
MatMaCorp
R9
C16
C20
Solas 8™

Solas 8™

Installation, Use and Maintenance Manual

Firmware Version r2.0

Manual Version 1.7

For Research Use Only – Not for Diagnostic Procedures

6400 Cornhusker Highway, Suite 300

Lincoln Nebraska, USA 68507

Contents

Solas 8™ Technical Specifications

Footprint (W x D x H)	25 cm x 28 cm x 8 cm / 9.8 in x 11 in x 3.1 in
Solas 8 Weight	2.7 kilograms \ 6 pounds
Input Power	100-240V AC 3.5-1.3A, 50-60Hz
Storage Temperature	0 Celsius to 40 Celsius (non-condensing)
Storage Relative Humidity Range	0-85%
Ambient Operating Temperature	10 Celsius to 40 Celsius (non-condensing)
Ambient Operating Relative Humidity Range	20-80%
Maximum Altitude	5000 feet / 1500m
Genotyping Block Sample Capacity	8 wells
DNA Prep Block Sample Capacity	8 wells
Mouse Support	Yes
Keyboard Support	Yes
USB 2.0 Export	Yes
USB Recovery Support	Optional
On-board storage	8GB
Touchscreen	Yes
2D Barcode Reading	Optional, USB
3D Barcode Reading	Optional, USB
Remote Updating	Yes
Remote Diagnostic Service and Support	Yes
Screen Size	7 inches
Screen Resolution	800x600 pixels
Excitation Source	Dedicated Light Emitting Diodes
Multiplexing	Yes
Maximum Block Temperature	105 Celsius
Approvals	CE, FCC, RoHS, WEEE

Chapter 1 - Instrument Overview

Your Solas 8™ instrument is a Point of Use laboratory device that can be used in a laboratory or taken out to the field and used directly in the sample collection environment.

The primary control method of your Solas 8™ User Experience is presented on a resistive touchscreen. This is different from the capacitive touch screen that is found on many smart phones.

The resistive touch screen enables robust, uninterrupted use of the Solas 8™ even while manipulating potentially hazardous organisms. It will also function properly while wearing Personal Protective Equipment such as gloves and will activate commands that are deliberately selected. To enable more precise control, the use of a stylus to control the interface of the Solas 8™ is also an option, however it is not required.

Unpacking

The Solas 8™ is a precision machine and as such, the Solas 8™ has been packaged in a way that is most likely to ensure its safe arrival. If the packaging has been damaged in shipping, please notify the carrier immediately and do not accept the shipment.

To Unpack:

1. Carefully unseal the top of the outer box with a blade less than 0.5”/1.25cm in length.
2. Remove the packaging material until you can safely remove both inner boxes. Set them aside.

3. Open the smaller white box on one end by opening the flap.
4. Remove your power supply, and its packaging and set aside.

5. Carefully unseal the top of the larger brown inner box with a blade less than 0.5”/1.25cm in length. Your Solas 8™ machine is suspended inside.

6. Remove the suspension assembly from the inner box and place it on a stable surface.
7. There are two flaps that are underneath the Solas 8™. Carefully unfold these flaps to release the tension in the plastic. This is shown in the Figure below.
8. Remove your Solas 8™ from under the plastic sheet.

NOTE: It is recommended that you let your Solas 8™ warm up to room temperature before first powering it up.

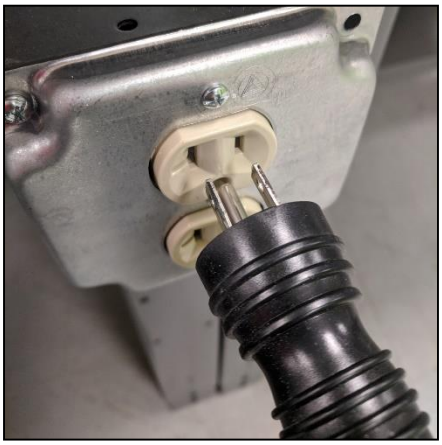
NOTE: Inside the lower block, there is a MatMaCorp Calibration Device. Please calibrate your Solas 8™ before use to make sure that shipping has not affected the instrument in any way. See Chapter 4 for more information, in the section titled, “Alignment Calibration Procedure".

Installation

Once unpacked, the Solas 8™ is ready to start working for you.

Once you have unpacked your Solas 8™ device:

1. Connect the power supply to your Solas 8™.
2. Connect the power supply to an outlet on your wall. The Solas 8™ can be supplied by voltages ranging from 100-240 Volts AC, with powerline frequencies from 50-60Hz.
3. Flip the power switch from the OFF position to the ON position. Your Solas 8™ will start booting.



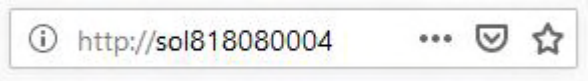
It is **strongly recommended** to recalibrate your Solas 8™ using the Calibration Device to ensure any effects from shipping are minimized. This procedure is explained in Chapter 4: Troubleshooting the Solas 8™.

Further configuration is recommended depending on your specific needs, however, once you connect your Solas 8™ to the power supply and connect your power supply to the wall, you can start generating data.

Instrument Configuration

Your Solas 8™ can connect to either Wired or Wireless networks. A network connection can be used to view results (graphic representation of raw data) on a modern browser, such as Mozilla Firefox or Google Chrome. To view results from your Solas 8™, ensure that it is powered on, and connected to the network.

