USER’S MANUAL

<Backlight Unit Replacement Procedure>

TYPE: UG520H- x
UG420H- x
UG320H- x
UG320HD- x
UG220H- x
Thank you for selecting the Fuji Programmable Operation Display, POD UG520/420/320/220 Series (called as the UGx20 or POD, hereafter). For proper set-up, you are requested to read through this booklet to understand more about the product.

This User’s Manual describes how to replace the backlight unit.

This manual is an English version based on the Japanese user’s manual (No. FH372)

[Reference]
In addition to this manual, the following manuals on the UGx20 Series are available. Please ask your nearest dealer for the appropriate manuals and read them as required.

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[Notes]

(1) No part of this manual may be reproduced in any form without prior permission of the publisher.
(2) The contents of this manual, including the specifications, are subject to change for improvement without notice.
(3) This manual was prepared with utmost care. However, if you find any ambiguity, errors, etc., please contact any of our sales offices that are listed at the end of this manual. In so doing, please tell the manual number shown on the cover of this manual.
Safety Precautions

Precautionary Remarks

1. A reduction in quality (performance) may be caused by backlight unit replacement. Understand the procedure described in this manual before replacing the unit.
2. If normal operation is not restored to the LCD module after backlight unit replacement, consult with Fuji Electric. Repair may not be possible, depending on the symptom of the failure.
3. The backlight unit is equipped with a high-voltage circuit. A hazard such as smoking or ignition may occur during its replacement. Fuji Electric assumes no responsibility for any accidents caused by failure to follow the replacement procedure in this manual.

Safety Instructions

For safety, this manual provides warnings with signal words of "DANGER" and "CAUTION" based on the severity of a hazard.

⚠️ DANGER Indicates an imminent hazard that, if not avoided, will result in death or serious injury.

⚠️ CAUTION Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury or property damage.

A warning with "⚠️ CAUTION" could result in a serious hazard according to the circumstances.

⚠️ DANGER

Turn off the POD before attempting to replace the liquid crystal backlight. Set the backlight aside until it cools. Failure to do so may result in an electric shock or burns.

⚠️ CAUTION

- When the backlight unit has been unpacked, check its appearance. Do not use it if any damage or deformation is found.
- Wear gloves or fingerstalls when replacing the backlight unit.
- The liquid crystal backlight is equipped with a glass cold-cathode tube. Since an impactive force or an abnormal stress may break the tube, exercise added care on handling.
- If the cold-cathode tube of the liquid crystal backlight is broken inside the POD, a problem of quality, such as uneven brightness due to remaining glass fragments, may occur. Returning it to Fuji Electric for repair is recommended.
- The panel surface is sensitive. Take necessary measures to protect the LCD module surfaces from scratches.
- Static electricity may damage the LCD module. Take necessary measures to protect the LCD module from static electricity.
- Do not twist or yank on the cable while handling the backlight unit.
- Dispose of the backlight unit in an appropriate manner as industrial wastes.
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When the screen brightness becomes dim and cannot be adjusted to the optimum setting, the life of the backlight unit may be expiring.

For the POD UGx20 Series, the backlight unit is replaceable. Obtain a new backlight unit suitable for the POD type, and replace the backlight unit with the new one according to the procedure described below.

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<td>Can not be replace</td>
<td>□</td>
<td>50,000</td>
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* Figures for the life of backlight shows the time till the surface luminance becomes 50% the initial value at the ambient temperature of 25°C.
UG520H-V Backlight Unit Replacement

(Required Tool)
Screwdriver
Precision screwdriver

⚠️ Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.

⚠️ When replacing the backlight, take appropriate preventive measures against static electricity.
* The point of measures against static electricity is to keep the entire workplace including humans at the same electric potential. Use an anti-static wristband or mat to prevent static electricity.

1. Turn the POD over and remove the packing.
2. Remove the 6 screws from the rear external case.

⚠️ Place it on a cloth, etc. to protect the display panel from scratches.

3. Remove the rear external case.
4. Disconnect the backlight unit (CFL unit) connector.

⚠️ Hold the connector and pull it out. Do not twist or yank on the cable then.
5. Remove the two ribbon cables.

