

Using a 33-bit motor driver chip and Field-Oriented Control (FOC), the RoboMaster C300 Brushless DC Motor Speed Controller enables precise control over motor torque.



ROBOMASTER

Exclusively designed for the RoboMaster M3505 P18 Brushless DC Gear Motor and C300 Brushless DC Motor Speed Controller, the M3505 Assembly Kit includes universal wheels and a terminal board.

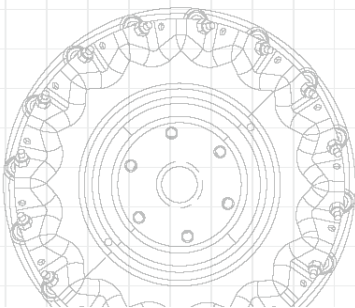
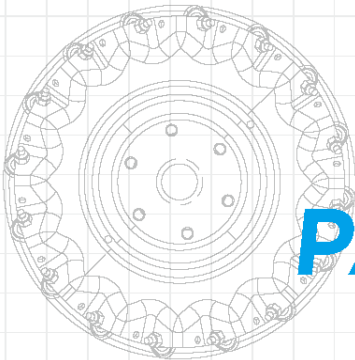
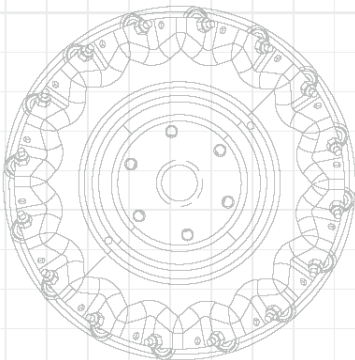
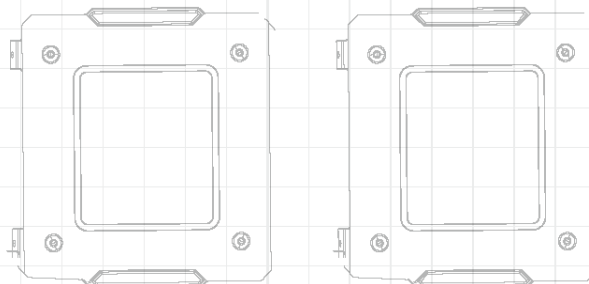
Reference System Specification Manual, Reference System User Manual, Introduction of Reference System Module

The M3505 Assembly Kit includes universal wheels and a terminal board, capable of complete assembly construction by non-professional users.

ROBOMASTER 2020 ROBOTICS COMPETITION

PARTICIPANT MANUAL

Prepared by the RoboMaster Organizing Committee
Updated on **December, 2019**



Statement

Participants are forbidden to be engaged or participate in practice suspected of public dispute, sensitive issue, offending the public or certain mass groups or other behaviors that damage the RoboMaster image; otherwise, once confirmed by the RoboMaster RMOC (hereinafter referred to as "the RMOC"), the offending party will be disqualified for the RoboMaster Competitions permanently.

Using this Manual

Legend

 Prohibition	 Important	 Hints and Tips	 Reference
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Release Notes

Date	Version	Changes
2019.12.31	V1.1	<ol style="list-style-type: none">1. Update Platform for Communication and Q&A.2. Update Open Source Award, Organization Award and selection standart about Organization Award.3. Update Appendix 1, including assessment requirements of Mid-Term Robot Assessment Video and Final Robot Assessment Video.
2019.10.15	V1.0	First Release

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1. Introduction

Founded by SZ DJI Technology Co., Ltd. and designed for young engineers, RoboMaster is a global educational robotics program that includes events, campus clubs, and pop-culture spinoffs.

The RoboMaster Competition is China's first FPV (First-Person View)-shooter-based robotics competition. It requires participants to go beyond their textbooks to develop a diverse fleet of robots. Through a process of independent research and development, students gain invaluable industrial practice and strategic planning skills. This helps to combine their book knowledge with practice in this field. The most advanced and intelligent robots are built through intense competition and relentless improvement.

The RoboMaster Competition is a global competition that technology enthusiasts from all over the world can enjoy and take part in. With this competition, we hope that robotics and engineering can reach a greater audience and inspire future generations.

RoboMaster attempts to reform the traditional methods of training talent. In the process of developing robotics, participants are provided with a platform where they can interact with like-minded peers, hone and further improve their skills, and advance tirelessly towards their dreams.

2. Season Schedule



The following is the RoboMaster 2019 Robotics Season Schedule for reference only. The specific time is subject to the latest announcement by the RMOC.

RoboMaster Robotics Competition is set under RoboMaster Competition. The RoboMaster 2020 Robotics Competition (hereinafter referred to as “RM2020 Robotics Competition”) consists of online schedule and offline schedule. It is recommended that each team drafts out a 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.

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

Teams passing the Technical Assessment can gain the corresponding number of RM Online Product Education Discount (hereinafter referred to as “Product Discount”) provided by the RMOC. For details about Technical Assessment specifications, please refer to [Appendix 1 Technical Assessment](#). For the number of online product discount of each stage, please refer to [Appendix 2 Product Discount Quantity](#).

Table 2-1 Online Schedule

Schedule	Item	Property	Rights and Duties
12 p.m., October 15, 2019 - 12 p.m., November 15, 2019	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.
12 p.m., November 22, 2019 - 12 p.m., November 23, 2019	Technical Assessment -Rules Exam	Teams from Mainland China; Teams from Hong Kong, Macau, Taiwan and Overseas	<ul style="list-style-type: none"> ● Receive the corresponding product discount of the stage ● Qualify for submitting the Season Schedule
12 p.m., November 24, 2019 - 12 p.m., November 28, 2019	Technical Assessment – Season Schedule	Teams from Mainland China	<ul style="list-style-type: none"> ● Receive the corresponding product discount of the stage

