

**CAMBRIAN
BIOWORKS**

MANTA

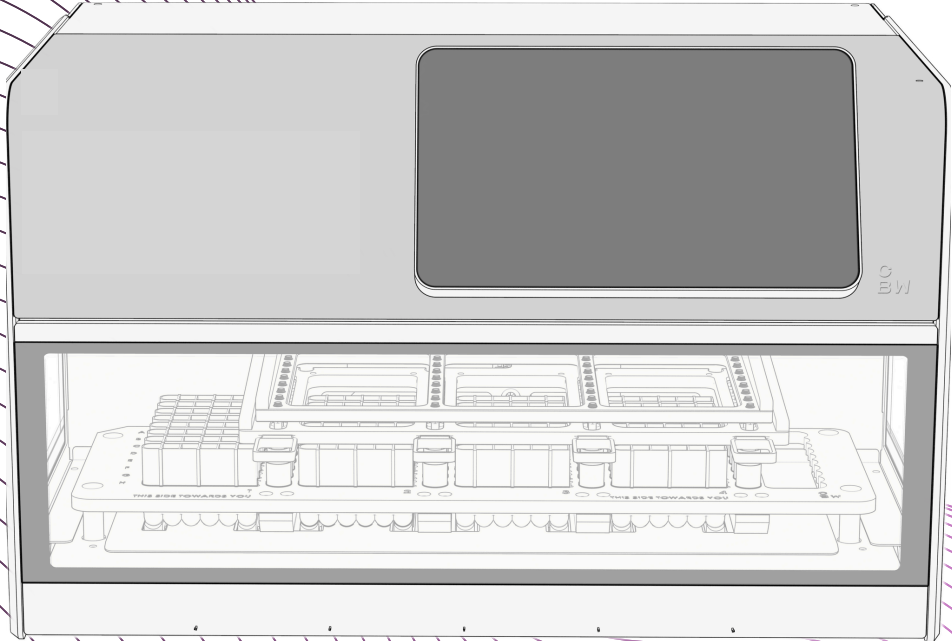


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Manta - The Automated Sample Prep Robot

Manta automates the isolation and purification of nucleic acids from biological samples using magnetic-particle-based technology in both diagnostics and research laboratory settings.

Description and principle

Manta utilizes paramagnetic bead technology for purifying nucleic acids. The system is equipped with a user-friendly touchscreen interface that hosts a diverse array of pre-installed protocols.

The Manta workflow is meticulously structured, encompassing three pivotal stages: binding, washing, and elution. Employing magnetic rods affixed to disposable combs, Manta collects beads from the solution and transfers them to subsequent wells. The system's internal agitation mechanism guarantees thorough sample mixing, while an integrated heating system mitigates alcohol carryover during elution. Furthermore, Manta streamlines sample tracking by enabling elution into barcoded tubes.

The vision underlying Manta is to empower users with unparalleled flexibility, ensuring optimal customization of their nucleic acid purification workflows.

Manta can accommodate a variable number of samples per run, ranging from 1 to 32. Moreover, the system allows for adaptability in starting sample volumes within the cartridges, spanning from 100 μ L up to 4 mL, with additional support available from Cambrian tech experts when necessary.