⚠️ **Slide the lock with the ribbon cable holding down with your fingers.**
* The connector is not removable.

6. Remove cord band and remove the LCD module connector by pulling it up.

⚠️ **Hold the connector and pull it out. Do not twist or yank on the cable then.**

7. Remove the 8 screws fixing the inside case.

8. Remove the inside case from the front external case.

⚠️ **Take care not leave scratches, fingerprints, or dirt on the display panel.**

9. Place the inside case with the display panel side up.
10. Remove the 4 screws fixing the LCD module.

11. Remove the LCD module from the inside case.

12. Place the LCD module with the display panel side down.

   **Place it on a cloth, etc. to protect the display panel from scratches.**

13. Partly remove the cushioning material.
   * The cushioning material is cemented with an adhesive. Remove only the portion on the backlight unit (CFL unit) cover.

14. Remove the screw fixing the backlight unit (CFL unit) cover.
   * Since the screw is small, use a precision screwdriver to remove it.

15. Use a precision screwdriver, slide the cover in the direction of arrow (1), and remove the cover from the claws while pulling it up in a slanting direction (as shown with the arrow (2)).
16. Remove the backlight unit (CFL unit) by pulling it up.

17. Attach a new backlight unit (CFL unit).

⚠️ **When taking a new backlight unit out of the bag, do not twist or yank on the cable.**

18. Attach the cover.

* Insert the cover in a slanting direction (as shown with arrow (1)), and slide it to the direction of arrow (2) until it is hooked on claws.

19. Attach the screw fixing the cover.

* Since the screw is small, use a precision screwdriver to attach it.
20. Place the LCD module with the display panel side up.

21. Attach the LCD module to the inside case.
   * Insert the cable and two ribbon cables into the inside case.

22. Attach the 4 screws to fix the LCD module.

23. After attaching the LCD module to the inside case, place it with the display panel side down.

   ! **Place it on a cloth, etc. to protect the display panel from scratches.**

24. Attach the inside case to the front external case.

   ! **Do not allow the entry of dust or particles to the area between the inside case and the front external case.**

25. Attach the 8 screws.
26. Attach the 2 ribbon cables.
   * Pass one ribbon cable under the ribbon cable guide.

27. Attach the backlight unit (CFL unit) connector.

   **Do not twist or yank on the cable of the backlight unit.**

28. Attach the LCD module connector.

   * Secure the ferrite core using a cord band.

   **Do not twist or yank on the cable of the LCD module.**

   **Visually check that all connectors and ribbon cables are connected securely.**

29. Attach the rear external case to the front external case.

   * Fit the rear external case in position. Press the case entirely so as to fit the panel board connector with the CPU board connector inside.

30. Attach the external 6 screws.

31. Attach the packing.
UG520H-S Backlight Unit Replacement

(Required Tool)
Screwdriver
Precision screwdriver

⚠️ **Do not touch cables and boards that are not associated with backlight unit replacement.** Doing so may result in failure.

⚠️ **When replacing the backlight, take appropriate preventive measures against static electricity.**
* The point of measures against static electricity is to keep the entire workplace including humans at the same electric potential. Use an anti-static wristband or mat to prevent static electricity.

1. With the main body turned over, remove the 6 screws from the outside case.  
   ⚠️ **Place it on a cloth, etc. to protect the display panel from scratches.**

2. Remove the rear outside case.

3. Remove the connector for the backlight unit (CFL unit).
   ⚠️ **Holding the connector, carefully remove it without pulling on the cable.**
4. Remove the two ribbon cables.

- Slide the lock to release it.

* The connector is not removable.

5. Remove the 6 screws that fix the inside case.

6. Remove the inside case from the front outside case.
7. Put the inside case on the table, with the display panel up.

⚠️ **Place it on a cloth, etc. to protect the display panel from scratches.**

8. Remove the 2 screws that fix the LCD module.

The metal fixture at the bottom (of the display panel) comes off. Do not lose it. After the fixture comes off, the LCD module is half loosened. Handle the LCD module carefully.

9. Put the inside case on the table, with the display panel up.

The LCD module is only partially secured, so turn the body over while holding the LCD module with your hand.

