

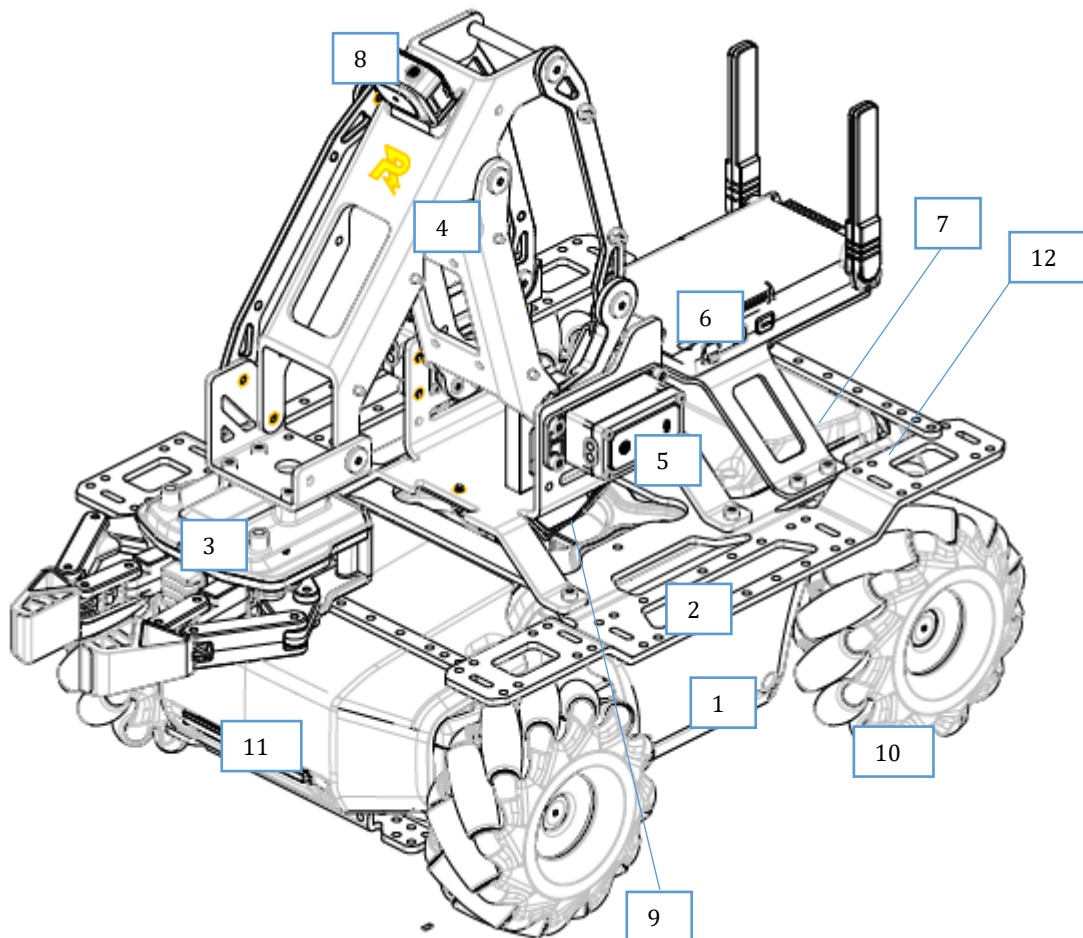
RoboMaster EP Core Quick Start Guide

Introduction

The RoboMaster™ S1 Education Expansion Set Core (EP Core) is an all-in-one education solution for STEAM classrooms. It provides an official SDK that can be used with powerful mechanical accessories and interfaces to expand hardware possibilities. Together with rich teaching resources and a continually-updated competition database, the EP Core delivers a new classroom experience to make education easier for both teachers and students, expanding the boundaries of the future of education.