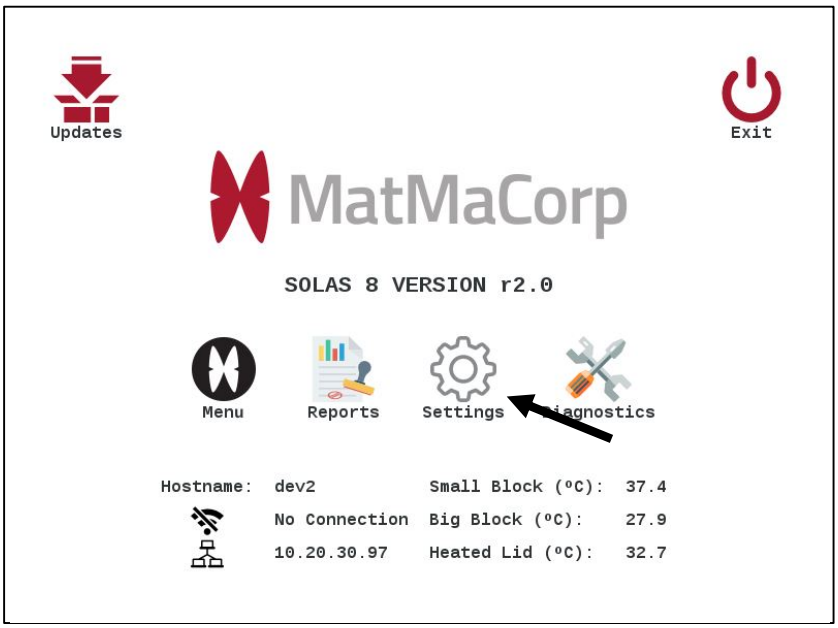
Type the device's hostname, or the devices IP into your browser's address bar, depending on your network configuration.



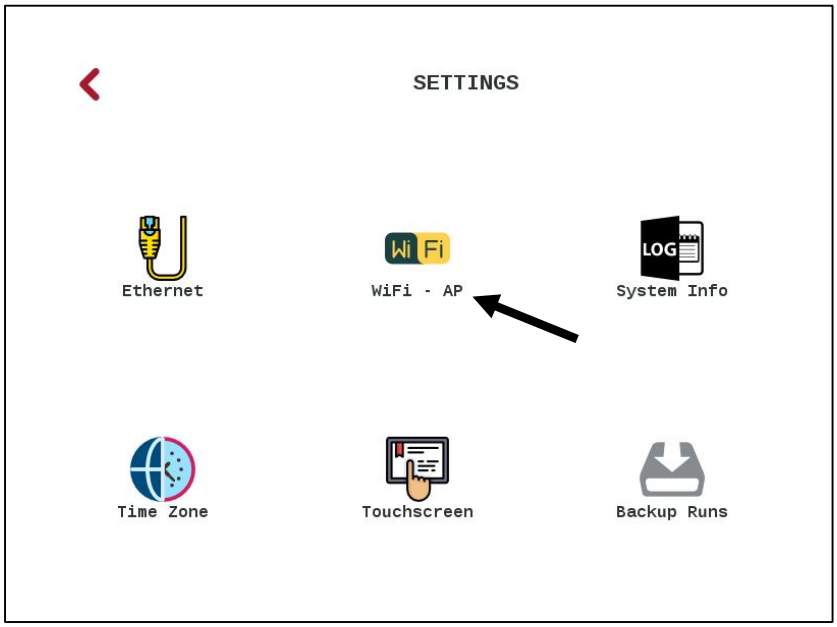
If the hostname does not work, try typing the current IP address of your device instead. This can be found on the start screen of your Solas 8™.

To connect to a wireless network:

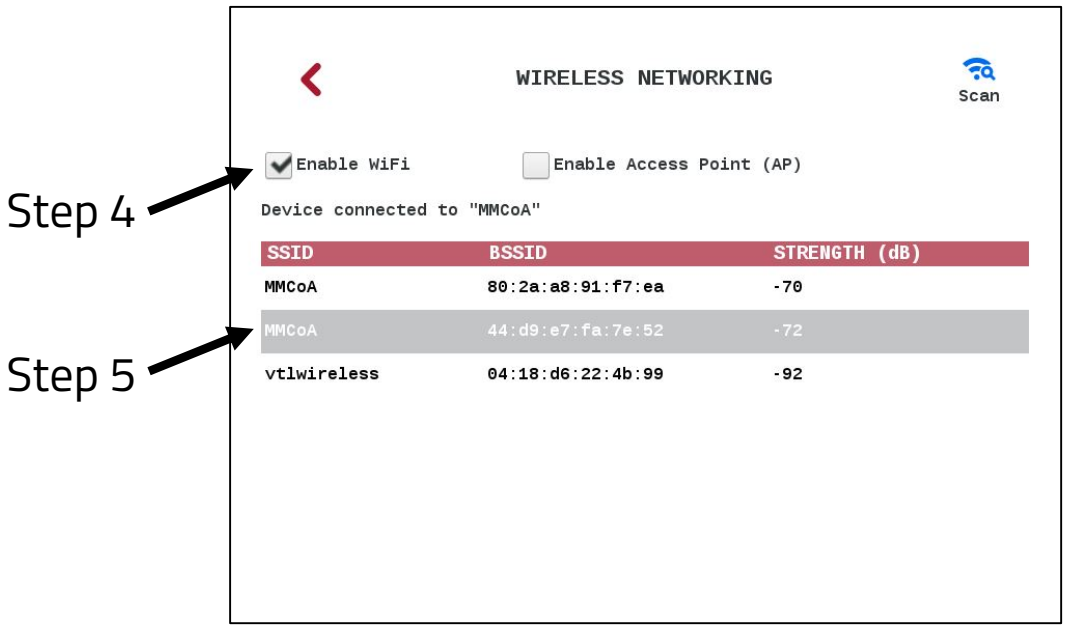
1. Navigate to the Solas 8™ start screen and tap the **Settings** icon.



2. The Solas 8™ System Settings menu appears.
3. Tap the **Wi-Fi** icon.



4. Tap **Enable Wi-Fi**. A list of Access Points will appear in the list below.
5. Tap the correct network name below, in the SSID column
6. A password prompt will appear, this is the wireless password. Your network administrator will know this information.