⚠️

10. Remove the 2 screws that fix the LCD module.
11. Remove the LCD module from the inside case.

12. Put the LCD module on the table, with the display panel down.

\textbf{Place it on a cloth, etc. to protect the display panel from scratches.}

13. Unlock the hooks of the backlight unit (CFL unit) by pressing them. Then, slide the backlight unit (CFL unit) in the direction indicated in the figure below while holding down the hooks.

14. Pull up the backlight unit (CFL unit), then remove it.

15. Mount the new backlight unit (CFL unit).
16. Slide in the new backlight unit (CFL unit) in the direction opposite to that when the old one was removed.

17. Put the LCD module on the table, with the display panel up.

18. Mount the LCD module on the inside case.
   *Pass the cables through the inside case.
   *Insert the connector on the LCD module into the connector on the inside case.
19. Set and tighten the 2 screws to secure the LCD module.

20. Set the metal fixture between the inside case and the LCD module.
21. Put the LCD module on the table, with the display panel down.

⚠️ **Place it on a cloth, etc. to protect the display panel from scratches.**

⚠️ **The LCD module is only partially secured, so turn the body over while holding the LCD module with your hand.**

22. Set and tighten the 2 screws to secure the LCD module.

* Tighten the 2 screws securely holding the fixture at the rear.

23. Mount the LCD module case on the front outside case.

⚠️ **Be careful not to allow dust or other foreign matter to enter the gap between the inside case and the front outside case.**

* Insert the optical fiber cable in the “POWER” hole on the front outside case.
24. Mount the 6 screws.

25. Mount the two ribbon cables.
   *Pass the cables under the guide for the ribbon cables on the inside case.

26. Mount the connector for the backlight unit (CFL unit).

27. Mount the rear outside case on the front outside case.
   * After fitting the rear outside case, firmly press the entire case body to fit the internal "POWER" board connector into the CPU board connector.

28. Mount the 6 screws on the rear outside panel.
UG420H-V Backlight Unit Replacement

(Required Tool)
Screwdriver

⚠️ Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.

⚠️ When replacing the backlight, take appropriate preventive measures against static electricity.
* The point of measures against static electricity is to keep the entire workplace including humans at the same electric potential. Use an anti-static wristband or mat to prevent static electricity.

1. Turn the POD over and remove the packing.
2. Remove the 6 screws from the rear external case.

⚠️ Place it on a cloth, etc. to protect the display panel from scratches.

3. Remove the rear external case.
4. Disconnect the backlight unit (CFL unit) connector.

⚠️ Hold the connector and pull it out. Do not twist or yank on the cable then.
5. Remove the two ribbon cables.

⚠️ **Slide the lock with the ribbon cable holding down with your fingers.**

* The connector is not removable.

6. Remove the 6 screws fixing the inside case.

7. Remove the inside case from the front external case.

⚠️ **Take care not leave scratches, fingerprints, or dirt on the display panel.**

8. Place the inside case with the display panel side up.

9. Remove the 4 screws fixing the LCD module.
10. Open the LCD module by turning it to the left and remove it from the inside case. Place it with the display panel side down. **Place it on a cloth, etc. to protect the display panel from scratches.**

![Diagram showing LCD module and inside case](image)

11. Hold down the claw, and pull the backlight unit (CFL unit) out horizontally to the left.

![Diagram showing backlight unit and Claw](image)

12. Attach a new backlight unit (CFL unit).
   * Hold down the claw, and insert the backlight unit (CFL unit) horizontally to the right. **When taking a new backlight unit out of the bag, do not twist or yank on the cable.**
13. Close the LCD module by turning it to the right, and attach the LCD module to the inside case.
   * Insert the cable and two ribbon cables into the inside case.

14. Attach the 4 screws to fix the LCD module.
   * Be careful not to drop the fiber cable.

15. After attaching the LCD module to the inside case, place it with the display panel side down.

   **Place it on a cloth, etc. to protect the display panel from scratches.**

16. Attach the inside case to the front external case.

   **Do not allow the entry of dust or particles to the area between the inside case and the front external case.**

17. Attach the 6 screws.
18. Attach the 2 ribbon cables.

19. Attach the backlight unit (CFL unit) connector.

⚠️ **Do not twist or yank on the cable of the backlight unit.**

Insert the ribbon cable into the connector and slide the lock to set it.