EP Core Diagram

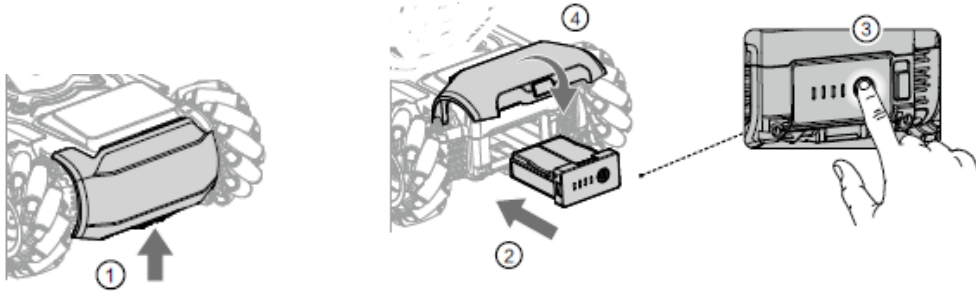
1. Omnidirectional Chassis	7. Motion Controller (Built-in)
2. Chassis Extension Platform	8. Camera
3. Gripper	9. Speaker
4. Robotic Arm	10. Mecanum Wheel
5. DJI 1528BA Servo	11. Armor
6. Intelligent Controller	12. Intelligent Battery (Built-in)



Powering On the EP Core

Follow the steps below to power on the robot:

1. Press the rear armor release button to open the chassis rear armor.
2. Install the intelligent battery into the battery compartment.
3. Press and hold the power button to turn on the battery.
4. Close the chassis rear armor.



Connecting the EP Core and the App

The EP Core must be connected to the RoboMaster app in order to use. Users can learn how to connect via Wi-Fi or via a router in the Connection Mode page. Follow the prompts to connect the EP Core to the app. Refer to the Connecting section for more information.



Initializing the EP Core with the App

Activating the EP Core

After connecting, use your DJI account to activate the EP Core in the RoboMaster app. Activation requires an internet connection.

Using the RoboMaster App

With the dedicated RoboMaster app, users can access rich educational resources and several gameplay modes. The app can be used with a touchscreen or a gamepad and is available on iOS, Android, Windows and Mac. Users on different platforms can even play together at the same time. Users can also write programs easily and apply them or share with friends instantly using the RoboMaster app. This section uses the RoboMaster app on iOS as an example. The specific interface may vary depending on the device used.

Omnidirectional Chassis

The EP Core chassis is an omnidirectional motion platform based on the Mecanum wheels, which can be used to move forward,

traverse, skew, rotate, or a combination of movements at once.

Motion Controller

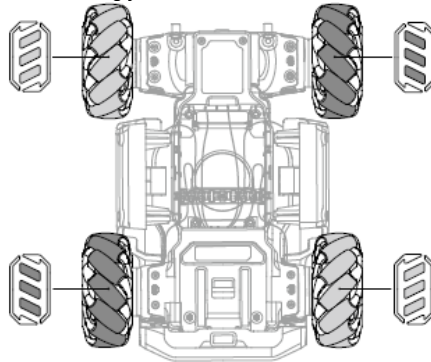
The motion controller is the core module for the EP Core chassis movement, providing a rich external module interface for video transmission and connecting the battery, armor, and motors. It also integrates an omnidirectional wheel motion control algorithm, power management system, motor management system, and a chassis management system.

Mecanum Wheel

The Mecanum wheel is a commonly used robotic omnidirectional chassis moving solution, which is divided into two types: left-threaded and right-threaded. The four-wheeled chassis requires two pairs of Mecanum wheels.



When installing, you can check the left-threaded mark or right-threaded mark on the bottom of the chassis, and install the left-threaded or right-threaded Mecanum wheel accordingly.



Armor Modules

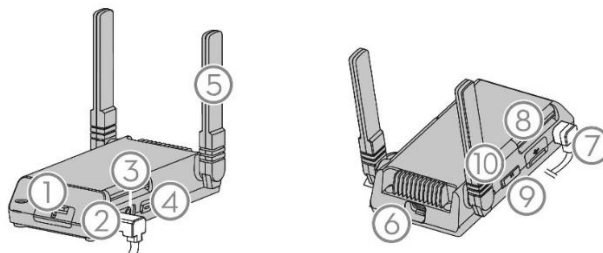
A total of four armored modules are installed on the four sides of the EP Core chassis, which protect the internal structure of the EP Core.

All armor is equipped with a hit detector, which is used to detect where the EP Core is struck and sends feedback to the intelligent controller to deduct hit points from the corresponding hit point bar.

Each hit detector module is represented by an LED light and is visible under the armor module.

Intelligent Controller

The intelligent controller is integrated with multiple systems including a video transmission system, game system, and Scratch programming system. It supports six smart modules, including line recognition, vision marker recognition, person recognition, clap recognition, gesture recognition, and EP Core robot recognition.