Components

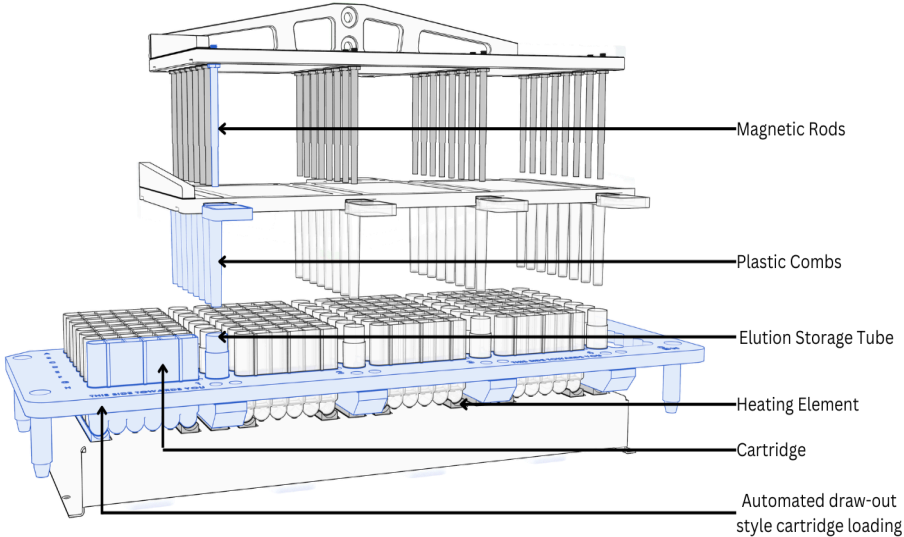


Fig. 1: Manta components

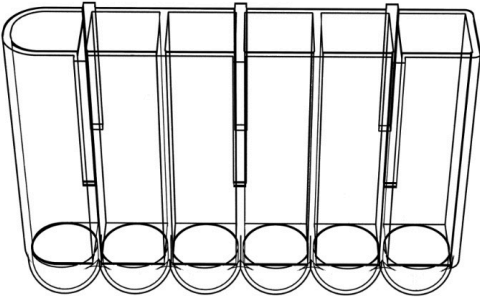


Fig. 2: Cartridge

Procedure

Manta simplifies and automates sample preparation for maximum convenience. Distinct wells are incorporated for samples, reagents, consumables, and elutes, ensuring a systematic and efficient workflow.

For optimal results, the lysis step is conducted independently using the provided buffers and detailed instructions. However, for simple sample types such as blood and saliva, lysis can be conveniently processed on the deck. Following the lysis step, users are guided to transfer the lysate into the cartridges according to the precise instructions outlined in the cartridge manual.

Executing sample preparation with Manta is a straightforward process. Begin by loading samples, specially designed cartridges pre-loaded with reagents, and pre-racked consumables into their designated drawers. The intuitive touchscreen interface allows users to effortlessly select their desired protocol, initiating a meticulously controlled run. Upon completion of the extraction process, retrieve the purified nucleic acid from the designated "elute" cartridge. Manta also offers the flexibility to elute nucleic acid into a separate bar-coded tube, a feature designed to simplify tracking for downstream workflows.

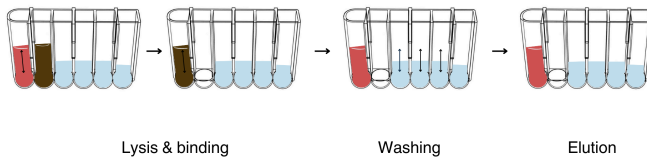


Fig. 3: The Manta Workflow

Technical specifications

Attribute	Description
Weight	18kg
Biospecimen compatibility	Whole blood, tissue, plasma, FFPE blocks, virus, bacteria, cell cultures, DBS cards, saliva, sputum, pus, amniotic fluid, CSF and VTM
Dimensions	43.5 x 28.2 x 26.7 cm [L x B x H]
Internal software	Currently supports 5 extraction protocols - blood, tissue, FFPE, viral co-extraction, DBS.
Operating conditions	15°C - 40°C; indoor use only
Mains power supply	240 V
Power consumption	800 Watts
UV system	UVC lamp
Heating temperature	Up to 85 °C
Throughput capacity	1 sample/run to 32 samples/run.
Processing time	≈30 minutes, but varies based upon sample
Display interface	7-inch touchscreen display
Starting sample volume	100µL - 4mL
Cartridge material	Polypropylene (PP)
Buffers	Pre-filled; components differ according to sample type; non-reusable
Elution	Optional: Elute in a barcoded storage tube

Operating Manta

Power on:

- Switch on the device using the power switch located at the back.

Wait for the display:

- Allow the display to load. Ensure a stable Wi-Fi connection as per the earlier steps.

Optional: UV Light sterilization:

- If desired, turn on the UV light for sterilization. Turn it off once the sterilization is complete. We recommend switching on the UV light in the device for approximately 10 minutes prior to the start of the protocol.