Schedule	Item	Property	Rights and Duties
12 p.m., December 16, 2019 - 12 p.m., December 19, 2019		Teams from Hong Kong, Macao, Taiwan and overseas	<ul style="list-style-type: none"> ● Make the Season Schedule open source and the top five open source teams will receive a set of the Standard referee system of the RM2019 version (VTM not included) ● Qualify for submitting the Mid-term Robot Assessment Video
12 p.m., January 13, 2020 - 12 p.m., January 16, 2020	Technical Assessment - Mid-term Robot Assessment Video	Teams from Mainland China	<ul style="list-style-type: none"> ● Receive the corresponding product discount of the stage ● Qualify for the Referee System Exam
12 p.m., February 17, 2020 - 12 p.m., February 20, 2020		Teams from Hong Kong, Macao, Taiwan and overseas	
12 p.m., February 15, 2020 - 12 p.m., February 16, 2020	Technical Assessment - Referee System Exam	Teams from Mainland China	<ul style="list-style-type: none"> ● Qualify for borrowing a set of the Standard, Hero, Engineer, and Sentry referee system ● Qualify for submitting the Technical Proposal
12 p.m., February 29, 2020 - 12 p.m., March 1, 2020		Teams from Hong Kong, Macao, Taiwan and overseas	
12 p.m., March 2, 2020 - 12 p.m., March 5, 2020	Technical Assessment - Technical Proposal	Teams from Mainland China	Qualify for submitting the Final Robot Assessment Video
12 p.m., March 30, 2020 - 12 p.m., April 2, 2020		Teams from Hong Kong, Macao, Taiwan and overseas	
12 p.m., March 25, 2020 - 12 p.m., March 28, 2020		Teams from Mainland China	Qualify for borrowing the full set of Referee System and participating in the China Regional Competition

Schedule	Item	Property	Rights and Duties
12 p.m., June 1, 2020 - 12 p.m., June 4, 2020	Technical Assessment - Final Robot Assessment Video	Teams from Hong Kong, Macao, Taiwan and overseas	Qualify for borrowing the full set of Referee System and participating in the International Regional Competition
12 p.m., June 15, 2020 - 12 p.m., June 18, 2020	Technical Assessment – Regional Competition Season Summary	Teams from Mainland China	<ul style="list-style-type: none"> ● Issue certificate and cash prize of the China Regional Competition ● Receive the corresponding product discount of the stage
12 p.m., August 24, 2020 - 12 p.m., August 28, 2020	Technical Assessment – Final Tournament Season Summary	Teams from Mainland China	Issue certificate and cash prize of the Final Tournament
		Teams from Hong Kong, Macao, Taiwan and overseas	Issue certificate and cash prize of the International Regional Competition

Table 2-2 Offline Schedule

Schedule	Item	Property	Entry Qualification
May 2020 – June 2020	China Regional Competition	Teams from Mainland China	<ul style="list-style-type: none"> ● Teams that pass the Final Robot Assessment Video qualify for the China Regional Competition ● Teams from Mainland China are free to choose the division or accept the arrangements made by the RMOC. The priority in choosing the division is based on the rankings of the total score of Technical Assessment
July 2020 – August 2020	Wild Card Competition	Teams from Mainland team	Teams that do not advance to the Final Tournament but rank top in the China Regional Competition qualify for the Wild Card Competition

Schedule	Item	Property	Entry Qualification
July 2020 – August 2020	International Regional Competition	Hong Kong, Macao, Taiwanese and overseas teams	Teams that pass the Final Robot Assessment Video qualify for the International Regional Competition
July 2020 – August 2020	Final Tournament	Teams from Mainland China; Teams from Hong Kong, Macao, Taiwan and Overseas	Teams that rank top in the China Regional Competition or International Regional and teams that advance to the Wild Card Competition qualify for the Final Tournament

3. Participation

There are three types of team: teams from Mainland China, teams from Hong Kong, Macao, Taiwan and Overseas and Chinese and Foreign Joint Teams. The Chinese and Foreign Joint Teams determine their property and entry procedure according to the geographical location of the school.

3.1 Participants

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

Table 3-1 Participants' Roles and Responsibilities

Roles	Role Instructions	Qty.	Status	Responsibilities
Supervisor	<ul style="list-style-type: none"> The main supervisor of the team is responsible for the formation and management of the team Responsible for guiding the team in making the robot Cannot simultaneously assume the roles of Advisor and Regular Member 	1-5	Faculties of the team's college or university who are qualified for teaching and scientific research and graduate before August 2020 (if necessary, you need to produce relevant evidence at the competition site)	<ul style="list-style-type: none"> Responsible for the safety of the personal property of all team members Coordinate campus resources, guide the team in developing project plans, control preparation schedule, help the team successfully conclude the match During the matches, the Supervisor must actively cooperate with the work of the RMOC

Roles	Role Instructions	Qty.	Status	Responsibilities
Advisor	<ul style="list-style-type: none"> ● Team guidance ● Cannot simultaneously assume the roles of Supervisor and Regular Member 	0-5	Full-time junior college students, undergraduates, postgraduates, and doctoral students in colleges and universities, as well as engineers, researchers and faculties working in enterprises, research institutions, or freelancers	<ul style="list-style-type: none"> ● Provide guidance and support to the team on strategy, technology, management, etc. ● Advisor can undertake tasks of manufacturing robots and other competition affairs
Regular Member	<ul style="list-style-type: none"> ● Including Captain, Vice Captain, PR Manager, Project Manager, Business Manager and General Member, see the table below for details ● Cannot simultaneously assume the roles of Advisor and Supervisor 	10-35	Full-time junior college students, undergraduates, postgraduates, and doctoral students in colleges and universities learning with proof of school enrollment before August 2020	See the table below for details
Tier players	The reserve members of the team are temporarily engaged in personal study and growth, and they can become regular members after the team's inspection and promotion	0-20		Assist the official team members with completing the matches, but do not qualify for any awards