⚠️ **Visually check that all connectors and ribbon cables are connected securely.**

20. Attach the rear external case to the front external case.

* Fit the rear external case in position. Press the case entirely so as to fit the panel board connector with the CPU board connector inside.

21. Attach the external 6 screws.

22. Attach the packing.
UG420H-T Backlight Unit Replacement

(Required Tool)
Screwdriver

⚠️ **Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.**

⚠️ **When replacing the backlight, take appropriate preventive measures against static electricity.**
* The point of measures against static electricity is to keep the entire workplace including humans at the same electric potential. Use an anti-static wristband or mat to prevent static electricity.

1. Turn the POD over and remove the packing.
2. Remove the 6 screws from the rear external case.

⚠️ **Place it on a cloth, etc. to protect the display panel from scratches.**

3. Remove the rear external case.
4. Disconnect the backlight unit (CFL unit) connector.

⚠️ **Hold the connector and pull it out. Do not twist or yank on the cable then.**
5. Remove the two ribbon cables.

![Slide the lock with the ribbon cable holding down with your fingers.](image)

*The connector is not removable.

6. Remove the 6 screws fixing the inside case.

7. Remove the inside case from the front external case.

![Take care not leave scratches, fingerprints, or dirt on the display panel.](image)

8. Place the inside case with the display panel side up.

9. Remove the 4 screws fixing the LCD module.
10. Open the LCD module by turning it to the left and remove it from the inside case. Place it with the display panel side down.

⚠️ Place it on a cloth, etc. to protect the display panel from scratches.

11. Hold down the claw, and pull the backlight unit (CFL unit) out horizontally to the left.

12. Attach a new backlight unit (CFL unit).
   * Hold down the claw, and insert the backlight unit (CFL unit) horizontally to the right.

⚠️ When taking a new backlight unit out of the bag, do not twist or yank on the cable.
13. Close the LCD module by turning it to the right, and attach the LCD module to the inside case.
   * Insert the cable and two ribbon cables into the inside case.

14. Attach the 4 screws to fix the LCD module.
   * When attaching the screw, tighten the grounding terminal together.
   * Be careful not to drop the fiber cable.

15. After attaching the LCD module to the inside case, place it with the display panel side down.

   ⚠️ **Place it on a cloth, etc. to protect the display panel from scratches.**

16. Attach the inside case to the front external case.

   ⚠️ **Do not allow the entry of dust or particles to the area between the inside case and the front external case.**

17. Attach the 6 screws.
18. Attach the 2 ribbon cables.

19. Attach the backlight unit (CFL unit) connector.

⚠️ Do not twist or yank on the cable of the backlight unit.

Do not twist or yank on the cable of the backlight unit.

Insert the ribbon cable into the connector and slide the lock to set it.

⚠️ Visually check that all connectors and ribbon cables are connected securely.

20. Attach the rear external case to the front external case.

* Fit the rear external case in position. Press the case entirely so as to fit the panel board connector with the CPU board connector inside.

21. Attach the external 6 screws.

22. Attach the packing.
1. With the main body turned over, remove the 6 screws from the outside case.

   ![Warning icon] Put a cloth or other protective material under the product so as not to damage the display panel.

2. Remove the rear outside case.

3. Remove the connector for the backlight unit (CFL unit).

4. Remove connector A.

5. Remove connector B.

   ![Warning icon] Holding the connector, carefully remove it without pulling on the cable.

   * Properly mark connectors B and C so that they can be correctly reinserted in the proper place.
6. Remove the two ribbon cables.

![Diagram of ribbon cables and lock](image)

* The connector cannot be removed.

7. Remove the 6 screws that fix the inside case.

![Diagram of inside case and screws](image)

8. Remove the inside case from the front outside case.

9. Put the inside case on the table, with the display panel up.

10. Remove the 4 screws that fix the LCD module.

11. Remove the LCD module from the inside case.

![Diagram of LCD module and screws](image)

12. Put the LCD module on the table, with the display panel down.

⚠️ **Put a cloth or other protective material under the product so as not to damage the display panel.**
13. Pull out the backlight unit (CFL unit) to the left as shown in the figure below.
   * Pull up the locks indicated in the figure below to unlock them.

