brother

WD-200 Series



User's Guide

This guide contains precautions and operation methods for use with this product. Read the whole guide before using your product and keep it for later reference.



Troubleshooting

If you have any problems with this product, to find a solution see Page 35

Version 0 UK ENG

1. Introduction

Symbols and conventions used in this document

We use the following symbols and conventions throughout this *User's Guide*:

[Important]	Explains precautions that must be observed when using this product.
[Note]	Provides supplementary information about using this product.

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Checking package contents

Before using the AiRScouter, check that package contents are complete.

Head Display kit

The head display, flexible arm, head band, and Pad (M size) are pre-assembled.

Head Display

Displays images sent from the control box.



Full mirror unit

Projects images from the head display.

8 Flexible Arm

Allows you to adjust the head display to the position and angle you want.

4 Head Band

Supports the product on your head.

Video Input Cable

Allows you to connect the control box to the head display.

[Note] If the head band feels too loose, use the rear band to support it.

Control Box

Sends images from external devices to the head display. It also allows you to adjust the brightness, and to enlarge and rotate the image.

AC adapter

Supplies power to the control box, and is also used to charge the internal battery.

The plug may differ by country.





Li-ion (lithium ion) rechargeable battery

Before using the AiRScouter, fit the battery into the control box and use the AC adapter provided to charge it.



Cable Clip

Use this clip to attach the cable to your clothing, to keep it out of the way. Attach the string of the cable clip to the cable, as shown on the right.



Rear Band

Attach this to the head band as necessary to prevent the head band from falling off, and to help tighten the headset.

Flexible arm for right eye Replace the flexible arm for left eye with the flexible arm for right eye if viewing the head display with your right eye. The letter "R" is printed on the flexible arm for right eye.

User's Guide (this document) Explains the basic functions and operation of the AiRScouter, as well as other content, such as maintenance methods. Also, use it to check what to do if a problem occurs (for example, loss of video output).

Product Safety Guide

Explains precautions for use with this product. Read this Guide first.





Names and functions of main parts

Head Display



Focal length adjusting dial

Adjusts the focal length of the displayed image. The adjustment range of the focal length is between 30 cm and 5 m.

Full mirror unit

Projects images from the head display onto the eye. It has a lens cover attached on the inside to protect the lens inside the head display.

S Video Input Cable

Connects the control box to the head display.

Eyeglass protection sheet

If you use the AiRScouter with glasses on, this sheet prevents force being exerted on the head display and possible damage to the glasses if a lens is touched.

Harness



Head Band

Hold this part when placing the AiRScouter on your head.

Porehead Pad

Prevents the head band from slipping down the forehead.

Cable Fix Slot

Holds the head display cable along the head band.

A Rear Band attachment

Allows you to attach the rear band, to prevent the head band from falling off, and to help tighten it onto the head.

6 Flexible Arm

Allows you to freely adjust the position and angle of the head display relative to the eye.

6 Dial

Adjusts the stiffness of the flexible arm ball joint.

Control Box



Control Panel

Includes control buttons, status LEDs, and a battery level indicator.

Q AC adapter connecting socket

Allows you to connect the AC adapter to power the control box and charge the internal battery.

B HDMI connecting port

Allows you to connect HDMI-compatible devices.

Head Display connecting port

Allows you to connect the head display to the control box.

G USB micro-B port for external battery

Allows you to connect a third-party USB battery. This port cannot be used to charge the internal battery.

Control Panel buttons



Power button

Press this button to turn the AiRScouter on. Press and hold this button for two seconds to turn the AiRScouter off.

The power automatically turns OFF if there is no input from a video source for one minute or more.

Mode button

Press this button to select the zoom mode. For more information, see page 20.

8 Rotate button

Press this button to rotate the image by 180°. Press and hold it for two seconds to flip the image horizontally.

Brightness button

Press this button to select one of five brightness levels.

Control Panel Status LEDs



Display LED (green)

Lights while the AiRScouter is on and an image is being projected on the display.