Table 3-2 Regular Members' Roles and Responsibilities



Roles	Role Instructions	Qty.	Responsibilities
Captain	<ul style="list-style-type: none"> ● Core team member, the team's technical and tactical leader ● The main liaison of the RMOc ● Cannot simultaneously assume the roles of Project Manager and PR Manager 	1	<ul style="list-style-type: none"> ● Responsible for division of labor, overall planning and tactics arrangement and adjustment ● Attend Captains Meeting, represent the team to confirm match results and participate in appeal processes and any subsequent hearings ● Responsible for the legacy and development of the team after the competition
Vice Captain	Core team member	0-3	<ul style="list-style-type: none"> ● Along with the team leader, forms the core management team ● Assists the Captain with the management of the team
Project Manager	<ul style="list-style-type: none"> ● Core team member ● Overall manager of the project 	1	Responsible for systemizing project tasks, coordinating fund, material and human resources of the team, assisting to establish and improve team management norms and systems, and reasonably planning and managing the goal, schedule and cost of the team's project
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	<ul style="list-style-type: none"> ● Manages business canvassing ● Can be concurrently assumed by other role holders 	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

Roles	Role Instructions	Qty.	Responsibilities
			sponsorship, etc.
General Member	Assumes none of the above roles	3-32	-

3.2 Participating Team

Below shows the definition, rights and entry procedures for each type of team.

Table 3-3 Types of Participating Teams

Teams from Mainland China	
Definition	Pass the registration review within the specified period in order to meet the relevant competition entry requirements and is a team which is geographically located in mainland China.
Entry Rights	Qualified for the current season competition, award selection and competition upgrading/promotion.
Entry Procedures	<ol style="list-style-type: none"> The event procedure is carried out in accordance with the standards for teams from Mainland China. <ul style="list-style-type: none">  The event procedure includes material gifts, purchases, and participation support. Participates in the China Regional Competitions and performs well in the Wild Card Competition and the Final Tournament.
Teams from Hong Kong, Macao, Taiwan and overseas	
Definition	Pass the registration review within the specified time, the participating teams from Hong Kong, Macao, Taiwan and overseas regions meet the relevant entry requirements.
Entry Rights	<p>Qualified for the current season competition, award selection and competition upgrading/promotion.</p> <ul style="list-style-type: none">  As regards Hong Kong, Macao and Taiwan and overseas teams, due to their different education systems, team members with high school education are allowed to participate in the competition, but the proportion must not exceed 20% of the total number of team players.
Entry Procedures	<ol style="list-style-type: none"> The event procedure is carried out in accordance with the standards of Hong Kong, Macao, Taiwan and overseas teams. In the International Regional Competition, those who perform satisfactorily will advance to the Final Tournament.

Chinese and Foreign Joint Teams	
Definition	Pass the registration review within the specified period, the participating teams from Hong Kong, Macao and Taiwan and overseas jointly-run universities that meet the relevant entry requirements.
Entry Rights	Qualified for the current season competition, award selection and competition upgrading/promotion.
Entry Procedures	<ol style="list-style-type: none"> 1. If the school's geographical location is in Mainland China, its team is subject to the event procedure in accordance with the standards for teams from Mainland China. 2. If the mainland school forms a team with teams whose universities are located in China Hong Kong, Macau, Taiwan and overseas, the team is subject to the entry procedures in accordance with the standards for teams from Hong Kong, Macao, Taiwan and overseas. As to how the intercollegiate team must meet the competition qualifications, see the R1 rule of Chapter 5.2.1.1 Participating Teams/Personnel of RoboMaster 2020 Robotics Competition Rules Manual.

3.3 Seeded Team

3.3.1 Regional Competition



- The organization team is determined as a seeded team.
- The seeded team setting of China Regional Competition also applies to International Regional Competition.

RM2020 Robotics Competition sets the team rankings. The RMOC will handle the scores by teams participating in the RoboMaster Robotics Competition in accordance with the previous competitions (see [Table 3-4](#)), and the total scores from the Technical Assessment system for the season (see [Table 3-5](#)), and the total points shall be calculated and ranked by a certain weight (see [Table 3-6](#)). The total scores from the Technical Assessment system for the 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 said division and the overall grouping situation. The seeded team list is determined by the top teams in the team rankings. In principle, during the Group Stage, each group has and only has one seeded team.

Table 3-4 Past Results and Points

Past Results	Points
Regional Competition Third Prize	1

Past Results	Points
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 Technical Assessment System Scores and Points

Scores	Points
$X < 45$	0
$45 \leq X \leq 100$	$(x-45) / 5.5$

Table 3-6 Point Weight

Point Item	Weight
The scores from the previous year	50%
The scores from the previous two years	30%
RM2020 Technical Assessment system total scores	20%

For example, 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 current season's Technical Assessment system total scores is 85, then the team's total score for the 2020 season shall be 5.595.

3.3.2 Final Tournament

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

3.4 Platform for Communication and Q&A

The RMOC provides many Q&A channels as shown below. For more contact information, please refer to [RoboMaster Organizing Committee Official Contact Details and FAQ Rules](#).

Table 3-7 Platform for Communication and Q&A

Channel	Office Hour	Notes
Official Forum: bbs.robomaster.com	Office hour: 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 write down
WeChat: rmsaiwu		"Specific competition + college name + role + name"

4. Award System

4.1 Final Tournament



- The name of the award will be adjusted later, subject to the actual certificate issued.
- The award system of China Regional Competition also applies to International Regional Competition.