14. Insert the new backlight unit (CFL unit).
   * Insert the new backlight unit until it locks completely.

15. Put the LCD module on the table, with the display panel up.

16. Mount the LCD module on the inside case.
   * Pass the cables through the inside case.
17. Set and tighten the 4 screws for securing the LCD module.

18. Put the inside case that has the LCD module mounted on it on the table, with the display panel down.

⚠️ **Put a cloth or other protective material under the product so as not to damage the display panel.**

19. Mount the inside case on the front outside case.

⚠️ **Be careful not to allow dust or other foreign matter to enter the gap between the inside case and the front outside case.**

* Insert the optical fiber cable in the "POWER" hole on the front outside case.
20. Mount the 6 screws.
21. Mount the connector for the backlight unit (CFL unit).
22. Mount connector B.
23. Mount connector A.

⚠️ **Make sure that the connectors are correctly inserted in their original places by using the marks made before removal.**

24. Mount the 2 ribbon cables.

25. Mount the rear outside case on the front outside case.

   *After fitting the rear outside case, firmly press the entire case body to fit the internal “POWER” board connector into the CPU board connector.*

26. Mount the 6 screws on the rear outside panel.
UG320 Backlight Unit Replacement
(Required Tool)
Screwdriver

⚠️ Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.

⚠️ When replacing the backlight, take appropriate preventive measures against static electricity.
* The point of measures against static electricity is to keep the entire workplace including humans at the same electric potential. Use an anti-static wristband or mat to prevent static electricity.

1. Turn the POD over, and remove the 4 external screws.

⚠️ Place it on a cloth, etc. to protect the display panel from scratches.

2. Remove the rear external case.

3. Remove the connector A.
4. Remove the connector B.
5. Remove the connector C.

⚠️ Hold the connector and pull it out. Do not twist or yank on the cable then.

* Leave position marks on the connectors B and C to check the positions when reattaching them.
6. Disconnect the backlight unit (CFL unit) connector.

⚠️ **Hold the connector and pull it out. Do not twist or yank on the cable then.**

7. Remove the 2 screws fixing the board equipped with the backlight unit (CFL unit) connectors.
8. Remove the board equipped with the backlight unit (CFL unit) connectors.
9. Remove the two ribbon cables.

*The connector and the lock are not removable.*
10. Remove the 3 screws fixing the inside case.

11. Remove the inside case from the front external case.

12. Place the inside case with the display panel side up.

⚠️ **Take care not leave scratches, fingerprints, or dirt on the display panel.**

13. Remove the 4 screws fixing the LCD module.

14. Remove the LCD module from the inside case.
15. Place the LCD module with the display panel side down.

**Place it on a cloth, etc. to protect the display panel from scratches.**

16. Release the lock of the backlight unit (CFL unit). Remove the unit by pulling it up.

17. Attach a new backlight unit (CFL unit).
   * Make sure that the lock is secured.

**When taking a new backlight unit out of the bag, do not twist or yank on the cable.**

18. Place the LCD module with the display panel side up.

19. Attach the LCD module to the inside case.
   * Insert the connectors B and C into the inside case.
20. Attach the 4 screws to fix the LCD module.
   * Tighten one screw at the bottom right with an earth cable terminal.

21. After attaching the LCD module to the inside case, place it with the display panel side down.

   ![Diagram of LCD module and screws](Image)

   **Place it on a cloth, etc. to protect the display panel from scratches.**

22. Attach the inside case to the front external case.

   ![Diagram of inside and front external cases](Image)

   **Do not allow the entry of dust or particles to the area between the inside case and the front external case.**
   * Insert the two ribbon cables into the inside case.

   ![Diagram of ribbon cables](Image)

   * Insert the fiber cable into the power connection hole.

   ![Diagram of fiber cable and power connection hole](Image)
23. Attach the 3 screws.

