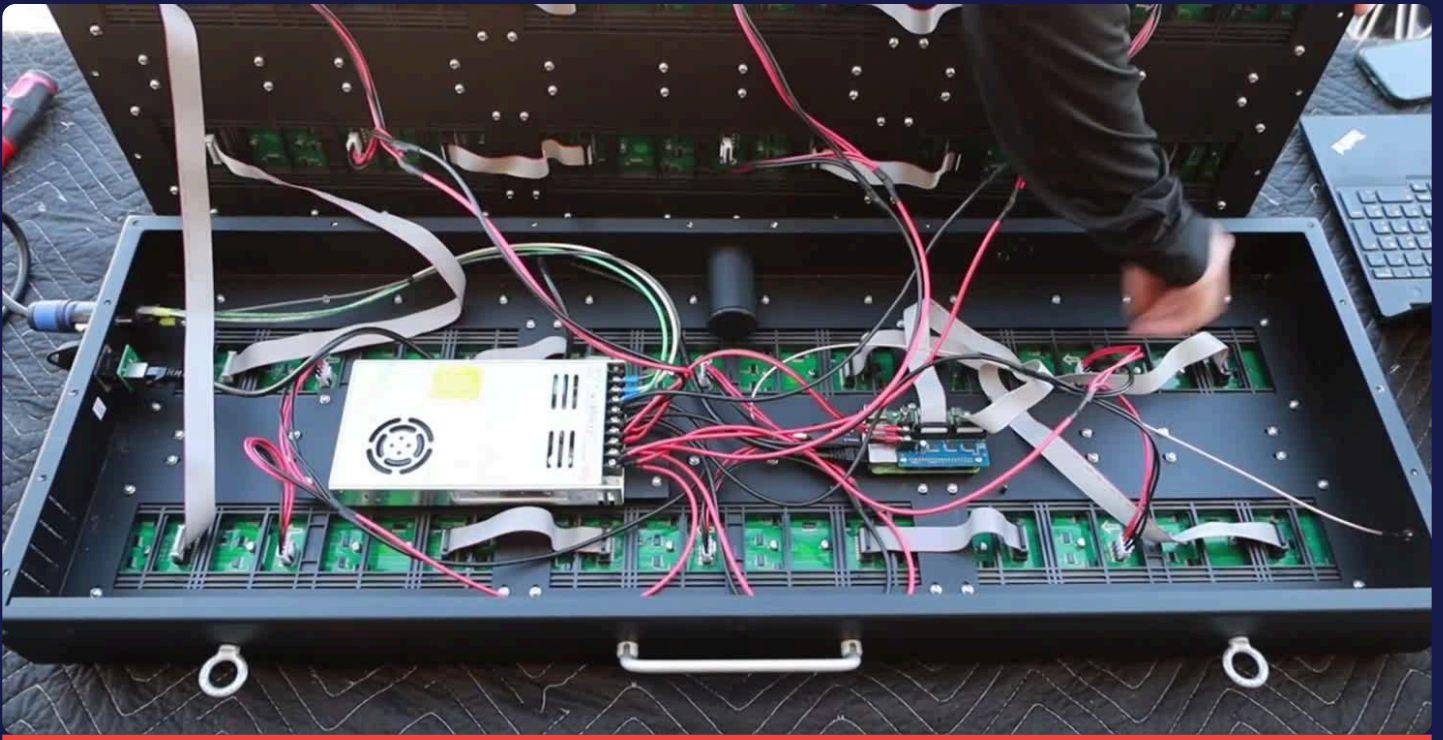


LED RACE CLOCK SERVICE & TROUBLESHOOTING GUIDE

Customer support manual



12 PROCEDURES

Power-on | Panel access | Inspection | Troubleshooting | Component replacement

MANUAL NAVIGATION

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HOW TO USE THIS GUIDE

For basic operation or access, see Turning On Your Clock (page 4) or Back Panel Removal (page 5). For a fault, start with the matching diagnostic procedure and follow its specific power-state instructions.

READ FIRST

SAFETY AND POWER-STATE GUIDE

USE THE POWER STATE LISTED FOR EACH PROCEDURE

Do not apply one procedure's power instructions to another. The inspection uses both powered and unpowered stages; the voltage check requires the clock to remain on.

PROCEDURE	POWER	KEY LIMIT
Turning On Your Clock	ON	Align, insert, then turn the blue connector.
Back Panel Removal	OFF	Power off before removing panel screws.
Internal Inspection	MIXED	Power only for visual indicator checks.
MicroSD Card Replacement	OFF	Disconnect before card access.
LED Module Replacement	OFF	Disconnect before cable or screw work.
Pi HAT Replacement	OFF	Disconnect before terminal or board work.
Pi Power Cable Replacement	OFF	Disconnect before terminal work.
Raspberry Pi Replacement	OFF	Disconnect before board removal.
LED Module Power Cable	OFF	Disconnect before terminal work.
Incomplete Display Troubleshooting	ON	Only for the connector checks shown.
Power Supply Voltage Check	ON	DC outputs only; avoid AC input terminals.
Ethernet Port Replacement	OFF	Disconnect before cable or screw work.

GENERAL HANDLING

- Place the clock on a flat, stable surface before beginning any inspection or repair.
- Keep hardware together.
- When disconnecting components or wires, always grip the connector itself rather than pulling on the wire. Avoid yanking or tugging on the cable, as this can damage the wire or connector.

STOP AND CONTACT SUPPORT

- If a component has been replaced and the issue is still not resolved, contact Finished Results Support at support@finishedresults.com for further assistance.
- If a connector, wire, or terminal appears damaged.

For assistance, email Finished Results Support at support@finishedresults.com.

PROCEDURE 01

TURNING ON YOUR CLOCK

PURPOSE

To demonstrate how to properly connect the power cable and turn on the clock.

BEFORE YOU BEGIN

- Have the external power cable ready. The video begins with the blue socket on the clock unconnected.

POWER STATE

TURN ON AT THE CONNECTOR

TOOLS / MATERIALS

External power cable; no separate tool is used.