1. microSD Slot

Compatible with a microSD card that can read and write faster than 10 MB/s, supporting up to 64 GB.

2. Camera Port

Used to connect to the camera.

3. Speaker Port

Used to connect to the speaker.

4. Autonomous Program Button

Scratch programs written by the user can be set as autonomous programs, which can be loaded directly onto the EP Core. Press the Autonomous Program Button to run the program.

5. Antennas

For optimal Wi-Fi connection, set the intelligent controller antennas at 90°.

6. Reserved Port

Unused port.

7. CAN Bus Port

8. Micro USB Port

Used to connect to the computer.

9. Connect Mode Switch

Used to switch between connecting via Wi-Fi or a router.

10. Connect Button

The connect button functions differently when connecting via Wi-Fi or router.

Connection to Wi-Fi: Once the Wi-Fi password is forgotten, press and hold this button for five seconds to reset the Wi-Fi password.

Connection to Router: When scanning the QR code with the EP Core to join a network, press this button first.

- DO NOT pull on the antenna.
- If the intelligent controller antenna is damaged, the performance of the EP Core will be affected. Contact DJI if the antenna is damaged.

Camera

Designed for EP Core robots, the EP Core camera features a 1/4-inch sensor with 5 million pixels and a FOV of 120°, allowing users to control the EP Core from a first-person perspective.

Clean the lens regularly to avoid blurring or halos. Use a special lens cleaner to make sure that there is no foreign matter on the lens after cleaning and that it does not damage the lens.

Speaker

The EP Core speaker is compatible with a 2.5 mm device with a power rating of 2 W. The speaker provides users with a more immersive experience with sound effects such as when the EP Core launches gel beads or is hit by another EP Core.

Operating Your EP Core

Checking Before Use

Check the following each time you use the EP Core:

1. Make sure the motion controller is properly installed, all cables are connected, and the screws on the chassis rear cover are tightened.
2. Make sure the intelligent controller, blaster, camera, and speaker are connected.
3. Make sure the microSD card is inserted.
4. Make sure the intelligent battery is fully charged and properly inserted.
5. For optimal Wi-Fi connection, set the intelligent controller antennas at 90°.

Operating the EP Core Using a Mobile Device

It is recommended to use the EP Core on flat surfaces such as wooden floors and carpets. Uneven surfaces such as sand or rocks may damage the wheels or motors.

Specifications

RoboMaster EP Core	
Chassis Speed Range	0-3.5 m/s (forward) 0-2.5 m/s (backward) 0-2.8 m/s (sideward)
Max Chassis Rotational Speed	600°/s
Intelligent Controller	
Latency ^[1]	Connection via Wi-Fi: 80-100 ms Connection via Router: 100-120 ms (unobstructed, free of interference)
Live View Quality	720p/30fps
Operating Frequency	2.4 GHz, 5.1 GHz _[2] , 5.8 GHz

Operating Mode	Connection via Wi-Fi, Connection via Router
Max Transmission Distance ^[3]	Connection via Wi-Fi: FCC, 2.4 GHz 140 m, 5.8 GHz 90 m CE, 2.4 GHz 130 m, 5.8 GHz 70 m SRRC, 2.4 GHz 130 m, 5.8 GHz 130 m MIC, 2.4 GHz 130 m Connection via Router: FCC, 2.4 GHz 190 m, 5.8 GHz 300 m CE, 2.4 GHz 180 m, 5.1 GHz 70 m SRRC, 2.4 GHz 180 m, 5.8 GHz 300m MIC, 2.4 GHz 180 m
Transmission Standard	IEEE802.11a/b/g/n
Camera	
Sensor	CMOS 1/4" ; Effective pixels: 5MP
FOV	120°
Max Still Photo Resolution	2560×1440 pixels
Max Video Resolution	FHD: 1080p/30fps HD: 720p/30fps
Max Video Bitrate	16 Mbps
Photo Format	JPEG
Video Format	MP4
Supported SD Cards	Supports microSD cards with a capacity of up to 64 GB
Operating Temperature Range	-10°C to 40°C (14 to 104 °F)
Intelligent Battery	
Capacity	2400 mAh
Maximum Charging Voltage	12.6 V
Nominal Charging Voltage	10.8 V
Battery Type	LiPo 3S
Energy	25.92 Wh
Battery Life (in use)	35 mins (measured at a constant speed of 2.0 m/s on a flat surface)
Battery Life (on standby)	Approx. 100 mins
Weight	169 g
Operating Temperature Range	-10°C to 40°C
Charging Temperature Range	5°C to 40°C
Maximum Charging Power	29 W
App	
iOS	iOS 10.0.2 or later
Android	Android 5.0 or later
Others	
Recommended Routers	TP-Link TL-WDR8600; TP-Link TL-WDR5640 (China) TP-Link Archer C7; NETGEAR X6S (International)
Recommended outdoor power supply solution for routers	Portable laptop charger (with the same input power of the router)