Key Lock LED (orange)

Lights when button operation on the control box is locked. For more information, see page 19.

③ Internal battery LED (orange)

Lights during battery charging.

External power LED (orange)

Lights when power is supplied from the AC adapter, or from an external battery (third-party USB battery).

LED indications

O lit ⊕ flashing ● off

Display LED (green)

State	Name	Explanation
0	Display ON	The AiRScouter receives video, which appears on the head display, from an external device.
🔅 (Slowly)	Operating	The control box is operating.
🌐 (Quickly)	No input	The AiRScouter receives no video signal from an external device.
•	Power OFF	The AiRScouter is turned off. To turn it on, press the power button.

Key Lock LED (orange)

State	Name	Explanation
0	Key Lock ON	Button operation on the control box is locked.
•	Key Lock OFF	Button operation on the control box is unlocked.

③ Internal battery LED (orange)

State	Name	Explanation
0	Battery level high	The charge level of the internal battery is full.
🔅 (Slowly)	Battery level medium	The charge level of the internal battery is close to half-full.
🌐 (Quickly)	Battery level low	The charge level of the internal battery is low.
•	No battery	The charge level of the internal battery is close to zero.

External power LED (orange)

(For the AC adapter)

State	Name	Explanation
0	Working	The AiRScouter is using the AC adapter.
🌐 (Slowly)	Charging	The internal battery is charging.
🔅 (Quickly)	Charging error	An error occurred while the internal battery was charging.
	Full charge	The internal battery is fully charged.

External power LED (orange)

(For the external battery)

State	Name	Explanation
0	Working	The AiRScouter is using an external battery.
🌐 (Quickly)	Connection error	An error occurred while the external battery was supplying power.
•	No battery	The charge level of the external battery is low. If the internal battery is charged, the AiRScouter will use it (the internal battery LED lights).

2. Before you start

Assembly

Assemble the AiRScouter and make connections according to the following procedure:

1 Feed the cable along the cable fix slots of the flexible arm and the head band, and then fasten it firmly.



2 Insert the internal battery into the control box:

- a) Remove the cover screws from the control box, and then insert the Li-ion rechargeable battery.
- b) After inserting the battery, close the control box cover and tighten the screws.



- [Important] Make sure you insert the battery in the correct way. Inserting the battery incorrectly will damage the AiRScouter.
 - **[Note]** If you are not using the internal battery, connect the AC adapter to the control box.

3 Connect the supplied AC adapter to the control box to fully charge the internal battery.



- [Note] Before you use the battery for the first time, charge it fully. For more information, see page 42.
- 4 Connect the video input cable of the head display to the control box.

5 Connect the video input cable or an HDMI connecting port to the control box.



- [Note] The only supported resolution for input devices is 1280 × 720 p. If a device with a different resolution is connected, the screen may not display correctly.
 - Use HDMI cables of up to 2 m.

Mounting

1 Fit the head band to the head.



- [Note] If the pads do not fit, replace them with pads of the right size. (See page 21)
 - If the head band feels loose, use the rear band. (See page 22)

If you wear glasses

- If the arms of the glasses are straight, they may touch the head band. Such contact may cause excess pressure on the ears.
- If the ends of the arms of the glasses are curved, they will not touch the head band. Glasses with curved arm ends allow for a more comfortable fit.



2 Use the cable clip to attach the cable to your clothing.

3. Display

Turn the power on

Press the power button to turn the AiRScouter on (the LED below the power button lights in green).



Adjust the head display to suit the application

Adjust the flexible arm to put the head display in a position that is easy to view.



- [Note] If the Ball Joint becomes loose after repeated adjustments of the head display position, turn the dial of the flexible arm to tighten it.
 - If it is not possible to bring the image into the field of view just by adjusting the flexible arm, adjust the position of the head band.





Adjust the focal length

Turn the focal length adjusting dial to adjust the focal length between 30 cm and 5 m.