The awards for the Final Tournament are as follows:

Table 4-1 Final Tournament Awards

Award	Ranking	Quantity	Reward
National First Prize	Champion: 1st place	1	<ul style="list-style-type: none"> ● Champion Trophy ● Champion Medal ● First Prize Honorary Certificate ● Cash prize of USD \$ 45,000 (pre-tax)
	First Runner-up: 2nd place	1	<ul style="list-style-type: none"> ● First Runner-up Trophy ● First Runner-up Medal ● First Prize Honorary Certificate ● Cash prize of USD \$ 30,000 (pre-tax)
	Second Runner-up: 3rd place	1	<ul style="list-style-type: none"> ● Second Runner-up Trophy ● Second Runner-up Medal ● First Prize Honorary Certificate ● Cash prize of USD \$ 15,000 (pre-tax)
	4th place	1	<ul style="list-style-type: none"> ● First Prize Honorary Certificate ● Cash prize of USD \$ 7,500 (pre-tax)
	5th to 16th place	12	<ul style="list-style-type: none"> ● First Prize Honorary Certificate ● Cash prize of USD \$ 4,500 (pre-tax)
National Second Prize	17th to 32nd place	16	<ul style="list-style-type: none"> ● Second Prize Honorary Certificate ● Cash prize of USD \$ 1,500 (pre-tax)
National Third Prize	Teams that won the Regional Competition First Prize but did not advance to the Final Tournament	Multiple	Third Prize Honorary Certificate

4.2 Regional Competition

The awards for the Regional Competition are as follows:

Table 4-2 Regional Competition Awards

Award	Ranking	Quantity	Reward
Regional Competition First Prize	Regional Competition Champion: Regional Competition 1st place	1 per division	<ul style="list-style-type: none"> ● Championship Trophy ● Regional Competition First Prize Honorary Certificate ● Cash prize of USD \$ 4,500 (pre-tax)
	Regional Competition First Runner-up: Regional Competition 2nd place	1 per division	<ul style="list-style-type: none"> ● First Runner-up Trophy ● Regional Competition First Prize Honorary Certificate ● Cash prize of USD \$ 4,500 (pre-tax)
	Regional Competition Second Runner-up: Regional Competition 3rd place	1 per division	<ul style="list-style-type: none"> ● Second Runner-up Trophy ● Regional Competition First Prize Honorary Certificate ● Cash prize of USD \$ 4,500 (pre-tax)
	Regional Competition 4th place	1 per division	<ul style="list-style-type: none"> ● Regional Competition First Prize Honorary Certificate ● Cash prize of USD \$ 4,500 (pre-tax)
	Regional Competition 5th to 8th place	4 per division	<ul style="list-style-type: none"> ● Regional Competition First Prize Honorary Certificate ● Cash prize of USD \$ 2,500 (pre-tax)
	A certain number of top ranking teams (the number is determined according to a certain proportion and the proportion is based on the total number of the participating teams in each division)	Multiple	<ul style="list-style-type: none"> ● Regional Competition First Prize Honorary Certificate ● Cash prize of USD \$ 1,500 (pre-tax)
Regional Competition Second Prize	Participating teams that do not obtain the Regional Competition First Prize	Multiple	Regional Competition Second Prize Honorary 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.
- The team that won the Champion, First Runner-up and Second Runner-up in the Final Tournament must follow the specification to open source robots that are specified by the RMOC and Season Summary, otherwise it will affect the issuing of the Final Tournament cash prize. The RMOC will add more Open Source Awards depending on the actual open source situation.

The awards of the Open Source are as follows. For selection, please refer to [Appendix 3 About Award Selection](#).

Table 4-3 Open Source Awards

Award	Quantity	Reward	Notes
Open Source Grand Prize	Multiple	<ul style="list-style-type: none"> ● Honorary Certificate ● USD \$ 15,000 (pre-tax) 	In the RM2020 season (September 20, 2019 to August 31, 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	<ul style="list-style-type: none"> ● Honorary Certificate ● USD \$ 7,500 (pre-tax) 	
Open Source Second Prize	Multiple	<ul style="list-style-type: none"> ● Honorary Certificate ● USD \$ 4,500 (pre-tax) 	
Open Source Third Prize	Multiple	<ul style="list-style-type: none"> ● Honorary Certificate ● USD \$ 1,500 (pre-tax) 	
Open Source Outstanding Prize	Multiple	<ul style="list-style-type: none"> ● Honorary Certificate ● Grade A: USD \$ 750 (pre-tax) ● Grade B: USD \$ 450 (pre-tax) ● Grade C: USD \$ 300 (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 sharing within one month after the award is announced and are obligated to participate in the exchange meetings and surveys conducted by the RMOC.

The awards of the Outstanding Contribution are as follows. For selection, please refer to [Appendix 3 About Award Selection](#).

Table 4-4 Outstanding Contribution Awards

Award	Quantity	Prize
Outstanding Supervisor	No more than 8 people	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 1,500 (pre-tax)
Outstanding Captain	No more than 8 people	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 750 (pre-tax)
Outstanding Project Manager	No more than 8 people	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 750 (pre-tax)
Outstanding PR Team	No more than 8 teams	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 450 (pre-tax)
Outstanding Business Team	No more than 8 teams	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 450 (pre-tax)
Outstanding Advisor	No more than 8 people	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 450 (pre-tax)
Outstanding Volunteer	<ul style="list-style-type: none"> ● No more than 10 people per each division ● No more than 15 people for the Final Tournament 	Honorary Certificate

4.5 Organization Award

Organization Awards are as follows. For selection, please refer to [Appendix 3 About Award Selection](#).

Table 4-5 Organization Awards

Award	Quantity	Reward
Rookie Award	No more than 5 people	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 750 (pre-tax)
Mainstay Award	No more than 5 people	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 750 (pre-tax)
Competitive Spirit Award	No more than 5 people	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 750 (pre-tax)
Cost Control Award	No more than 5 people	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 750 (pre-tax)

Award	Quantity	Reward
Top Tactician Award	No more than 5 people	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 750 (pre-tax)
Discipline Construction Award	No more than 5 people	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 450 (pre-tax)
Rising Star Award	No more than 5 people	RoboMaster Standard that worth USD \$ 3,000
Best Season Schedule Award	5	Honorary Certificate
Best Technical Proposal Award	5	Honorary Certificate
Best Season Summary	<ul style="list-style-type: none"> ● Regional Competition: 5 ● Final Tournament: 5 	Honorary Certificate

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 recognition and aesthetics of the robots' appearance, the RMOC encourages the teams to add industrial design elements when designing the robots' protective case, and the RMOC shall issue forth appearance-related rewards.