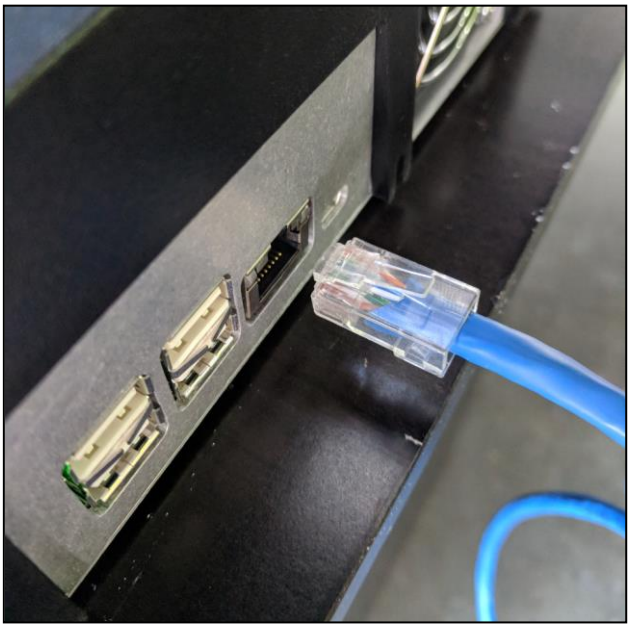


7. Enter the password and Tap **OK**.
8. You should see the “Device connected to your network” message appear above your list.

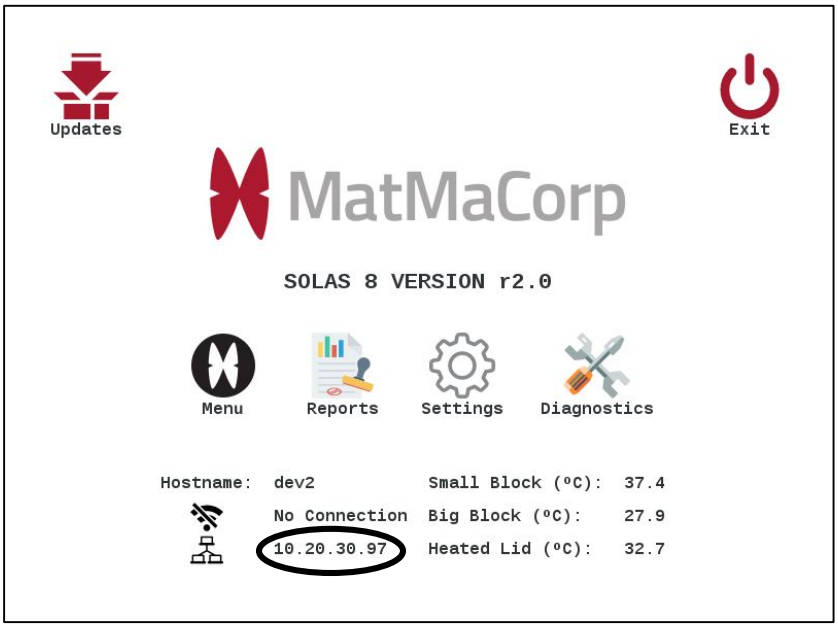
NOTE: If you would like to disable all wireless functionality on the Solas 8™, you can do so from this screen by deselecting both "Enable WiFI" and "Enable Access Point (AP)".

Wired Networking Configuration

1. On the right side of your Solas 8™, please place a Cat 5e or better Ethernet cable into the appropriate port.



2. After a few seconds, depending on your network, the Start screen will show an IP in place of “Cable unplugged”.



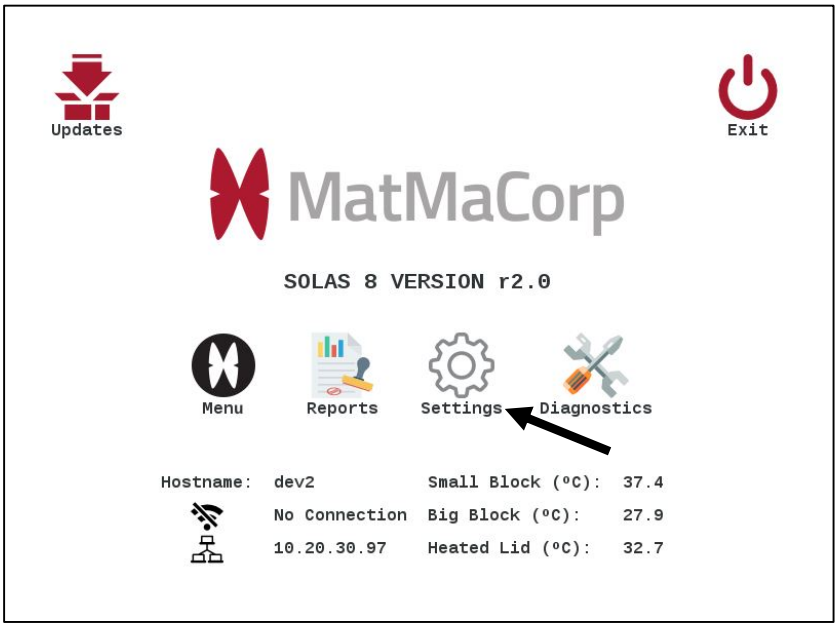
The following screen is only suggested to complete if you are connecting your Solas 8™ to a network that requires setup.

In many instances, the default configuration is okay. If unsure, please talk with your Network Administrator or your IT Department.

