

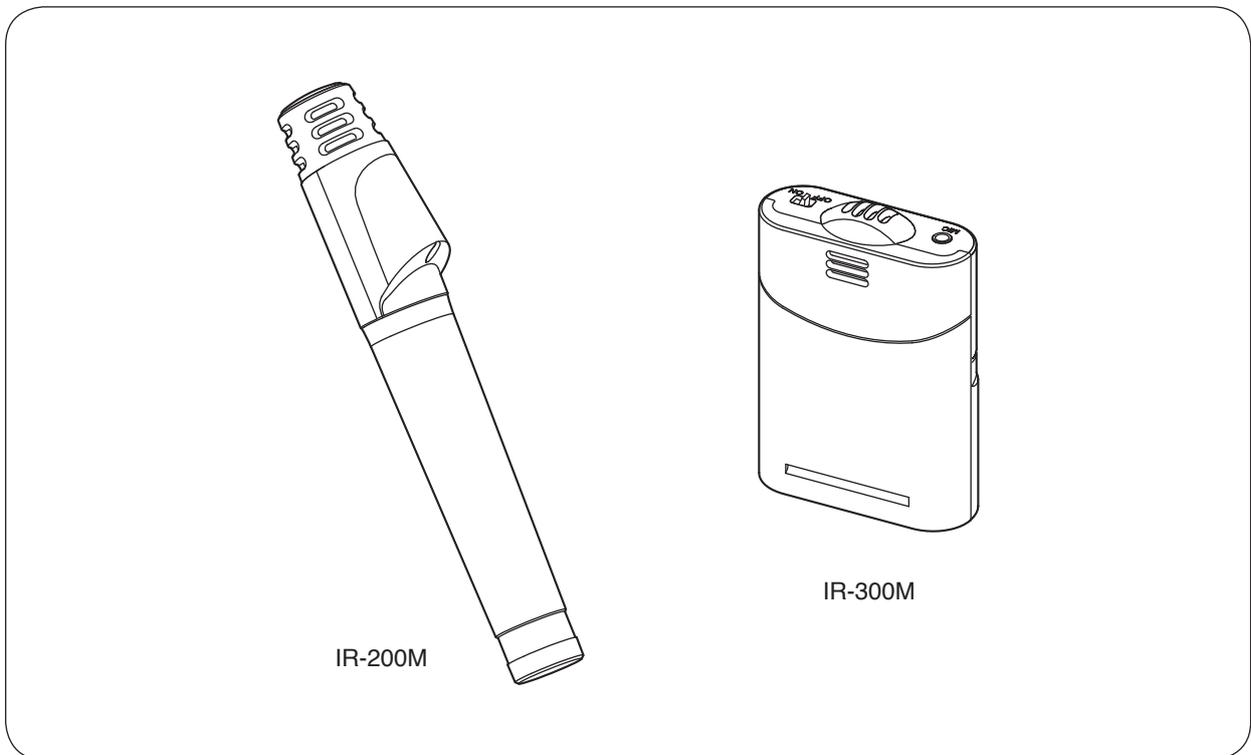


INSTRUCTION MANUAL

## INFRARED WIRELESS MICROPHONES

**IR-200M**

**IR-300M**



Thank you for purchasing TOA's Infrared Wireless Microphone.  
Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

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# 1. SAFETY PRECAUTIONS

- Before installation or use, be sure to carefully read all the instructions in this section for correct and safe operation.
- Be sure to follow all the precautionary instructions in this section, which contain important warnings and/or cautions regarding safety.
- After reading, keep this manual handy for future reference.



## **WARNING**

Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.



## **CAUTION**

Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.



## **WARNING**



## **CAUTION**

### **When the Unit is in Use**

- Use TOA's IR-200BC Battery Charger when recharging.  
The infrared wireless microphone can be powered by optionally available nickel metal hydride (NiMH) batteries. The use of any other than the specified charger could result in fire, personal injury or environmental contamination due to battery rupture or leakage.
- Stop charging if the batteries are not fully charged within 3 hours. Failure to do so may cause the batteries to fire, explode, leak, or heat.
- Never short-circuit the charging terminals on the bottom of the microphone with metal objects.  
Doing so could result in electric shocks or burns.
- To prevent the electromagnetic wave from badly influencing medical equipment, make sure to switch off the unit's power when placing it in close proximity to the medical equipment.

### **When the Unit is in Use**

- When the unit is not in use for 14 days or more, be sure to take the batteries out of the unit because battery leakage may cause a fire, personal injury, or environmental contamination.
- Make sure to observe the following handling precautions so that a fire or personal injury does not result from leakage or explosion of the battery.
  - Be sure to use 2 IR-210BTs or 2 IR-200BTs Rechargeable Batteries designed for use with the infrared wireless microphone when recharging.
  - Avoid mixed use of new and old batteries, batteries of different types, or fully charged and discharged batteries in the same microphone.
  - Even if the product numbers of the rechargeable batteries to be used are the same, avoid mixing new and old batteries, or using together those of different charging conditions.
  - Do not short, disassemble, heat nor put the battery into a fire.
  - Do not solder a battery directly
  - Note correct polarity (positive and negative orientation) when inserting a battery in the unit.
  - Avoid locations exposed to the direct sunlight, high temperature and high humidity when storing batteries.

## FCC Compliance

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.

Any modifications made to this device that are not approved by TOA Corporation may void the authority granted the user by the FCC to operate this equipment.

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required correct the interference at his own expense.

## 2. GENERAL DESCRIPTION

The IR-200M (hand-held type) and IR-300M (hands-free type) infrared wireless microphones are intended for speech applications and use unidirectional electret condenser microphone units featuring high sensitivity and clear sound.

## 3. FEATURES

- Employs the PLL synthesizer system, allowing up to 6 different frequencies to be set.
- Powered by 2 dedicated rechargeable NiMH batteries of the same product number or 2 AA alkaline batteries.

### Note

It is recommended that the microphone be used with the optional IR-210BT/200BT rechargeable battery that not only ensures longer microphone operation, but is also friendly to the environment.