Open door and load samples:

- Press "Open Door" to open the door and extend the sample tray.
- Take out the tray and load your samples into the cartridges.
- Fit the cartridges tightly onto the tray.

Place combs and close door:

- Ensure that combs are placed tightly in the appropriate positions.
- Press "Close Door" to close the door.

Select extraction protocol:

- Press "Choose Extraction Protocol" to navigate to the list of protocols.
- Select your desired protocol.

Start protocol:

- Press the play symbol to initiate the selected protocol.
- Confirm your selection.

Track protocol:

- Track the progress of the protocol on the display.

Collect sample:

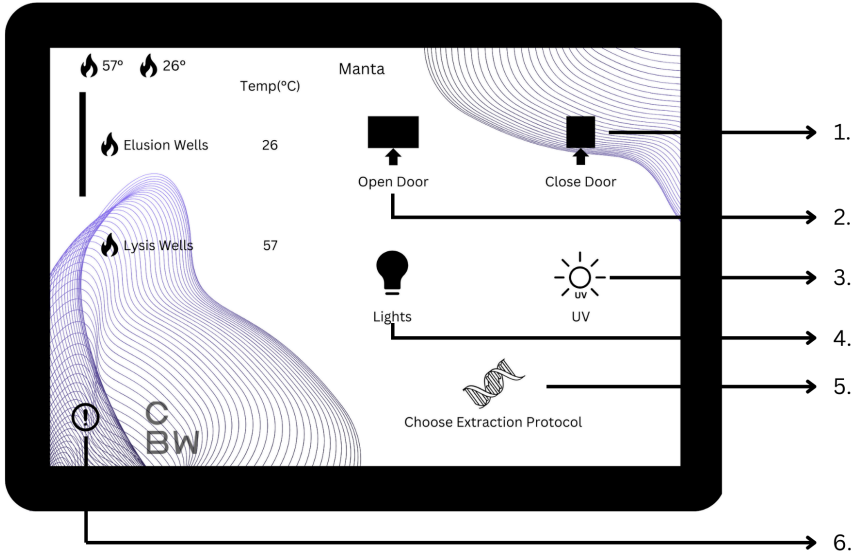
- Once the protocol is complete, the door will open automatically.
- Collect your sample.

Close door:

- After collecting the sample, press "Close Door" to close the door and prevent contamination.