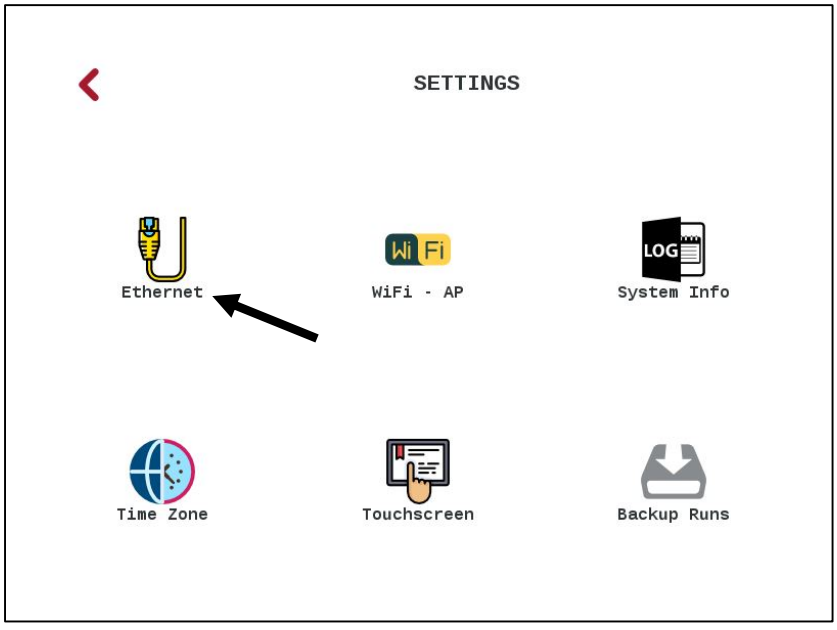
These settings are only required in certain situations, and they depend on each individual network, if they are needed at all.

Incorrect settings here may cause your Solas 8™ to be unreachable on your network.

1. Navigate to the Solas 8™ home screen and tap the **Settings** icon.



2. The Solas 8™ System Settings menu appears.
3. Tap the **Ethernet** icon.



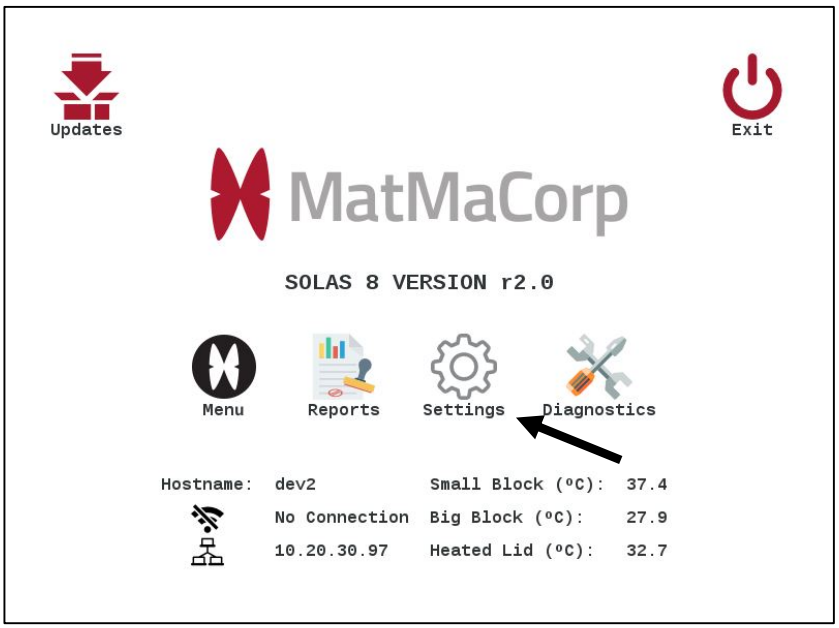
4. Please contact your IT Department for the information to enter in the fields here. These settings will override the default settings that ship with your Solas 8, and if these settings are entered incorrectly, they will cause your Solas 8 to lose all wired connectivity.

For your convenience, please keep a written copy of your network settings below:

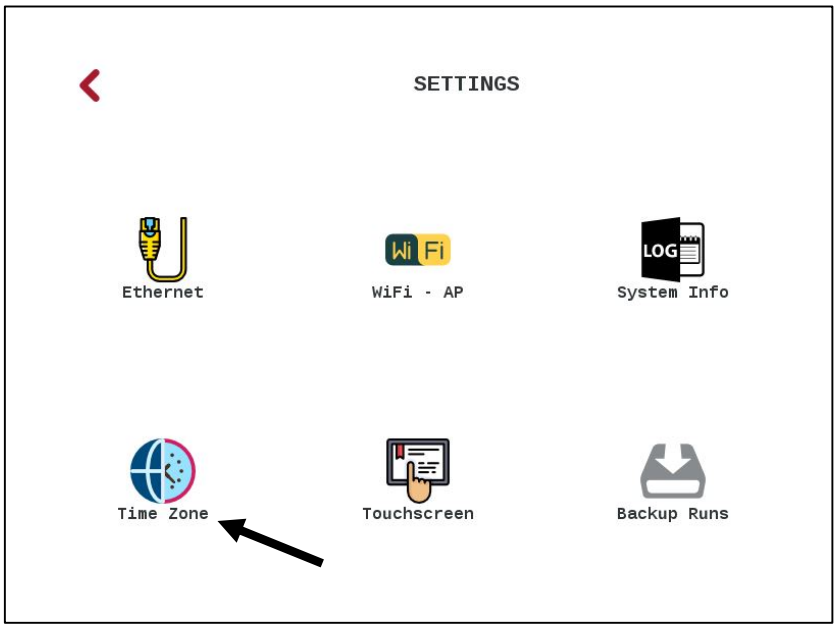
Device S/N SOL8_____		Hostname	_____
Static IP	____.____.____.____	Gateway	____.____.____.____
Domain	_____	DNS 1	____.____.____.____
Netmask	____.____.____.____	DNS 2	____.____.____.____

