows:

Table 4-1 Final Tournament Awards

Award	Ranking	Quantity	Prizes
National First Prize	Champion: 1st place	1	● Champion trophy ● Champion medal ● First Prize Achievement Certificate ● Cash prize of RMB 300,000 (pre-tax)
	First Runner-Up: 2nd place	1	● First runner-up trophy ● First Runner-Up Medal ● First Prize Achievement Certificate ● Cash prize of RMB 200,000 (pre-tax)
	Second Runner-Up: 3rd place	1	● Second runner-up trophy ● Second Runner-Up Medal ● First Prize Achievement Certificate ● Cash prize of RMB 100,000 (pre-tax)
	4th place	1	● First Prize Achievement Certificate ● Cash prize of RMB 50,000 (pre-tax)
	5th to 16th place	12	● First Prize Achievement Certificate ● Cash prize of RMB 30,000 (pre-tax)
National Second Prize	17th to 32th place	16	● Second Prize Achievement Certificate ● Cash prize of RMB 10,000 (pre-tax)
National Third Prize	Teams that won the Regional Competition First Prize but did not advance to the Final Tournament	Multiple	Third Prize Achievement Certificate

4.2 China Regional Competition

The awards for the Regional Competition are as follows:

Table 4-2 Regional Competition Awards

Award	Ranking	Quantity	Prizes
Regional Competition First Prize	Regional Competition Champion: Regional Competition 1st place	1 per division	● Champion trophy ● Regional Competition First Prize Achievement Certificate ● Cash prize of RMB 30,000 (pre-tax)
	Regional Competition First Runner-Up: Regional Competition 2nd place	1 per division	● First runner-up trophy ● Regional Competition First Prize Achievement Certificate ● Cash prize of RMB 30,000 (pre-tax)
	Regional Competition Second Runner-Up: Regional Competition 3rd place	1 per division	● Second runner-up trophy ● Regional Competition First Prize Achievement Certificate ● Cash prize of RMB 30,000 (pre-tax)
	Regional Competition 4th place	1 per division	● Regional Competition First Prize Achievement Certificate ● Cash prize of RMB 30,000 (pre-tax)
	Regional Competition 5th to 8th place	4 per division	● Regional Competition First Prize Achievement Certificate ● Cash prize of RMB 15,000 (pre-tax)
	A certain proportion of top-ranking teams in each division.	Multiple	● Regional Competition First Prize Achievement Certificate ● Cash prize of RMB 8,000 (pre-tax)

Award	Ranking	Quantity	Prizes
Regional Competition Second Prize	Participating teams that did not win the Regional Competition First Prize	Multiple	Regional Competition Second Prize Achievement Certificate

4.3 Open Source Award

- There is no fixed number of open source awards, and the RMOC will rank them according to the quality of the submitted projects. For example, if all open source projects are not particularly outstanding, the first prize of the Open Source Award shall have no winners; if there are multiple outstanding players, one winner of the first prize of multiple open source awards can be selected.
- Teams that won the Champion, First Runner-Up and Second Runner-Up in the Final Tournament must follow the compliant open-source robot types specified by the RMOC and Season Summary, otherwise the release of the Final Tournament cash prize will be affected. The RMOC will add more Open Source Awards depending on the actual open source situation.

The setup of the Open Source Award is as follows. For details on the award criteria, please refer to "Appendix 3 - Award Criteria".

Table 4-3 Open Source Awards

Award	Quantity	Prizes	Remarks
Open Source Grand Prize	Multiple	● Achievement certificates ● RMB 100,000 (pre-tax)	In the RM2020 season (September 20, 2019 to November 30, 2020), the core technologies operation management approaches were publicly shared in the RoboMaster BBS and on the official website to promote the development of the RoboMaster Robotics Competition and the culture and spirit of engineers
Open Source First Prize	Multiple	● Achievement certificates ● RMB 50,000 (pre-tax)	
Open Source Second Prize	Multiple	● Achievement certificates ● RMB 30,000 (pre-tax)	
Open Source Third Prize	Multiple	● Achievement certificates ● RMB 10,000 (pre-tax)	
Open Source Outstanding Prize	Multiple	● Achievement certificates ● Grade A: RMB 5,000 (pre-tax) ● Grade B: RMB 3,000 (pre-tax) ● Grade C: RMB 2,000 (pre-tax)	

4.4 Outstanding Contribution Awards

Outstanding Supervisor award recipient, Outstanding Captain award recipients, and Outstanding Project Manager award recipients are required to submit a personal work summary and experience description within one month after the award is announced and are obligated to participate in the sharing sessions and surveys conducted by the RMOC.

The setup of the Outstanding Contribution Awards is as follows. For details on the award criteria, please refer to“Appendix 3 - Award Criteria”.

Table 4-4 Outstanding Contribution Awards

Award	Quantity	Prizes
Outstanding Supervisor	No more than 8 people	● Achievement certificates ● Cash prize of RMB 8,000 (pre-tax)
Outstanding Captain	No more than 8 people	● Achievement certificates ● Cash prize of RMB 5,000 (pre-tax)
Outstanding Project Manager	No more than 8 people	● Achievement certificates ● Cash prize of RMB 5,000 (pre-tax)
Outstanding PR Team	No more than 8 teams	● Achievement certificates ● Cash prize of RMB 3,000 (pre-tax)
Outstanding Business Team	No more than 8 teams	● Achievement certificates ● Cash prize of RMB 3,000 (pre-tax)
Outstanding Advisor	No more than 8 people	● Achievement certificates ● Cash prize of RMB 3,000 (pre-tax)
Outstanding Volunteer	● No more than 10 people per each division ● No more than 15 people for the Final Tournament	Achievement certificates

4.5 Organization Awards

The setup of the Organization Awards is as follows. For details on the award criteria, please refer to “Appendix 3 - Award Criteria”.