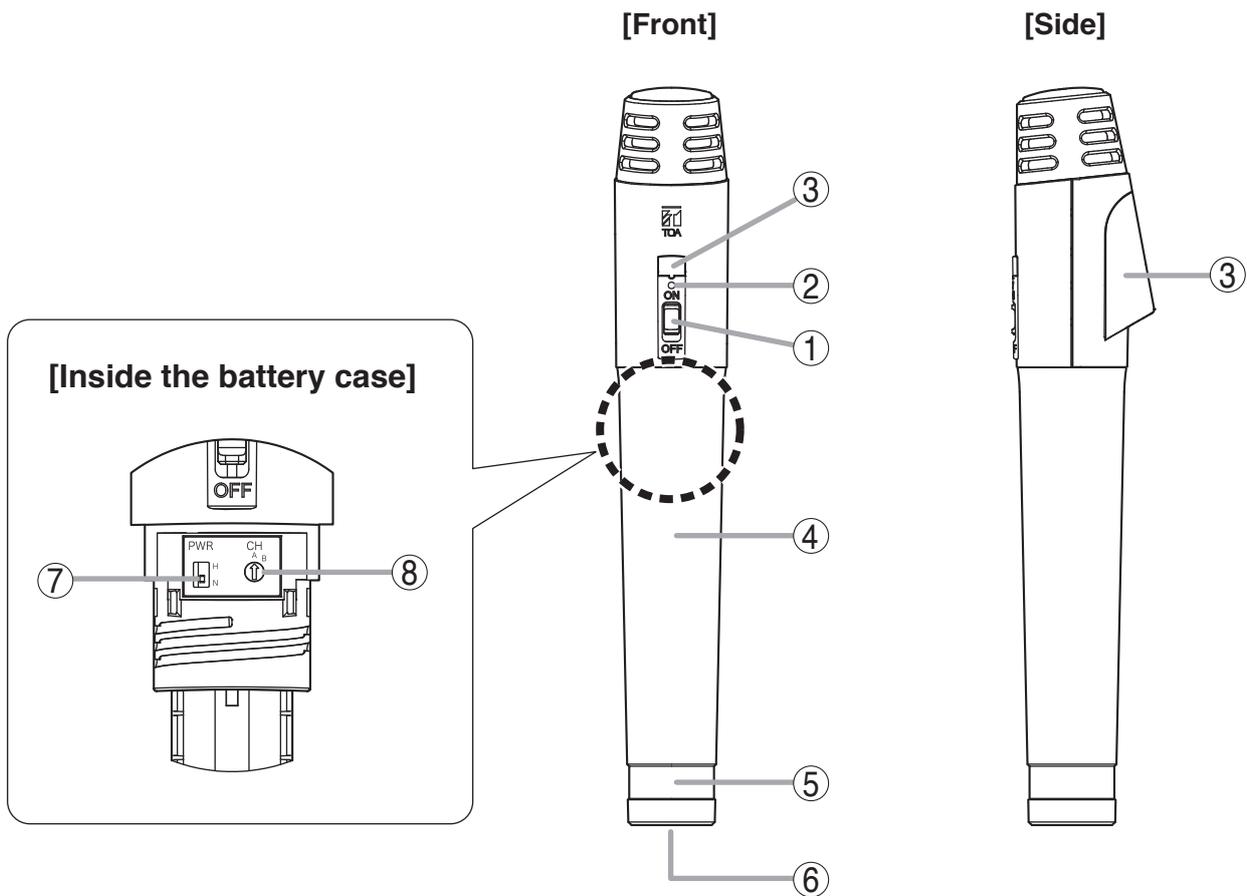
- The IR-300M is equipped with an external microphone input terminal, allowing it to be used in combination with the YP-M101 tie-clip type microphone or YP-M301 headset microphone.
- The microphone system's infrared transmission eliminates problems with interference or eavesdropping, allowing simultaneous use in adjacent conference rooms or school classrooms.
- Since the infrared microphone uses a frequency band that does not interfere with that of the infrared conference system (TS-800 and TS-900 Series), both the infrared wireless microphone system and the conference system can be simultaneously installed in the same location.
- Anti-bacteria-treated body.

## 4. HANDLING PRECAUTIONS

- Do not cover the infrared wireless microphone's infrared emitter with the hand or hide the microphone by placing it inside clothes. Covering the infrared emitter will disable light transmission.
- Avoid using the infrared microphone in close proximity to plasma displays or infrared LAN, which could lead to noise or microphone malfunctions.
- Do not dismantle or modify the infrared microphone.
- Take care not to drop the infrared microphone on the floor or hit it on hard objects, as this could lead to microphone failures.
- The infrared microphone cannot be used outdoors or in areas exposed to direct sunlight.
- Do not place the infrared microphone in high-temperature locations, such as in a car parked with its doors closed in summer, or in highly humid locations, as this could lead to microphone failure.
- Avoid using the infrared microphone in locations that can be splashed with perspiration or seawater, as this could lead to microphone failures.
- When cleaning the infrared microphone, be sure to turn the power switch to OFF. Wipe with a soft dry cloth. If it gets very dirty, use the soft cloth slightly moistened in neutral cleanser. Never use volatile spirits like thinner, benzene, or alcohol. Such chemicals may damage its plastic surface.

## 5. NOMENCLATURE AND FUNCTIONS

### 5.1. IR-200M



#### 1. Power switch

Turns on and off the microphone.

#### 2. Battery indicator

Lights when the power switch (1) is turned on. Continuously lights green while the battery is fully charged, and gradually changes to red as the battery becomes weaker.

#### 3. Infrared emitter

Emits the infrared beam for communications.

#### 4. Battery case

Contains the battery compartment. Be sure to open and close the case correctly. (Refer to p. 7 "BATTERY INSERTION.")

#### 5. Color label attachment area

Attach optional color label to distinguish between infrared wireless microphones.

#### 6. Charging terminal

(Refer to p. 8 "How to Charge.")

#### 7. Power selector switch [PWR]

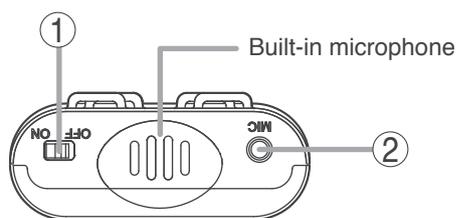
Switches the power level of the infrared beam for communications. (Refer to p. 12 "ABOUT THE POWER SELECTOR SWITCH.")