[1] Measured in an interference-free and unobstructed environment with a distance of approximately one meter between the mobile device, the router, and the EP Core. The iOS device used was an iPhone X. The results of testing with different Android device may be different.

[2] Outdoor use of the 5.1 GHz and 5.8 GHz frequency bands is prohibited in some areas. Always follow all local laws and regulations in your country or region.

[3] Measured in an interference-free and unobstructed environment.

For Connection via Wi-Fi, the mobile device used for testing was a sixth-generation iPad (released in 2018).

For Connection via Router, several router models were used for testing. FCC: TP-Link Archer C9; SRRC: TP-Link WDR8600; CE: TP-Link Archer C7; MIC: WSR-1160DHP3.



EU Compliance Statement: SZ DJI TECHNOLOGY CO., LTD. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of the Directive 2014/53/EU.

A copy of the EU Declaration of Conformity is available online at www.dji.com/euro-compliance

EU contact address: DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany

Declaración de cumplimiento UE: SZ DJI TECHNOLOGY CO., LTD. por la presente declara que este dispositivo cumple los requisitos básicos y el resto de provisiones relevantes de la Directiva 2014/53/EU.

Hay disponible online una copia de la Declaración de conformidad UE en www.dji.com/euro-compliance

Dirección de contacto de la UE: DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany

EU-verklaring van overeenstemming: SZ DJI TECHNOLOGY CO., LTD. verklaart hierbij dat dit apparaat voldoet aan de essentiële vereisten en andere relevante bepalingen van Richtlijn 2014/53/EU.

De EU-verklaring van overeenstemming is online beschikbaar op www.dji.com/euro-compliance

Contactadres EU: DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany

Declaração de conformidade da UE: A SZ DJI TECHNOLOGY CO., LTD. declara, através deste documento, que este dispositivo está em conformidade com os requisitos essenciais e outras disposições relevantes da Diretiva 2014/53/EU.

Existe uma cópia da Declaração de conformidade da UE disponível online em www.dji.com/euro-compliance

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Dichiarazione di conformità UE: SZ DJI TECHNOLOGY CO., LTD. dichiara che il presente dispositivo è conforme ai requisiti essenziali e alle altre disposizioni rilevanti della direttiva 2014/53/EU.

Una copia della dichiarazione di conformità UE è disponibile online all'indirizzo Web www.dji.com/euro-compliance

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Une copie de la déclaration de conformité UE est disponible sur le site www.dji.com/euro-compliance

Adresse de contact pour l'UE : DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany

EU-Compliance: Hiermit erklärt SZ DJI TECHNOLOGY CO., LTD., dass dieses Gerät den wesentlichen Anforderungen und anderen einschlägigen Bestimmungen der EU-Richtlinie 2014/53/EU entspricht.

Eine Kopie der EU-Konformitätserklärung finden Sie online auf www.dji.com/euro-compliance.

Kontaktadresse innerhalb der EU: DJI GmbH, Industriestrasse 12, 97618, Niederlauer, Germany

////电池可更换的产品（比如无人机）增加以下一句话////

CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

Environmentally friendly disposal



Electrical appliances must not be disposed of together with the residual waste, but have to be disposed of separately. The disposal at the communal collecting point via private persons is for free.

The owner of old appliances is responsible to bring the appliances to these collecting points or to similar collection points. With this little personal effort, you contribute to recycle valuable raw materials and the treatment of toxic substances.

Umweltfreundliche Entsorgung

Elektro-Altgeräte dürfen nicht mit gewöhnlichem Abfall entsorgt werden und müssen separat entsorgt werden. Die Entsorgung an kommunalen Sammelstellen ist für Privatpersonen kostenlos. Die Eigentümer der Altgeräte sind für den Transport zu den Sammelstellen verantwortlich. Durch diesen geringen Aufwand können Sie zur Wiederverwertung von wertvollen Rohmaterialien beitragen und dafür sorgen, dass umweltschädliche und giftige Substanzen ordnungsgemäß unschädlich gemacht werden.