Table 4-5 Organization Awards

Award	Quantity	Prizes
Rookie Award	No more than 5 people	● Achievement certificates ● Cash prize of RMB 5,000 (pre-tax)
Mainstay Award	No more than 5 people	● Achievement certificates ● Cash prize of RMB 5,000 (pre-tax)
Competitive Spirit Award	No more than 5 people	● Achievement certificates ● Cash prize of RMB 5,000 (pre-tax)
Cost Control Award	No more than 5 people	● Achievement certificates ● Cash prize of RMB 5,000 (pre-tax)
Top Tactician Award	No more than 5 people	● Achievement certificates ● Cash prize of RMB 5,000 (pre-tax)
Discipline Building Award	No more than 5 people	● Achievement certificates ● Cash prize of RMB 3,000 (pre-tax)
Rising Star Award	Multiple	● Achievement certificates ● RoboMaster Standard Robot worth RMB 25,999
Best Season Schedule Award	5	● Achievement certificate ● One set of Standard Robot Referee System worth RMB 5,033
Best Technical Proposal Award	5	Achievement certificates
Best Season Summary Award	● China Regional Competition: 5 ● Final Tournament: 5	Achievement certificates

4.6 Aesthetic Design Award

- The RMOC will rank the award according to the quality of the Regional Competition's team aesthetic design. For example, if all Regional Competition team Aesthetic Designs are not particularly outstanding, there shall be no winner in the Outstanding Team Aesthetic Design Award. If there are multiple outstanding entries, multiple winners of the Outstanding Team Aesthetic Design Award can be selected.
- Winners of the Best Team Aesthetic Design Award in the Regional Competition will share their design experience at the Young Engineers Conference.

In order to improve the distinctiveness and aesthetics of the robots' appearance, the RMOC encourages the teams to add industrial design elements when designing their robots' protective shells. The RMOC will reward robots that are aesthetically designed with prizes.

The Aesthetic Design Award is divided into the Individual Aesthetic Design Award and Team Aesthetic Design Award. Among them, the Individual Aesthetic Design Award will select one best-appearance robot for each unit; the Team Aesthetic Design Award will select the team with better overall appearance of all the robots.

The winners of the Regional Competition Aesthetic Design Award will be selected by the RMOC before the official commencement of the China Regional Competitions. The winners of the Final Tournament Aesthetic Design Award will be selected by the RMOC before the official commencement of the Final Tournament. For details on the award criteria, please refer to "Appendix 3 - Award Criteria".

Table 4-6 Regional Competition Individual Aesthetic Design Award

Participating Robot	Quantity	Prizes
Standard Robots	No more than 3 per division	● Achievement certificates ● Cash prize of RMB 1,000 (pre-tax)
Engineer Robots	No more than 3 per division	● Achievement certificates ● Cash prize of RMB 1,000 (pre-tax)
Hero	No more than 3 per division	● Achievement certificates ● Cash prize of RMB 1,000 (pre-tax)
Aerial Robot	No more than 3 per division	● Achievement certificates ● Cash prize of RMB 1,000 (pre-tax)
Sentry	No more than 3 per division	● Achievement certificates

Participating Robot	Quantity	Prizes
		● Cash prize of RMB 1,000 (pre-tax)

Table 4-7 Regional Competition Team Aesthetic Design Award

Award	Quantity	Prizes
Best Team Aesthetic Design Award	1award for every division	● Achievement certificates ● Cash prize of RMB 2,000 (pre-tax)
Outstanding Team Aesthetic Design Award	No more than 8 per division	● Achievement certificates ● Cash prize of RMB 1,000 (pre-tax)

Table 4-8 Regional Competition Individual Aesthetic Design Award

Participating Robot	Quantity	Prizes
Standard Robots	No more than 3	● Achievement certificates ● Cash prize of RMB 2,000 (pre-tax)
Engineer Robots	No more than 3	● Achievement certificates ● Cash prize of RMB 2,000 (pre-tax)
Hero	No more than 3	● Achievement certificates ● Cash prize of RMB 2,000 (pre-tax)
Aerial Robot	No more than 3	● Achievement certificates ● Cash prize of RMB 2,000 (pre-tax)
Sentry	No more than 3	● Achievement certificates ● Cash prize of RMB 2,000 (pre-tax)

Table 4-9 Final Tournament Team Aesthetic Design Award

Participating Robot	Quantity	Prizes
First Prize	No more than 2robots	● Achievement certificates

		● Cash prize of RMB 3,000 (pre-tax)
Second Prize	No more than 5robots	● Achievement certificates ● Cash prize of RMB 2,000 (pre-tax)
Third Prize	No more than 10robots	● Achievement certificates ● Cash prize of RMB 1,000 (pre-tax)

4.7 Robot Combat Awards

The number of awards will be based on the selection criteria and the number of robots. For details on the award criteria, please refer to “Appendix 3 - Award Criteria”.

Table 4-10 Robot Combat Awards

Robot Type	Award	Quantity (number)	Prizes
Standard Robots	First Prize	Multiple	Achievement certificates
	Second Prize	Multiple	Achievement certificates
	Third Prize	Multiple	Achievement certificates
Engineer Robots	First Prize	Multiple	Achievement certificates
	Second Prize	Multiple	Achievement certificates
	Third Prize	Multiple	Achievement certificates
Hero	First Prize	Multiple	Achievement certificates
	Second Prize	Multiple	Achievement certificates
	Third Prize	Multiple	Achievement certificates
Aerial Robot	First Prize	Multiple	Achievement certificates
	Second Prize	Multiple	Achievement certificates
	Third Prize	Multiple	Achievement certificates
Sentry	First Prize	Multiple	Achievement certificates
	Second Prize	Multiple	Achievement certificates
	Third Prize	Multiple	Achievement certificates

Robot Type	Award	Quantity (number)	Prizes
Dart System	First Prize	Multiple	Achievement certificates
	Second Prize	Multiple	Achievement certificates
	Third Prize	Multiple	Achievement certificates

4.8 Best Creativity Award

The setup of the Best Creativity Award is as follows. For details on the award criteria, please refer to “Appendix 3 - Award Criteria”.

Table 4-11 Best Creativity Award

Award	Quantity	Prizes
Best Creativity Award	No more than 5	Achievement certificates

Appendix 1 Technical Assessment

All teams that compete in the RM2020 Robotics Competition must complete the Technical Assessment in accordance with the requirements of the RMOC and within the time specified. For the schedule of the RM2020 Robotics Competition Technical Assessment, please refer to “2 - Season Schedule”.