#### 8. Channel selector switch [CH]

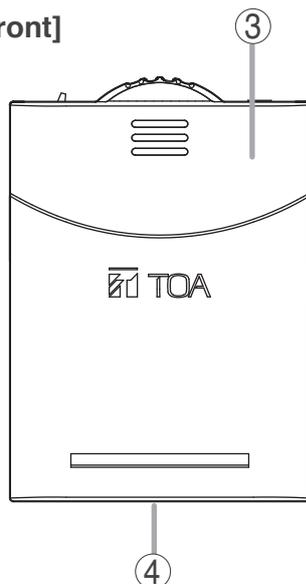
Set the selector switch to the same channel as that of the tuner. (Refer to p. 11 "CHANNEL SETTINGS.")

## 5.2. IR-300M

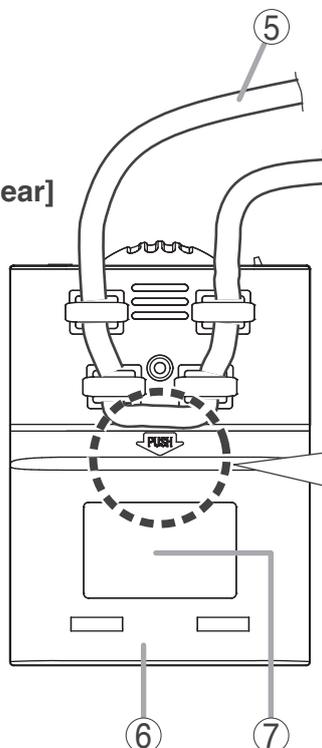
[Top]



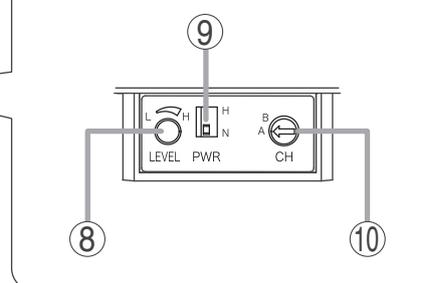
[Front]



[Rear]



[Inside of the battery cover]



### 1. Power switch / battery indicator

Turns on or off the microphone.  
Turning on this switch causes its indicator to come on, allowing it to also function as a battery indicator. This switch continuously lights green while the battery is fully charged, and gradually changes to red as the battery becomes weaker.

### 2. External microphone input terminal [MIC]

Used to connect a headset microphone or other external microphone.

### 3. Infrared emitter

Transmits the infrared beam for communications.

### 4. Charging terminal

(Refer to p. 8 "How to Charge.")

### 5. Neck strap

Used to suspend the infrared wireless microphone from the neck. (Refer to p. 10 "INFRARED WIRELESS MICROPHONE USAGE TIPS.")

### 6. Battery cover

Contains the battery compartment.  
Be sure to open and close the cover correctly. (Refer to p. 7 "BATTERY INSERTION.")

### 7. Color label attachment area

Attach optional color label to distinguish between infrared wireless microphones.

### 8. Microphone level control

Used to adjust the input level when using an external microphone. (Refer to p. 12 "ABOUT THE MICROPHONE LEVEL CONTROL.")

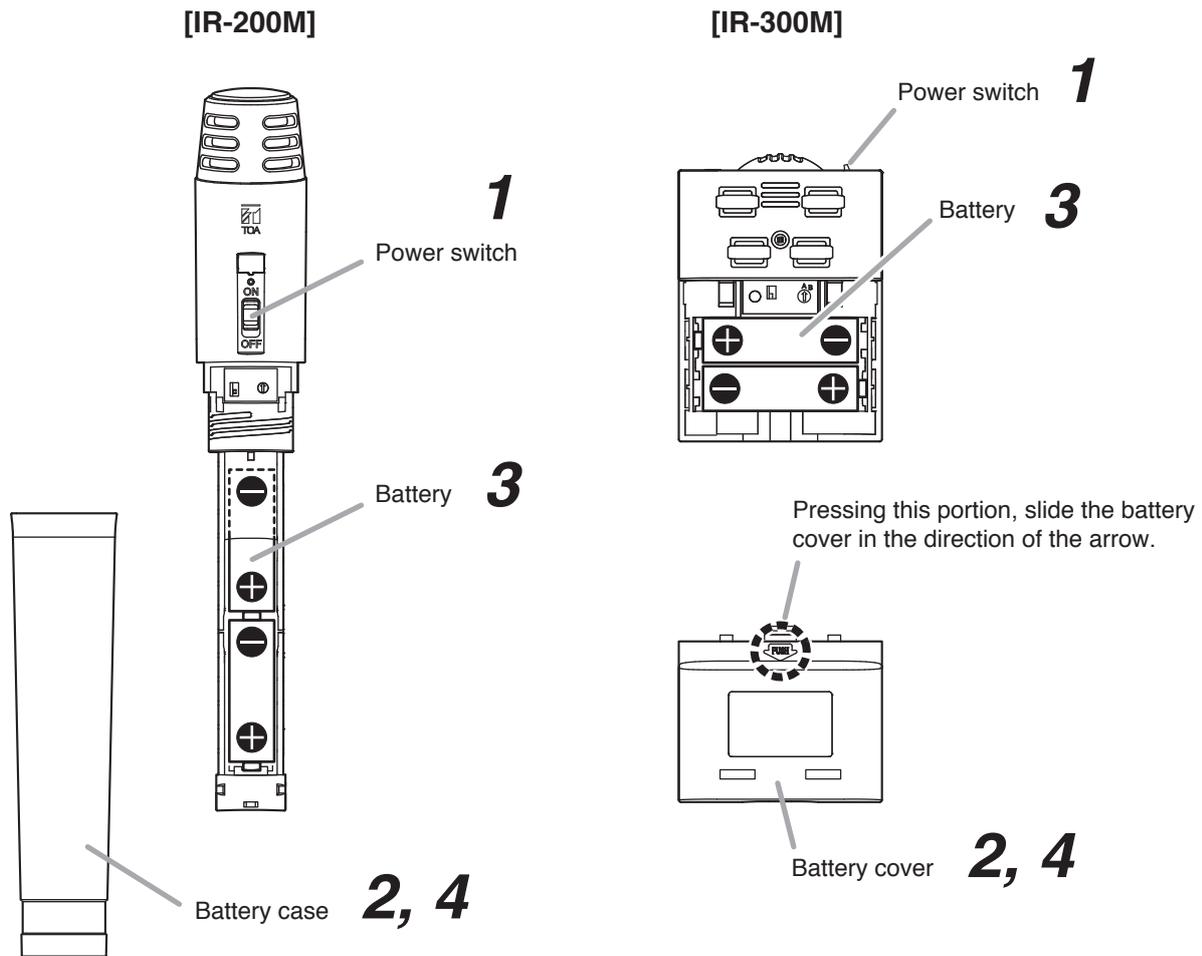
### 9. Power selector switch

Switches the power level of the infrared beam for communications. (Refer to p. 12 "ABOUT THE POWER SELECTOR SWITCH.")