STEP-BY-STEP INSTRUCTIONS

- 01 Locate the blue power connection on the clock.
- 02 Align the external power cable connector with the socket.
- 03 Insert the connector, then turn it to secure the connection.



Locate the blue power connection



Insert and turn to secure the connection

IMPORTANT NOTES

Hold the connector housing while aligning, inserting, and turning it. The walkthrough shows the external connection only.

VERIFICATION / WHAT TO CHECK

Confirm that the connector is seated and secured. The video ends with the cable connected; an illuminated display or completed startup is not shown.

PROCEDURE 02

BACK PANEL REMOVAL

PURPOSE

To demonstrate how to properly remove the back panel.

BEFORE YOU BEGIN

- Make sure the LED Race Clock is powered off.
- Begin with the panel still in place, as shown.

POWER STATE
OFF BEFORE BEGINNING

TOOLS / MATERIALS

- Phillips #2 screwdriver

STEP-BY-STEP INSTRUCTIONS

01

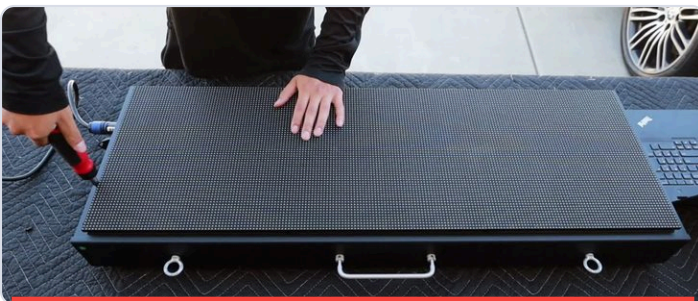
Using the appropriate screwdriver, remove the screws securing the back panel to the clock housing.

02

Work around the panel as shown until all of its securing screws have been removed.

03

Keep the removed screws together as you work.



Remove the panel securing screws



Continue around the housing

IMPORTANT NOTES

This walkthrough covers screw removal. Opening or lifting off the panel is not demonstrated.

VERIFICATION / WHAT TO CHECK

Confirm that the securing screws have been removed and kept together. The panel remains in place in the source video.

PROCEDURE 03

INTERNAL INSPECTION

PURPOSE

To demonstrate how to inspect the LED Race Clock and verify that it is operating correctly.

BEFORE YOU BEGIN

- Place the clock on a stable work surface and support the rear housing while it is open.
- Keep removed hardware together.
- Power is used only while observing indicator lights. Do not touch internal components while the clock is powered.
- Power off and disconnect the clock before checking connections or tightening screws.

TOOLS / MATERIALS

- Phillips #2 screwdriver



Power-supply indicator

POWER STATE

MIXED - FOLLOW EACH STEP

PROCEDURE 03

STEP-BY-STEP INSTRUCTIONS

Before beginning, power off and disconnect the clock. Unscrew and remove the back panel using a Phillips #2 screwdriver. Then follow the power-state instructions for this procedure.

01

Begin with the rear housing open and the display panel supported.

02

Reconnect power only for the indicator-light checks. Do not touch internal components while powered.

03

Locate the power supply and confirm that its green indicator light is on.

04

Locate the Raspberry Pi. Confirm the red and green indicator lights are on and watch for green-light activity.

05

Turn the clock off and disconnect electrical power before touching any connection.

06

Check each cable connection. Look for plugs that are not fully seated or appear loose.

07

Continue across the lower clock body and the raised display panel until every visible cable connection has been checked.

08

With power disconnected, gently tighten any loose mounting screws. Do not overtighten.

09

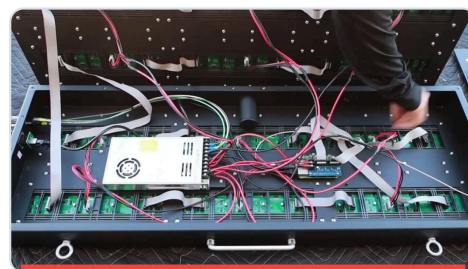
Carefully lower the display panel back into position.



Power-supply indicator



Raspberry Pi indicators



Cable-connection inspection

IMPORTANT NOTES

- The powered portion is visual only.
- Power off before cable or screw work.

VERIFICATION / WHAT TO CHECK

Power-supply and Raspberry Pi indicators are visible during the powered check; connections and mounting screws are secure with power disconnected.

PROCEDURE 04

MicroSD CARD REPLACEMENT

PURPOSE

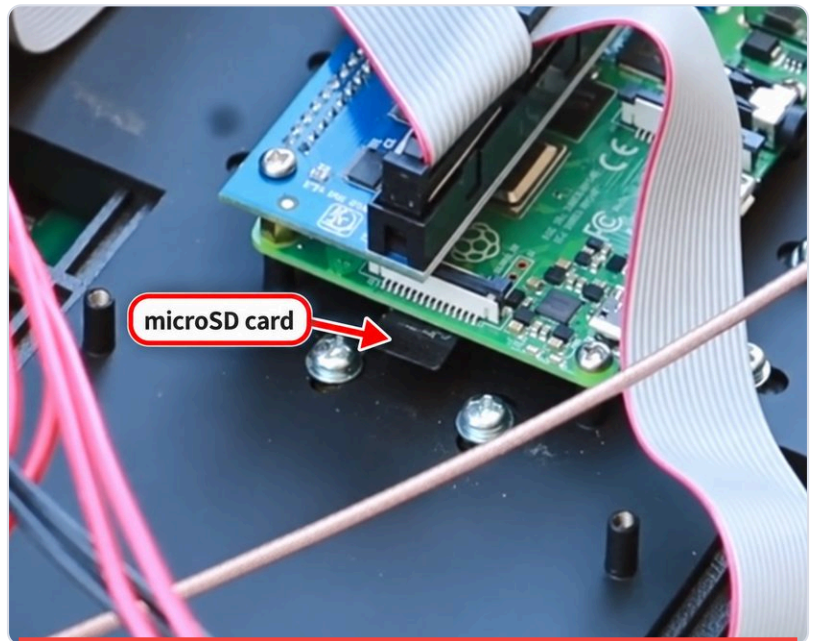
Follow this procedure if the clock does not boot and the Raspberry Pi shows no indicator lights.