The purpose of the Technical Assessment is to demonstrate the technical skills of a team, better prepare the team for the competition and facilitate its future development, improve the comprehensive competence of team members in demand analysis, budgeting, data analysis and report preparation. The total score of Technical Assessment will be one of the bases for the arrangements of divisions and the setup of seeded teams in the Regional Competitions. It is recommended that participating teams take the Technical Assessment seriously, be actively engaged in the process and fully demonstrate the team's strength.

The Technical Assessment must be conducted according to the set requirements. The following shows the relation between scores and grades:

Appendix Table 1 Rating System

Score Range	Level
90 ≤ X ≤ 100	A
75 ≤ X < 90	B
60 ≤ X < 75	C
45 ≤ X < 60	D
30 ≤ X < 45	E
0 ≤ X < 30	F

Technical Assessment Tasks and Requirements

The latest tasks and requirements relating to each section of the Technical Assessment shall be based on announcements on the official website.

There are a total of nine Technical Assessment components in the RM2020 Robotics Competition: Rules Exam, Season Schedule, Mid-Term Robot Assessment Video, Referee System Exam, Technical Proposal, Final Robot Assessment Video, Pilot Theory Exam, Pilot Video Assessment, and Team Season Summary. Except for the Rules Exam and Referee System Exam and Pilot Theory Exam, teams only have one submission opportunity in the other sections.

The Technical Assessment score shall be the weighted average score of all sections (Pilot Theory Exam and Pilot Video Assessment are excluded from the total Technical Assessment score). The weight of each section is as shown below:

Appendix Table 2 Weight of Each Section of Technical Assessment

Technical Assessment Task	Team Category	Weight
Rules Exam	Mainland China	10%
	Hong Kong, Macau, Taiwan and overseas	12.5%
Season Schedule	Mainland China	10%
	Hong Kong, Macau, Taiwan and overseas	12.5%
Mid-Term Robot Assessment Video	Mainland China	20%
	Hong Kong, Macau, Taiwan and overseas	-
Referee System Exam	Mainland China	10%
	Hong Kong, Macau, Taiwan and overseas	12.5%
Technical Proposal	Mainland China	30%
	Hong Kong, Macau, Taiwan and overseas	37.5%
Final Robot Assessment Video	Mainland China	20%
	Hong Kong, Macau, Taiwan and overseas	25%

1. Rules Exam

- Exam Content: RoboMaster 2020 Robotics Competition Rules Manual and relevant competition rules
- Exam Format: 50 multiple-choice questions (generated randomly). The full mark is 100, with 2 marks for each question
- Passing Requirement: 90 or above
- Questions can be answered more than once within the effective time period, and the minimum interval between the starting time of any two attempts must be 40 minutes.
- The assessment results shall be based on the highest score achieved during the assessment period.

2. Season Schedule

- Submission Format: PDF document
- Documentary requirements:
  - Word Format: Use Songti (Chinese) or Times New Roman (English) font in 4-point size, with 1.5 lines spacing
  - File Size: No limit on the length, including diagrams (flowcharts, tables, etc.)
  - File Name: College Name + Team Name + Season Schedule
- Passing Requirement: Grade D or above
- Assessment Requirement: There are multiple modules and each has its own requirements. The details and requirements for the modules are as follows:

Appendix Table 3 Season Schedule Assessment Requirements

Module	Content	Scoring Criteria	Score
Competition Culture	RM competition details and culture, and core team culture	Clarity and accuracy	5
Project Analysis	Interpretation of new season rules	Interpret the rules correctly and in depth	25
	Requirement analysis and design idea of each type of robot	Clear requirement analysis	
	Other content and schedule (e.g. Battlefield, debugging tool) that are required to complete	Plan comprehensively	
Team Structure	Team's management structure	Reasonable structure	15
	Recruitment of Team Members	Reasonable division of labor and combination of key and reserve team members	
	Responsibilities of each role	Clear duties for each role	
	Building Team Spirit and Team Legacy Succession	Reasonable planning and strong executability	
Team Collaboration	Open source materials, material manuals and organization of relevant documents in the forum	Abundant and practical information	20
	Use planning of code, drawings and document collaboration tool	Collaborative solution is practical	

Module	Content	Scoring Criteria	Score
	Use planning of R&D management tool (ONES AI or other tools)	Reasonable planning	
	Training and self-learning processes	Reasonable study plan	
Auditing System	Task proposal, allocation, verification, evaluation and progress tracking, with a results acceptance system	Processes are reasonable and easily executable, with each section having clear output targets.	10
Resource Management	Evaluation of resources available (funding, materials, and manufacturing resources)	Thoroughness of investigation	15
	Arrangement of manpower and schedule	Reasonable planning	
	Robot funds, lab management budget	Reasonable and comprehensive budget planning	
Promotion Campaign/Business Plan	● Planning for all resources and materials required throughout the season ● Planning for sponsorship and publicity required	Clear and reasonable	10
Total			100

3. Mid-Term Robot Assessment Video

- Submission Format: Video + BOM Form
- Basic Requirement:
  - Demonstrate the basic functions of Standard, Hero and Engineer Robots and submit the BOM Form of the corresponding robot
  - Extra points will be given for demonstration of other functions of the above robots or the functions of other robots.
- Video requirements:
  - Information boards or captions must be shown at the beginning of the video, to include the following details: college name and date and location of recording
  - Every process must include captions or information boards, which must provide clear and accurate explanations for each process shown in the video
  - Ensure only relevant content is shown and the video is tightly edited lasting no longer than three minutes.

- The video's resolution must be higher than 720p.