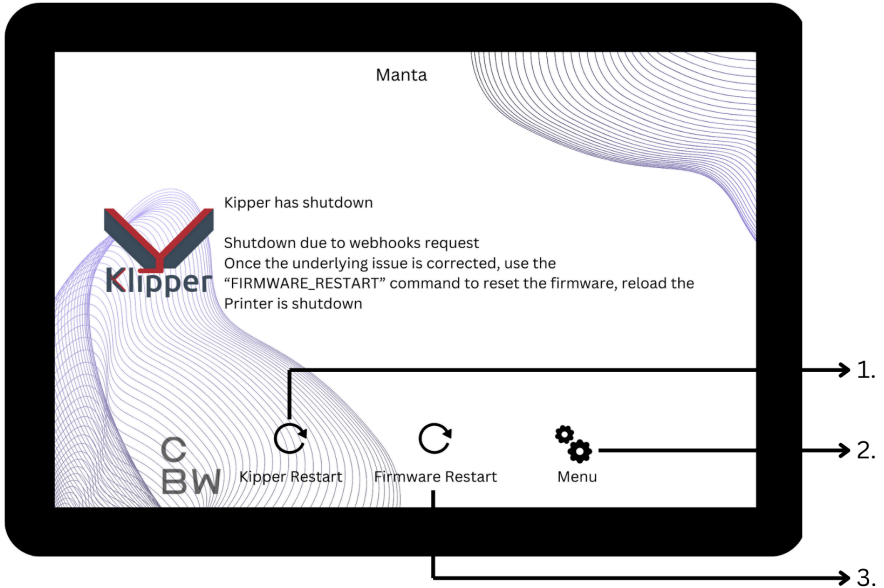
The Display Panels: An Overview

Screen 1: The Main Menu



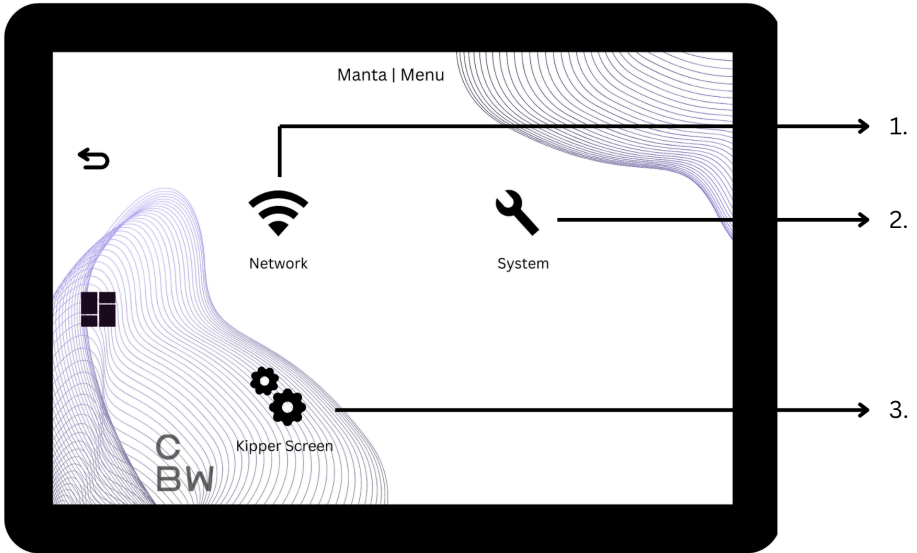
1. Open Door: Press to automatically open the door and extend the sample tray.
2. Close Door: Press to close the door automatically.
3. Lights: Press to toggle ON/OFF device lights.
4. UV light: Press to activate UV light for sterilisation.
5. Choose extraction protocol: Press to navigate and select the desired extraction protocols.
6. "!" : Press the "!" button to access emergency menu settings.

Screen 2: The Emergency Menu



1. Klipper restart: Press this to restart the system.
2. Menu: Press this to access device settings.
3. Firmware restart: Press this to restart the software after an emergency stop or connecting to a WiFi network.

Screen 3: Device Settings



1. Network: Press to view the list of available WiFi networks
2. System: Do not alter any of the set parameters without consulting an authorized personnel
3. Kipper Screen: Do not alter any of the set parameters without consulting an authorized personnel

Connecting to a Wi-Fi network

Access device settings:

- Press the "!" button on the display.

Navigate to Wi-Fi settings:

- In the emergency menu, select "Menu", then choose "Network".

Select network:

- A list of available Wi-Fi networks will appear. Choose your desired network from the list by clicking ">".

Enter Wi-Fi credentials:

- If required, enter the network password using the on-screen keyboard.

Connect:

- Press the "Save" button to connect to the selected Wi-Fi network.

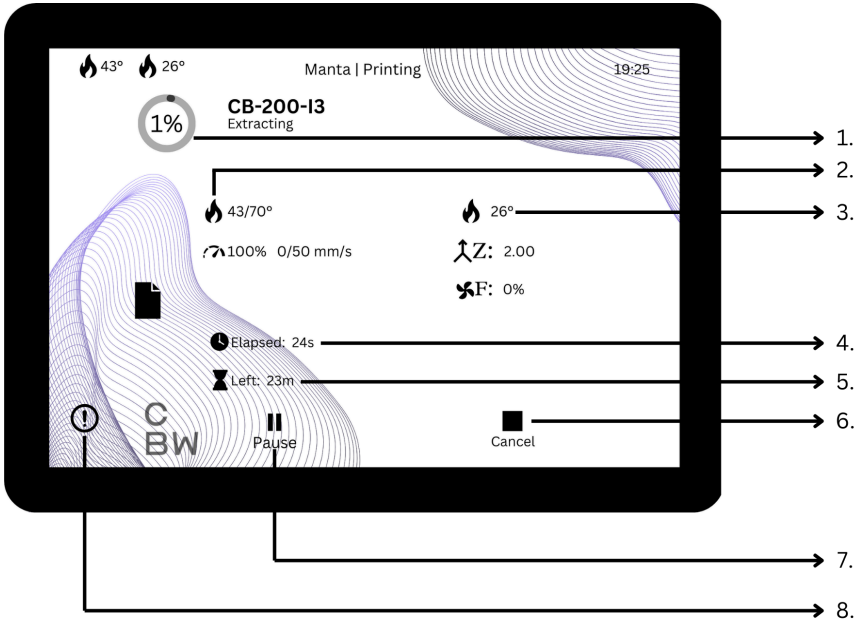
Confirmation:

- Once connected, you'll receive a message signifying a successful connection on the display.