BEFORE YOU BEGIN

- Turn off the LED Race Clock and disconnect it from electrical power.
- Place the clock on a stable work surface.
- Keep removed hardware together and begin with the rear housing open.

TOOLS / MATERIALS

- Phillips #2 screwdriver
- This component can typically be removed by hand or with thin-nose pliers. If using pliers, pull gently to avoid damaging the component or connector.



Card location beneath the Raspberry Pi

POWER STATE
OFF AND DISCONNECTED

PROCEDURE 04

STEP-BY-STEP INSTRUCTIONS

Before beginning, power off and disconnect the clock. Unscrew and remove the back panel using a Phillips #2 screwdriver. Then follow the power-state instructions for this procedure.

01

Locate the MicroSD card underneath the Raspberry Pi. Access may be limited.

02

Carefully grip the exposed edge of the card.

03

Gently pull the card straight out of the slot. Adjust your grip as needed and take your time.

04

Note the orientation of the original card before it is fully removed.

05

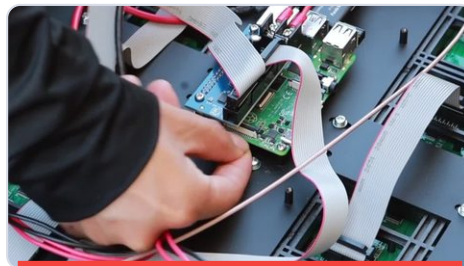
Position the replacement MicroSD card in the same orientation as the original.

06

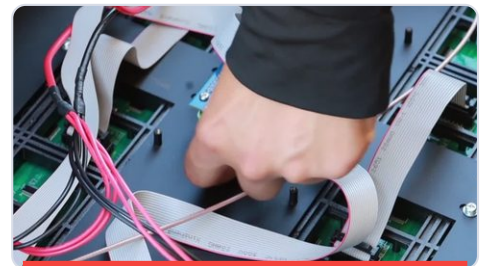
Slide the replacement into the same slot until it is fully inserted.



Card location beneath the Raspberry Pi



Straight-out removal



Replacement insertion

IMPORTANT NOTES

- Pull the card straight out.
- Match the original orientation.
- Do not force the replacement into the slot.

VERIFICATION / WHAT TO CHECK

The replacement MicroSD card is fully inserted in the slot beneath the Raspberry Pi and matches the original orientation. Functional testing is not shown.

PROCEDURE 05

LED MODULE REPLACEMENT

PURPOSE

LED Module displays problems such as missing pixels, damaged pixels, or pixels showing the wrong color.

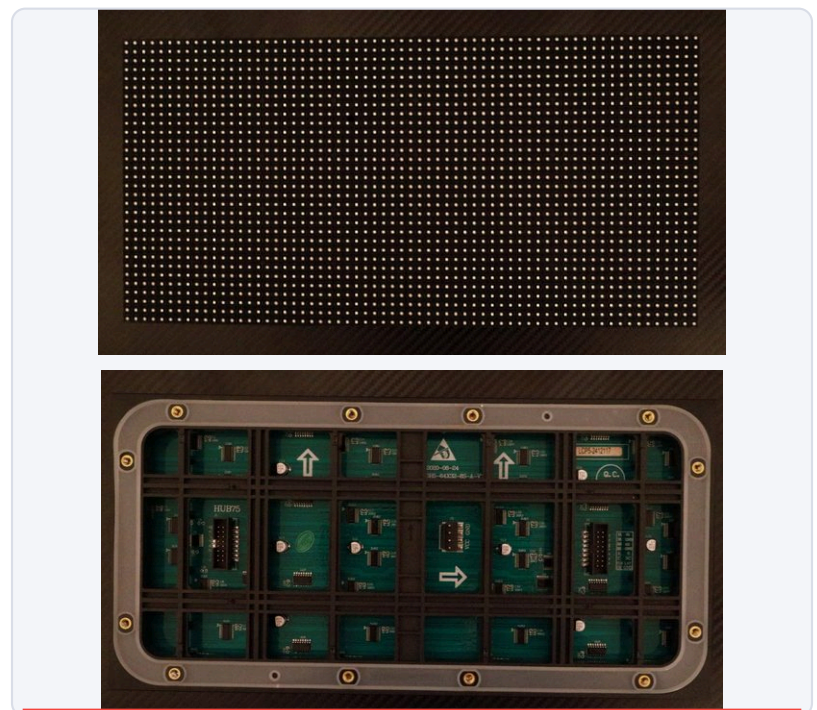
BEFORE YOU BEGIN

- Turn off the LED Race Clock and disconnect it from electrical power.
- Place the clock on a stable work surface and keep all hardware together.
- Begin with the rear housing open.

TOOLS / MATERIALS

- Phillips #2 screwdriver
- Replacement LED module

LED Module



Component reference - identify this part before beginning the procedure.

POWER STATE
OFF AND DISCONNECTED

PROCEDURE 05

STEP-BY-STEP INSTRUCTIONS

Before beginning, power off and disconnect the clock. Unscrew and remove the back panel using a Phillips #2 screwdriver. Then follow the power-state instructions for this procedure.

01

Move cables away from the work area. Disconnect only the cables that block access and note where each connector belongs.

02

Remove the four screws securing the power supply to the clock body - two on each side.

03

Move the power supply only far enough to expose the module. Do not pull on its connected wires.

04

Remove the mounting screws securing the upper-right LED module, then lift the module straight out.

05

Disconnect the module ribbon cable and power connector. Pull on the connector housings, not the wires.

06

Match the replacement to the surrounding module orientation. The printed circuit-board arrow must point to the right.

07

Place the replacement into the opening, align the mounting points, and tighten the module screws evenly. Do not overtighten.

08

Reconnect the module power connector and ribbon cable until fully seated.

09

Return the power supply and cables to their original positions. Reinstall all four power-supply screws.

10

Confirm that no cable is loose or pinched before closing the housing.



Move the power supply for access



Disconnect module cables



Printed arrow points right

IMPORTANT NOTES

- Four power-supply mounting screws: two per side.
- Printed module arrow points right.
- Pull connectors by their housings.

VERIFICATION / WHAT TO CHECK

Module hardware is secure, power and ribbon connectors are fully seated, and no cable is loose or pinched. This walkthrough does not include a power-on test.

PROCEDURE 06

PI HAT REPLACEMENT

PURPOSE

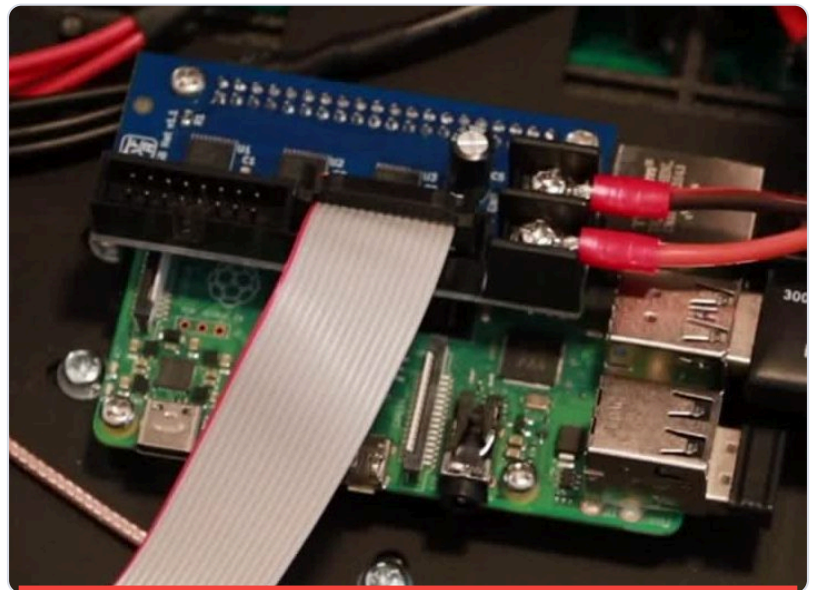
Replace the Pi HAT if it is not supplying power to the Raspberry Pi, resulting in display issues.

BEFORE YOU BEGIN

- Turn off the LED Race Clock and disconnect it from electrical power.
- Place the clock on a stable work surface and keep removed hardware together.
- Begin with the rear housing open.

TOOLS / MATERIALS

- Phillips #2 screwdriver
- Replacement Pi HAT

Pi HAT

Component reference - identify this part before beginning the procedure.

POWER STATE
OFF AND DISCONNECTED

PROCEDURE 06

STEP-BY-STEP INSTRUCTIONS

Before beginning, power off and disconnect the clock. Unscrew and remove the back panel using a Phillips #2 screwdriver. Then follow the power-state instructions for this procedure.

01

Loosen the two terminal screws and remove the black and red power leads from the Pi HAT.

02

Remove the two Pi HAT mounting screws and keep them together.

03

Lift the Pi HAT straight up and off the Raspberry Pi header pins.

04

Disconnect both ribbon cables from the Pi HAT.

05

Position the replacement Pi HAT over the Raspberry Pi. Align the header connector with every pin and use the mounting holes as a position check.

06

Press the Pi HAT down evenly until it is fully seated.

07

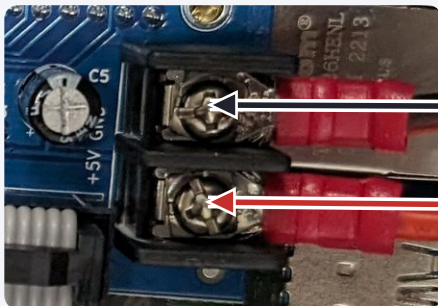
Reinstall the two mounting screws and tighten them gently.

08

Connect the red power cable to the terminal labeled +5V. Connect the black power cable to the other terminal screw directly above it. Tighten both terminal screws.

09

Verify polarity, then reconnect both ribbon cables to their original connectors until fully seated.



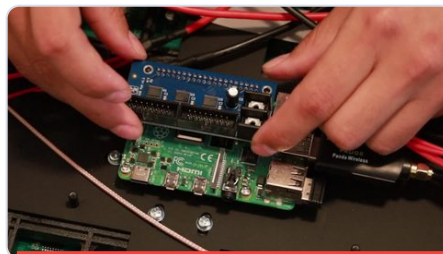
STEP 08 | PI HAT POWER CONNECTIONS

Black cable → top terminal screw

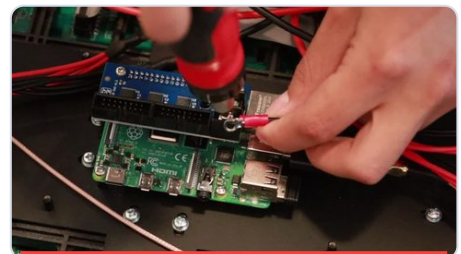
Red cable → +5V



Lift straight off the header pins



Align every header pin



Restore power-lead polarity

IMPORTANT NOTES

- Black cable: top terminal screw.
- Red cable: lower terminal labeled +5V.
- Reversed polarity may damage the Pi HAT.

VERIFICATION / WHAT TO CHECK

The Pi HAT is level and fully seated on all header pins, both screws are secure, polarity is correct, and both ribbon cables are fully seated. No power-on test is shown.

PROCEDURE 07

PI POWER CABLE REPLACEMENT

PURPOSE

The power cable is damaged or is not supplying power to the Raspberry Pi.