### 10. Channel selector switch

Set the selector switch to the same channel as that of the tuner. (Refer to p. 11 "CHANNEL SETTINGS".)

## 6. BATTERY INSERTION



**Step 1.** Set the power switch to the OFF position.

**Step 2.** Remove the battery case (IR-200M) or battery cover (IR-300M).

**[IR-200M]**

Rotate the battery case counterclockwise.

**[IR-300M]**

Slide the battery cover in the direction of the arrow while pressing the arrow portion.

**Step 3.** Insert 2 dedicated rechargeable NiMH batteries of the same product number or 2 AA alkaline batteries, noting correct polarities (+ and -) indicated in the battery compartment.

**Step 4.** Replace the battery case (IR-200M) or battery cover (IR-300M) securely.

## 7. WHEN OPERATING ON RECHARGEABLE BATTERIES

### CAUTION

When charging, never insert rechargeable batteries other than the specified IR-210BT/200BT battery in the infrared wireless microphone. Charging any other than the IR-210BT/200BT battery may result in fire or personal injury due to battery rupture.

#### Notes

- When operating on rechargeable batteries, the optional IR-200BC Battery Charger is required.
- For rechargeable batteries, be sure to use the optional IR-210BT/200BT battery. Do not use other batteries.

### 7.1. How to Charge

**Step 1.** Set the infrared wireless microphone's power switch to the OFF position.

#### Note

Be sure to turn off the microphone's power switch when charging. Batteries cannot be correctly charged if the power switch is ON.

**Step 2.** Place 2 rechargeable batteries in the infrared wireless microphone.  
(Refer to p. 7 "BATTERY INSERTION.")

**Step 3.** Fully insert the infrared wireless microphone into the microphone receptacle of the IR-200BC Battery Charger.

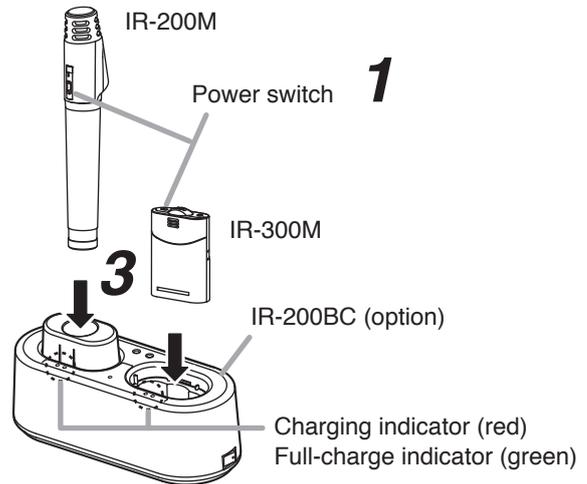
The IR-200BC's charging indicator lights red and charging begins.

Charging is completed in approximately 3 hours and the IR-200BC's full-charge indicator lights green.  
(When charging the IR-200M microphone, attach the mounting adapter supplied with the charger.)

#### Notes

- If the red charging indicator does not light even if the infrared wireless microphone has been inserted into the charger, check to see if the microphone has been correctly inserted.
- The infrared wireless microphone becomes warm after charging completion, however this is not a failure.

**Note:** For more information, please read the instruction manual enclosed with the IR-200BC Battery Charger.



### 7.2. Charging Timing

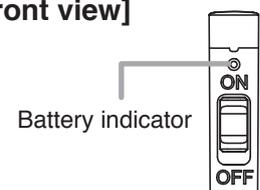
As discharge progresses, the battery indicator's color gradually changes from green to red. If the indicator lights red during use, charge the infrared microphone immediately since the microphone will be disabled several minutes after the indicator has lit red.

#### [Guidelines on the rechargeable battery's operation time]

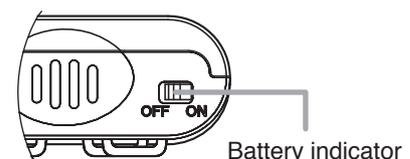
Power selector switch* position	Continuous usage time
H	Approx. 5 hours
L	Approx. 8 hours

\* Refer to p. 12 "ABOUT THE POWER SELECTOR SWITCH."

#### [IR-200M's front view]



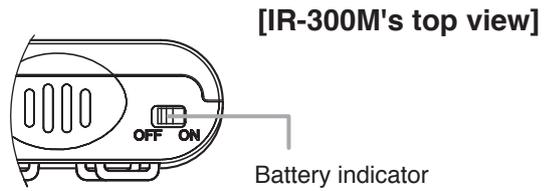
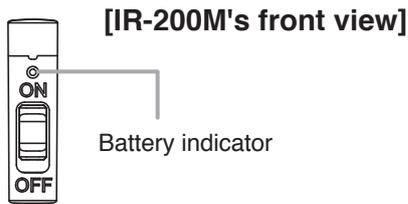
#### [IR-300M's top view]



#### Notes

- When using the IR-210BT/200BT rechargeable battery for the first time or when using it after it has been stored for a long period of time, be sure to charge it before use.
- The IR-210BT/200BT battery is designed to cycle through about 500 charges and discharges. When the microphone operation interval becomes extremely short after prolonged repeated use, change the battery with a new one.

## 8. WHEN USING DRY CELL BATTERIES



The battery indicator continuously lights green while the battery is fully charged, and gradually changes to red as the battery becomes weaker. Change the battery with a new one when the indicator lights red.