4. Settings

Adjust brightness

Press the brightness button on the control box to adjust the brightness of the image.



Lock the control panel

To lock the panel (the key lock function), preventing unintentional operation, press the mode button and the rotate button on the control box at the same time.

The key lock LED is lit in orange when the key lock is active.



[Note] To unlock the key lock, press the mode button and the rotate button at the same time again.

Enlarge the centre of the screen

You can enlarge the centre of the screen by using Central Enlarge Mode.

Each time you press the mode button, the display toggles between enlargement of the centre and normal display of the whole image.





Rotate the image

You can rotate the image by 180° or flip it horizontally.

- To rotate the image by 180°, press the rotate button.
- To flip the image horizontally, press and hold the rotate button for two seconds.



Replace the pads

The pads are optional accessories.

Remove the left and right pads from the head band.



2 Align the pads with the mounting holes in the head band and attach the pads.



[Note] There are three pad thickness sizes: S, M, and L. Use the size of pad that fits best.

Attach the rear band

1 Press the circled area and slide the head band cover to remove it.



2

- a) Attach the end of the rear band inside the head band, as shown in the illustration.
- b) Feed the rear band through the opening on the head band.



3 Press the circled area and slide the head band cover back into place. After attaching the head band cover, make sure the rear band sticks out through the hole in the head band.

- **4** Attach the opposite side in the same way.
- **5** Use the rear band length adjuster to adjust the rear band to the length you want.



Replace with the flexible arm for right eye

- Press the power button on the control box to turn the AiRScouter off, and then disconnect the head display cable from the control box.
- 2 If the head display cable runs along the head band slot, remove the cable. Next, remove the cable from the flexible arm slot.



3 Rotate the ball joint dial between the head band and flexible arm, and then remove the flexible arm from the head band.



4 Rotate the ball joint dial between the flexible arm and head display, and remove the head display from the flexible arm.



5 Turn the head band upside down so that the logo faces the other way.



6 Remove the left and right head band covers by pressing the highlighted area and swap them around. The logo now faces the right way.



7 Rotate the ball joint dial between the flexible arm and head display, and then attach the head display to the flexible arm.



[Note] You can increase the arm stiffness during operation by rotating the dial anticlockwise.

8 Rotate the ball joint dial between the head band and flexible arm, and then attach the flexible arm to the head band.



[Note] You can increase the arm stiffness during operation by rotating the dial anticlockwise.

Run the cable along the flexible arm and head band cable fix slot, and then secure the cable to prevent it from coming loose.



Connect the head display cable to the control box, and then turn the power on. Next, press the image rotation button to rotate the image 180°.



Replace the mirror unit

A replacement mirror unit is an optional accessory. Follow the instructions below to replace the mirror unit with a new one, or to change it to a different type of unit.



[Important] Take care to avoid touching the mirror and lens. They could be damaged or dirtied if touched.

2 When holding the sides of the mirror unit, slide it parallel into the head display so that the non-reflective side of the mirror faces the front of the head display.



[Important] You may break the mirror unit if you attach it in an incorrect orientation.

[Important] • The AiRScouter can use the following power supplies:

- The supplied AC adapter.
- The supplied internal battery of the control box.
- An external battery (a third-party USB battery supplying the voltage of DC 5 V and the current of at least 1 A).
- If multiple power supplies are connected to the AiRScouter, the following sources are prioritised:
 - AC adapter
 - 2 External battery
 - ③ Internal battery

[Example]

- If the external battery is disconnected while it is in use, the internal battery is used.
- If the external battery is connected while the internal battery is in use, the external battery is used.
- The internal battery cannot charge while the AiRScouter is turned on.
- The external battery cannot be used to charge the internal battery. The internal battery can only be charged using the AC adapter.
- If the AiRScouter becomes hot due to continuous use or the external environmental conditions, the external power LED flashes rapidly. The internal battery cannot be charged in this state.
- If a USB-AC conversion adapter is used as an external power supply, use one that supplies the voltage of DC 5 V and the current of at least 1 A.
- You cannot charge the battery by connecting the AiRScouter to a computer using a USB cable.