Setting Your Time Zone

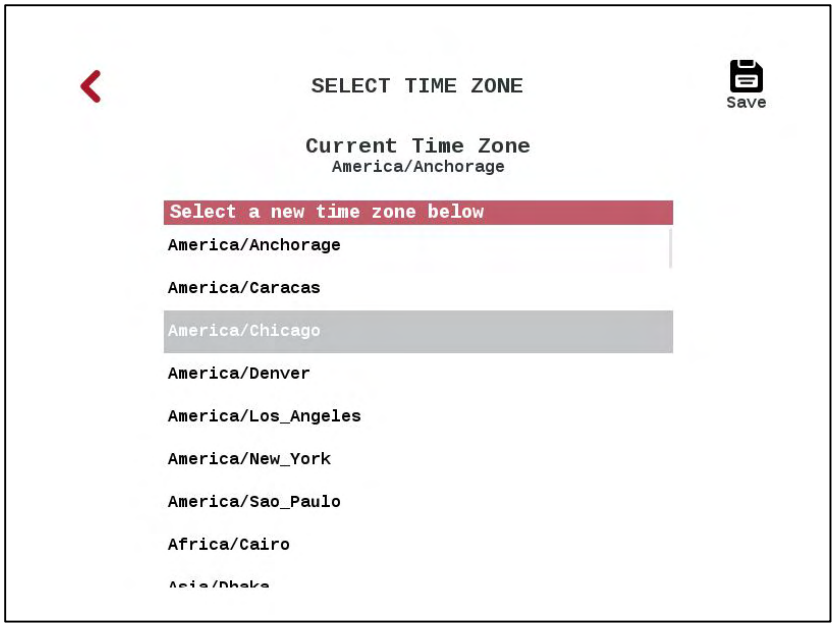
1. Navigate to the Solas 8™ Start screen and tap the **Settings** icon.



2. The Solas 8™ System Settings menu appears.
3. Tap the **Time Zone** icon.



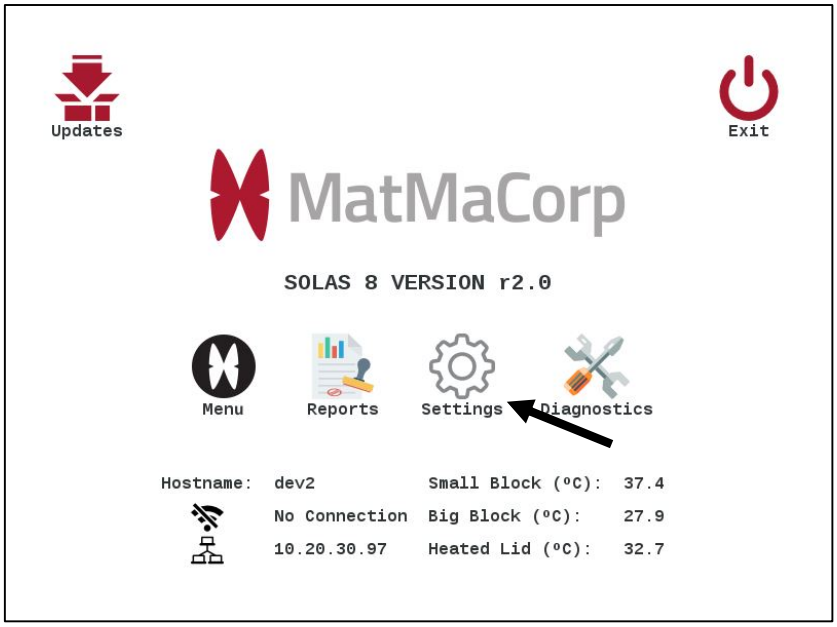
4. The following screen will appear. Tap your time zone from the scroll box. Tap **save**, then Tap **OK** on the confirmation.



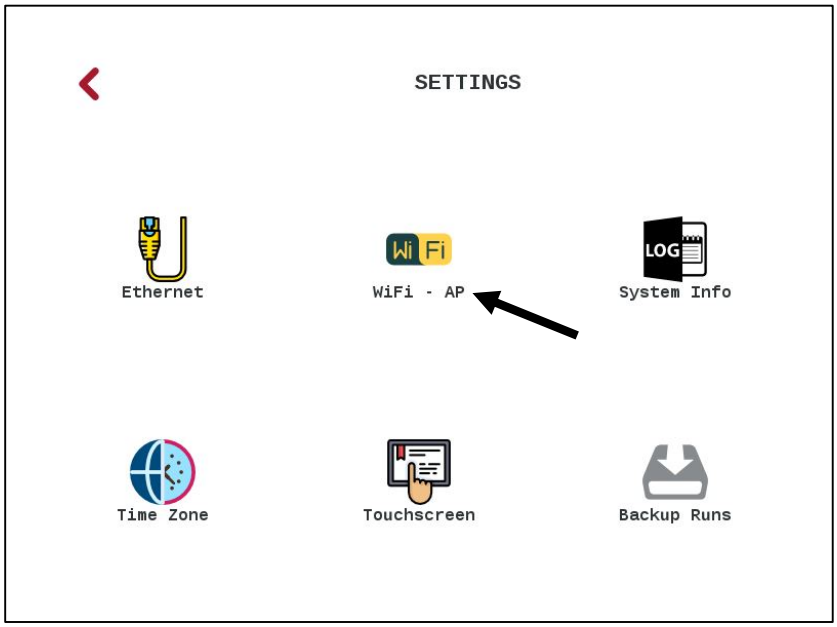
Using Your Solas 8™ as an Access Point

Occasionally, you may want to view results and reports on your Solas 8™ with no existing network available. To connect a wireless-enabled device directly to your Solas 8™:

1. Tap the **Settings** icon from the Start screen.



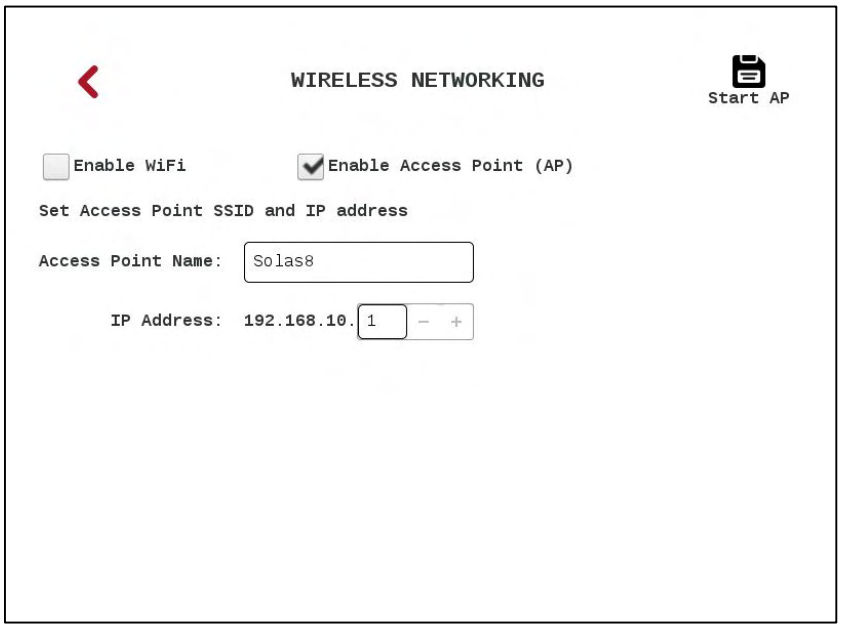
2. Tap the **WiFi - AP** icon.



3. Tap **Enable Access Point (AP)**.

4. Tap **Start AP** in the upper right corner of the screen.

5. You will now be able to connect to your Solas 8™ directly with your cell phone or laptop.



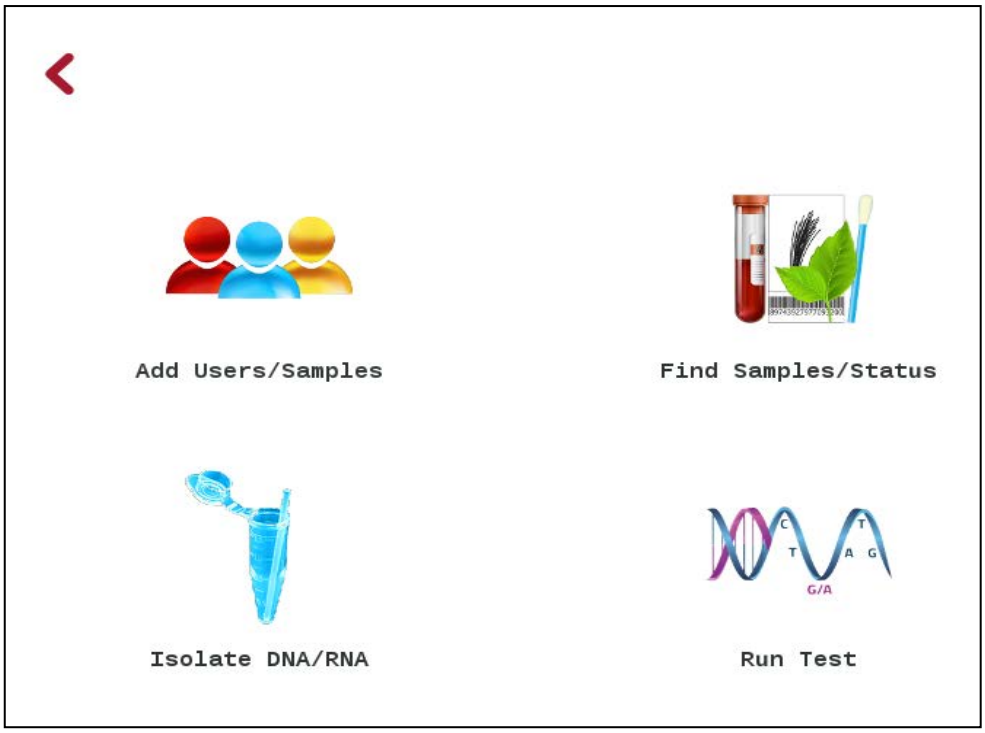
Chapter 2 - Using the Solas 8™

Introduction

The Solas 8™ device is used to process DNA and RNA samples for SNP or target detection. The system was designed with different user types in mind; anyone from a person with little or no lab experience to an experienced researcher at a university should be able to use the system without difficulty.

Samples can be processed under different users (customers) or under different projects. Samples are entered into the system using a simple user interface. All the information is stored in a relational database.

Everything from DNA isolation to data generation for each test is followed through the database. Results associated with the sample for various tests done on the Solas 8™ are also saved on the device itself for future reference.

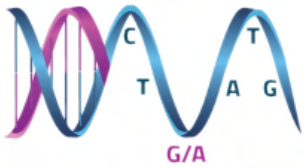


The menu page has 4 icons:

The first icon with multiple users shown above is used to create users and add user samples.

The second icon with the different sample types is a search function that allows you to find samples, find customers and find sample status.

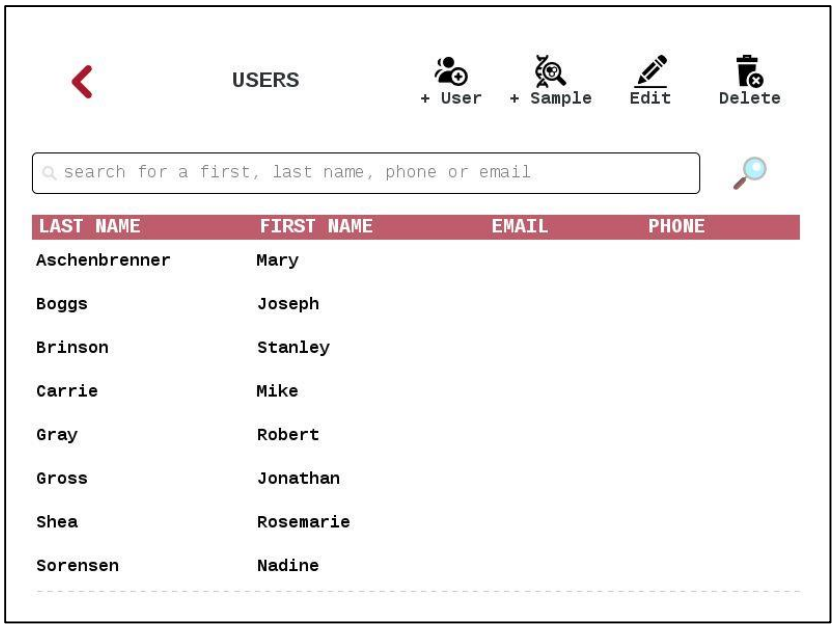
The third icon is the DNA isolation application that runs on the Solas 8™. DNA isolation can be ran on the Solas 8™ for samples that have been entered on the system. The correct protocol to follow appears automatically once a specific tissue type is selected for a set of samples.



The fourth icon is the DNA or RNA test application that runs on the device. The correct protocol to follow automatically appears once a specific test is selected for a set of samples. The following sections will show details of each of the four applications that you will be using.

Relational Database

On the menu screen, tap the  icon to open the database. The list of customers with their last name in alphabetical order will appear on screen.



There is a search bar here, and if you need to find a user or a customer you could type in any of the following:

- First name
- Last name
- Phone number
- Email address

On top right-hand side of the screen, you will see the Add User, Edit, Add Sample and Delete buttons. The following sections will demonstrate the functionality of these icons.

To Add User

1. Tap 

in the top right of the database screen.
2. The add user form appears on screen, and you can fill out the relevant fields:
    a. First Name (Required)
    b. Last Name (Required)
    c. Address
    d. Phone Number
    e. Email Address

3. If you would like to enable email notifications when a result for that user is available, please mark the box above the email address field.

    NOTE: Please ensure your Solas 8™ is connected to the internet for this functionality to work properly.

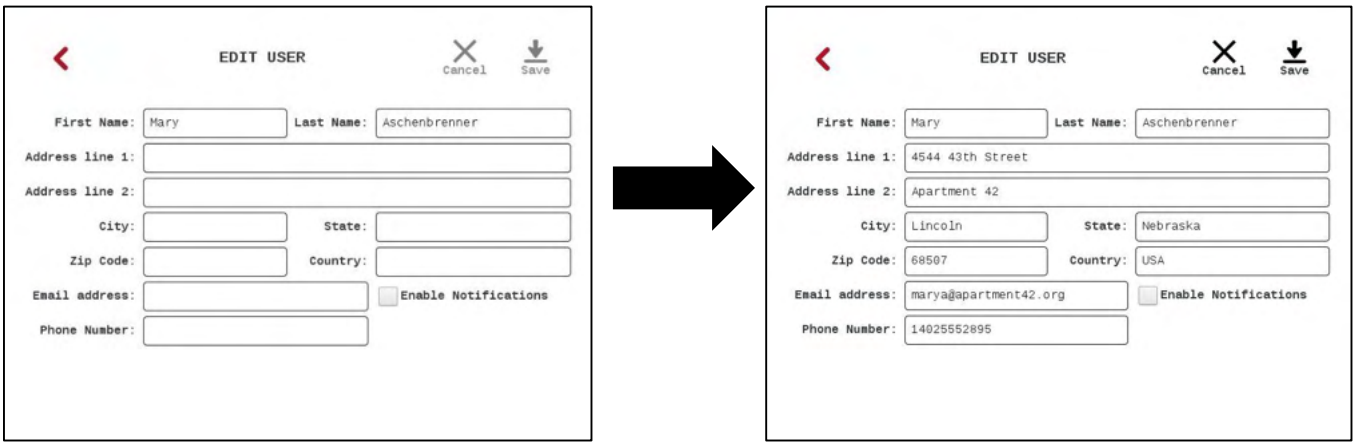
4. When you have completed the user entry, tap the **Save** icon in the upper right corner. Please note that the user's first and last names are required.

5. To send a test email from your device, Tap **TEST EMAIL.**

To Edit User

The Solas 8™ also provides a function to edit an existing user's information.

1. Select an existing user from the list of users.
2. Tap EDIT in the top right of the relational database screen.
3. When the user's information appears on screen, you are free to modify any information.
4. Tap the **Save** icon to save changes and tap the **Cancel** icon to remove any pending changes.



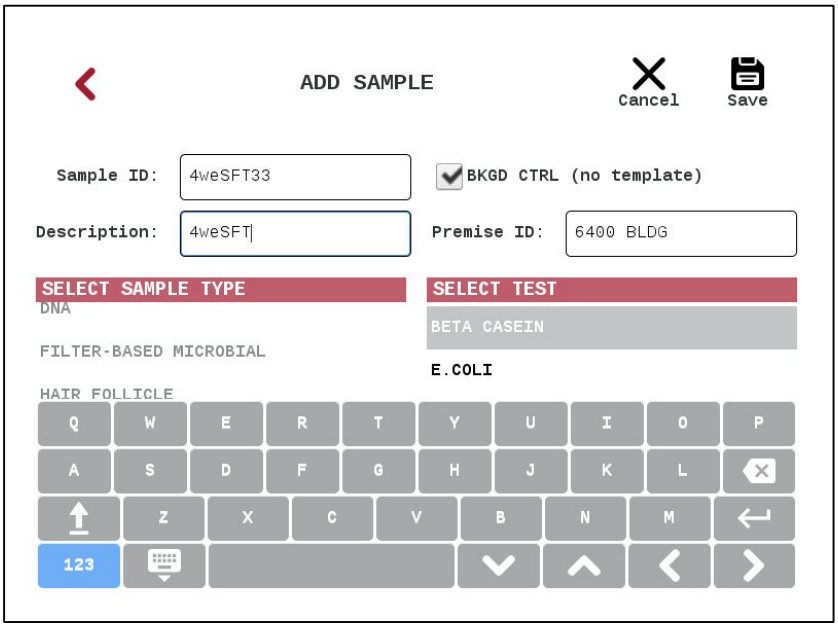
5. To return to the previous screen, tap the back arrow in the top left corner at any time.