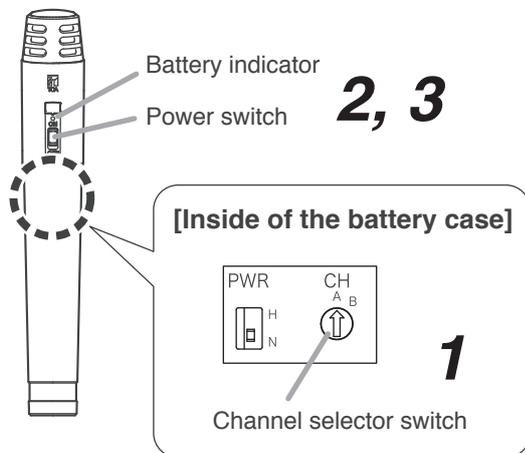
### [Guidelines on the AA alkaline dry cell battery's operation time]

Power selector switch* position	Continuous usage time
H	Approx. 4 hours
N	Approx. 6 hours

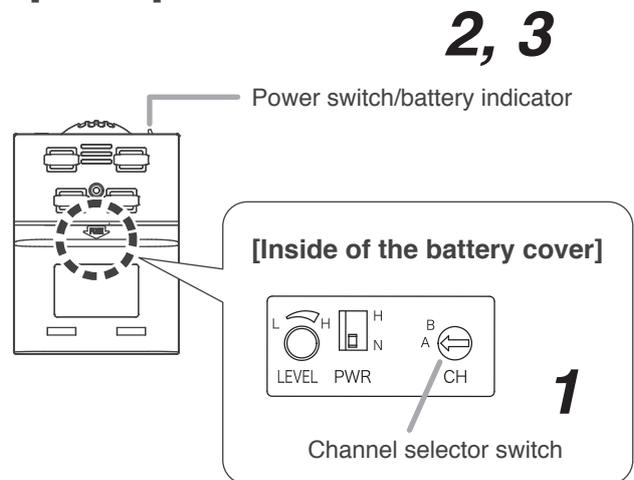
\*Refer to p. 12 "ABOUT THE POWER SELECTOR SWITCH."

## 9. OPERATION

[IR-200M]



[IR-300M]



**Step 1.** Confirm that the infrared wireless microphone has been set to the same channel as that of the infrared wireless tuner. (Refer to p. 11 "CHANNEL SETTINGS.")

**Step 2.** Turn on the infrared microphone's power switch and confirm that the battery indicator lights green.

**Step 3.** Turn off the infrared microphone's power switch after use.

## 10. INFRARED WIRELESS MICROPHONE USAGE TIPS

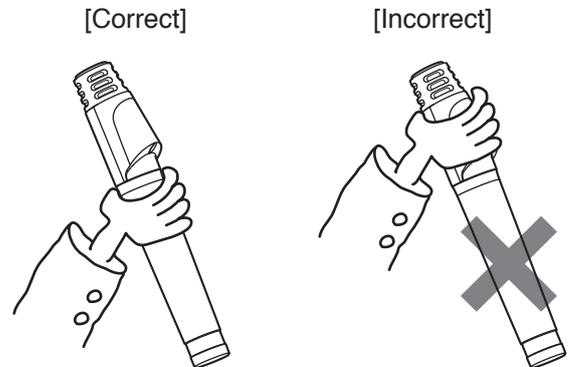
### 10.1. When Holding the Microphone or Suspending It From the Neck

#### Note

Do not cover the infrared wireless microphone's infrared emitter with the hand or hide the microphone by placing it inside clothes. Covering the infrared emitter will disable light transmission.

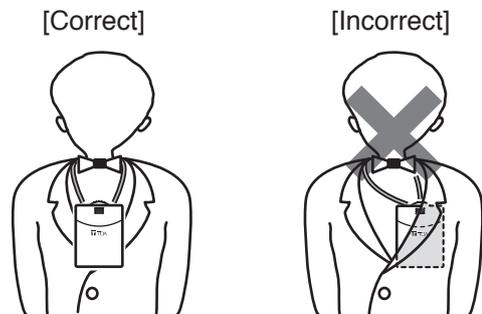
#### [Hand-held type]

Hold the infrared microphone so that its power switch faces the user and its infrared emitter is oriented toward the front.



#### [Hands-free type]

Suspend the microphone from the neck so that its infrared emitter is oriented toward the front.



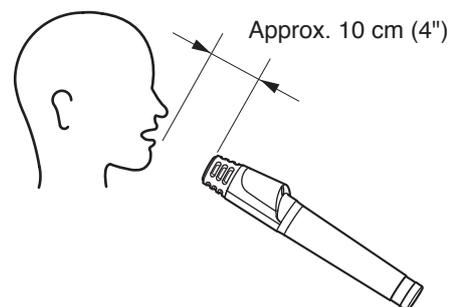
### 10.2. Microphone-to-Mouth Distance

#### Note

Do not speak loudly with the microphone close to the mouth (within 10 cm or 4"). The voice will sound muddy and hard to hear.

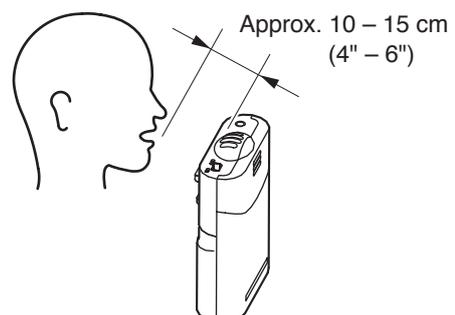
#### [Handheld type]

Keep a distance of 10 cm (4") between microphone and mouth when speaking.



#### [Hands-free type]

Adjust the strap length so that the distance between microphone and mouth is kept at 10 – 15 cm (4" – 6").