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 Regional Competition Aesthetic Design Award will be selected by the RMOC before the official competition of the divisional competition. The annual Aesthetic Design Award will be selected by the RMOC before the Final Tournament. For selection, please refer to [Appendix 3 About Award Selection](#).

Table 4-6 Regional Competition Individual Aesthetic Design Award

Robot	Quantity	Reward
Standard	No more than 3 per division	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 150 (pre-tax)
Engineer	No more than 3 per division	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 150 (pre-tax)
Hero	No more than 3 per division	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 150 (pre-tax)
Aerial	No more than 3 per division	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 150 (pre-tax)
Sentry	No more than 3 per division	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 150 (pre-tax)

Table 4-7 Regional Competition Team Aesthetic Design Award

Award	Quantity	Reward
Best Team Aesthetic Design Award	1team for every division	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 300 (pre-tax)
Outstanding Team Aesthetic Design Award	No more than 8 per division	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 150 (pre-tax)

Table 4-8 Annual Individual Aesthetic Design Award

Participating Robot	Quantity	Reward
Standard	No more than 3	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 300 (pre-tax)
Engineer	No more than 3	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 300 (pre-tax)
Hero	No more than 3	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 300 (pre-tax)
Aerial	No more than 3	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 300 (pre-tax)
Sentry	No more than 3	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 300 (pre-tax)

Table 4-9 Annual Team Aesthetic Design Award

Participating Robots	Quantity	Reward
First Prize	No more than 2 teams	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 450 (pre-tax)
Second Prize	No more than 5 teams	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 300 (pre-tax)
Third Prize	No more than 10 teams	<ul style="list-style-type: none"> ● Honorary Certificate ● Cash prize of USD \$ 150 (pre-tax)

4.7 Robot Combat Award



The number of awards will be based on the selection criteria and the number of robots. For selection, please refer to [Appendix 3 About Award Selection](#).

Table 4-10 Robot Combat Award

Robot Type	Award	Quantity (number)	Reward
Standard	First Prize	Multiple	Honorary Certificate
	Second Prize	Multiple	Honorary Certificate
	Third Prize	Multiple	Honorary Certificate
Engineer	First Prize	Multiple	Honorary Certificate
	Second Prize	Multiple	Honorary Certificate
	Third Prize	Multiple	Honorary Certificate
Hero	First Prize	Multiple	Honorary Certificate
	Second Prize	Multiple	Honorary Certificate
	Third Prize	Multiple	Honorary Certificate
Aerial	First Prize	Multiple	Honorary Certificate
	Second Prize	Multiple	Honorary Certificate
	Third Prize	Multiple	Honorary Certificate
Sentry	First Prize	Multiple	Honorary Certificate
	Second Prize	Multiple	Honorary Certificate
	Third Prize	Multiple	Honorary Certificate

Robot Type	Award	Quantity (number)	Reward
Dart System	First Prize	Multiple	Honorary Certificate
	Second Prize	Multiple	Honorary Certificate
	Third Prize	Multiple	Honorary Certificate

4.8 Creativity Award

Creativity Awards are as follows. For selection, please refer to [Appendix 3 About Award Selection..](#)

Table 4-11 Creativity Award

Award	Quantity	Reward
Creativity Award	No more than 5	Honorary Certificate

Appendix 1 Technical Assessment

All teams that compete in the RM2020 Robotics Competition must complete a 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, help in the future development, improve the comprehensive competence of demand analysis, cost budgeting, data analysis, report compilation of team members. The total score of Technical Assessment will become one of the bases for division arrangement and seeded team setting of the Regional Competition. It is recommended that participating teams take the Technical Assessment seriously, play an active role in the process and fully demonstrate the team's strength.

Technical Assessment will be graded according to certain requirements and the grade will be displayed in the registration system. The following shows the relation between scores and grades:

Appendix Table 1 Rating System

Score Range	Grade
$90 \leq X \leq 100$	A
$75 \leq X < 90$	B
$60 \leq X < 75$	C
$45 \leq X < 60$	D
$30 \leq X < 45$	E
$0 \leq X < 30$	F

Technical Assessment Task and Requirement

There are seven Technical Assessment tasks in total in the RM2020 Robotics Competition: Rules Exam, Season Schedule, Mid-term Robot Assessment Video, Referee System Exam, Technical Proposal, Final Robot Assessment Video and Season Summary. Except Rules Exam and Referee System Exam, teams can only submit once in other sections.

The total score of the Technical Assessment is the weighted average of scores of each section. Below shows the weight of each section:

Appendix Table 2 Weight of Each Section of Technical Assessment

Technical Assessment Task	Weight
Rules Exam	10%
Season Schedule	10%

Technical Assessment Task	Weight
Mid-Term Robot Assessment Video	20%
Referee System Exam	10%
Technical Proposal	30%
Final Robot Assessment Video	20%

1. Rules Exam

- Exam Content: Exam content: RoboMaster 2020 Robotics Competition Rules Manual V1.0 and relevant competition rules
- Exam Form: 50 multiple-choice questions (generated randomly). The full mark is 100, with 2 marks for each question
- Qualification: 90 or above
- The exam can be done more than one time within the effective time, and the minimum interval between the start time of the first and the second attempt is 40 minutes
- The result of the exam is based on the highest score acquired within the effective exam period

2. Season Schedule

- Submission Format: PDF document
- Document 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 (flowchart, table, etc.)
 - Filename: College Name + Team Name + Season Schedule
- Pass 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 Requirement

Module	Content	Scoring Criteria	Score
Competition Culture	RM competition details and culture Core team culture	Clarity and accuracy	5

Module	Content	Scoring Criteria	Score
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 direction	Reasonable labor division and combination of regular team members and reserve team members	
	Responsibilities of each role	Clarity of duties	
	Team atmosphere construction and legacy of the team	Reasonable planning and strong executability	
Team Cooperation	Open source materials, manuals and the arrangement of related information in the forum	Abundant and practical information	20
	Use planning of code, drawings and document collaboration tool	Collaborative solution is practical	
	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, progress tracking and results acceptance system	Reasonable processes that are easily executable	10
Resource Management	Evaluation of resources available (budgeting, materials, and manufacturing resources)	Thoroughness of investigation	15