Use external batteries

You can use a third-party USB battery as an external battery. If the capacity of the internal battery is too low, use an external battery that allows for a longer operation of the AiRScouter.

- [Important] Only use a third-party battery that supplies the voltage of DC 5 V and the current of at least 1 A.
 - The external battery cannot be used to charge the internal battery.
- Before connecting the external battery to the control box, fully charge the battery. For more information about charging

your external battery, see its manual.

2 Connect the connector of the USB cable to the USB micro-B port of the control box.



3 Connect one connector of the USB cable to the port of the USB battery.



- **4** The external power LED (orange) on the control box lights
 - The external power LED (orange) lights when power is being supplied.
 - When the charge level of the external battery is depleted, the external power lamp (orange) switches off.
 - If the internal battery is charged, the power source switches to supply power from it.

Set Power Saving Mode

- [Important] In this mode, the AiRScouter turns off automatically if the head display does not move and there is no button operation on the control box for a certain period (60 seconds).
 - The factory setting for Power Saving Mode is OFF.

To turn Power Saving Mode on or off, when turning on the AiRScouter, press the power button and brightness button at the same time.

• If the AiRScouter is turned on after the setting has been changed to Power Saving Mode ON, the key lock LED (orange) flashes rapidly four times.



 If the AiRScouter is turned on after the setting has been changed to Power Saving Mode OFF, the key lock LED (orange) flashes rapidly twice.

5. Maintenance

Clean the mirror unit

If the mirror unit gets dirty, the image will not be projected clearly from the head display. If the image becomes unclear, clean the mirror unit using the following procedure:

[Important] Use ethanol for cleaning the mirror unit. Never use organic solvents such as benzene or thinner, alkaline detergents, or organic chemicals such as fluorochemical solvents instead of ethanol. Such substances could cause the mirror coating to peel off the reflective side of the mirror, so that the image will not be reflected normally.

Use cotton buds moistened with ethanol to wipe away dirt and dust from the mirror and the lens cover.



[Note] • The mirror unit consists of a mirror (with reflective and non-reflective sides) and a lens cover. Lens cover Mirror (reflective side)

 Always wipe the reflective side gently because strong rubbing may cause it to peel off.

Clean the head band

If the pads attached to the head band are dirty, wipe them with a dry cloth.

If you cannot remove dirt from the pads using a dry cloth, clean them with ethanol.

Clean the control box

Wipe dust and dirt off the control box with a soft, dry cloth. If you cannot remove dust and dirt off the pads using a dry cloth, wipe it with a moistened and well wrung cloth.

6. Troubleshooting

If a problem occurs while you are using this product, resolve it by using the following methods:

Problem	Check	Action	Page
The screen is blank.	Is the cable connected correctly?	Check that the cable is connected correctly, and that the connector is fully inserted.	15
	Is the mirror positioned correctly?	Move the flexible arm and head display to adjust the mirror to a position that makes it easy to view the image.	17
	Is this product turned off?	Press the power button to turn the AiRScouter on.	17
	Has the internal battery for the control box discharged?	Connect the AC adapter to the AiRScouter to charge the internal battery.	-
	Have both the internal battery and the external battery discharged?	Connect the AC adapter to the AiRScouter to charge the internal battery. Alternatively, try using a charged external battery.	31

Troubleshooting

Problem	Check	Action	Page
The screen is blank.	Is the resolution of the input device set to the input resolution of the AiRScouter?	Check the product specification and set the resolution of the input device to the input resolution of the AiRScouter.	-
	Is the cable connected correctly?	Disconnect the cable from this product and from the input device, and then reconnect it.	15
	Is the HDMI cable longer than two metres?	Use an HDMI cable of two metres or shorter.	15
Pressing and holding the power button does not switch the control box OFF.	-	Press and hold the power button for eight seconds to force the power to turn off.	-
The image has frozen.	Is the cable connected correctly?	Disconnect the cable from this product and from the input device, and then reconnect it.	15
	-	Press and hold the power button for eight seconds to force the power to turn off.	-