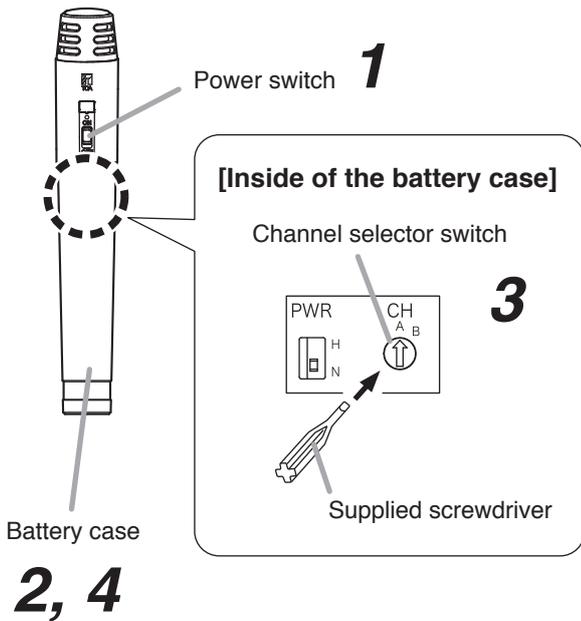


# 11. CHANNEL SETTINGS

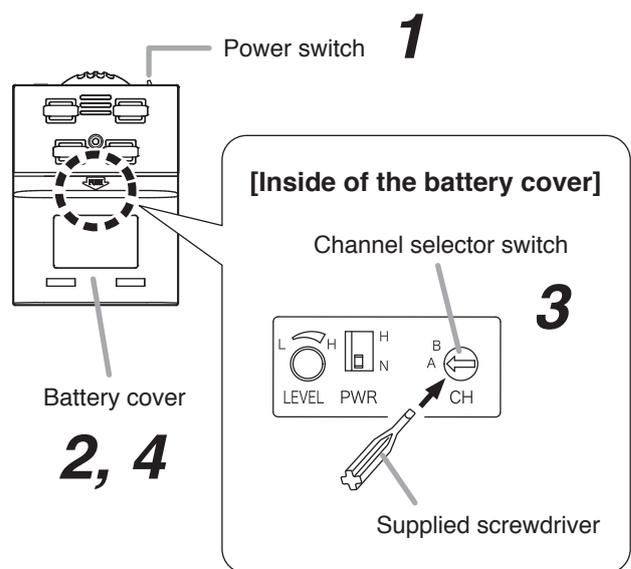
## Notes

- Make sure that the infrared wireless microphone channel is identical to that of the infrared wireless tuner. If the channels are different, microphone signals cannot be tuned.
- If the channel switch pointer is incorrectly set, such as between 2 numbers resulting in no indication, the battery indicator will alternately flash green and red to indicate irregularities. Confirm the channel selector switch position and set it correctly.

### [IR-200M]



### [IR-300M]



**Step 1.** Set the power switch to the OFF position.

#### Note

The transmitting frequency will not change even if the channel setting is performed with the power switched on.

**Step 2.** Remove the battery case (IR-200M) or battery cover (IR-300M).

#### [IR-200M]

Rotate the battery case counterclockwise.

#### [IR-300M]

Slide the battery cover in the direction of the arrow while pressing the arrow portion.

**Step 3.** Set the channel selector switch to the desired channel.

Rotate the channel selector switch using the supplied screwdriver. Select the channel A or B.

**Step 4.** Replace the battery case (IR-200M) or battery cover (IR-300M) securely.

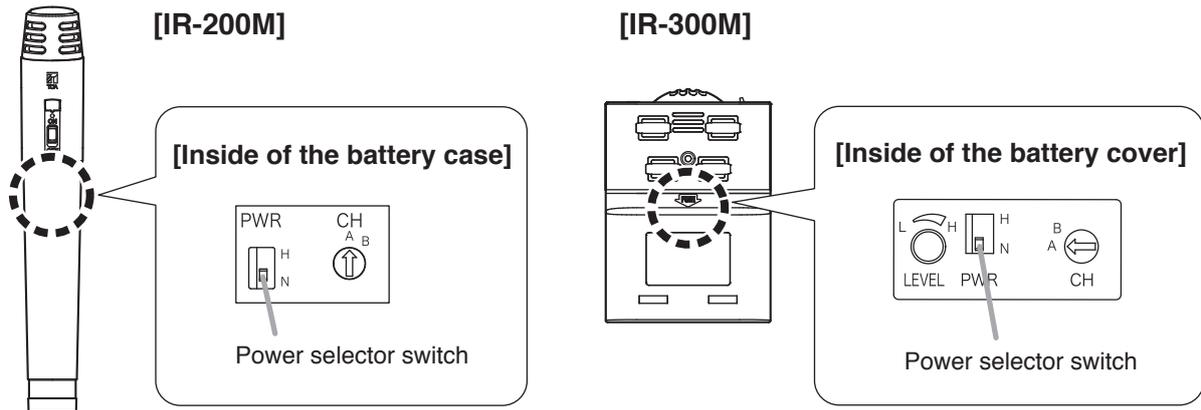
## 12. ABOUT THE POWER SELECTOR SWITCH

Transmission output can be switched in 2 steps: Normal (Power selector switch position: N) and High (switch position: H). Set the switch position depending on the continuous usage time\*<sup>1</sup>, battery service life and usage conditions\*<sup>2</sup>.

**Note:** The power selector switch is set to the N position by default.

\*<sup>1</sup> For continuous usage time by the power selector switch settings, refer to p. 8 "Guidelines on the rechargeable battery's operation time" or p. 9 "Guidelines on the AA alkaline dry cell battery's operation time."

\*<sup>2</sup> To make the continuous usage time longer, set the switch to the N position. When a longer transmission distance is required, set to the H position.



## 13. ABOUT THE MICROPHONE LEVEL CONTROL (IR-300M ONLY)

When using an external microphone, sensitivity differs depending on the type of microphone connected. Use this control to set the sensitivity to an appropriate level for the connected external microphone.

### Note

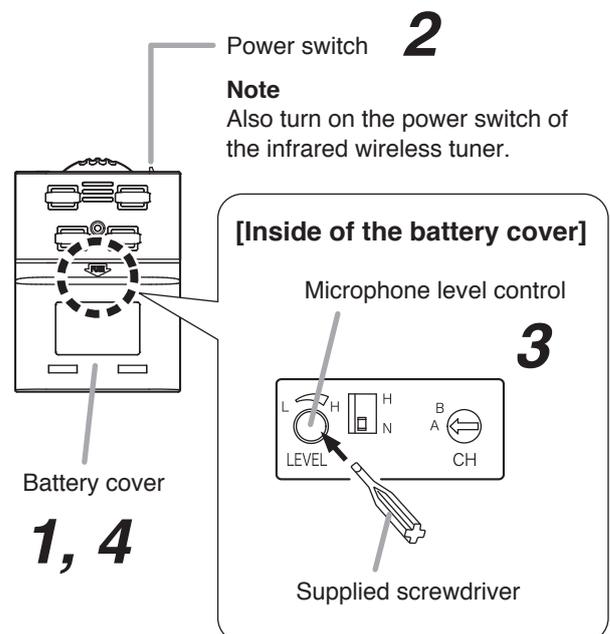
The microphone level control is factory-preset to the appropriate position for the built-in microphone unit.