Tratamiento de residuos responsable con el medio ambiente

Los aparatos eléctricos viejos no pueden desecharse junto con los residuos orgánicos, sino que deben ser desechados por separado. Existen puntos limpios donde los ciudadanos pueden dejar estos aparatos gratis. El propietario de los aparatos viejos es responsable de llevarlos a estos puntos limpios o similares puntos de recogida. Con este pequeño esfuerzo estás contribuyendo a reciclar valiosas materias primas y al tratamiento de residuos tóxicos.

Mise au rebut écologique

Les appareils électriques usagés ne doivent pas être éliminés avec les déchets résiduels. Ils doivent être éliminés séparément. La mise au rebut au point de collecte municipal par l'intermédiaire de particuliers est gratuite. Il incombe au propriétaire des appareils usagés de les apporter à ces points de collecte ou à des points de collecte similaires. Avec ce petit effort personnel, vous contribuez au recyclage de matières premières précieuses et au traitement des substances toxiques.

Smaltimento ecologico

I vecchi dispositivi elettrici non devono essere smaltiti insieme ai rifiuti residui, ma devono essere smaltiti separatamente. Lo smaltimento da parte di soggetti privati presso i punti di raccolta pubblici è gratis. È responsabilità del proprietario dei vecchi dispositivi portarli presso tali punti di raccolta o punti di raccolta analoghi. Grazie a questo piccolo impegno personale contribuirete al riciclo di materie prime preziose e al corretto trattamento di sostanze tossiche.

Milieuvriendelijk afvoeren

Oude elektrische apparaten mogen niet worden weggegooid samen met het restafval, maar moeten afzonderlijk worden afgevoerd. Afvoeren via het gemeentelijke inzamelpunt is gratis voor particulieren. De eigenaar van oude toestellen is verantwoordelijk voor het inleveren van de apparaten op deze of vergelijkbare inzamel punten. Met deze kleine persoonlijke inspanning lever je een bijdrage aan de recycling van waardevolle grondstoffen en de verwerking van giftige stoffen.

Eliminação ecológica

Os aparelhos elétricos antigos não podem ser eliminados juntamente com os materiais residuais. Têm de ser eliminados separadamente. A eliminação no ponto de recolha público através de entidades particulares é gratuita. É da responsabilidade do proprietário de aparelhos antigos levá-los a estes pontos de recolha ou a pontos de recolha semelhantes. Com este pequeno esforço pessoal, contribui para a reciclagem de matérias-primas úteis e para o tratamento de substâncias tóxicas.

Безопасная для окружающей среды утилизация

Старые электрические приборы нельзя выбрасывать вместе с бытовыми отходами, их утилизация производится отдельно. Частные лица могут сдавать приборы в специальные пункты приема бесплатно. Владельцы старой техники несут ответственность за ее сдачу в специальный пункт приема или аналогичную службу. Чтобы внести свой вклад в переработку ценного сырья и ядовитых веществ, от вас требуется совсем небольшое усилие.

Thailand Warning message

เครื่องโทรคมนาคมและอุปกรณ์นี้ มีความสอดคล้องตามข้อกำหนดของ กทช.

Mexico Warning message

"La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada."

Brazil Warning message

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário



FCC compliance statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

ISED compliance statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage;
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The user manual for LE-LAN devices shall contain instructions related to the restrictions mentioned in the above sections, namely that:

- i. the device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
- ii. where applicable, antenna type(s), antenna models(s), and worst-case tilt angle(s) necessary to remain

compliant with the e.i.r.p. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.

- i. le dispositif utilisé dans la bande 5150-5250 MHz est réservé à une utilisation en intérieur afin de réduire le risque de brouillage préjudiciable aux systèmes mobiles par satellite dans le même canal;
- ii. le cas échéant, le (s) type (s) d'antenne, le (s) modèle (s) d'antenne et l'angle (s) d'inclinaison le plus défavorable nécessaire (s) pour rester conforme (e) au p.e. L'exigence relative au masque d'élévation énoncée à la section 6.2.2.3 doit être clairement indiquée.

Radiation Exposure statement

This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

Cet équipement est conforme aux limites d'exposition aux radiations FCC/IC CNR-102 établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps.