

Sugarobot

STEAM

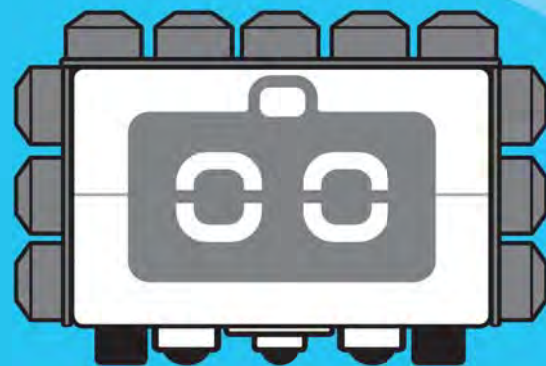


Sugarobot

Electro

User Manual





Fun coding without the screen.



■ Preparation Page 1

■ About Electro Page 6

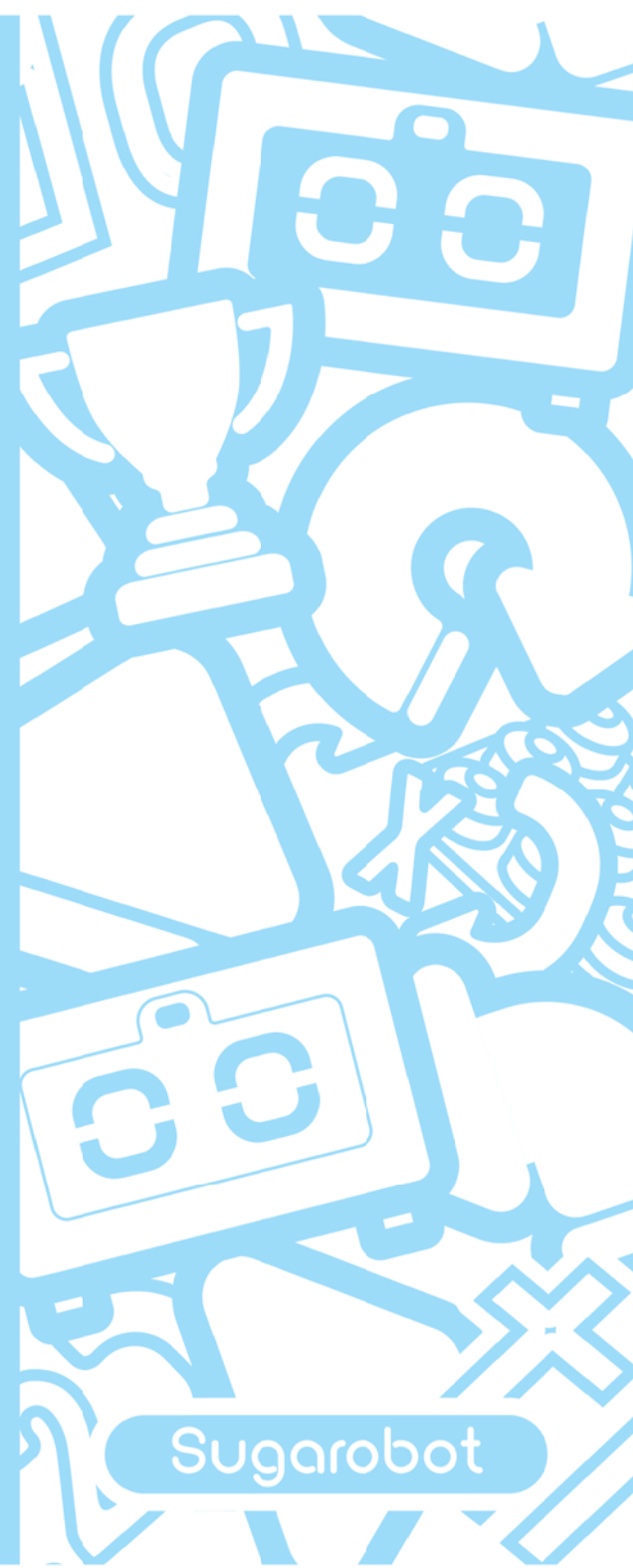
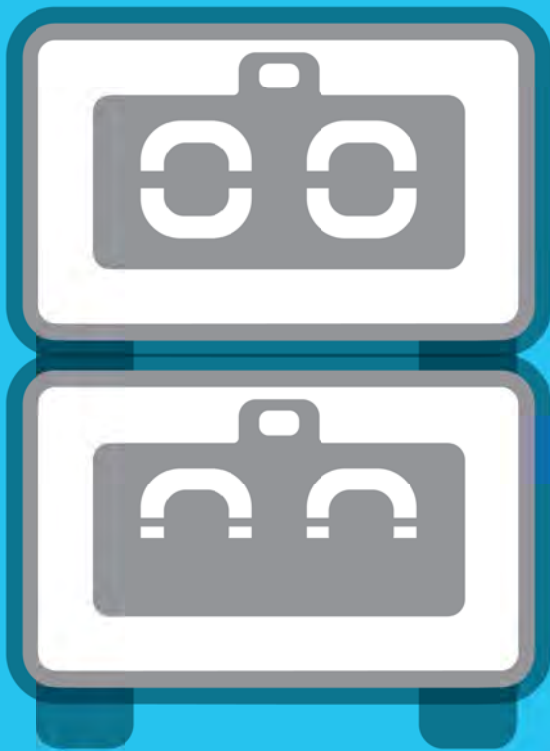
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■ Safty Guidance Page 25

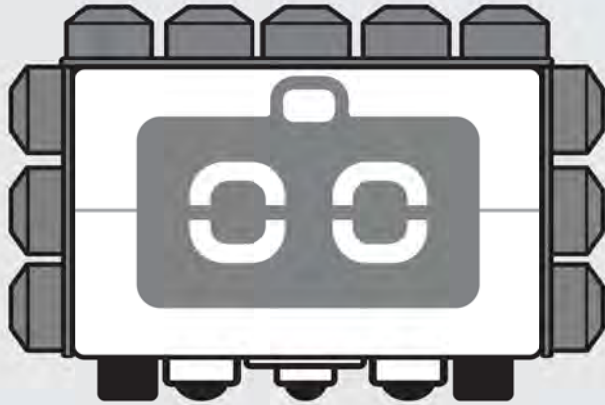
■ Before playing with the Electro, please make sure to read the user guide in the presence of a parent or guardian to ensure safe usage.

Reminder: *This manual contains important information and should be retained; *Before using this product, please read this manual carefully.
Any product issues or usage problems resulting from failure to follow these instructions are the user's sole responsibility;
*This product is fragile. Please do not drop, press, smash, or attempt to damage the product.
Any damage caused by improper use will be the user's sole responsibility.

■ Preparation



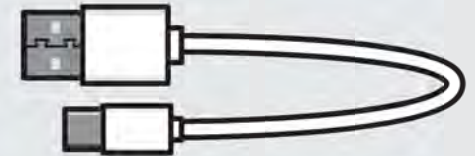
Item list of Electro



Electro x1



Remote Control x1



Charger Cable x1



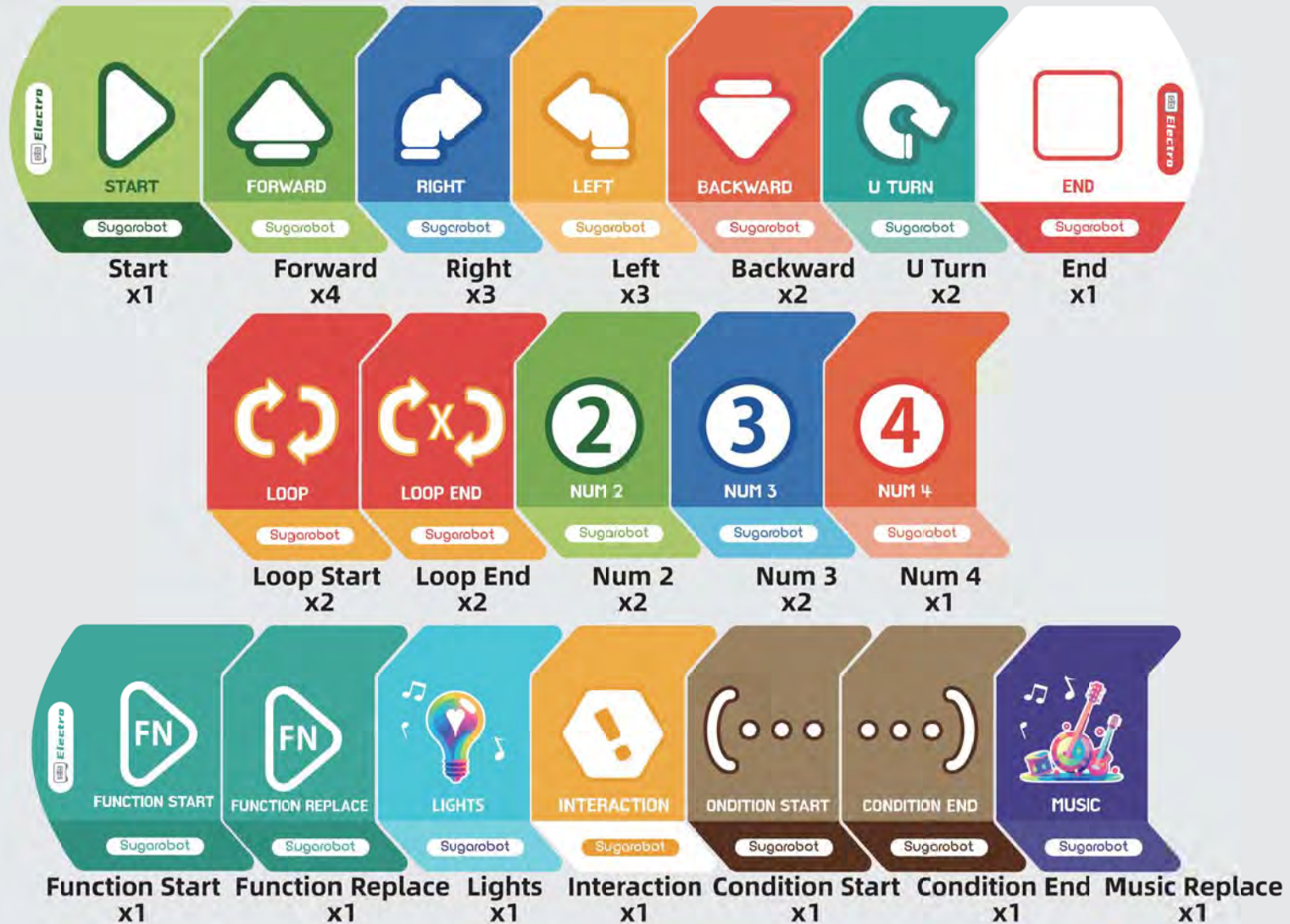
Marker Pen Adaptor x1



Music Mat x1

Item list of Electro

Coding Cards



Item list of Electro

Behavior Cards



**Forward
x2**



**Right
x2**



**Left
x2**



**U Turn
x1**



**Finish Card
x1**



**Ambulance
x1**



**Fire Truck
x1**



**Police
x1**

Item list of Electro



Helicopter
x1



Motorcycle
x1



Airplane
x1



Cat
x1



Lion
x1

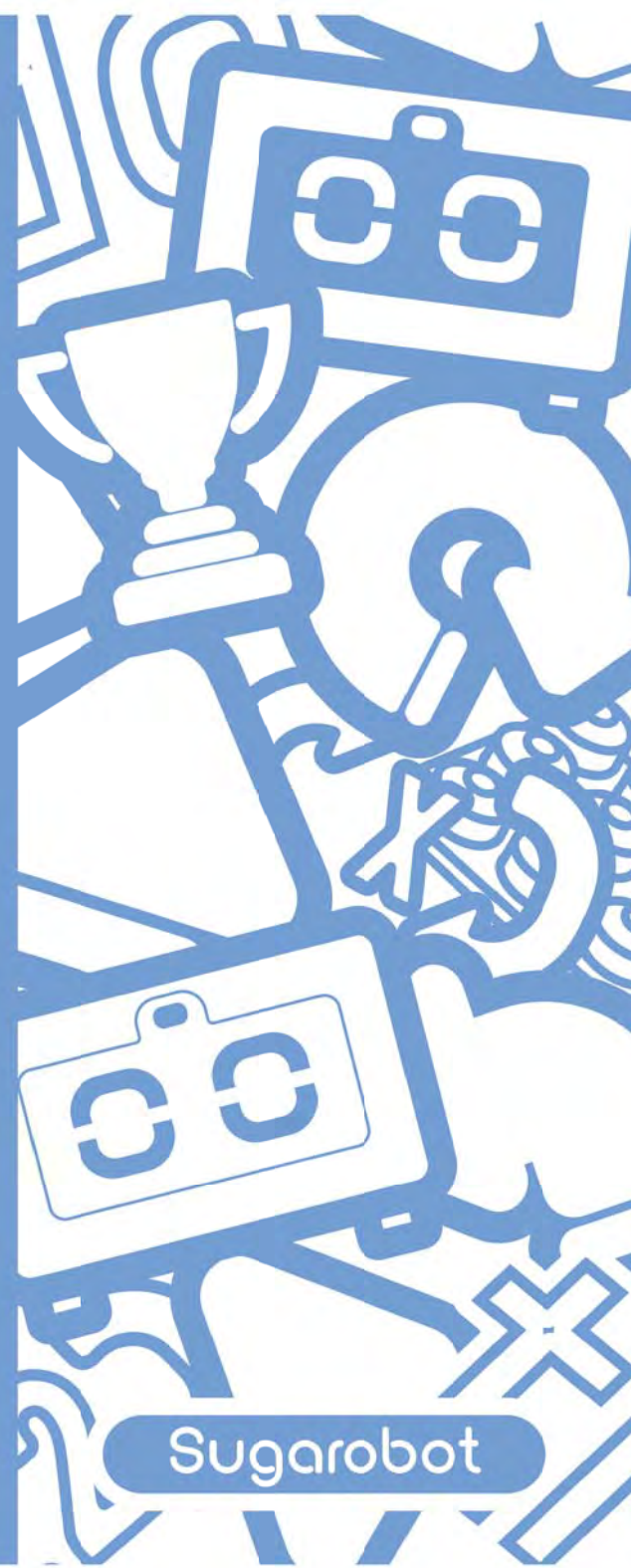


Elephant
x1



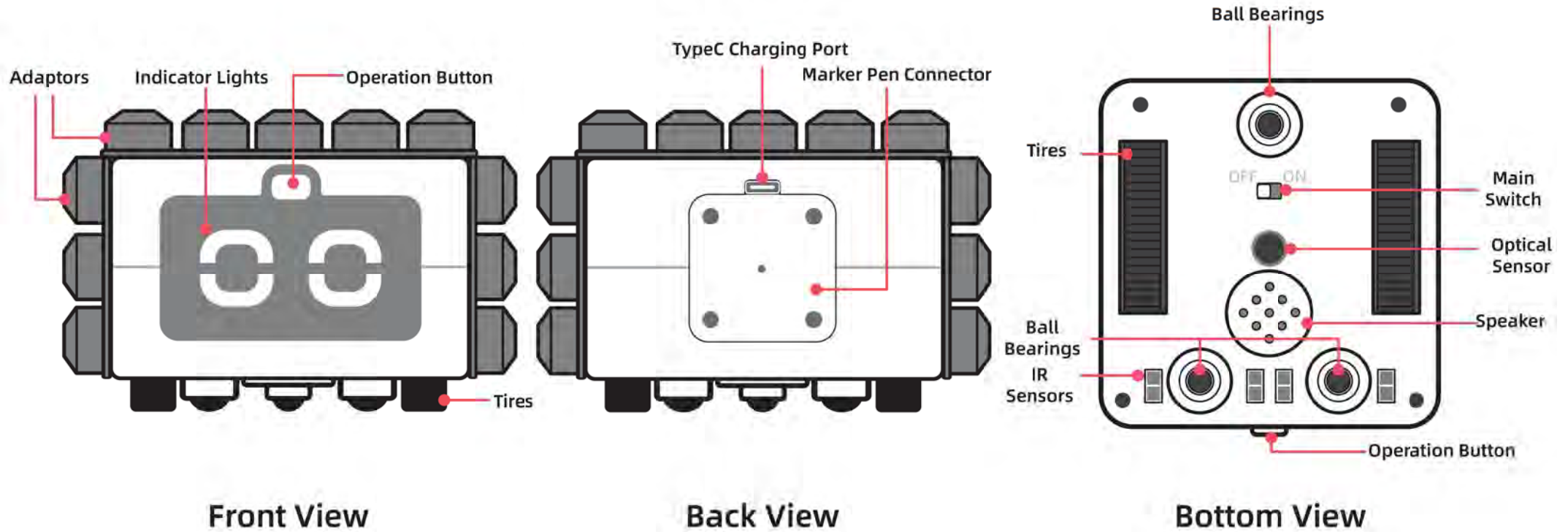
Dog
x1

■ About Electro

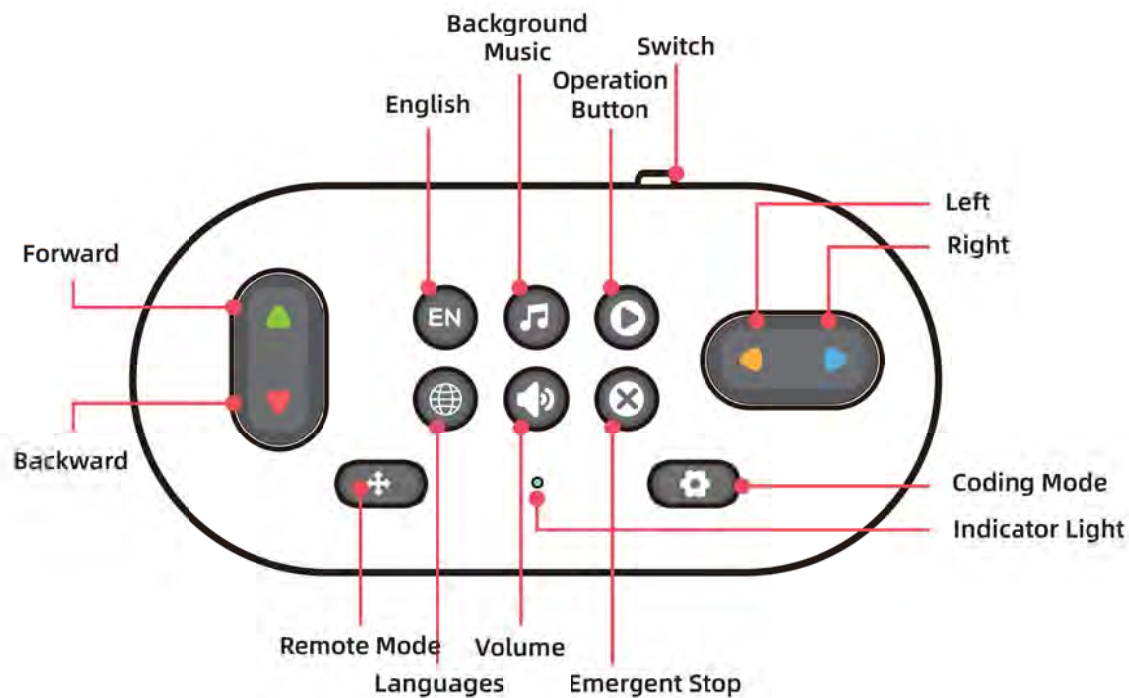


Sugarobot

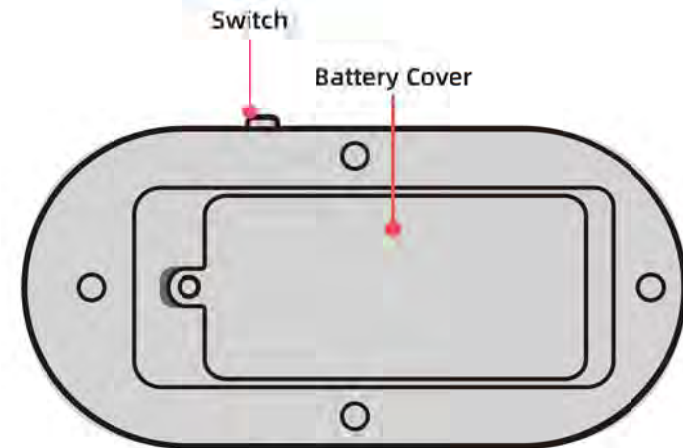
Electro Body



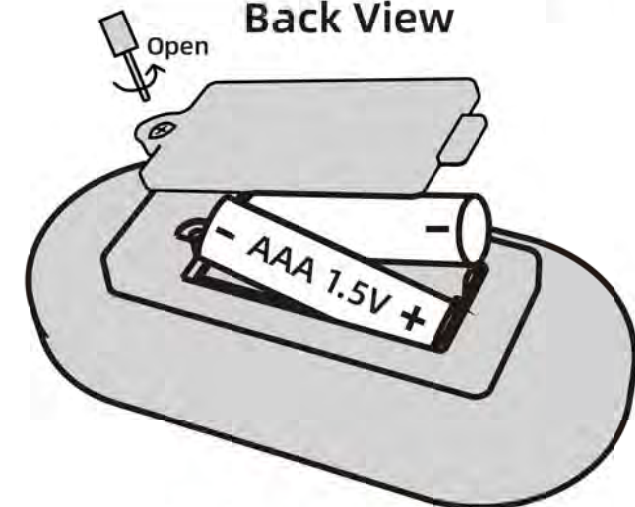
Remote Control



Top View

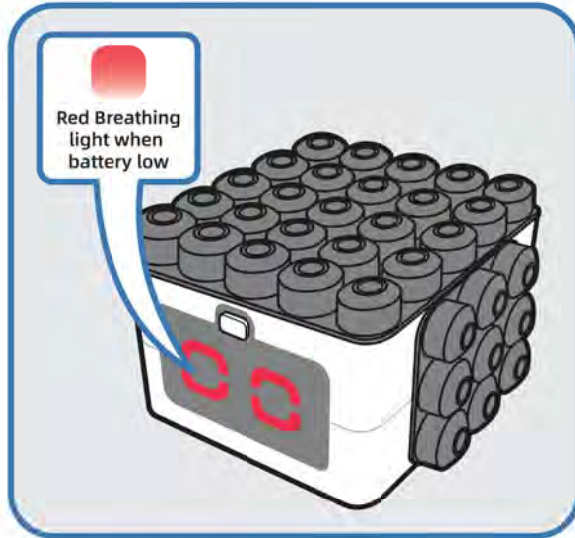


Back View

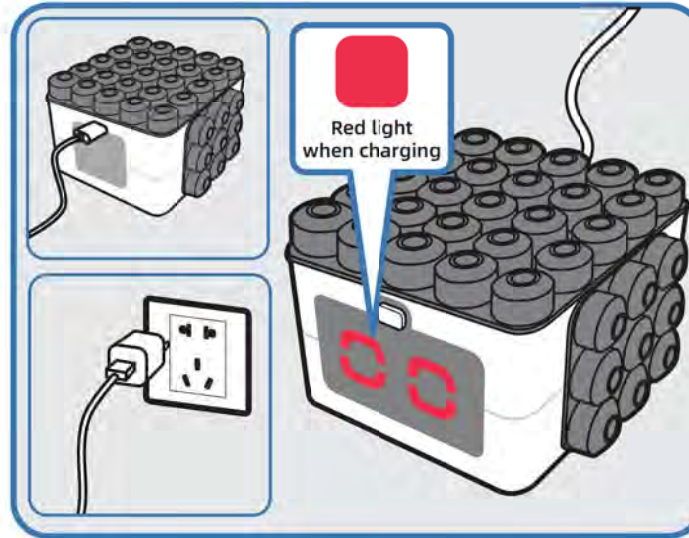


Battery Replacement

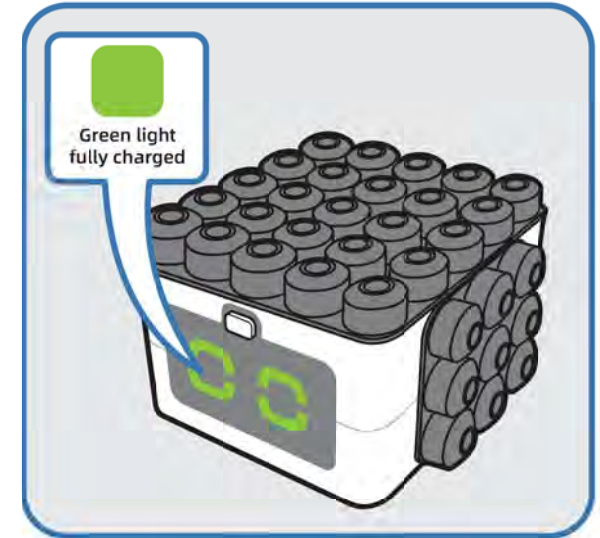
Recharge



①When Electro's battery is low, the light will flash red, and there will be a voice prompt. At this time, Electro cannot be controlled further.



②Before charging, please turn off the power of Electro. Connect the TYPE-C end of the data cable to Electro's charging port, and plug the USB end into the power adapter, then connect it to the socket. When the charging status is normal, the command light of Electro will turn **Solid Red**. Additionally, please do not continue to play with Electro during the charging process.

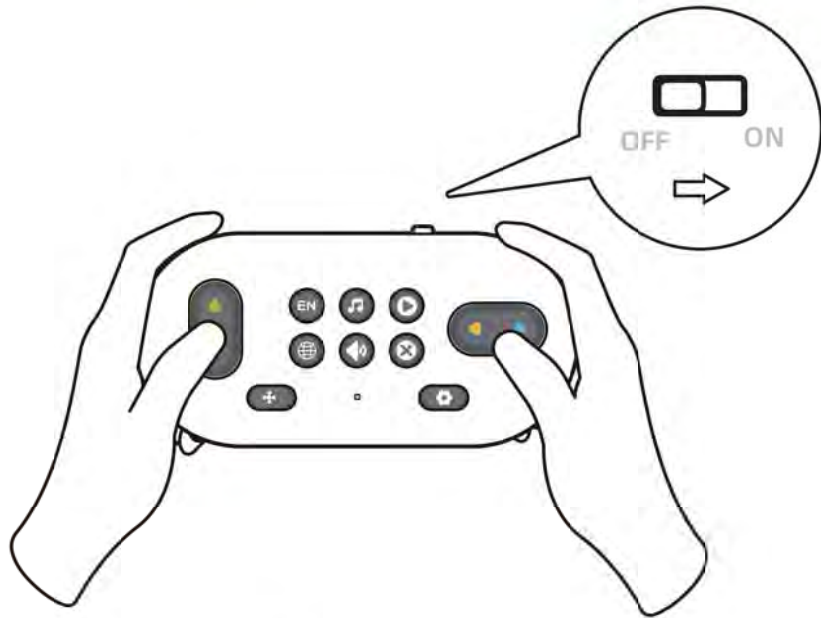


③When the charging of Electro is complete, the command light will turn solid green.

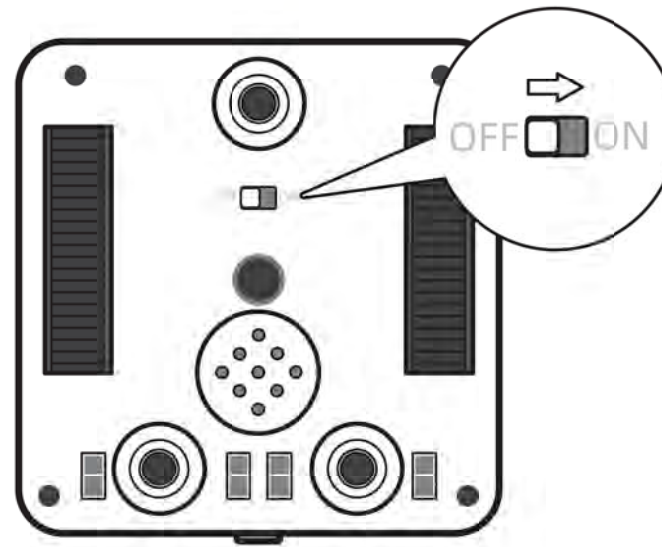


- Electro supports USB-Type C charging.
- Electro can run for approximately 1.5 hours when fully charged.(continuous operation).
- In the case of a depleted battery, it takes approximately 60 minutes to fully charge Electro.

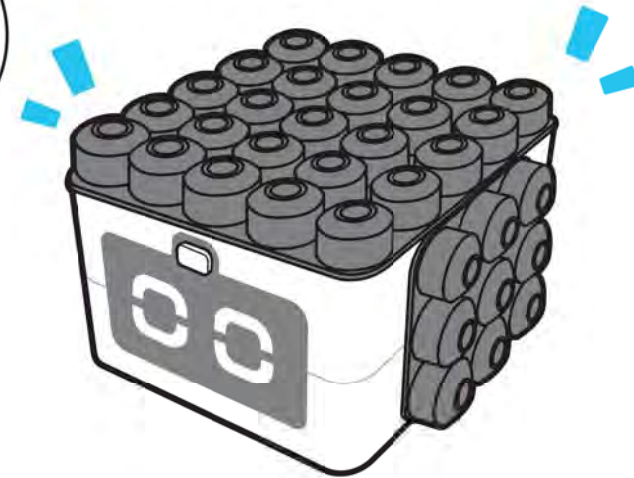
Startup Electro



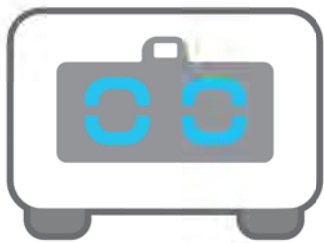
①



②



③



Turn on the remote control and Electro.
When you hear the voice prompt from Electro,
it indicates that Electro has been successfully
powered on.

■ How to play

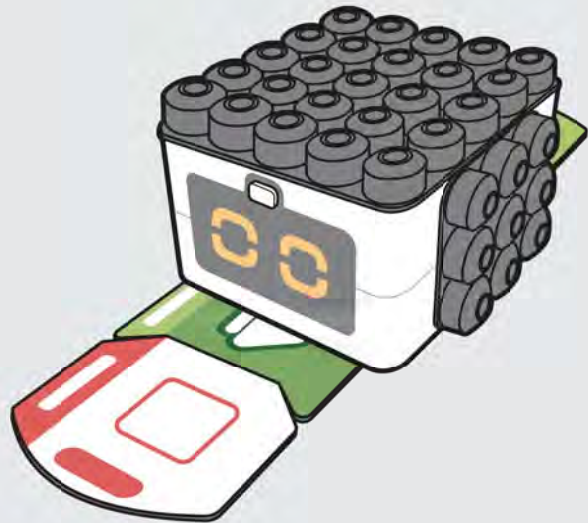


Coding Mode

After the robot is powered on, it defaults to coding mode, but it can also be switched to programming mode using the remote control.



Building the "program" from Start Card to End Card.



•Automatically read coding instruction cards.

After connecting the coding cards from the start card to the end card, place Electro on top of the start card, and it will automatically read the codes.

•Execute coding instructions.

After pressing the operation button, Electro will start to execute the coding instructions.

•Error self-check and prompt

After pressing the operation button, it will automatically check the recorded instructions for any errors, such as empty instruction or syntax errors.

Loop Functions

•Loop and Nested loop

The commands between 'Loop Start' and 'Loop End' will be executed multiple times according to the number cards. Electro also supports 'Nested Loops' by placing another layer of loop commands inside an existing loop.



循环起始卡 循环结束卡 数字2卡 数字3卡 数字4卡



The right way of using 'loop start' and 'loop end' cards.



(Missing number cards after 'loop start')



(Missing 'loop end' card)

The wrong way of using loop cards.

Function Subroutine



Function Start Card



Function Replacement Card

Steps of using Function Cards

- ①: Record commands by placing the 'Function Start' card before the commands and letting Electro read the cards.
- ②: Adding 'Function Replacement' card to the main commands.
- ③: Press the operation button to start executing the commands.

•Functions

Electro supports recording complex commands using the 'Function Start' card. After storing the commands inside the 'Function,' we can use the 'Function Replacement' card wherever we want.



Self-Checking



Error Command Example



Error of missing 'Loop End' card in the array.

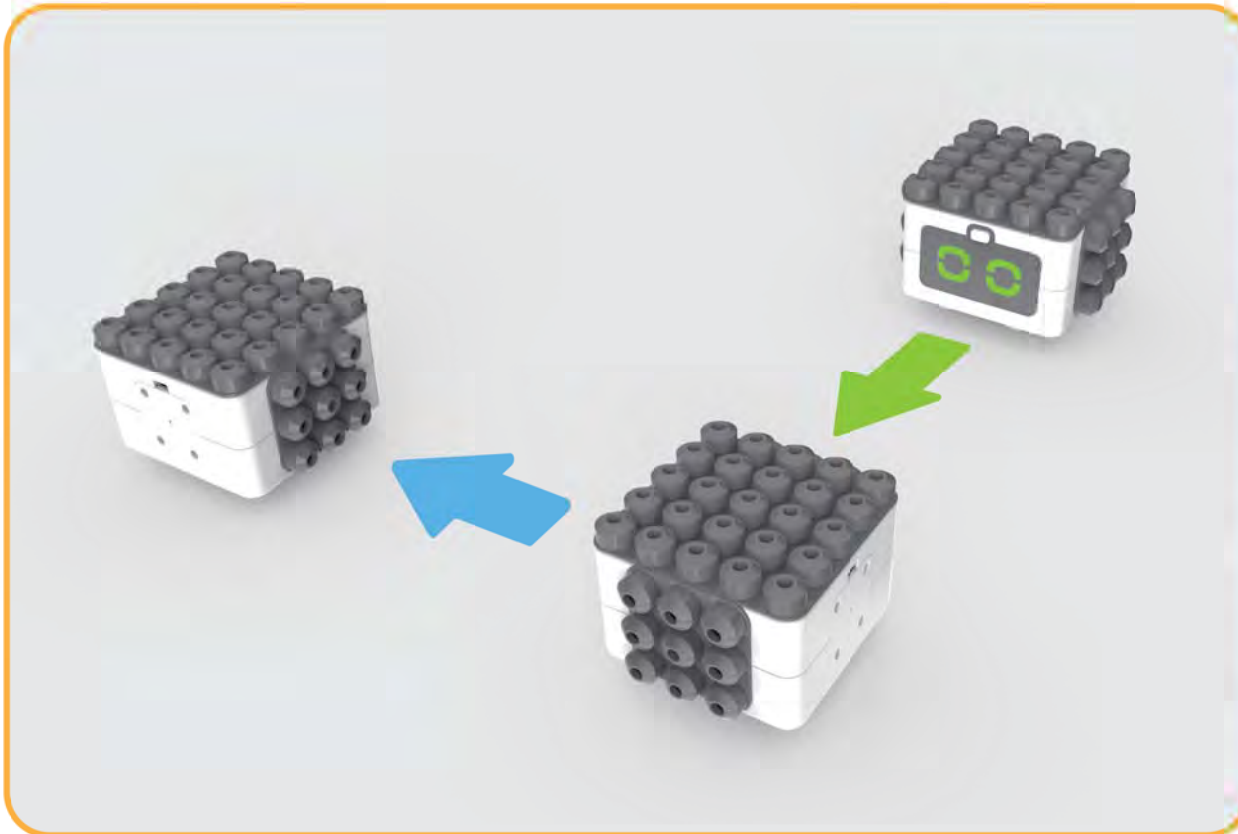
Self-Checking:

After completing the instruction input, if the start running button is pressed and the "red light flashes" while the intended commands do not begin executing, it indicates that Electro has detected an error in the user's input. The correct instructions need to be re-entered before the program can be run again.

Common reasons for instruction input errors may include:

1. The 'Loop Start' card and 'Loop End' card do not appear as a matching pair.
2. The 'Loop End' card appears before the 'Loop Start' card.
3. There is no 'End' card.
4. An obstruction occurred while reading the instructions, preventing successful card reading.
5. More than 50 commands were entered at once.
6. Function replacement card were nested within other Function start card.
7. The 'Condition Start' card and 'Condition End' card do not appear as a matching pair.

Coding Mode - Path Free



'Path Free' is an open gameplay style where Electro is not limited to a specific route through tracks or maps.

In 'Coding Mode' after reading the commands, place the robot on a flat table or floor. At this time, Electro's indicator light shall be a green breathing light.

Pressing Electro's operation button will allow Electro to execute programming instructions on a flat surface without a predefined path.

Note: At this point, Electro may not move in a straight line or turn exactly 90°, as factors such as friction and its own weight can affect its movement.



Coding Mode - Line Tracing

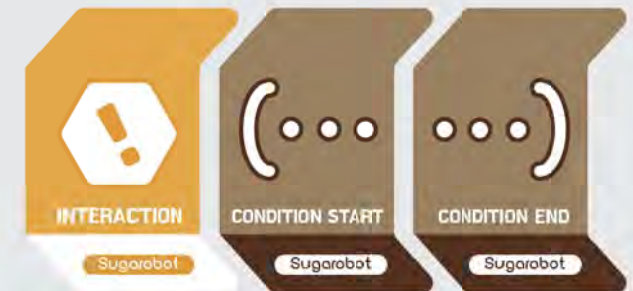


Using insulating tape to make routes on a white or light-colored reflective surface, paper, is convenient and quick.



Place Electro on the black track, and its light will change from a green breathing light to a yellow light, indicating that Electro has successfully entered line-tracing mode. Now, press the operation button, and it will follow the black track, making autonomous directional decisions when it reaches intersections.

Coding Mode - Stage Challenges (need maps)



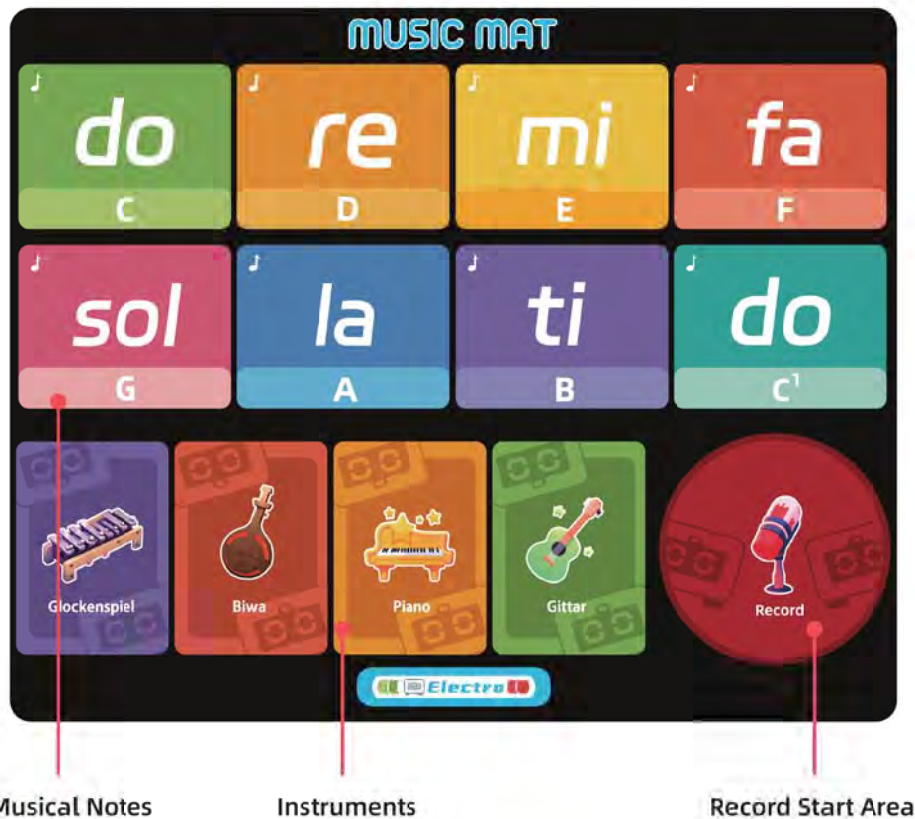
The Condition Start, Condition End, and Interaction cards must be used in conjunction with the Electro educational kits.

For detailed instructions on how to use them, please refer to the educational kit guidances.

Coding Mode - Music

•About Music Mat

In coding mode,
Electro can record musical notes into a song
using the Music Mat.



① Scan the 'Record Start' area
to let Electro turn into recording
mode.



② Scan different musical
notes on the Music Mat.



③ Play the recorded music
by scanning different
instruments. (Electro
supports switching between
different instruments while
playing the music.)



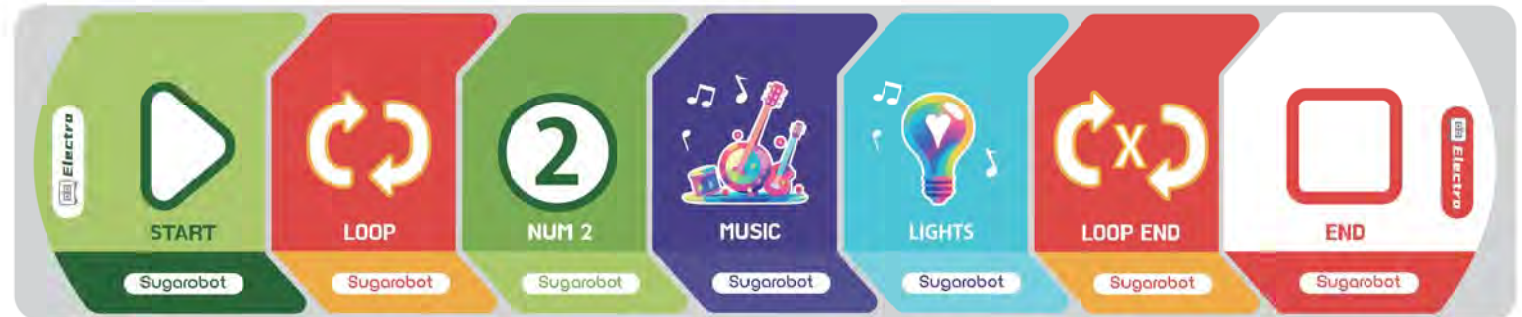
Coding Mode - Music

•Music Card

Add the recorded music into commands.



Music Card



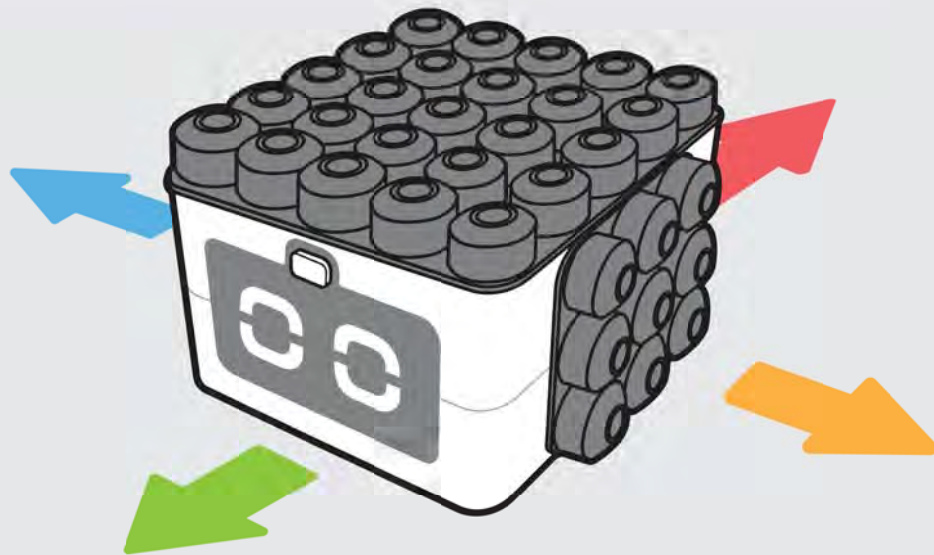
Place the "Music Play Card" into the programming instruction set, and after Electro runs the coding commands, it will play the recorded music when it reaches the corresponding Music Play Card. You can also use the loop command to play the music multiple times!

Remote Mode

After turning on the Electro remote control, when the remote's light stops flashing, it indicates that it has successfully paired with Electro.

Press the remote control mode button in the lower-left corner to enter 'Remote Control Mode'.

·The default color of light is 'BLUE' in 'Remote Control Mode'.

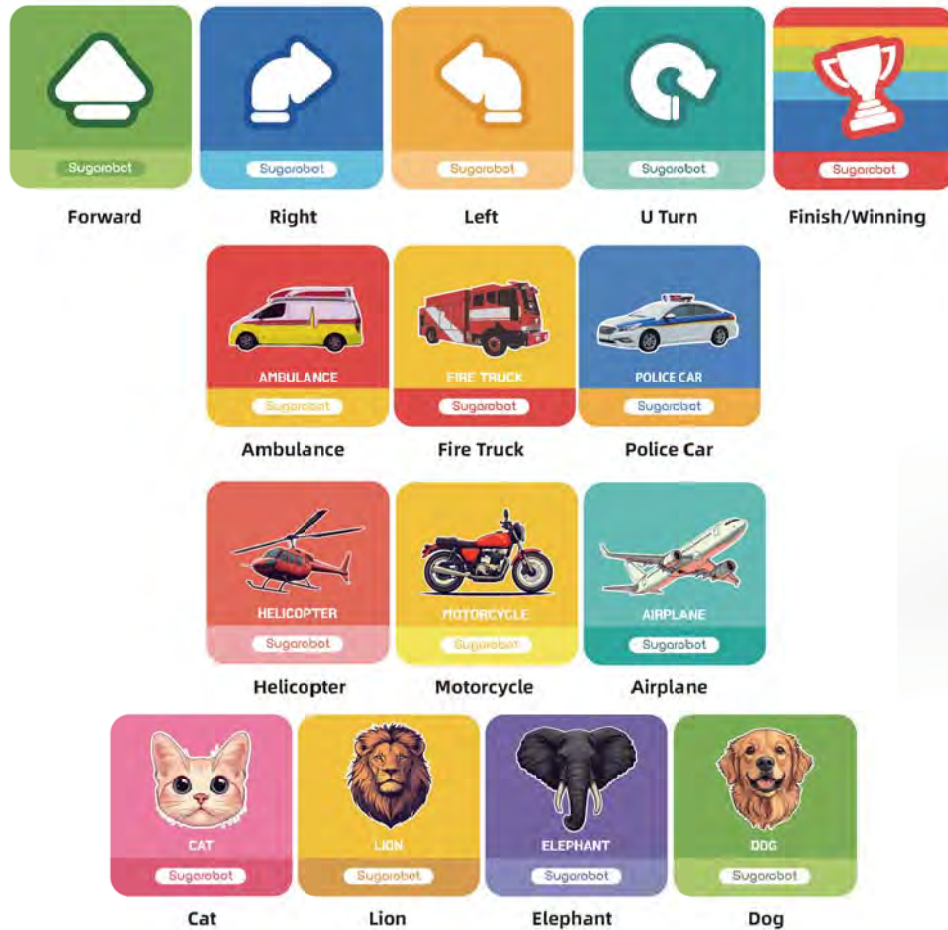


Forward-Green
Backward-Red

Left-Yellow
Right-Blue

Remote Mode - Behavior Cards

Behavior cards will affect Electro when it drives over them in Remote Control Mode. Depending on the type of card, different actions and sound effects will be triggered.



Remote Mode - Self-Driving



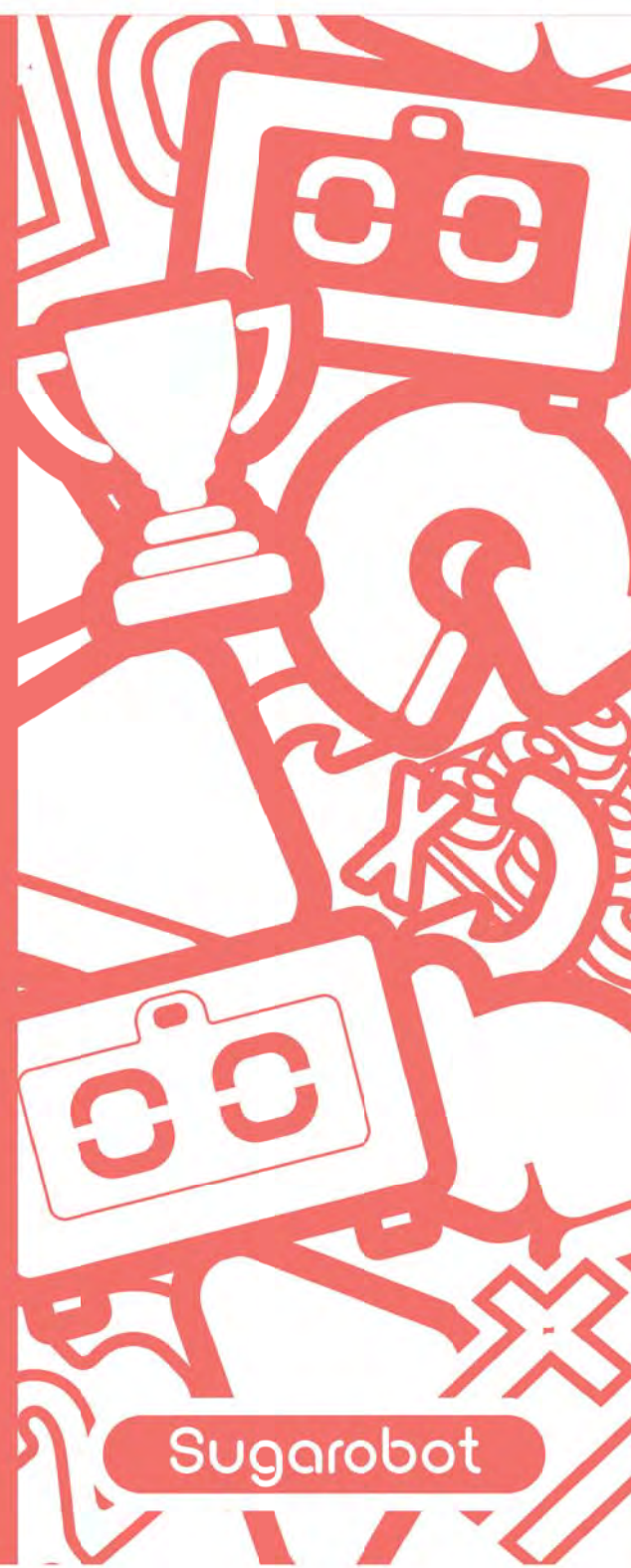
The behavior cards with directional commands, the 'Directional Cards', will directly influence Electro's movements. By laying the soft behavior cards on a flat surface, Electro can even "auto-drive" itself to the destination.

Remote Mode - Racing



The 'Directional Cards' have a higher control priority than the remote control commands, allowing Electro to support multiplayer competitions. Set a target endpoint and place multiple 'Directional Cards' along Electro's path. Participants must try to avoid the 'Traps' along the way (if they accidentally run over a card, the remote control will become unresponsive for a period of time). Let's see who can reach the target endpoint first!

■ Safty Guidance



Sugarobot

Maintenance

•Cleaning

- When cleaning this product, please ensure that the power of both the robot and the remote control is turned off.
- Please use a soft, clean, dry cloth to gently wipe the surfaces of the robot and the remote control. Do not use chemicals such as alcohol, gasoline, or solvents for cleaning, as they may cause deterioration or discoloration of the product's shell or finish.
- Please use a soft, clean, dry cloth or cotton swab to gently wipe the infrared sensors and image recognition sensors on the bottom of the robot. After cleaning, do not press hard on the sensors.
- Please use a soft, clean, dry cloth or cotton swab to gently wipe the robot's charging port and data cable interface.
- Please use tweezers to carefully remove any dust, lint, or hair that may have entered the robot or remote control.
- Please do not blow dust and dirt out of the robot's charging port or bottom speaker with your mouth.
- Please do not wash or soak this product with liquid, as it is not waterproof.

•Charging and Battery Lifespan for Electro

- Please charge this product in an environment with a temperature between 5°C and 35°C.
Charging may not be possible if the temperature exceeds this range.
- If the product will not be used for an extended period, it is recommended to fully charge it at least once half a year to maintain battery functionality.
- When the battery's lifespan is significantly reduced, it indicates that it may have reached the end of its usable life.
- Do not disassemble, impact, squeeze, or throw the product into fire.
- Please do not place it in a high-temperature environment.
- Please do not replace the lithium battery on your own. If it is damaged, please contact a professional for assistance.

Please retain this instruction for future reference!

Light Indications



Light indications

-  Breathing Red—Needs to recharge
-  Constant Red—Charging
-  Constant Green—Charging finished

Coding Mode

-  Flashing Red—Error/Syntax Error
-  Flashing Green—Passing Tests/Tests Finished
-  Breathing Green—Finish reading the commands
-  Constant Yellow—Detected Maps or Tracks after reading the commands.

Remote Mode

-  Constant Blue—Remote Control Mode
-  Flashing White—Detect Finish Card

During Operation

-  Green—Forward
-  Red—Backward
-  Yellow—Turning Left
-  Blue—Turning Right



Electro Specifications



Specifications:

·Charging Voltage/Current:

5V=1A

·Max Outputs:

8.5W

·Dimensions:

94*114*78 mm (LxWxH)

·Weight:

~350g

·Max Carrier Weight:

≤2kg

·Battery Capacity:

1800mAh

·Standby Time:

~240min

(Battery Capacity may drop after multiple charge and discharge cycles.)

·Recommand Charging Frequency:

Once per week.

·Environment Requirement:

Indoor Activities

·Continous Operation Time when Fully Charged:

~ 90min

(Battery Capacity may drop after multiple charge and discharge cycles.)

·Wireless Communication :

2.4GHz

Safty Warnings

Please follow the safety warnings, precautions, and usage instructions. Children should play under the supervision of an adult after reading this manual together.

- Please regularly inspect the product: 1. Data cable interface 2. Robot power interface 3. Remote control battery compartment cover and the bottom of the robot, ensuring there is no damage or dust accumulation.
- To avoid the risk of fire, explosion, injury, or malfunction, do not expose this product to extreme environments or flames.
- Do not use this product near stoves, active induction cookers, or other heating devices, and do not expose it directly to sunlight through a window.
- Do not disassemble, modify, or alter this product on your own. Unauthorized modifications or disassembly may result in risks of fire, electric shock, or malfunction.
- Do not attempt to open or repair this product yourself. Contact your local dealer or customer support for assistance.
- Keep the product away from young children and pets. Store it in a place that is out of reach of young children and pets to prevent accidental injuries, such as swallowing small parts of the product.
- Warning: For the purposes of recharging the battery, only use the detachable supply cord provided with this toy.

Precautions

1. When connecting the data cable, please ensure that both ends are securely plugged into their respective ports.
2. When playing, please ensure there is enough space to avoid collisions with people, furniture, windows, or other household items, which could result in personal injury, property damage, or product malfunction.
3. When operating the product, be careful not to use forceful or rough actions that may subject the product to strong physical impacts.
4. Please do not throw or step on this product, and avoid dropping it from a height.
5. When using the data cable, avoid pulling it forcefully.
6. Do not place heavy objects on the product or use it to drag heavy items.
7. Please use this product on a flat, clean, and stable surface or table. After play, ensure the product is properly stored.
8. Do not apply excessive pressure or forceful actions to the robot's indicator lights or the "Execute Programming Instructions" button.
9. Please keep this product clean.

This product is intended for indoor use only; please do not use it outdoors.

Precautions

Important:

- This toy contains replaceable and non-replaceable batteries.
 - Please install the batteries using the correct polarity.
 - Please charge the rechargeable batteries under the supervision of an adult.
 - Do not mix different types of batteries or new and used ones.
 - Non-rechargeable batteries must not be recharged.
 - Rechargeable batteries must be removed from the toy before charging.
 - Flat or dead batteries should be removed from the toy.
 - The power supply terminals are not to be short-circuited to avoid damaging the toy or causing a fire hazard.
 - Always remove the battery if the toy is not to be used for some time.
 - Used batteries and broken electrical and electronic products must be disposed of at an approved collection point. Such products must not be thrown away alongside regular household waste.
 - Please replace the batteries when the toy won't work, re-activates frequently, or when its music is weakened.
 - Protect the toy from water or dampness.
 - Please ensure that the power is turned 'off' before changing the battery. Battery charging must be done by adults only.
- The toy is only to be connected to Class II equipment bearing the following symbol.



For EU Compliance

Frequency bands: 2415-2469MHz

Max. Output Power: 5.12dBm for controller, -2.85dBm for robot.

Precautions

ISED Compliance Statements

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.

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. 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. Cet équipement est conforme aux limites d'exposition aux radiations IC CNR-102 établies pour un environnement non contrôlé.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 to 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.

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.



Sugarobot[®]



Sugarobot
Electro

CAN ICES-003(B) / NMB-003(B)

47CFR §2.1077 Compliance information.
Unique Identifier: 850618AE
Responsibility Party: Hape International Inc
4001 West Green Tree Road
Milwaukee, WI 53209 USA
800-661-4142



For more information,
please visit the official website:

www.sugarobots.com