**Step 1.** Remove the battery cover.

**Step 2.** Set the power switches of both the infrared wireless microphone and tuner to the ON position.

**Step 3.** Set the microphone level control to the appropriate position. Using the supplied screwdriver, set to a position that prevents sound distortion and feedback.

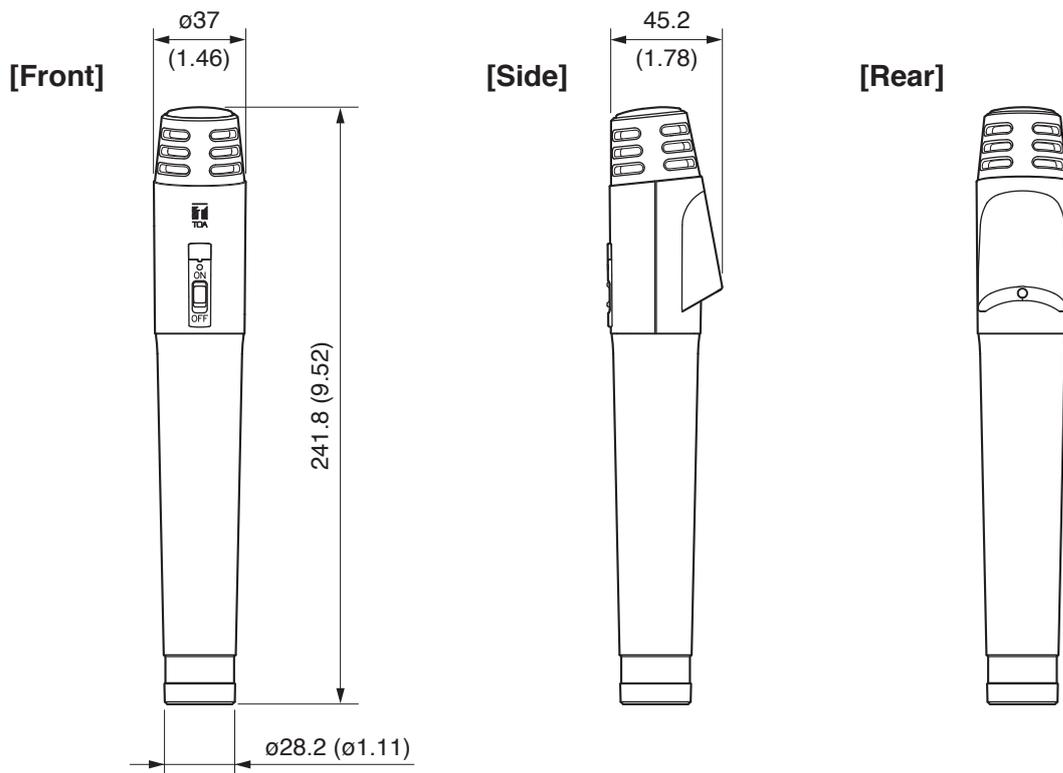
**Step 4.** Replace the battery cover.



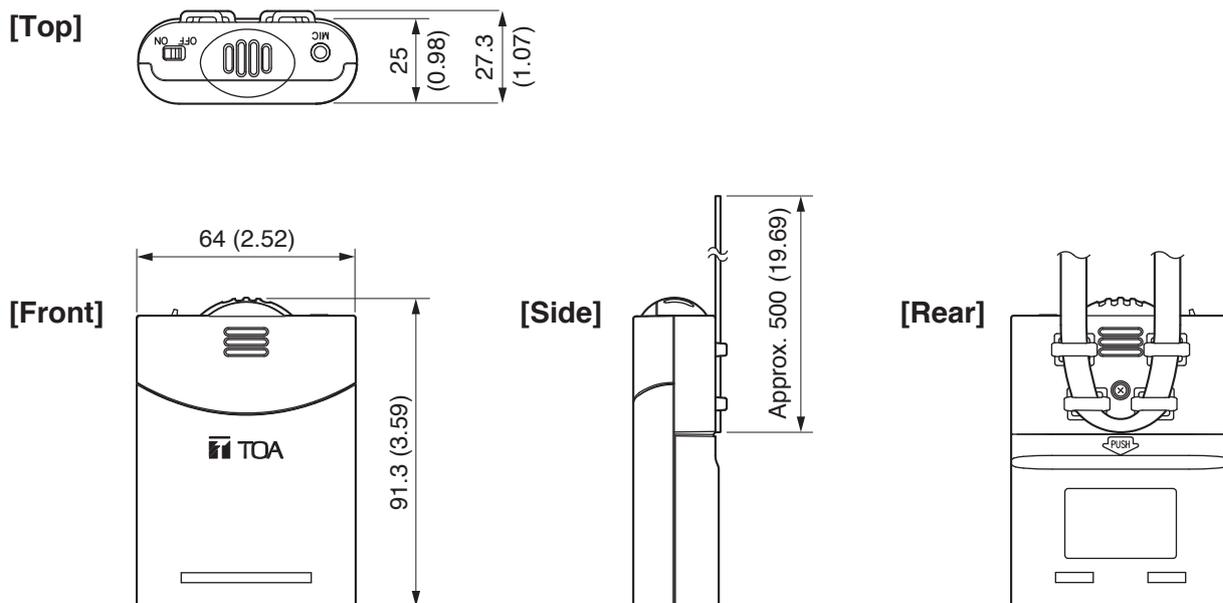
# 14. DIMENSIONAL DIAGRAMS

Unit: mm (inches)

## 14.1. IR-200M



## 14.2. IR-300M



## 15. TROUBLESHOOTING

Symptom	Possible cause	Remedy
Battery indicator does not light even if the power switch is turned on.	[Operating on rechargeable batteries] <ul style="list-style-type: none"> <li>Battery polarities not correct.</li> <li>Specified battery not used.</li> </ul>	<ul style="list-style-type: none"> <li>Reinsert batteries correctly.</li> <li>Replace the batteries with the dedicated rechargeable batteries for the infrared wireless microphone.</li> <li>Charge using IR-200BC Battery Charger.</li> </ul>
	[Operating on dry cell batteries] <ul style="list-style-type: none"> <li>Battery polarities not correct.</li> <li>Batteries exhausted.</li> </ul>	<ul style="list-style-type: none"> <li>Reinsert batteries correctly.</li> <li>Replace with new ones.</li> </ul>
When the power switch is turned on, the battery indicator lights red.	[Operating on dry cell batteries] <ul style="list-style-type: none"> <li>Batteries exhausted.</li> </ul>	<ul style="list-style-type: none"> <li>Replace with new ones.</li> </ul>
	[Operating on rechargeable batteries] <ul style="list-style-type: none"> <li>Battery discharged.</li> </ul>	<ul style="list-style-type: none"> <li>Charge using the IR-200BC Battery Charger.</li> </ul>
When the power switch is turned on, the battery indicator alternately flashes green and red.	<ul style="list-style-type: none"> <li>Channel selector switch not set correctly to an indicated position.</li> </ul>	<ul style="list-style-type: none"> <li>Perform channel settings correctly. (Refer to p. 11 "CHANNEL SETTINGS.")</li> </ul>
Infrared wireless tuner's reception indicator does not light (no signal received) even with the power switch turned on.	<ul style="list-style-type: none"> <li>Channel set for infrared wireless microphone not identical to the tuner.</li> </ul>	<ul style="list-style-type: none"> <li>Reset the infrared microphone to the same channel as the tuner.</li> </ul>
Interferes with other infrared microphone being used simultaneously.	<ul style="list-style-type: none"> <li>Two infrared wireless microphones set to the same channel.</li> </ul>	<ul style="list-style-type: none"> <li>Set channels correctly. (Refer to p. 11 "CHANNEL SETTINGS.")</li> </ul>
	<ul style="list-style-type: none"> <li>Infrared wireless microphone used too close to the tuner.</li> </ul>	<ul style="list-style-type: none"> <li>Keep the infrared microphone at least 50 cm (19.69") away from the infrared tuner.</li> </ul>

## 16. SPECIFICATIONS

### 16.1. IR-200M

Battery		2 IR-210BTs or 2 IR-200BTs rechargeable batteries for the infrared wireless microphone or AA alkaline dry cell battery (2 pieces).
Current Consumption		Typ. 250 mA (2.4 V, Power selector switch: N) Typ. 340 mA (2.4 V, Power selector switch: H)
Infrared Emitter	Wavelength	870 nm (AM: Brightness modulation)
	Modulation Method	Frequency modulation
	Carrier Frequency	Channel A: 3.100 MHz Channel B: 3.350 MHz
	Transmission Distance	Approx. 20 m or 65 ft (Power selector switch: H; In an unobstructed space.) Approx. 15 m or 50 ft (Power selector switch: N; In an unobstructed space.)
Tone Signal		32.768 kHz
Modulation Sensitivity		±4.8 kHz (1 kHz, when SPL of 84 dB is input)
Maximum Input Sound Pressure		120 dB SPL
Microphone Unit		Unidirectional electret condenser microphone
Frequency Response		100 Hz – 12 kHz
Preemphasis		300 μs
Battery Operation Time		Approx. 8 hours (when the IR-210BT rechargeable battery for the infrared wireless microphone is used; Power selector switch: N) Approx. 6 hours (when the alkaline battery is used; Power selector switch: N)
Operating Temperature		0 to 40 °C (32 to 140 °F)
Operating Humidity		30 to 85%RH (no condensation)
Finish		Control Section: ABS resin, metallic gray, 50% glossy, paint Filter Section: Polycarbonate, optical cut filter
Dimensions		ø37 x 241.8 (h) mm (ø1.46" x 9.52")
Weight		170 g or 0.37 lb (with alkaline batteries) 185 g or 0.41 lb (with dedicated rechargeable batteries)

**Note:** The design and specifications are subject to change without notice for improvement.

#### • Accessories

Screwdriver (for setting) ..... 1  
Color label (6 colors) ..... 1

#### • Optional products

Battery Charger : IR-200BC  
Rechargeable battery: IR-210BT-2 (containing 2 pieces)  
Rechargeable battery: IR-200BT-2 (containing 2 pieces)

## 16.2. IR-300M

Battery	2 IR-210BTs or 2 IR-200BTs rechargeable batteries for the infrared wireless microphone or AA alkaline dry cell battery (2 pieces).	
Current Consumption	Typ. 250 mA (2.4 V, Power selector switch: N) Typ. 340 mA (2.4 V, Power selector switch: H)	
Infrared Emitter	Wavelength	870 nm (AM: Brightness modulation)
	Modulation Method	Frequency modulation
	Carrier Frequency	Channel A: 3.100 MHz Channel B: 3.350 MHz
	Transmission Distance	Approx. 20 m or 65 ft (Power selector switch: H; In an unobstructed space.) Approx. 15 m or 50 ft (Power selector switch: N; In an unobstructed space.)
Tone Signal	32.768 kHz	
Modulation Sensitivity	±4.8 kHz (1 kHz, when SPL of 84 dB is input)	
Maximum Input Sound Pressure	120 dB SPL	
Input Sensitivity Adjustment	Adjustment range: -9 dB to 0 dB (factory-preset: 0 dB)	
Microphone Unit	Unidirectional electret condenser microphone	
Frequency Response	100 Hz – 12 kHz	
Preemphasis	300 μs	
Input	External microphone input (3.5 mm or 1/8" monaural mini jack)	
Battery Operation Time	Approx. 8 hours (when the IR-210BT rechargeable battery for the infrared wireless microphone is used; Power selector switch: N) Approx. 6 hours (when the alkaline battery is used; Power selector switch: N)	
Operating Temperature	0 to 40 °C (32 to 140 °F)	
Operating Humidity	30 to 85%RH (no condensation)	
Finish	Control Section: ABS resin, metallic gray, 50% glossy, paint Filter Section: Polycarbonate, optical cut filter	
Dimensions	64 (w) x 91.3 (h) x 27.3 (d) mm (2.52" x 3.59" x 1.07")	
Weight	130 g or 0.29 lb (with alkaline batteries & strap) 140 g or 0.31 lb (with dedicated rechargeable batteries & strap)	

**Note:** The design and specifications are subject to change without notice for improvement.

### • Accessories

Screwdriver (for setting) .....	1
Color label (6 colors) .....	1

### • Optional products

Battery Charger :	IR-200BC
Rechargeable battery:	IR-210BT-2 (containing 2 pieces)
Rechargeable battery:	IR-200BT-2 (containing 2 pieces)