Module	Content	Scoring Criteria	Score
	Arrangement of manpower and schedule	Reasonable planning	
	Robot funds, lab management budget	Reasonable and comprehensive budget planning	
Promotion Campaign/Business Plan	<ul style="list-style-type: none"> ● Planning of demand resources and materials throughout the season ● Planning of sponsorship demand and promotional demand 	Clarity and quality of plan	10
Total			100

3. Mid-Term Robot Assessment Video

- Submission Format: Video + BOM Form
- Basic Requirement:
 - Complete basic functions of Standard, Hero and Engineer and submit the BOM Form of the corresponding robot
 - Display other functions of the above robots or functions of other robots can get extra points
- Video Requirement:
 - Name of university/college, shooting date and location must be stated at the beginning of the video
 - Subtitles or commentaries should be included to explain each process in the video
 - Only contain relevant content and the video is tightly edited lasting no longer than three minutes
 - Video must have a resolution of 720p or higher
- 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
- Pass 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

Item	Content might be included	Score	Basic Function	
Standard	Complete movement: panning, spinning	5	<ul style="list-style-type: none"> ● Able to move normally without exceeding power limit ● Able to attack ● Meet 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 tracking an armor module	5		
	Striking a 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		
	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	Complete movement	5		

Item	Content might be included	Score	Basic Function
	Grabbing a Projectile Container to obtain projectiles	10	<ul style="list-style-type: none"> ● Able to move normally ● Able to obtain projectiles ● Meet the installation specifications for the Referee System
	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	<ul style="list-style-type: none"> ● Able to move normally without exceeding the power limit ● Able to attack ● Meet 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	
	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	Displaying fully enclosed propeller cage	5	<ul style="list-style-type: none"> ● Has fully enclosed propeller cage
	Complete movement: take-off, movement, hovering, landing	10	

Item	Content might be included	Score	Basic Function
	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	<ul style="list-style-type: none"> ● Able to move normally without exceeding the power limit
	Demonstrating the installation of the Referee System (or the installation spot reserved for the Referee System)	5	<ul style="list-style-type: none"> ● Meet the installation specifications for the Referee System
Dart System	Adjusting the angles of pitch and yaw axes of the Dart Launcher	5	<ul style="list-style-type: none"> ● Able to launch dart normally ● Meet the installation specifications for the Referee System
	Loading and launching dart	5	
	Launching dart 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	
Others	Demonstration of other special functions	-	Extra points will be given according to the actual effect

Appendix Table 5 BOM Form Assessment Requirement

Score Criteria	Score
Clear module classification	5
Reliable and complete content	10
Visual data presentation	5

4. Referee System Examination

- Exam Form: Multiple-choice questions randomly selected from RoboMaster database. The full mark is 100
- Pass Requirement: 90 or above
- If the pass requirements have not been met within the valid time of the evaluation, repeat the completion of questions. Once several requirements are met, then it will immediately pass the review.

The minimum interval between the start of the two questions is 20 minutes. Multiple team members of one team need to participate in the Examination simultaneously.

- The result of the exam is based on the last submission made within the effective exam period

5. Technical Proposal

- Submission Format: PDF document
- Document 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 diagram (flowchart, table, etc.)
 - File Name: College Name + Team Name + Technical Proposal
- Pass 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 Requirement

Module	Content	Scoring Criteria	Score
Requirement Confirmation	From the rules and team's ability, determine task priorities and key technologies for winning matches	<ul style="list-style-type: none"> ● Clarity and quality of technical requirements and specifications ● Analyze target performance and calculate theory limit 	15
Structural Design	<ul style="list-style-type: none"> ● Technical Proposal of some assembly or component (can refer to the below table) ● Analysis of Design For Manufacturability (DFM) 	Analysis of the quality, requirements, performance, material usage, component selection, and manufacturing method	25
Programming Logic	Show the program logic diagram for one of the robots	Logic accuracy and modularity	10
Scientific Design Method	Analyze specific cases of theory analysis, software simulation, experimental test and practice improvement that apply to robots	Whether the process of theory guiding practice, experiment and data analysis, and iterative design has been reflected	20

Module	Content	Scoring Criteria	Score
Innovation	Use case description of innovative methods applied to robots	Whether innovations 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	<ul style="list-style-type: none"> Industrial design proposal Typical user-robot interaction case 	<ul style="list-style-type: none"> Whether the design idea is specific and the appearance is aesthetic and practical Whether the user-robot interaction will be optimized and the overall arrangement is reasonable, and maintainability will also be considered 	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

Item	Content
Requirement Analysis	Mechanism function, performance indexes and analysis under different working conditions. Sensor and actuator selection parameters
Design Drawings	Taking one component as an example and show the engineering diagram (with STEP file)
Materials and Manufacturing Processes	Lists the materials selection, manufacturing techniques/cost, and plan to reduce costs for different batches
Finite Element Method (FEM)	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, which have protective shell and unexposed wires.
- Submit the cost report of the whole team

Appendix Table 8 Cost Report Requirement

Module	Content	Scoring Criteria	Score
Cost Summary	Cost overview, budget, budget that has been used, subsequent budget plan of the current season, sustainable development plan of the next season	Reliable data and reasonable plan	20
Cost Analysis	<ul style="list-style-type: none"> ● Analyze the proportions according to technic type, technical direction or robot type ● The fulfillment of expectation, reason of error, subsequent solutions 	Can analyze and reflect the core pain problems and have reasonable subsequent solutions	50
Attachment	Improve the cost BOM that has been submitted in the Mid-term Robot Assessment Video	<ul style="list-style-type: none"> ● Clear module classification ● Reliable and complete content ● Visual data presentation 	30

- Display other functions of the above robots or functions of other robots can get extra points

- Video Requirements:

- Name of university/college, shooting date and location must be stated at the beginning of the video
- Subtitles or commentaries should be included to explain each process in the video
- Only contain relevant content and the video is tightly edited lasting no longer than five minutes
- Video must have a resolution of 720p or higher

- Submission Method:

- Upload the video to Youku/YouTube and set an access password
- Submit the video URL, access password and cost report through the registration system

- Pass 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 requirements and scoring standards apply to different items. For specific standards, please refer to [Appendix Table 4](#).