- Submission Method:
  - Upload the video to Youku/YouTube and set an access password
  - Submit the video URL, access password and BOM Form through the registration system
- Passing Requirement: The teams will be ranked according to their total marks for the video and BOM Form, and will pass the assessment according to a certain percentage
- Assessment Requirement: Different requirements and scoring standards apply to different items as set out in the table below:

Appendix Table 4 Assessment Requirements for Mid-Term and Final Robot Assessment Videos

Parameter	Content might be included	Score	Basic Functions
Standard Robots	Complete movement: panning, spinning	5	● Able to move normally without exceeding the power limit ● Able to attack ● Meets the installation specifications for the Referee System
	Climbing a 15° slope and displaying power consumption data in real time	5	
	Launching 50 rounds of projectiles continuously from the magazine to attack a target with the size of a Large Armor Module at 5 meters away, and calculating the hit rate	10	
	Automatically recognizing and following an armor module	5	
	Attack Power Rune	5	
	Steadily passing over a Launch Ramp	5	
	Demonstrating the installation of the Referee System (or the installation spot reserved for the Referee System)	5	
Hero	Complete movement: panning, spinning	5	
	Climbing a 15° slope and displaying power consumption data in real time	5	

Parameter	Content might be included	Score	Basic Functions
	Launching 20 rounds of 42mm projectiles or 50 rounds of 17mm projectiles continuously from the magazine to attack a target with the size of a Large Armor Module at 5 meters away, and calculating the hit rate	10	
	Automatically recognizing and following an armor module	5	
	Demonstrating the installation of the Referee System (or the installation spot reserved for the Referee System)	5	
Engineer Robots	Complete movement:	5	● Able to move normally ● Able to obtain projectiles ● Meets the installation specifications for the Referee System
	Grabbing a Projectile Container to obtain projectiles	10	
	Handing over and receiving projectiles with Standard and Hero	5	
	Reviving Standard and Hero with a RFID Card	5	
	Rescuing Standard and Hero	5	
	Launching 50 rounds of projectiles continuously from the magazine	5	
	Demonstrating the installation of the Referee System (or the installation spot reserved for the Referee System)	5	
Sentry	Moving on a Sentry Rail	5	● Able to move normally without exceeding the power limit ● Able to attack ● Meets the installation specifications for the Referee System
	Launching 50 rounds of projectiles continuously from the magazine to attack a target with the size of a Large Armor Module at 5 meters away, and calculating the hit rate	10	
	Automatically recognizing and following an armor module	5	

Parameter	Content might be included	Score	Basic Functions
	Mounting the robot onto and removing it from the Sentry Rail	5	
	Demonstrating the installation of the Referee System (or the installation spot reserved for the Referee System)	5	
Aerial Robot	Displaying a fully enclosed propeller guard	5	● Has a fully enclosed propeller guard ● Able to move normally without exceeding the power limit ● Meets the installation specifications for the Referee System
	Complete movement: take-off, movement, hovering, landing	10	
	Launching 50 rounds of projectiles continuously in flight to attack a target with the size of a Large Armor Module at 5 meters away, and calculating the hit rate	5	
	Demonstrating the installation of the Referee System (or the installation spot reserved for the Referee System)	5	
Dart System	Adjusting the angles of pitch and yaw axes of the dart launcher	5	● Able to launch darts normally ● Meets the installation specifications for the Referee System
	Loading and launching darts	5	
	Launching darts to attack a target at an outpost's distance	10	
	Demonstrating the installation of the Referee System (or the installation spot reserved for the Referee System)	5	
Miscellaneous	Demonstration of other special functions	-	Extra points will be given based on the actual effects.

Appendix Table 5 BOM Report Requirements

Scoring Criteria	Score
Clear classification of modules	5

Scoring Criteria	Score
Information is true and complete	10
Intuitive presentation of data	5

4. Referee System Exam

- Exam Format: Multiple-choice questions randomly drawn from the question bank, with a full mark of 100.
- Passing Requirement: 90 or above
- If the passing requirement is not met within the effective time period, the questions can be answered repeatedly. Once the requirement is met, the candidate will immediately pass the review. The interval between the starting time of any two attempts must be above 20 minutes. The questions are required to be completed by multiple members of a team simultaneously.
- The result of the exam is based on the highest score made within the effective exam period

5. Technical Proposal

- Submission Format: PDF document
- Documentary requirements:
  - Word Format: Use Songti (Chinese) or Times New Roman (English) font in 4-point size, with 1.5 lines spacing
  - File Size: Max. 8,000 words including diagrams (flowcharts, tables, etc.)
  - File Name: University Name + Team Name + Technical Proposal.
- Passing Requirement: Grade D or above
- Assessment Requirement: There are multiple modules and each has its own requirements. The details and requirements for the modules are as follows:

Appendix Table 6 Technical Proposal Assessment Requirements

Module	Content	Scoring Criteria	Score
Setting Requirements	Set task priorities, key technical indicators and technical points for winning the competition according to the rules and your own conditions.	● Clear and reasonable technical requirements and specifications ● Analyze target performance and calculate theory limit	15

Module	Content	Scoring Criteria	Score
Structural Design	● Technical Proposal of some assembly or component (can refer to the below table) ● Design for manufacturability (DFM) Analysis	Whether requirements analyses, working condition analyses, material use, component selection, and processing methods are reasonable.	25
Programming Logic	Set out the programming logic diagram for one of the robots.	Logic accuracy and modularity	10
Scientific Design Method	Analyze cases of theoretical analysis, software simulation, experimental tests and practical improvements applied on a robot.	Whether the process of theory guiding practice, experiment and data analysis, and iterative design has been reflected	20
Innovation	Analyze a typical case of innovative technology applied on a robot.	New innovations and creativity that lead to better results.	10
Cost Control	Analyze the sections and parts that have adopted measures to reduce cost	Whether the cost control solution is reasonable and takes effect	10
Industrial Design	● Industrial design proposal ● Typical user-robot interaction case	● Whether the design idea is clear and the appearance is aesthetic and practical ● Whether the user-robot interaction is optimized, whether the overall configuration is reasonable, and its maintainability.	10
Total			100

- Based on a certain functional component, the structural design analysis can focus on the following aspects:

Appendix Table 7 Structural Design Reference

Parameter	Content
Requirements Analysis	Mechanism functions, performance indicators and their analyses under different working conditions, and sensor and actuator selection parameters.
Design Drawings	Engineering drawings complete with STEP files, using one component as an example.