Verify connection:

- Press the "Close" button to return to the list of networks. In the list of networks, you should see "Connected" in brackets next to the network you are connected to.
- Press the back arrow twice to return to the emergency menu settings and select "Firmware Restart."

Screen 4: The Progress Screen



1. Indicates the progress of the current protocol.
2. Indicates the current temperature of the lysis well.
3. Indicates the current temperature of the elution well.
4. Indicates the elapsed time.
5. Indicates the amount of time remaining for the protocol to complete.
6. Press to cancel the current protocol.
7. Press to pause the protocol after the current step.
8. "I": Press the "I" button to access emergency menu settings.

Emergency Stop:

Immediate Stop:

- In order to halt the current run abruptly, press the “!” button on the display.

Navigate to Device Settings:

- The device will take you to the Device Settings screen.

Initiate Firmware Restart:

- Click on “Firmware Restart” to restart your device promptly.

Note: Use this procedure only in emergencies to stop the device immediately. After the restart, assess the situation and address any issues before resuming operations.

Maintenance

General maintenance

- Ensure the tray and cartridges are level and horizontal.
- Ensure the tray is properly aligned by following the provided instructions.
- Place the elution tube with the cap removed.
- Keep the device on a flat surface.
- Insert the cartridge in the correct orientation.
- Avoid reusing cartridges or combs.
- Do not manually adjust the comb plate or magnetic stand.
- Use the designated button to open the door; avoid forcing it open manually and wait for it to open fully.
- Refrain from placing anything in the device as the door is closing.
- Exercise caution; keep hands and body parts clear during protocol runs or when the UV light is active.
- Ensure the comb is securely locked during placement to prevent any impact on bead transfer.
- To ensure uninterrupted operation, consider using Manta with a UPS. This safeguards against unexpected power interruptions during a run, preventing automatic shutdowns and the subsequent need for a restart.
- Verify that the correct protocol is chosen and avoid attempting to mix different protocols, as this may impact the accuracy of results.

In case of low yield or low contamination

Review sample storage:

- Examine the prepared sample to ensure it meets the guidelines and is ready for processing.
- Evaluate the storage conditions of your samples before the run; improper storage can impact results.

Inspect consumables:

- Ensure the cartridges, combs, and any other consumables are in good condition and free from damage or wear.
- Ensure the comb is securely locked in place, preventing any accidental movement during the run.

Implement cleaning:

- If contamination is suspected, follow the recommended cleaning procedure.
- Monitor the mixing and heating processes to confirm they are functioning correctly. If there are any irregularities, contact customer support for assistance.
- Confirm that the correct protocol is selected before starting a run to ensure accurate and intended results.

Sterilization

For effective sterilization and disinfection, our device is equipped with an advanced UVC lamp. UVC serves as a powerful tool in neutralizing bacteria, viruses, and other microbes present on surfaces, rendering them inactive. To optimize the sterilization process, we recommend switching on the UV light in the device for approximately 10 minutes prior to the run.

Note: Before initiating UVC sterilization, it is advisable to pre-clean surfaces to remove visible dirt and debris.

UPS specifications

It is highly recommended to use a UPS with our device, as a loss or disruption of power could interrupt the protocol and adversely affect the overall process. To ensure seamless operation and mitigate any risks associated with power fluctuations, we recommend employing a UPS with the following specifications: a main input voltage of 230 V, a main output voltage of 230 V, and a rated power of 1100 VA.

Annual Maintenance

This Cambrian Bioworks product is guaranteed to be free from defects in materials and workmanship for a period of one (1) year from either (i) the date of purchase by the original retail customer or (ii) the date the product is sold by the manufacturer (the "Commencement Date").

During the warranty period, Cambrian Bioworks will, at its sole discretion, repair or replace defective parts or products. This warranty is applicable solely to the original purchaser and is non-transferable.

This warranty does not cover defects or damages resulting from:

- Unauthorized repairs or modifications performed by a party other than Cambrian Bioworks or its authorized representatives.
- Misuse, neglect, mishandling, or failure to follow the provided product instructions.
- Contamination, overheating, or exposure to environmental conditions beyond the product's specifications.
- Use of replacement parts obtained from sources not authorized by Cambrian Bioworks.

All warranty inspections must be carried out by an authorized representative of Cambrian Bioworks. In case of a defect covered by the warranty, Cambrian Bioworks will provide free replacement parts and, for products sold within India, free labor for repairs with the replacement parts for a period of ninety (90) days from the commencement date.

To return any product or component to the company for warranty service, the item must be sent prepaid, and prior written authorization

from Cambrian Bioworks, including a “Return Materials Number”, must be obtained.

In no event shall Cambrian Bioworks be liable for any direct, indirect, special, incidental, or consequential damages, or for any damages resulting from loss of use or profits, anticipated or otherwise, arising out of or in connection with the sale, use, or performance of any products. This limitation applies regardless of the nature of the claim, whether based on contract, tort (including negligence), strict liability, or regulatory action.

This warranty is governed by and construed under the laws of the jurisdiction in which the original purchaser resides. Any disputes arising from or in connection with this warranty shall be subject to the exclusive jurisdiction of the competent courts in that jurisdiction.

Appendix

Troubleshooting

1. The device is not powering on when the switch is turned on.

- *Ensure that the device is properly connected to a power source. Confirm that the power outlet is functional by testing it with another device.*

Inspect power cable and plug:

- *Examine the power cable and plug for any damage.*

Reset the device:

- *Perform a soft reset by turning the device off, unplugging it, waiting for 30 seconds, and then plugging it back in.*
- *If issues persist, contact technical support for further assistance.*

2. The touch screen is not responding to the inputs.

- *Gently clean the touch screen with a soft, lint-free cloth.*
- *Restart the device.*
- *If the issue persists, contact technical support for further assistance.*

3. Unable to connect the device to the Wi-Fi.

- *Check Wi-Fi credentials.*
- *Verify that the correct Wi-Fi credentials are entered in the device settings.*
- *Restart the Wi-Fi router.*
- *If connectivity issues persist, contact technical support for assistance with advanced troubleshooting.*

4. UV sterilization is not working / sterilization is not effective / contamination is suspected.

- *Verify that the UV sterilization bulb is not damaged or burnt out.*
- *Confirm that the device door is securely closed during the UV sterilization process.*
- *Increase sterilization time, if required.*
- *It is advisable to pre-clean surfaces to remove visible dirt and debris.*
- *If issues persist, contact technical support for further assistance.*

5. Inconsistent heating across wells.

- *Verify that the combs and tray are correctly positioned.*
- *Ensure no obstructions are affecting the even distribution of heat.*
- *During the extraction process, observe the performance of the heating element.*
- *If inconsistencies persist, contact technical support for further assistance.*

6. The device door is not opening.

- *Ensure no obstructions are blocking the door's movement.*
- *Examine the door mechanism for visible damage or misalignment.*
- *If the issue persists, contact technical support for further assistance.*

7. The device door is not closing properly.

- *Ensure no obstructions are preventing the door from closing.*
- *Remove any objects that may be blocking the door's path.*
- *Examine the door seals for any signs of wear or damage.*
- *If the issue persists, contact technical support for further assistance.*

8. There are magnetic beads remaining in well after extraction / inconsistent magnetic bead collection.

- *Examine the magnetic rod for visible damage or misalignment. Monitor the movement of the magnetic rods to verify they descend all the way.*
- *Check all mechanical components, including motors and moving parts, for any signs of damage.*
- *Verify that the combs are moving smoothly. Ensure that the comb is securely locked in place.*
- *Ensure that the tray and cartridges are correctly aligned within the device.*
- *Verify that the correct protocol is selected.*

- *If the issue persists, contact technical support for further assistance.*

9. The comb is not moving from one well to another.

- *Verify that the correct extraction protocol is selected.*
- *Examine the motor responsible for comb movement for any signs of malfunction.*
- *Ensure that the tray and combs are properly aligned, allowing the comb to move smoothly.*
- *Ensure that the comb is securely locked in place.*
- *If the issue persists, contact technical support for further assistance.*

10. Observing low sample yield.

- *Examine the prepared sample to ensure it meets the prescribed guidelines and is ready for processing.*
- *Evaluate the storage conditions of your samples before the run; improper storage can impact results.*
- *Ensure the cartridges and the combs are in good condition and free from damage or wear.*
- *Ensure the comb is securely locked in place, preventing any inadvertent movement during the run.*
- *If contamination is suspected, follow the recommended cleaning procedure.*
- *Monitor the mixing and heating processes to confirm they are functioning correctly.*

- *Confirm that the correct protocol is selected before starting a run to ensure accurate and intended results.*
- *Ensure that the tray and cartridges are correctly aligned within the device.*
- *If issues persist, contact technical support for further assistance.*

11. The light is not working.

- *Verify that the light is turned on using the touchscreen display.*
- *Check the light bulb for any signs of damage or burnout.*

12. There is spillage during the operation.

- *Verify that the correct extraction protocol is selected.*
- *Ensure that the tray and cartridges are correctly aligned within the device.*
- *Ensure the comb is securely locked in place, preventing any inadvertent movement during the run.*
- *Examine the motor responsible for comb movement for any signs of malfunction.*
- *If issues persist, contact technical support for further assistance.*

13. There is an error while executing the protocol / device freezes during the operation.

- *Stop the protocol immediately by pressing the emergency stop button on the display. After pressing the “!” button, the device will take you to the “Device Settings” screen, where you can restart your device by clicking on the “Firmware Restart” button. To ensure accurate and reliable results, it is recommended to prepare a new sample and re-run the protocol.*
- *Examine the motor responsible for comb movement for any signs of malfunction.*
- *Ensure that the tray and cartridges are properly aligned, allowing the comb to move smoothly.*
- *Ensure the comb is securely locked in place, preventing any inadvertent movement during the run.*
- *Verify that the correct extraction protocol is selected.*
- *If issues persist, contact technical support for further assistance.*

14. There was an unexpected pause during the run.

- *In the event of a pause due to an error, click on the “!” button to initiate an emergency shutdown. The device will take you to the Device Settings screen, where you can restart your device by clicking on the “Firmware Restart” button.*
- *Restart your device and run the protocol again.*

15. The magnetic rods broke during the run.

- *In the event of a breakage of the magnetic rod, discard the broken part and immediately contact our customer support to arrange for a replacement. If you choose to proceed with the run despite the breakage, ensure that you place the cartridges in a suitable position where the rods are still present.*

FAQs

1. Can we use separate buffers for Manta?

No, we recommend using only Cambrian buffers provided in the pre-filled cartridges. These buffers are specifically designed to be used with Manta to maximize performance.

2. Can Manta run different nucleic acid extractions simultaneously?

No, there are different protocols for different runs.

3. We want to modify some aspects according to our requirements. Is that possible?

We are open to customizing certain features to meet your specific needs. Our device is constructed entirely in our factory in Bangalore, allowing us to make significant modifications based on your requirements. A notable example is when we tailored the machine for a customer who needed to remove ethanol completely from the cartridge. In response, we customized his device to halt the magnetic particle movement for 2-3 minutes to ensure the complete drying of ethanol.

4. How can we run a high-volume sample on Manta?

High-volume samples can be run on Manta using the specifically designed cartridges. Manta is capable of processing diverse sample volumes, ranging from 100µL to 4mL. When using cartridges with a starting volume of 200µL, 32 runs can be achieved. For a starting volume of 4mL, samples can be run horizontally, resulting in a reduced throughput of 16 runs. If the starting volume requirement is 8 mL, the throughput drops to 8 runs.

Please reach out to support@CambrianBioworks.com for support regarding the same.

5. What types of samples can Manta process?

We designed Manta to meet your diverse nucleic acid isolation needs. In addition to regular DNA and RNA isolation, Manta can isolate DNA from a variety of samples, including whole blood, tissue, plasma, FFPE blocks, viruses, bacteria, cell cultures, DBS cards, saliva, and sputum. Our ongoing efforts aim to enhance Manta's flexibility to include additional sample types.

6. How long does it take to process each sample type?

Please refer to the reagent product manual.

7. How does Manta control contamination?

Manta employs a UV contamination control system. It also includes an auto-draw-out cartridge holder and a detachable, autoclavable active work area. This ensures a sterile environment, eliminating the risk of spills or cross-contamination.

8. Is Manta an Indian product?

Yes! Manta is entirely built in the Cambrian Bioworks factory located in Bangalore, India.

9. Is there any manual override between the protocols?

Yes, there is a manual override option. You can stop the protocol immediately by pressing the emergency stop button on the display. After pressing the "!" button, the device will take you to the Device Settings screen, where you can restart your device by clicking on the "Firmware Restart" button.

Ordering Information

Catalog Number	Product Description
CBWM100-C	Manta - Automated Sample Prep Robot
CBWM100.256	Cambrian FFPE DNA Isolation Kit pre-filled cartridge for Manta
CBWM30.256	Cambrian Viral NA Extraction Kit pre-filled cartridge for Manta
CBWM068.256	Cambrian gDNA Isolation from Whole Blood Kit pre-filled cartridge for Manta
CBWM096.256	Cambrian gDNA Isolation from fresh tissue and amniotic fluid pre-filled cartridge for Manta
CBWM085.256	CamOptioma DNA Saliva Extraction kit pre-filled cartridge for Manta
CBWM068CB.256	Cambrian gDNA Isolation from Cord Blood pre-filled cartridge for Manta
CBWM068.64	Cambrian gDNA Isolation from Whole Blood pre-filled cartridge for Manta
CBWM100.64	Cambrian FFPE DNA Isolation Kit for Manta pre-filled cartridge for Manta
CBWM30.64	Cambrian Viral NA Extraction Kit for Manta pre-filled cartridge for Manta
CBWM085.64	CamOptioma DNA Saliva Extraction kit pre-filled cartridge for Manta
CBWM096.64	Cambrian gDNA Isolation from fresh tissue and amniotic fluid pre-filled cartridge for Manta
CBWM008-T	8 Tip combs for Manta

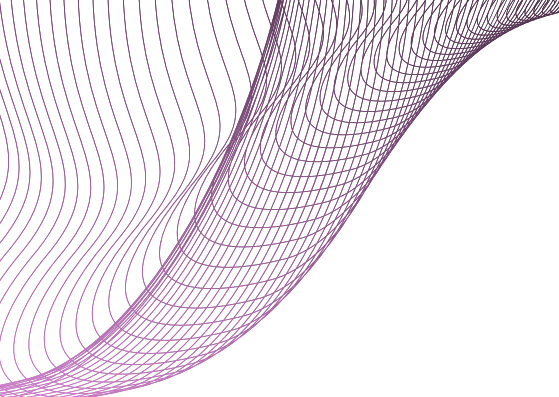
Related products

Catalog Number	Product Description
CBWD015.B250	Cambrian Buccal Swab Collection Kit
CBWA016	CamSpot DBS Collection Kit
CBWD002	Cambrian Magnetic Stand- 8 Station
CBWD010	CamSelect NGS-Size selection and clean-up beads for sequencing
CBWC040.250	Cambrian Multi DNA isolation Kit
CBWC085	CamOptima Saliva DNA Extraction Kit
CBWC100.250	Cambrian FFPE DNA Extraction Kit
CBWC068.DBS250	Cambrian DNA Extraction from DBS Cards
CBWC032.250	Cambrian Plasmid Extraction
CBWC030.250	Cambrian Viral NA Extraction kit

Contact us

We want our customers to have a direct link with our team. If you encounter any issues, please reach out to 91-9916657672 or you can write to support@CambrianBioworks.com or sales@CambrianBioworks.com (our customer success team is fairly proactive).

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