7. Season Summary

- Submission Format: PDF document
- Document 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
- Pass 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 9 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	Analyzes problems that arise in each match and then finds a cause and solution	Comprehensiveness of analysis, adequacy of data, and helpfulness of the summary for the team	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

Name	Rules Exam	Season Schedule	Mid-term Robot Assessment Video	Regional Competition Summary
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 Flight Battery TB47S	8	4	2	1
Manifold 2-G 128G (CN)	3	3	2	1

Appendix 3 About Award Selection

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

A. Open source award

a) Selection Rules

The RMOC will score the open source materials according to the following two criteria: the 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 10 Outstanding Contribution Awards Selection Criteria

Award	Selection Criteria	Selection Method
Outstanding Supervisor	<ul style="list-style-type: none">● The team that the Supervisor belongs to displays a good competitive spirit, and there exist no violations that seriously breach the rules and the spirit of civilized competition● 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	<ol style="list-style-type: none">1. Participants shall submit the "RM2020 Outstanding Supervisor Application Form" to apply2. After the participant applies, the RMOC selects the best according to the "application form"

Award	Selection Criteria	Selection Method
Outstanding Captain	<ul style="list-style-type: none"> ● The team that the Captain belongs to displays a good competitive spirit, and there exist no violations that seriously breach the rules and the spirit of civilized competition ● 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 divided according to the performance level, and the performance level of the current season is maintained at the same level as or improved from that of the previous competition 	<ul style="list-style-type: none"> ● Participates in the Captain's discussions, the content of the discussions is widely endorsed, and the top three votes after each discussion will enjoy extra points ● Performance level: <ol style="list-style-type: none"> 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	<ul style="list-style-type: none"> ● The team that the Project Manager belongs to displays a good competitive spirit, and there exist no violations that seriously breach the rules and the spirit of civilized competition ● 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 	Selected according to the Project Manager's assessment score ranking

Award	Selection Criteria	Selection Method
Outstanding PR Team	<ul style="list-style-type: none"> ● The team that the PR team members belongs to displays a good competitive spirit, and there exist no violations that seriously breach the rules and the spirit of civilized competition ● Submits a publicity report on time every month, actively plans the team's PR work so that the team's influence will be improved 	Selected according to the PR team's assessment score ranking and comprehensive performance evaluation
Outstanding Business Team	<ul style="list-style-type: none"> ● The team that the Business team members belongs to displays a good competitive spirit, and there exist no violations that seriously breach the rules and the spirit of civilized competition ● 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	<ul style="list-style-type: none"> ● The team that the Advisor belongs to displays a good competitive spirit, and there exist no violations that seriously breach the rules and the spirit of civilized competition 	<ol style="list-style-type: none"> 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
	<ul style="list-style-type: none"> 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 	
Outstanding Volunteer	<ul style="list-style-type: none"> 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 	Nomination is done by the person in charge of the RMOC, and selection is then made according to the nomination materials

C.Organization Award

Appendix Table 11 Organization Award Selection Criteria

Award	Selection Criteria	Selection Method
Rookie Award	<ul style="list-style-type: none"> The team has qualified for the Regional Competition for three consecutive years (including for the present competition) 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 	<ul style="list-style-type: none"> The team with more overall progress will be given priority for the award Performance level: <ol style="list-style-type: none"> Regional Competition Third Prize Regional Competition Second Prize/Final Tournament Third Prize Final Tournament Second Prize Final Tournament First Prize

Award	Selection Criteria	Selection Method
		5. Final Tournament Champion, First Runner-up, Second Runner-up
Mainstay Award	Have participated for three consecutive years (including in the current competition), and won 8th-32nd place in the Final Tournament in three years	Teams with a longer participation period and teams with better scores will be given priority
Competitive Spirit Award	<ul style="list-style-type: none"> ● The team displays a good competitive spirit, and there exist no violations that seriously breach the rules and the spirit of civilized competition ● The team is more active in forums, WeChat groups, etc., and gets along well with the RMOC, volunteers, and other teams ● The team is helpful, active and an open source of information to others, enthusiastically sharing their experiences and willing to provide resources to other teams 	<ul style="list-style-type: none"> ● Selection is 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	<ul style="list-style-type: none"> ● Cost data is clear and complete and can reflect the result of cost overview or cost control ● Cost control scheme and method is enforceable ● During the match preparation stage, actively open source the effective and replicable cost control method and case 	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● The team achieves good results on the team strength via tactical operations ● The team's tactics is instructive to other participating teams, having a positive impact on the overall performance of the competition 	<ul style="list-style-type: none"> ● 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 Construction Award	<ul style="list-style-type: none"> ● The team displays a good competitive spirit, and there exist no violations that seriously breach the rules and the spirit of civilized competition ● The team or the lab whether the team belongs to has rich experience in robotics competitions ● The team or the lab whether the team belongs to has extensive patents, published papers or scientific research records of robotics ● The team or the lab whether the team belongs to has abundant information on entrepreneurship, jobs and further education ● The team's Supervisor offers a course related to RoboMaster or introduces the competition knowledge point of RoboMaster into teaching practice, establishes RoboMaster research lab, etc. 	<ul style="list-style-type: none"> ● Selection is to be made according to various relevant information of teams collected by the RMOC ● Teams with more abundant information and that perform well in various aspects will be given priority