Parameter	Content
Materials and Processing	Listing the material selection for components, processing methods, processing costs, and cost reduction plans for different batches.
Finite Element Analysis	An FEM report for a certain component that includes: loading condition, meshing, results analysis, optimization

6. Final Robot Assessment Video

- Submission Format: Video + Cost Report
- Basic Requirement:
  - Display the basic functions of Standard, Hero and Engineer, equipped with protective shells and wires that are unexposed.
  - Extra points will be given for demonstration of other functions of the above robots or the functions of other robots.
  - Submit the cost report of the whole team

Appendix Table 8 Cost Report Requirement

Module	Content	Scoring Criteria	Score
Cost Overview	Cost overview, budget, used budget, and subsequent budget plans for the current season	Description	10
Cost Analysis	● Fill in the expenses and labor cost reports according to the items and categories. ● Analyzes the reasons and solutions for any cost irregularities.	● Data is detailed and truthful. ● In-depth analysis and reasonable solution given.	20
Conclusion and Planning	● Analyzes cases relating to cost control and management, and concludes the experience. ● Describes the progress of capability building and future plans for cost control.	● The conclusion is comprehensive and in-depth. ● Good capability building progress, with reasonable planning.	10

Module	Content	Scoring Criteria	Score
Attachment	Improve the cost BOM that has been submitted in the Mid-term Robot Assessment Video	● Clear classification of modules ● Information is true and complete ● Intuitive presentation of data	10

- Video requirements:
  - Information boards or captions must be shown at the beginning of the video, to include the following details: college name and date and location of recording
  - Every process must include captions or information boards, which must provide clear and accurate explanations for each process shown in the video
  - Ensure only relevant content is shown and the video is tightly edited lasting no longer than five minutes.
  - The video's resolution must be higher than 720p.
- Submission Method:
  - Upload the video to Youku/YouTube and set an access password
  - Submit the video URL, access password and cost report to the registration system.
- Passing Requirement: The teams will be ranked according to their total marks for the video and Cost Report, and will pass the assessment according to a certain percentage
- Assessment Requirement: Different items correspond to different requirements and scores. Please refer to "Appendix Table 4 - Assessment Requirements for Mid-Term and Final Robot Assessment Videos" for the specific assessment table.

7. Pilot Theory Exam

- Exam Format: Multiple-choice questions randomly drawn from the question bank, with a full mark of 100.
- Passing Requirement: 90 or above

If the passing requirement is not met within the effective time period, the questions can be answered repeatedly. Once the requirement is met, the candidate will immediately pass the review.

8. Pilot Video Assessment

- Number of people assessed: Not more than 3 persons from each team can participate in the assessment.
- Submission Format: Each pilot shall provide a video individually.

- Basic Requirement:
  - The pilot's demonstration video for operating the Aerial Robot. The drone must not rely on GPS signals (tin foil may be used to block GPS signals or the ATTI mode may be used).
  - The Aerial Robot's wheelbase must not be less than 650 mm.
- Video requirements:
  - No editing is allowed for all assessment videos.
  - Every process must include captions or information boards, which must provide clear and accurate explanations for each process shown in the video.
  - Ensure only relevant content is shown and the video is tightly edited lasting no longer than three minutes.
  - The video's resolution must be higher than 720p.
  - Each video must start by showing a picture of the assessed pilot holding his or her personal identity card (the identity card number may be concealed). Teams from Hong Kong, Macau, Taiwan and overseas should use their permits for entry into mainland China.
  - Two videos are required to be submitted for each assessment. One video should first capture the face of the pilot, then pan slowly towards the back and of the pilot and the Aerial Robot (the pilot must remain in the frame at all times), and then begin with the assessment. Another person should be facing the pilot directly and filming the Aerial Robot and the operator. The videos should be presented in a picture-in-picture (PiP) format, with their synchronicity controlled within a 5-second range.
- Submission Method:
  - Upload the video to Youku/YouTube and set an access password
  - Submit the video URL and password to the registration system.
- Assessment components: as shown in the table below.

Appendix Table 9 Pilot Video Assessment Components

Parameter	Display content	Score	Basic Functions
Basic operating and positioning capabilities	The Aerial Robot takes off from the ground and hovers for 20s, during which the Aerial Robot drifts vertically and horizontally within 0.5 of the propeller blade range.	10	Able to operate the Aerial Robot in a stable and safe manner. ⚠ If any serious error occurs during the assessment (such as performing a wrong posture correction after the Aerial

Parameter	Display content	Score	Basic Functions
	The Aerial Robot flies to a target located 5m away and hovers there for 20s, during which the Aerial Robot drifts vertically and horizontally within 0.5 of the propeller blade range.	10	Robot strays from the flight path when flying a horizontal 8-shaped route), the pilot shall be deemed as having failed the assessment.
	The Aerial Robot performs a 360-degree rotation at a target located 5m away, and drifts vertically and horizontally within 0.5 of the propeller blade range	20	
	The Aerial Robot lands on its take-off site.	10	
Movement control capability	The Aerial Robot flies a horizontal 8-shaped route at a 2m altitude. The Aerial Robot's forward movement direction (i.e., the X-axis for movement control) is constantly on a tangent with the 8-shaped flight path.	50	

9. Team Season Summary

- Submission Format: PDF document
- Documentary requirements:
  - Word Format: Use Songti (Chinese) or Times New Roman (English) font in 4-point size, with 1.5 lines spacing
  - File Size: Max. 5,000 words
  - File Name: College Name + Team Name + Season Summary
- Passing Requirement: Grade D or above
- Assessment Requirement: There are multiple modules and each has its own requirements. The details and requirements for the modules are as follows:

Appendix Table 10 Season Summary Assessment Requirement

Module	Content	Scoring Criteria	Score
Academic Innovation	All competition-related patents, academic articles, and open-source documents	The quality and quantity of patents, articles and open-source documents	30
Competition Analysis	Analyze problems that arise in each match, and find the cause and a solution	Analysis is comprehensive, data is adequate, and the summary is helpful for the team's growth.	15
Team Development	Summary of the problems and challenges encountered throughout the season, plans to improve and develop the team		30
R&D Management	The input and actual output of R&D management, summary of strengths and weaknesses		25
Total			100

Appendix 2 Product Discount Quantity

Appendix Table 11 Quantity of Products with Discounts Corresponding to Each Technical Assessment Section

Name	Rules Exam	Season Schedule	Mid-term Robot Assessment Video	Final Robot Assessment Video
RoboMaster Development Board Type A	3	3	2	1
RoboMaster Development Board Type B	3	3	2	1
RoboMaster Development Board Type C	8	3	2	1
RoboMaster Development Board Cables Package	1	1	1	1
RoboMaster GM6020 Brushless DC Motor	4	6	4	2
RoboMaster M3508 P19 Brushless DC Gear Motor	8	12	8	4
RoboMaster M3508 Accessories Package	2	2	2	1
RoboMaster C620 Brushless DC Motor Speed Controller	8	12	8	4
RoboMaster M2006 P36 Brushless DC Gear Motor	4	4	2	1
RoboMaster C610 Brushless DC Motor Speed Controller	4	4	2	1
RoboMaster SNAIL 2305 Brushless DC Motor	4	8	4	2
RoboMaster C615 Brushless DC Motor Speed Controller	4	8	4	2
Matrice 600 Part46 - Intelligent Battery TB47S	8	4	2	1
Manifold 2-G 128G (CN)	3	3	2	1

Appendix 3 Award Criteria

Individual winners or team winners of each award are required to submit experience sharing for the award.

A.Open Source Award

a) Selection Criteria

The RMOC will score the open source materials according to the following two criteria: basic format and content. The specific details and scores of each criterion used will be announced separately.

- (95, 100]: Open Source Grand Prize
- (90, 95]: Open Source First Prize
- (85, 90]: Open Source Second Prize
- (80, 85]: Open Source Third Prize
- (70, 80]: Open Source Outstanding Prize

b) Application Process

To be determined.

B.Outstanding Contribution Awards

Appendix Table 12- Outstanding Contribution Awards Selection Criteria

Award	Selection Criteria	Selection Method
Outstanding Supervisor	● The team displays a good competitive spirit, with no serious violations of competition rules and proper standards of conduct. ● Guides the student team and instills team culture, displays a high sense of responsibility, is caring towards each team member, cares about the growth and development of students in the field of competition, and is deeply revered by said students	1. Participants shall submit the "RM2020 Outstanding Supervisor Application Form" to apply 2. After the participants apply, the RMOC selects the best according to the “application form”

Award	Selection Criteria	Selection Method
Outstanding Captain	● The team displays a good competitive spirit, with no serious violations of competition rules and proper standards of conduct. ● The Captain's team actively cooperates with the RMOC and is willing to share knowledge, create a good communication atmosphere in the team circle; ensure the official information access rate within the team; completes the participation process on time ● The team is categorized according to its performance level, and it has maintained or improved its performance level from the previous competition season.	● Participates in Captains' discussions, where the views shared by the Captain in the discussions are endorsed by the majority. Extra points are given to Captains receiving the top three highest votes after each discussion. ● Performance level: 1. Regional Competition Third Prize 2. Regional Competition Second Prize/Final Tournament Third Prize 3. Final Tournament Second Prize 4. Final Tournament First Prize 5. Final Tournament Champion, First Runner-Up, Second Runner-Up
Outstanding Project Manager	● The team displays a good competitive spirit, with no serious violations of competition rules and proper standards of conduct. ● Employs good project management methods, controls the overall progress of the project, comprehensively considers R&D costs, work safety, etc., and comprehensively manages the whole work.	● Participates in Captains' discussions, where the views shared by the Captain in the discussions are endorsed by the majority. Extra points are given to Captains receiving the top three highest votes after each discussion. ● Project management assessment reports are submitted on time, with active organization of team management tasks, contributing to an increase in the team's management standards. ● Selected according to the Project Manager's assessment score ranking

Award	Selection Criteria	Selection Method
Outstanding PR Team	● The team displays a good competitive spirit, with no serious violations of competition rules and proper standards of conduct. ● Submits publicity reports on time, active in planning the team's PR work to increase the team's influence.	Selected according to the PR team's assessment score ranking and comprehensive performance evaluation
Outstanding Business Team	● The team displays a good competitive spirit, with no serious violations of competition rules and proper standards of conduct. ● Actively plans the investment promotion within the team, integrates the internal and external resources of the team, locates investment partners through various channels in order to provide technical support and fund sponsorship for the team.	Selected according to the Business team's assessment score ranking
Outstanding Advisor	● The team displays a good competitive spirit, with no serious violations of competition rules and proper standards of conduct. ● In the aspects of technological innovation, tactical design, team management, team building, etc., the advisor provides constructive and practical suggestions to the team, and provides guidance and support to the team in strategy, technology and management.	1. Participants shall submit the "RM2020 Outstanding Advisor Application Form" to apply 2. After the participants apply, the RMOC selects the best according to the "application form"

Award	Selection Criteria	Selection Method
Outstanding Volunteer	● Participates in RM2020 volunteer work, understands, respects, and loves the RoboMaster competition, and actively cooperates with the work of the RMOC ● The volunteer is diligent and pragmatic, displays teamwork spirit, and shows outstanding performance in volunteer work ● Displays no dereliction of duty, misconduct, or major work mistakes	The staff of the RMOC make nominations and select winning candidates based on the nomination materials.

C. Organization Award

Appendix Table 13 Organization Award Selection Criteria

Award	Selection Criteria	Selection Method
Rookie Award	● The team has qualified for the Regional Competitions for three consecutive years (including the current season) ● Never entered the Final Tournament Top 8 in two years ● The current competition performance is upgraded to one level higher than the previous one's	● The team with more overall progress will be given priority for the award ● Performance level: 1. Regional Competition Third Prize 2. Regional Competition Second Prize/Final Tournament Third Prize 3. Final Tournament Second Prize 4. Final Tournament First Prize 5. Final Tournament Champion, First Runner-Up, Second Runner-Up

Award	Selection Criteria	Selection Method
Mainstay Award	Participated for three consecutive years (including the current season), and won the 8th-32nd place in the Final Tournament for three years	Teams with a longer participation period and teams with better scores will be given priority
Competitive Spirit Award	● The team displays a good competitive spirit, with no serious violations of competition rules and proper standards of conduct. ● The team is active in forums, WeChat groups, etc., and interacts well with the RMOC, volunteers, and other teams ● The team is helpful, active and an open source of information for others, enthusiastically sharing their experiences and willing to provide resources to other teams	● Selections to be made according to the feedback given by the staff of the RMOC, other teams, and volunteers of the competition. ● Teams with more positive feedback from the RMOC staff, other teams, and event volunteers will be given priority
Cost Control Award	● Cost data is clear and complete and can reflect the result of cost overview or cost control ● High executability of the cost control scheme and methods. ● During the match preparation stage, actively open source the effective and replicable cost control method and case	● Score of cost relevant content in each Technical Assessment section ● The effectiveness of open sourcing cost control method (the participation of the selection of Cost Control Award need to be illustrated separately when applying for Open Source Award)

Award	Selection Criteria	Selection Method
Top Tactician Award	● The team displays a good competitive spirit, with no serious violations of competition rules and proper standards of conduct. ● The team achieves good team results via tactical operations ● The team's tactics are instructive to other participating teams, having a positive impact on the overall performance of the competition	● The team submits assessment material, like tactics development process, performing action related to tactics (Operator training), etc. ● The RMOC selects the best according to competition performance and materials
Discipline Building Award	● The team displays a good competitive spirit, with no serious violations of competition rules and proper standards of conduct. ● The team or its lab has extensive robotics-related competition experience. ● The team or its lab has extensive patents, publications or scientific research records in the field of robotics. ● The team or its lab is an abundant source of information on entrepreneurship, employment and further education.	● The selection will be made by the RMOC based on the various team information collected relating to each aspect. ● Preference is given to teams with abundant information and that perform well in multiple aspects.

Award	Selection Criteria	Selection Method
	● The team's supervisor establishes relevant RoboMaster courses or incorporates subject knowledge from RoboMaster into the curriculum, or creates a RoboMaster research lab, etc.	
Rising Star Award	● Any team from mainland China or from Hong Kong, Macau, Taiwan and Overseas that has not qualified for the last two RoboMaster Robotics Competitions (RM2018, RM2019). ● The team has not for the past two seasons (RM2018, RM2019) received any free material supply provided specifically for teams that are first-time participants in the competition. ● The team has passed the Rules Exam within the specified time period. ● The team agrees with and accepts the relevant terms of the free material supply contract (for details, please refer to the "RoboMaster 2020 Robotics Competition Free Material Supply Contract")	Selection is made based on registration information.

Award	Selection Criteria	Selection Method
Best Season Schedule Award	Make the Season Schedule of the current season open source, and the score of this section in Technical Assessment ranks in top 5 among all open source teams	The RMOC will collect the open source materials via robomaster@dji.com and make the selection according to rankings *Open source post title: [Season Schedule + College Name Team Name + RM2020 Season Schedule Open Source]
Best Technical Proposal Award	Make the Season Schedule of the current season open source, and the score of this section in Technical Assessment ranks in top 5 among all open source teams	The RMOC will collect the open source materials via robomaster@dji.com and make the selection according to rankings *Open source post title: [Technical Proposal + College Name Team Name + RM2020 Technical Proposal Open Source]
Best Season Summary Award	Make the Season Schedule of the current season open source, and the score of this section in Technical Assessment ranks in top 5 among all open source teams	The RMOC will collect the open source materials via robomaster@dji.com and make the selection according to rankings *Open source post title: [Season Summary + College Name Team Name + RM2020 Regional Competition/Final Tournament Season Summary Open Source]

D.Aesthetic Design Award

a) Selection Criteria

Appendix Table 14- Individual Aesthetic Design Award Selection Criteria

Criteria	Weight	Instructions		
		4-5 points	**2-3 points**	**1 point**
Completeness	30%	Serious attitude, compliance with rules, orderly components, stylish exterior, rich decorative details.	Serious attitude, compliance with rules, decorative exterior.	Casual attitude or non-compliance with rules.

Criteria	Weight	Instructions		
		4-5 points	2-3 points	1 point
Aesthetic	30%	An overall aesthetic design, with a reproducible design language	An overall design that is relatively aesthetic	Not aesthetic
Distinctiveness	20%	Distinctive aesthetic features	Notable aesthetic features	Common aesthetic features
Innovation	20%	New materials, processing methods, styles and design language are used, with outstanding effects	Try to adopt new materials, new processes, new shapes, novel design languages, etc.	Follows the prescribed order, with no innovative aspects

The selection criteria for the Regional Competition Team Aesthetic Design Award are as follows:

Appendix Table 15 Team Aesthetic Design Award Selection Criteria

Criteria	Weight	Instructions		
		4-5 points	2-3 points	1 point
Completeness	30%	Serious attitude, compliance with rules, aesthetic design present on all the team's robots; orderly components, stylish exterior, rich decorative details.	Serious attitude, compliance with rules, aesthetic design present on all the team's robots.	Casual attitude, non-compliance with rules, or aesthetic design present only on some individual robots.
Aesthetics	20%	An overall aesthetic team design, with a reproducible design language	An overall team design that is relatively aesthetic	Not aesthetic
Distinctiveness	20%	Distinctive team aesthetic features	Notable team aesthetic features	Common team aesthetic features
Degree of Coordination	20%	The color, material, style and design language of the team's robots are coordinated and the sense of unity is strong.	The team's robots are relatively coordinated in appearance, uniform in style, and display a certain sense of unity	The style is not uniform

Criteria	Weight	Instructions		
		4-5 points	2-3 points	1 point
Innovation	10%	New materials, new processes, new shapes, novel design languages, etc., with excellent results	Try to adopt new materials, new processes, new shapes, novel design languages, etc.	Follows the prescribed order, with no innovative aspects

Solidity is added as a selection criterion for the Final Tournament Team Aesthetic Design Award, as a coefficient multiplied by the total score. The specific standards and score descriptions are as below:

Appendix Table 16- Firmness Criteria and Score Instructions

Coefficient	Criteria
50%	● Stability: The robot's external features and protective shell are loose and not fixed in place securely, resulting in deformation and pieces falling off. For example: It is bonded using unfirm tapes and can be easily taken off. ● Material strength: The protective shell is made of materials that are fragile and easily broken, and is easily damaged in combat. For example: Made of acrylic sheet, glass and other materials, easily broken and damaged during matches.
75%	● Stability: The robot's exterior and protective shell have a certain degree of stability, and are bonded using materials with a certain degree of strength. For example: Use a double-sided adhesive, foam adhesive or other adhesive to stabilize the fixation adhesion. ● Material strength: The materials used for the protective shell are not easily damaged, but the overall structural strength is low, and damage may occur during collisions, etc. For example: With PC board splicing, the connections are easily broken and fractured.
100%	● Stability: The robot's exterior and protective shell have good stability, and are bonded using materials with high strength or joined using soft materials. For example: Use materials with firm adhesion, such as fiber-reinforced tape, a magic buckle, etc., to stabilize the adhesion. ● Material strength: The materials used for the protective shell are not easily damaged, the overall structural strength is good, and damage does not occur easily during collisions, etc. For example: Made with PC bending, but the structural strength of the overall armor is relatively poor.

125%	● Stability: The robot's exterior and protective shell have good stability. They are rigidly connected by screws or quick-disassembly structures, are firmly fixed and can form part of the anti-collision structure of the robot. For example: The outer frame is protected by a metallic materials and is firmly fixed. ● Material strength: The materials used for the protective shell are difficult to break, the overall structural strength is high. Consideration is given to the design and connections of the detailed sections such as the joints, and protection and buffers are provided for the robot during collisions in the Battlefield. For example: Connection points on the PC armor are bonded using fiber tape, with a foamed lining as a buffer.

b) Selection Process

Teams that wish to participate in the Aesthetic Design Award are required to adhere to the following process:

China Regional Competition

1. The participating team members shall submit the registration materials for award consideration. The registration materials are: A photo of the participating team robots (including all participating robots) and an introductory text of less than 100 words.
2. The RMOC and participating teams shall vote for the winner.

Final Tournament

1. It is optional for the participating teams to sign up for the Design Awards.
2. Each participating team sends a representative to form a panel of judges with the RMOC.

Meetings will be held for the judging of the Aesthetic Design Award based on the status of participation, and each participating team shall transport their robots to the designated locations according to sequence.

The judging panel shall then score the robots of the participating teams.

E. Robot Combat Award

Selection is to be made according to the actual performance of each robot in the matches, according to specific data for ranking, and according to a specific percentage.

F. Best Creativity Award

Appendix Table 17-Best Creativity Award Selection Criteria

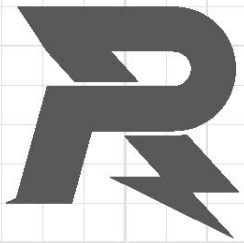
Criteria	Weight	Instructions		
		4-5 points	2-3 points	1 point
Innovation	50%	The structure is innovative, and it is manifested in solving similar tasks with new methods or solves unsolved tasks	Optimizes and improves upon existing mature solutions, displays certain innovation and improves work efficiency	It is on the straight and narrow, but displays no innovation
Practicality	30%	Practical and efficient, and the actual performance is ranked in the top 10% of similar robots in the current season's competition	It displays certain practicability and high efficiency. The actual performance is in the top 20% of similar robots in the current season's competition	Not practical, with low efficiency
Influence	20%	The team has a significant influence on other teams and is a reference standard followed by many.	The team has a certain level of influence on other teams, and is a reference standard with a certain value and significance.	Possesses no reference value

Appendix 4 Safety Instructions

Every team member participating in the RoboMaster 2020 must fully understand and accept that safety is the most important issue for the sustainable development of the RoboMaster Competition. In order to protect the rights and interests of all team members and the event organizers, and according to relevant laws and regulations, all team members who have registered for RM2020 will be deemed to have acknowledged and agreed to abide by the following safety terms:

1. All team members who have registered to take part in the RoboMaster 2020 Competition confirm that they possess the full capacity for civil conduct and can independently create and operate robots. All team members further confirm that, before using any products of the competition organizer SZ DJI Technology Co., Ltd., to create any robots, they will read in detail the RoboMaster 2020 Robotics Competition registration guide, competition regulations, and other important documents containing rules and regulations related to the competition.
2. During the competition, all participants should make sure that their actions including the creation, testing, and use of robots will not cause any injury or damage to his or her teammates, members of the opposing teams, staff, audience, equipment, or the competition venue.
3. All teams must ensure that the structural design of their robots will not hinder safety inspection during Pre-match Inspection, and agree to fully cooperate with the Pre-match Inspection carried out by RoboMaster's organizers.
4. All teams guarantee that they will not use any internal combustion engines, explosives, or high-pressure gas as working gas, or any dangerous materials.
5. During any stage of the R&D, preparation or competition period, all team members must be fully aware of any potential safety issues, and the team's Supervisor is responsible for instructing and supervising the team on safety issues.
6. All teams must guarantee the safety of all robots. This includes ensuring the projectile launchers installed on robots are safe, and that they will not cause any harm either directly or indirectly to any Operator, referee, staff member or audience member.
7. All teams will take sufficient and necessary safety measures during the R&D, training and competition periods regarding any hazardous situations that may occur. These include but are not limited to: preventing the control system from becoming unstable; anticipating every operation step prior to execution to avoid errors or collisions between team members or between robots and team members; prohibiting team members from engaging in solo training and making sure personnel are available as emergency responders to any situation; wearing goggles and helmets; applying the spotlight lock function and adding an emergency stop function other measures in a robot during debugging.

8. Teams will be held responsible for all accidents and losses resulting from the technical faults of robots, loss of control of UAVs or any other unexpected circumstances.
9. The materials bought from or provided by the organizer SZ DJI Technology Co., Ltd., such as batteries and the Referee System, must be used in accordance with their instructions. SZ DJI Technology Co., Ltd. will not be held responsible for any injuries that arise from improper use of these materials. Teams will be held responsible for any injuries caused to their own members or any third party and for any property loss arising from creating and operating any robots.
10. All team members must remain in strict compliance with the laws and regulations of the country or region. All team members pledge that their robots will only be used for the RoboMaster competitions and that their robots will not be illegally modified or used for any illicit purpose.



E-mail: robomaster@dji.com
Forum: bbs.robomaster.com
Website: www.robomaster.com
Tel: +86 (0)755 36383255 (GTC+8, 10:30AM-7:30PM, Monday to Friday)
Address: Room 202, Floor 2, Integrated Circuit Design & Application Industrial Park, No. 1089, Chaguang Road, Xili County, Nanshan District, Shenzhen City, Guangdong Province, China