24. Attach the board equipped with the backlight unit (CFL unit) connectors.

25. Attach the 2 screws to fix the board equipped with the backlight unit (CFL unit) connectors.

26. Attach the backlight unit (CFL unit) connector.

27. Attach the 2 ribbon cables.

Insert the ribbon cable into the connector and slide the lock to set it.
28. Attach the connector C.

29. Attach the connector B.

⚠️ **Check the positions of the connectors with their marks.**

30. Attach the connector A.

⚠️ **Visually check that all connectors and ribbon cables are connected securely.**

31. Attach the rear external case to the front external case.

* Fit the rear external case in position. Press the case entirely so as to fit the power supply board connector with the CPU board connector inside.

32. Attach the external 4 screws.
UG320HD Backlight Unit Replacement

(Required Tool)
Screwdriver

⚠️ Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.

⚠️ When replacing the backlight, take appropriate preventive measures against static electricity.
* The point of measures against static electricity is to keep the entire workplace including humans at the same electric potential. Use an anti-static wristband or mat to prevent static electricity.

1. Turn the POD over, and remove the 9 external screws.

⚠️ Do not remove the gasket.

Place it on a cloth, etc. to protect the display panel from scratches.

2. Remove the rear external case.

2. Remove the connectors A to E.

Hold the connector and pull it out. Do not twist or yank on the cable then.

* Leave position marks on the connectors B and C, A and D to check the positions when reattaching them.
4. Remove the three ribbon cables.

![Diagram showing ribbon cables and lock]

**Slide the lock with the ribbon cable holding down with your fingers.**

* The connector and the lock are not removable.

5. Remove the 4 screws fixing the CPU board.

![Diagram showing screws and CPU board]

6. Raise the CPU board vertically until it is removed.

**Take necessary measures to protect the CPU board from static electricity.**

![Diagram showing screws, insulating seal, and connector]

7. Remove the 2 insulating seals from the inverter board.

8. Remove the connector from the inverter board.
9. Remove the 2 screws fixing the inverter board.

10. Remove the inverter board and detach two connectors from the backlight unit.

11. Release the lock of the backlight unit (CFL unit). Remove the unit by pulling it up.

12. Attach a new backlight unit (CFL unit).
   * Make sure that the lock is secured.

   **When taking a new backlight unit out of the bag, do not twist or yank on the cable.**

13. Attach the backlight unit (CFL unit) connector to the inverter board.

14. Attach the 2 screws to fix the inverter board.
15. Attach the connector to the inverter board.

16. Attach the 2 insulating seals to places above the resistors between the coil and the connector on the inverter board.

17. Attach the CPU board.

⚠️ **Insert the LEDs into each hole of the POWER lamp and the ENB lamp.**

18. Attach the 4 screws to fix the CPU board.

   * Tighten one screw at the bottom right with an earth cable terminal.

19. Attach the 3 ribbon cables.

   Insert the ribbon cable into the connector and slide the lock to set it.
20. Attach the connector A to E.

⚠️ **Check the positions of the connectors with their marks.**

21. Visually check that all connectors and ribbon cables are connected securely.

22. Attach the rear external case to the front external case.

23. Attach the external 9 screws.
UG220 backlight unit replacement.

⚠️ Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.

1. Turn the backlight unit upside down. Remove the 4 external screws.

⚠️ Place it on a cloth, etc. to protect the display panel from scratches.

2. Remove the rear external case.

3. Disconnect the backlight unit (CFL unit) connector.

⚠️ Hold the connector and pull it out. Do not twist or yank on the cable then
4. Remove the screw fixing the backlight unit (CFL unit).

5. Raise the backlight unit (CFL unit) once and remove the unit by sliding it horizontally.

⚠️ **While raising the backlight unit, do not twist or yank on the cable.**

6. Attach a new backlight unit (CFL unit).

⚠️ **When taking a new backlight unit out of the bag, do not twist or yank on the cable.**

7. Attach the screw to fix the backlight unit (CFL unit).

8. Connect the backlight unit (CFL unit) connector.
Visually check that all connectors and ribbon cables are connected securely.

9. Attach the rear external case to the front external case.
   * Fit the rear external case in position. Press the case entirely so as to fit the power supply board connector with the CPU board connector inside.

Do not allow the cable to be caught in the area between the cases.

10. Attach the external 4 screws.