Problem	Check	Action	Page
The internal battery cannot charge.	Is the internal battery hot?	If the internal battery gets hot, from continuous use or for any other reason, it will not charge even when the AC adapter is plugged in (the external power LED flashes rapidly). Charge the battery after it has cooled down.	-
	Is the usage environment suitable?	Charging is possible in an environment with temperature between 10 and 35 °C.	42
	Is this the AiRScouter turned on?	Turn the AiRScouter OFF while charging the internal battery.	-
	Is the internal battery over- discharged?	If the internal battery is left for a long period, it gets over-discharged and cannot be charged. Use a new battery. For information about buying new batteries, contact your Brother dealer.	-

Problem	Check	Action	Page
The internal battery cannot be charged from an external battery.	-	Connect the AC adapter to the AiRScouter to charge.	-
There is no power supply, even when an external battery is connected (the external power LED (orange) does not light).	Does the external battery provide the current of at least 1 A?	Use an external battery that provides the voltage of DC 5 V and the current of at least 1 A.	30
The internal battery	Is the internal battery fully charged?	Fully charge the built-in battery before using it.	-
almost imme- diately.	Does the internal battery discharge very quickly after it was fully charged?	The internal battery has finished its service life. Use a new battery. For information about buying new batteries, contact your Brother dealer.	-

Problem	Check	Action	Page
The edges and corners of the display screen are not visible.	Has the mirror position been adjusted?	Move the flexible arm and head display to adjust the mirror to a position when you can see the whole screen.	17
The display screen is blurred.	Is the focal length adjusted correctly?	Turn the focal length adjusting dial on the head display right and left to adjust the focal length.	-
The display screen is too dark, or too bright.	Is the brightness set correctly?	Press the Brightness adjustment button to adjust the brightness.	19
The display screen is too dark to see.	Is the current environment extremely bright?	Check whether direct sunlight is getting in, and whether anything in the surrounding area is emitting extremely bright light.	-
The image is flipped horizontally or vertically.	Is the image orientation set correctly?	Press the image rotate button to rotate the image.	20
The image flips horizontally.	Is the image orientation set correctly?	Press and hold the image rotate button to mirror the image horizontally.	20

Troubleshooting

Problem	Check	Action	Page
The image is not displayed on the full screen.	Is the enlarge mode on?	Press the mode button.	20
Dirt is displayed on the screen.	Are the mirror and lens cover dirty?	Clean the mirror unit.	33
The fit of the head band feels loose.	Are the pads the correct thickness?	Use thicker pads. The pads are optional accessories.	21
	Are you using the rear band?	Use the rear band to tighten the head band.	22
	Is the fit still loose when you are using the thickest pad and the rear band?	If it still feels too loose, you must replace the head band. Use a new head band. For information about buying a head band, contact your Brother dealer.	-
The head band does not fit well.	Does the head band touch the arms of the your glasses?	If possible, use glasses with curved arms (that follow the shape of the ears) so that they do not touch the head band.	16

Problem	Check	Action	Page
The movement of the flexible arm is too tight or too loose.	Has the tightness of the Ball Joint been adjusted?	Turn the dials of the Ball Joints between the flexible arm and the head band, and between the flexible arm and the head display, to adjust their tightness.	17

Appendix

Li-ion rechargeable batteries

■Key points for using Li-ion rechargeable batteries

- Charge the Li-ion rechargeable battery before using it. Do not use it without charging it.
- Li-ion rechargeable batteries can be charged in an environment with temperature between 10 and 35 °C. We recommend charging them within that temperature range. At temperatures outside the range, the Li-ion rechargeable battery will not charge and the internal battery LED will flash rapidly.

Characteristics of Li-ion rechargeable batteries

When you know the characteristics of Li-ion rechargeable batteries, you are able to use the Li-ion rechargeable batteries provided with the product correctly.

- Using or storing Li-ion rechargeable batteries in places that are too hot or cold may cause them to deteriorate more quickly. In particular, usage at a high charge rate (90% or more) in a hot place greatly accelerates the deterioration of Li-ion rechargeable batteries.
- If this product will not be used for a month or more, take the Li-ion rechargeable battery out of the control box, and store it in a cool place out of direct sunlight.
- Charge the Li-ion rechargeable battery every six months if it is left unused for a long period.
- The device may feel warmer if it is touched while the Li-ion battery is charging. This is normal, and the device can be used safely. Stop using the device if the control box gets extremely hot.

Inserting the Li-ion rechargeable battery into the Control Box



If the Li-ion rechargeable battery was removed, reverse the process to insert it again.

Charging Li-ion rechargeable batteries

The Li-ion rechargeable battery can be charged while it is connected to the control box.

Use the following procedure to charge.



[Note] It takes about three hours to charge the Li-ion rechargeable battery from zero charge to full charge (when the device is switched OFF).

Stopping the charging of Li-ion rechargeable batteries

To stop the Li-ion rechargeable battery charging, unplug the cable from the AC adapter.

Appendix

Product specification

Model name		WD-200B
External dimensions	Head Display kit	H
		266 mm (H) × 182.9 mm (W) × 28.8 mm (D) Cable 2 m
	Control Box	115 mm (H) × 84 mm (W) × 28.8 mm (D)
Weight	Head Display kit	Approx. 145 g (including cable)
	Control Box	Approx. 190 g
Input	Input terminal ^{*1}	HDMI 1.4 (with HDCP support)
	Supported HDMI input resolution	720 p (1280 × 720 pixels)
Display performance	Display resolution	720 p (1280 × 720 pixels)
	Colors	Full color (16.77 million colors)
	Focal length adjustment	Adjustable in the range between 30 cm and 5 m (approx.)
	Screen size	Approx. 17.8° diagonal (equivalent to a 13-inch screen seen at 1 m away)

Model name		WD-200B
Environmental performance	Operating temperature	Between 0 and 40 °C
	Operating humidity	Between 20 and 80% (no condensation)
Operation and adjustment functions		Brightness (5 levels)/ screen rotation (horizontal flip)/ Key lock/Central Enlarge Mode
Power supply		AC supply, internal battery
Internal battery operation time		Approx. 4 h
Power consumption *2		Approx. 2.5 W
External power input		Voltage: DC 5 V, current: At least 1 A

*1 Full HD (1920 × 1080 p) is not supported with the HDMI input

*2 Image display when using the AC adapter

Consumables and optional accessories

Head Band Set (including pads) Model name: HB-20PD

Includes head band, pads (S, M, L sizes), and rear band.



- Flexible Arm for left eye Model name: AM-20L A flexible arm for using the head display with the left eye. It is provided as standard with this product.
- Flexible Arm for right eye Model name: AM-20R A flexible arm for using the head display with the right eye.

■ Half mirror unit Model name: MR-20H Projects images from the head display. The head display is supplied with the full mirror unit attached. To use this product with transparency, replace the full mirror unit with the half mirror unit.











Requesting repairs

Before requesting repairs make sure you have performed the tasks listed in the *Troubleshooting* section page 35.

If that does not solve the problem, note the following information and contact your Brother dealer:

- Your AiRScouter's serial number
- Problem symptoms
- Problem context (for example, what you did and what you expected to happen)
- Problem occurrence frequency (for example, always or intermittently)

Important Notice

Note:

For FAQs, troubleshooting and more, visit the Brother Solutions Center at <u>support.brother.com</u>

Part retention period:

The minimum part retention time of functional parts for repair of this product is five years from the end of manufacturing (two years for printed materials).