Award	Selection Criteria	Selection Method
Rising Star Award	<ul style="list-style-type: none"> ● The team has not qualified for the RoboMaster Robotics Competition for the past two seasons (RM2018, RM2019) ● The team has not received gift materials which are subject to teams that participate in RoboMaster competitions for the first time for the past two seasons (RM2018, RM2019) ● Participate and pass the Rules Exam within the specified period ● Agree with and accept relevant terms of the Gift Materials contract (for details, please refer to RoboMaster 2020 Robotics Competition Gift Materials Contract) 	Selection is to be determined and made according to the register information
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	<p>The RMOC will collect the open source materials from the RoboMaster forum and make the selection according to rankings</p> <p>*Open source post title: [Season Schedule + College Name Team Name + RM2020 Season Schedule Open Source]</p>
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	<p>The RMOC will collect the open source materials from the RoboMaster forum and make the selection according to rankings</p> <p>*Open source post title: [Technical Proposal + College Name Team Name + RM2020 Technical Proposal Open Source]</p>

Award	Selection Criteria	Selection Method
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 from the RoboMaster forum 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 12 Individual Aesthetic Design Award Selection Criteria

Scoring Criteria	Weight	Instructions		
		4-5 points	2-3 points	1 point
Degree of Completion	30%	Serious attitude, in line with the requirements of the rules, regular and orderly components, strong outer shape, rich decorative details	Serious attitude, in line with the requirements of the rules, outer shape which is rich in decorative details	Attitude displayed is not serious or does not meet the requirements of the rules
Aesthetic	30%	Beautiful overall design, with a reproducible design language	Overall, somewhat beautiful	Unightly
Identifiability	20%	The appearance is very characteristic	The appearance is somewhat characteristic	The appearance is not characteristic
Innovation	20%	New materials, new processes, new models, novel design language are all used, etc., with excellent results	Tries to adopt new materials, new processes, new shapes, novel design language, 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 13 Team Aesthetic Design Award Selection Criteria

Scoring Criteria	Weight	Instructions		
		4-5 points	2-3 points	1 point
Degree of Completion	30%	Serious attitude, in line with the requirements of the rules, the whole team's robots display the same design, regular and orderly components, strong outer shape, rich decorative details	Serious attitude, in line with the requirements of the rules, most robots have the same design	Attitude displayed is not serious, does not meet the requirements of the rules or only individual robots have such a design
Aesthetic	20%	The team is beautiful overall and has a reproducible design language	The team is relatively beautiful overall	Unsightly
Identifiability	20%	The overall appearance of the team is very characteristic	The overall appearance of the team is somewhat characteristic	The appearance is not characteristic
Coordination	20%	The team's robot color, material, style and language are coordinated, and the overall impression is strong	The team's robots are relatively coordinated in appearance, uniform in style, and display a certain sense of unity	The style isn't uniform
Innovation	10%	New materials, new processes, new models, novel design language are all used, etc., with excellent results	Tries to adopt new materials, new processes, new shapes, novel design language, etc.	Follows the prescribed order, with no innovative aspects

The selection criteria for the Annual Team Aesthetic Design Award contains firmness assessment, which will multiply by the total score as a coefficient. The specific criteria and score illustrations of firmness are as follows:

Appendix Table 14 Firmness Criteria and Score Instructions

Coefficient	Criteria
50%	<ul style="list-style-type: none"> ● Fixation stability: The appearance of the robots and the fixation of protective shell is unstable and easy to loosen, resulting in deformation and shedding. For example: It is bonded using unfirm tapes and can be easily taken off. ● Material strength: The protective shell is made of a material that is fragile and easily broken, and is easily damaged in the combat. For example: Made of acrylic sheet, glass and other materials, and it is easy to break and damage during the match.
75%	<ul style="list-style-type: none"> ● Fixation stability: The appearance of the robots and the protective shell have a certain fixation stability, and the material is bonded using a material having a certain strength. For example: Use a double-sided adhesive, foam adhesive or other adhesive to stabilize the fixation adhesion. ● Material strength: The material used for the protective shell is not easily damaged, but the overall structural strength is not high, and damage may occur in the case of collision etc. For example: With PC board splicing, the connections are easily broken and fractured.
100%	<ul style="list-style-type: none"> ● Fixation stability: The appearance of the robots and the protective shell have good fixation stability, and the material with high strength is used for bonding or soft material for connecting. For example: Use material with firm adhesion, such as a fiber-reinforced tape, a magic buckle, etc. to stabilize the fixation adhesion. ● Material strength: The material used for the protective shell is not easily damaged, and the overall structural strength is good, and it is difficult to be damaged in the case of collision etc. For example: Made with PC bending, but the overall shell structure strength is slightly poorer.
125%	<ul style="list-style-type: none"> ● Fixation stability: The appearance of the robots and the protective shell have good fixation stability. They are rigidly connected by screws or quick-disassembly structure, and they are firmly fixed and can be used as part of the anti-collision structure of the robots. For example: The outer frame is protected by a metal material and is firmly fixed. ● Material strength: The material used for the protective shell is difficult to break, and the overall structure is highly strong. Considering the design and connection of the details section, such as the connections, it also protects and buffers the robot collision in the Battlefield. For example: The PC shell connection is adhered with a fiber tape and has a foamed lining as a buffer.

b) Selection Process

If the participating teams need to participate in the Aesthetic Design Award selection, they shall abide by following processes:

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 the participating teams shall then vote for the selection.

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.
3. The Aesthetic Design Award selection meeting will be held according to the registration conditions, and the participating teams will carry the robots to the designated positions in sequence.
4. The jury team shall then score the robots of the participating teams.

E. Robot Combat Award

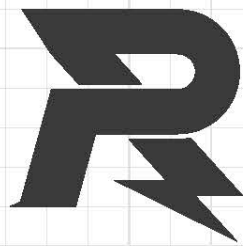
Selection is to be made according to the actual performance of each robot in the matches, according to specific data for ranking, and according to a specific percentage.

F. Creativity Award

Appendix Table 15 Creativity Award Selection Criteria

Scoring 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

Scoring Criteria	Weight	Instructions		
		4-5 points	2-3 points	1 point
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%	Great influence on the participating teams and is widely emulated for learning	Holds a certain influence on other teams, holds a certain reference value and reference significance	Possesses no reference value



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