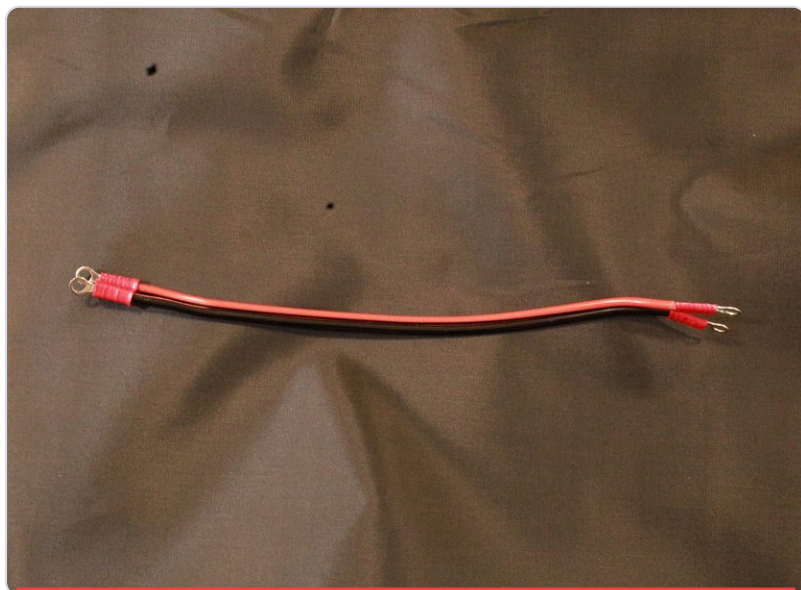
BEFORE YOU BEGIN

- Turn off the LED Race Clock and disconnect it from electrical power.
- Place the clock on a stable work surface and keep removed hardware together.
- Begin with the rear housing open.
- Identify the exact Pi power cable before loosening any power-supply connection.

TOOLS / MATERIALS

- Phillips #2 screwdriver
- Replacement Pi power cable

Pi Power Cable



Component reference - identify this part before beginning the procedure.

POWER STATE
OFF AND DISCONNECTED

PROCEDURE 07

STEP-BY-STEP INSTRUCTIONS

Before beginning, power off and disconnect the clock. Unscrew and remove the back panel using a Phillips #2 screwdriver. Then follow the power-state instructions for this procedure.

01

At the Pi HAT, loosen the two terminal screws and release the red and black cable ends.

02

Trace the same cable to the power supply and confirm that you have identified the correct wire pair.

03

Loosen the corresponding power-supply terminal screws and remove the old cable.

04

At the power supply, connect the replacement red lead to positive and the black lead to negative, using the terminal markings shown.

05

Position the replacement cable ends at the matching connections and tighten the screws.

06

Return any displaced LED power-cable ends to their original power-supply positions.

07

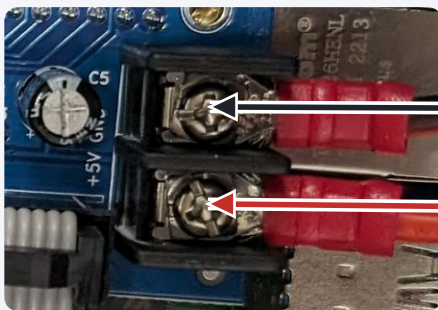
Position the cable ends beneath the loosened screws, then secure the red cable ends and the black cable ends.

08

Return to the Pi HAT. Connect the red power cable to the terminal labeled +5V.

09

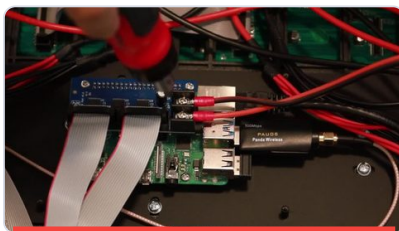
Connect the black power cable to the other terminal screw directly above it. Tighten both terminal screws.



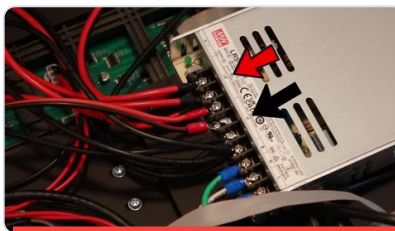
STEPS 08–09 | PI HAT POWER CONNECTIONS

Black cable → top terminal screw

Red cable → +5V



Disconnect at the Pi HAT



Match supply polarity



Red lower; black upper

IMPORTANT NOTES

- Confirm the cable pair before disconnecting it.
- Power supply: red to positive; black to negative.
- Pi HAT: red lower; black upper.

VERIFICATION / WHAT TO CHECK

All replacement and restored cable ends are secured at their original terminals, with correct polarity at both the power supply and Pi HAT. No power-on test is shown.

PROCEDURE 08

RASPBERRY PI REPLACEMENT

PURPOSE

Replace the Raspberry Pi if it is damaged or is not powering on.

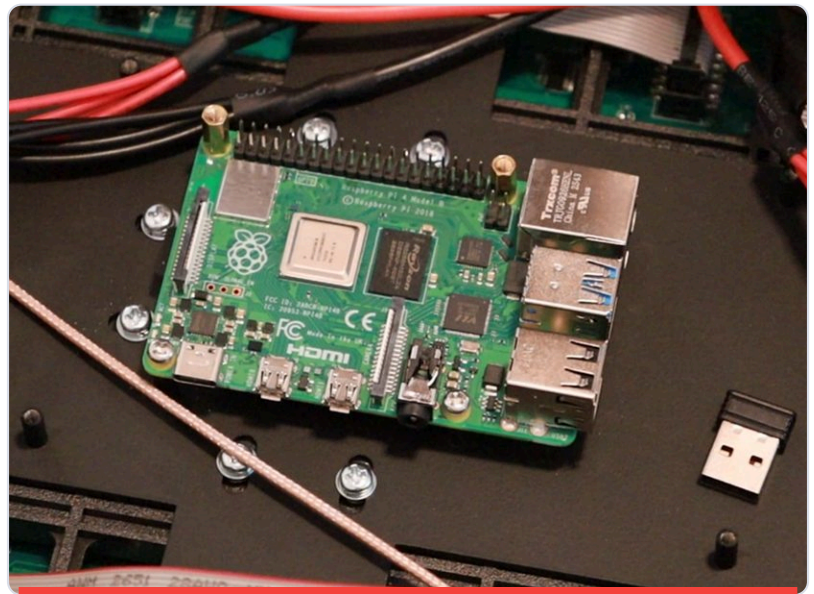
BEFORE YOU BEGIN

- Turn off the LED Race Clock and disconnect it from electrical power.
- Place the clock on a stable work surface with the rear housing open.
- Keep all screws, threaded standoffs, and removed connectors nearby.

TOOLS / MATERIALS

- Phillips #2 screwdriver
- Replacement Raspberry Pi

Raspberry Pi



Component reference - identify this part before beginning the procedure.

POWER STATE
OFF AND DISCONNECTED

PROCEDURE 08

STEP-BY-STEP INSTRUCTIONS

Before beginning, power off and disconnect the clock. Unscrew and remove the back panel using a Phillips #2 screwdriver. Then follow the power-state instructions for this procedure.

01

Remove the two screws that secure the Pi HAT.

02

Keep the Pi HAT ribbon cables connected and carefully move the Pi HAT aside.

03

Disconnect the Ethernet cable from the top port on the right side of the Raspberry Pi.

04

Remove the small USB receiver, followed by the Panda wireless adapter. Grip each connector at its base.

05

Remove the mounting screws and threaded standoffs at the four Raspberry Pi mounting points.

06

Lift the original Raspberry Pi away from the mounting points.

07

Position the replacement over the same four points. The 40-pin header faces the upper edge of the clock.

08

Align all four holes before installing any hardware.

09

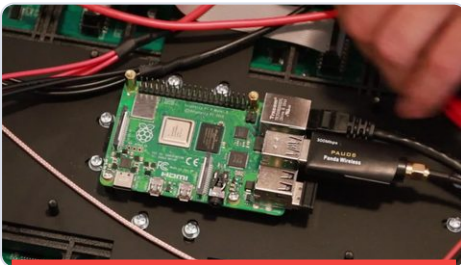
Reinstall the screws and threaded standoffs. Start each piece by hand, then tighten. Keep the board flat and do not overtighten.

10

Reconnect the Ethernet cable, small USB receiver, and Panda wireless adapter to their original right-side ports.

11

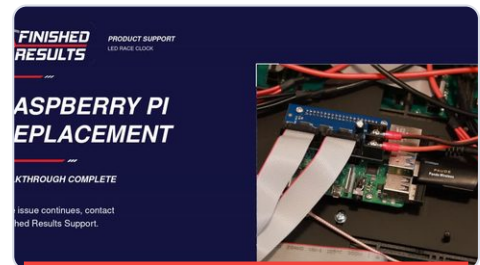
Return the Pi HAT to its original position and reinstall its two screws.



Disconnect right-side devices



Match the 40-pin-header orientation



Restore the Pi HAT

IMPORTANT NOTES

- Four Raspberry Pi mounting points.
- 40-pin header faces the upper edge of the clock.
- Grip connectors at their bases.

VERIFICATION / WHAT TO CHECK

The Raspberry Pi sits flat, all four mounting points are secure, each connector is fully seated in its original port, and the Pi HAT is restored. No power-on test is shown.

PROCEDURE 09

LED MODULE POWER CABLE REPLACEMENT

PURPOSE

Replace the cable if it is damaged or is not supplying power to the LED module.

BEFORE YOU BEGIN

- Turn off the LED Race Clock and disconnect it from electrical power.
- Place the clock on a stable work surface and keep removed hardware together.
- Begin with the rear housing open.
- Trace the target cable before loosening any power-supply terminal.

TOOLS / MATERIALS

- Phillips #2 screwdriver
- Replacement LED module power cable

LED Module Power Cable

Component reference - identify this part before beginning the procedure.

POWER STATE
OFF AND DISCONNECTED

PROCEDURE 09

STEP-BY-STEP INSTRUCTIONS

Before beginning, power off and disconnect the clock. Unscrew and remove the back panel using a Phillips #2 screwdriver. Then follow the power-state instructions for this procedure.

01

Press the locking clip on the LED module power connector and pull the connector straight out of the module.

02

Trace the cable's red and black wires to the power supply and confirm the correct wire pair.

03

Loosen the two terminal screws that secure these wires. Do not remove the screws from the terminal block.

04

Remove the red and black fork terminals from the power supply.

05

Position the replacement cable at the power supply.

06

Insert the red fork terminal into the labeled positive terminal and the black fork terminal into the labeled negative terminal.

07

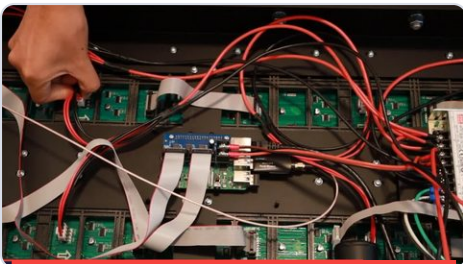
Seat both fork terminals fully beneath the screw clamps. A partially seated terminal can cause a loose connection.

08

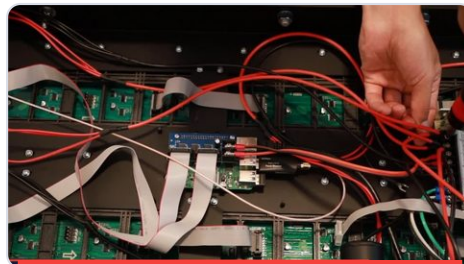
Tighten both terminal screws until firm. Do not overtighten.

09

Reconnect the cable to the LED module until fully seated and the locking clip engages.



Release the locking connector



Red positive; black negative



Reconnect until the clip engages

IMPORTANT NOTES

- Red fork terminal: positive.
- Black fork terminal: negative.
- Loosen terminal screws; do not remove them.

VERIFICATION / WHAT TO CHECK

Both fork terminals are fully captured beneath the screw clamps, polarity is correct, and the LED-module connector is seated with its locking clip engaged. No power-on test is shown.

PROCEDURE 10

INCOMPLETE DISPLAY TROUBLESHOOTING

PURPOSE

To troubleshoot issues that may occur when the LED Race Clock is not displaying properly.

BEFORE YOU BEGIN

- Place the clock on a stable surface and observe the display before opening the housing.
- Support the rear housing while it is open.
- The clock remains powered for the connector checks shown in this procedure.
- Do not remove, install, or tighten screws while powered. If screw work is needed, stop, power off, and disconnect the clock.

TOOLS / MATERIALS

- Phillips #2 screwdriver



Initial incomplete display

POWER STATE
ON FOR THE SHOWN CHECKS

PROCEDURE 10

STEP-BY-STEP INSTRUCTIONS

Before beginning, power off and disconnect the clock. Unscrew and remove the back panel using a Phillips #2 screwdriver. Then follow the power-state instructions for this procedure.

01

Observe the front display and identify which LED modules are not responding.

02

Open and support the rear housing, then inspect the internal connections.

03

Locate the loose red-and-black connector shown and press it firmly into place.

04

Recheck the display.

05

If the issue remains, continue inspecting the remaining internal connections.

06

Locate the disconnected ribbon cable shown at the LED module.

07

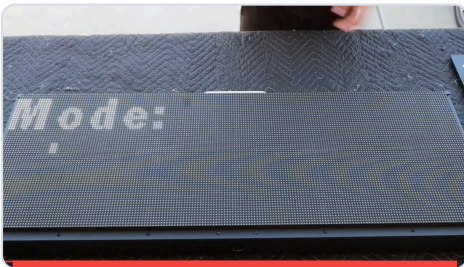
Align the ribbon-cable connector and press it straight in until fully seated.

08

Close the housing, restart the clock, and allow the startup sequence to finish.

09

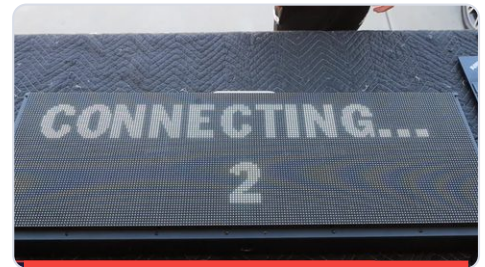
Confirm that the full display is visible and every LED module is responding.



Initial incomplete display



Reseat the ribbon cable



Full display after restart

IMPORTANT NOTES

- This diagnostic remains powered for the connector checks shown.
- No screw work is included while powered.
- Support the rear housing throughout access.

VERIFICATION / WHAT TO CHECK

After restart, the full display is visible and every LED module responds. If the issue continues after the connection checks and restart, contact Finished Results Support.

PROCEDURE 11

POWER SUPPLY VOLTAGE CHECK

PURPOSE

To demonstrate how to check the voltage, verify that the correct voltage is selected, and adjust the voltage setting if needed.

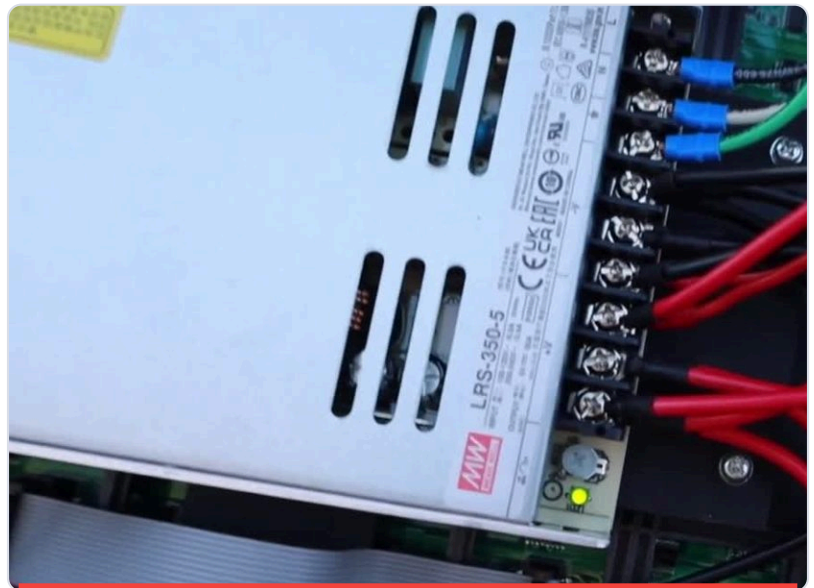
BEFORE YOU BEGIN

- Place the LED Race Clock on a stable surface and support the rear housing while it is open.
- This check must be performed with the clock powered on.
- Keep fingers behind the insulated probe guards.
- Avoid the power supply AC input terminals.

TOOLS / MATERIALS

- Phillips #2 screwdriver
- Digital multimeter set to DC volts
- Red and black insulated test probes

Power Supply



Component reference - identify this part before beginning the procedure.

POWER STATE
ON

PROCEDURE 11

STEP-BY-STEP INSTRUCTIONS

Before beginning, power off and disconnect the clock. Unscrew and remove the back panel using a Phillips #2 screwdriver. Then follow the power-state instructions for this procedure.

01

Turn on the LED Race Clock.

02

Set the multimeter to DC volts before placing the probes near the power supply.

03

Identify the test leads: red is positive and black is negative.

04

Keep your fingers behind the insulated probe guards throughout the test.

05

Place the red probe on a positive DC output terminal.

06

Place the black probe on a negative DC output terminal.

07

Read the voltage on the multimeter. The display should read approximately 5.2 V.

08

If adjustment is needed, turn the power-supply voltage-adjust control slightly left or right while watching the meter.

09

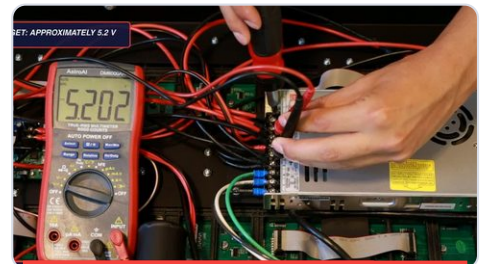
Confirm a reading of approximately 5.2 V before removing the probes.



Set the multimeter to DC volts



Probe the DC output terminals



Confirm approximately 5.2 V

IMPORTANT NOTES

- Keep fingers behind the insulated probe guards.
- Avoid AC input terminals.
- Target DC output: approximately 5.2 V.

VERIFICATION / WHAT TO CHECK

The multimeter reads approximately 5.2 V with the probes on the positive and negative DC output terminals. If the voltage cannot be corrected, contact Finished Results Support.

PROCEDURE 12

ETHERNET PORT REPLACEMENT

PURPOSE

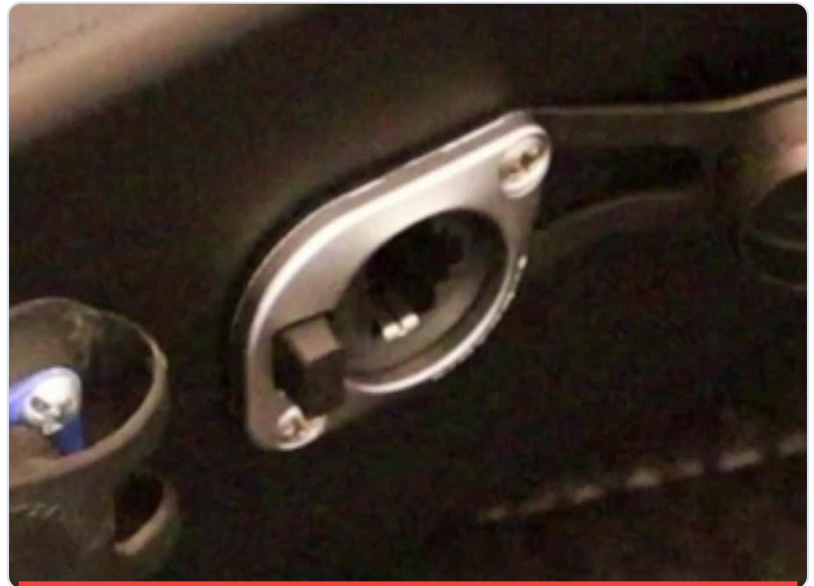
Replace the Ethernet port if it is damaged or causing connectivity issues.

BEFORE YOU BEGIN

- Turn off the LED Race Clock and disconnect it from electrical power.
- Place the clock on a stable surface and keep removed hardware together.
- Begin with the rear housing open. Support it while it is open.

TOOLS / MATERIALS

- Phillips #2 screwdriver
- Replacement Ethernet port assembly

Ethernet Port Assembly

Component reference - identify this part before beginning the procedure.

POWER STATE**OFF AND DISCONNECTED**

PROCEDURE 12

STEP-BY-STEP INSTRUCTIONS

Before beginning, power off and disconnect the clock. Unscrew and remove the back panel using a Phillips #2 screwdriver. Then follow the power-state instructions for this procedure.

01

Disconnect the internal Ethernet cable from the port assembly and move it out of the way.

02

Remove the two mounting screws securing the Ethernet port assembly. Keep both screws for reinstallation.

03

Remove the port assembly. Identify the larger main body, which fits inside the clock, and the outer cover, which fits outside.

04

Align the small metal tab on the main body with the matching feature in the outer cover. Check that the pieces fit together correctly.

05

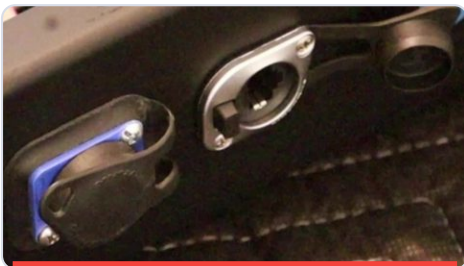
Position the replacement main body inside the clock and the outer cover outside. Align both mounting holes.

06

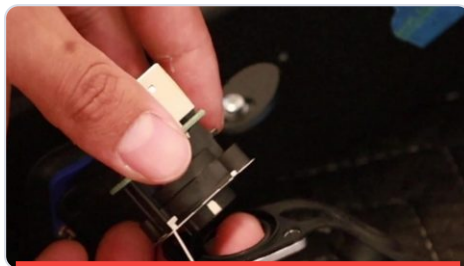
With both pieces and the screw holes aligned, reinstall and tighten the two mounting screws.

07

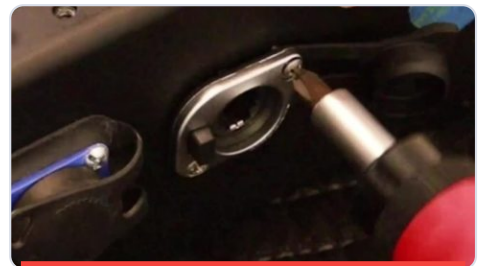
Reconnect the internal Ethernet cable to the port assembly. Check that the connector is fully seated.



Installed Ethernet port assembly



Match the body and outer cover



Reinstall both mounting screws

IMPORTANT NOTES

- Main body inside; outer cover outside.
- Match the metal tab before tightening.
- Retain and reinstall both mounting screws.

VERIFICATION / WHAT TO CHECK

Both screws are installed and the internal cable is fully seated. No power-on or connectivity test is included. If the issue continues, contact Finished Results Support.



FINAL CHECK

Use only the checks that apply to the procedure you completed.

- ☐ Correct procedure and power state were used.
- ☐ All connectors are fully seated in their original locations.
- ☐ Red and black power leads match the polarity shown.
- ☐ For completed replacements, removed hardware was reinstalled.
- ☐ No cable is loose, pinched, or routed across a mounting point.
- ☐ Any supported verification or restart was completed.

IF THE ISSUE CONTINUES

If the issue persists after completing these steps, contact Finished Results Support at support@finishedresults.com for further assistance.

Be ready to identify the procedure completed and the verification result observed.

FINISHED RESULTS | LED RACE CLOCK PRODUCT SUPPORT