To Add Sample

To add samples, first select the user that the sample is from, then tap + SAMPLE in the top right. In the screen that appears, there are fields to enter the Sample ID, the Premise ID, and the Sample Description for the sample you are adding.

To add a sample:

1. Enter a Sample ID. This is mandatory to keep progress logged for the sample.
2. Enter a premise ID if required
3. Enter a Description if required
4. Tap the **BKGD CTRL** checkbox if the sample is a background control for the specific sample type and C-SAND™ assay you are running. For more information about this feature, please see the relevant section.
5. Select a Sample Type by Tapping a sample in the center list.
6. Select a Test in the right-most column
7. Tap **Save**



The "Select Test" column will include all C-SAND™ Assays that your specific Solas 8™ has available, including any Custom C-SAND™ Assays, and any publicly available C-SAND™ Assays (Standard Assays) that you had purchased at any time.

Please ensure that the tissue type that is selected matches the tissue type of the sample, as the MagicTip™ Isolation protocol will adapt accordingly. As more sample types are added, this list will update.

Once you have added a sample, you are presented with an option to continue entering samples or returning to the relational database home screen.

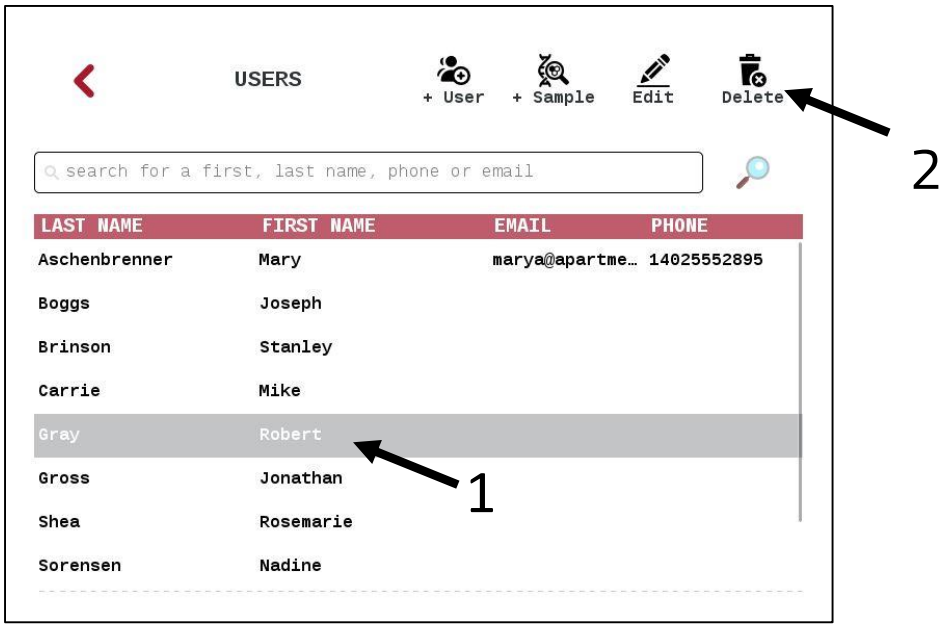
You may also enter samples using a barcode scanner. MatMaCorp suggests the Honeywell 1900G-HD scanner.

To Delete User

Your Solas 8™ has a function to delete users. This is accessed from the **Delete** icon in the top right of the relational database screen: 

To delete a user and all samples associated with that user:

1. Tap on a user
2. Tap on the **Delete** icon
3. A confirmation will appear
    a. To confirm the deletion of the user and all of the user's samples, tap **Yes.**
    b. To cancel the deletion of the user and all of the user's samples, tap **No.**
4. You will be returned to the relational database home screen.



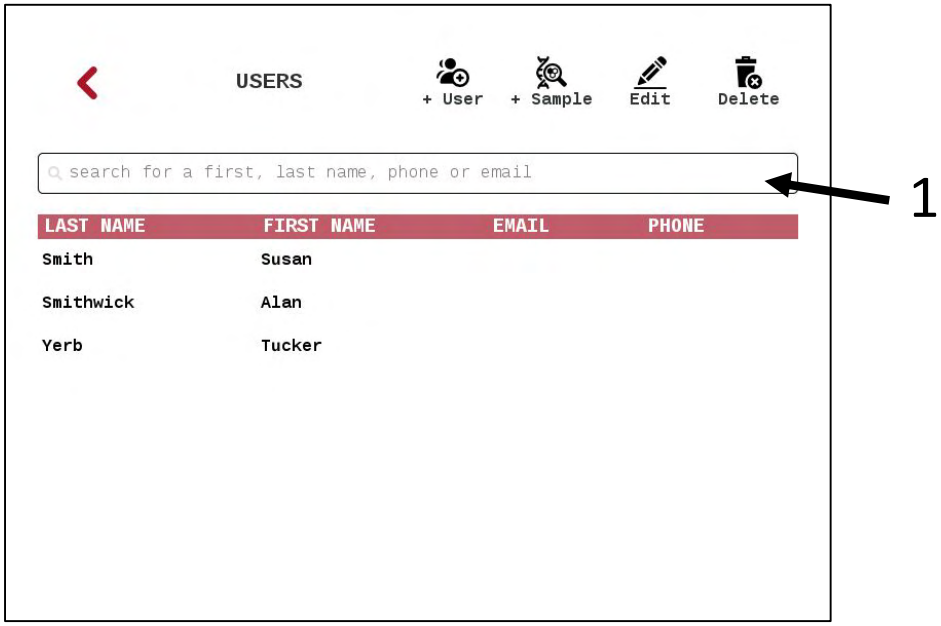
To Search Users

Your Solas 8™ has a function to search the user list. To access this function, in the relational database home screen, the search bar is positioned above the user list.

To Search the user list:

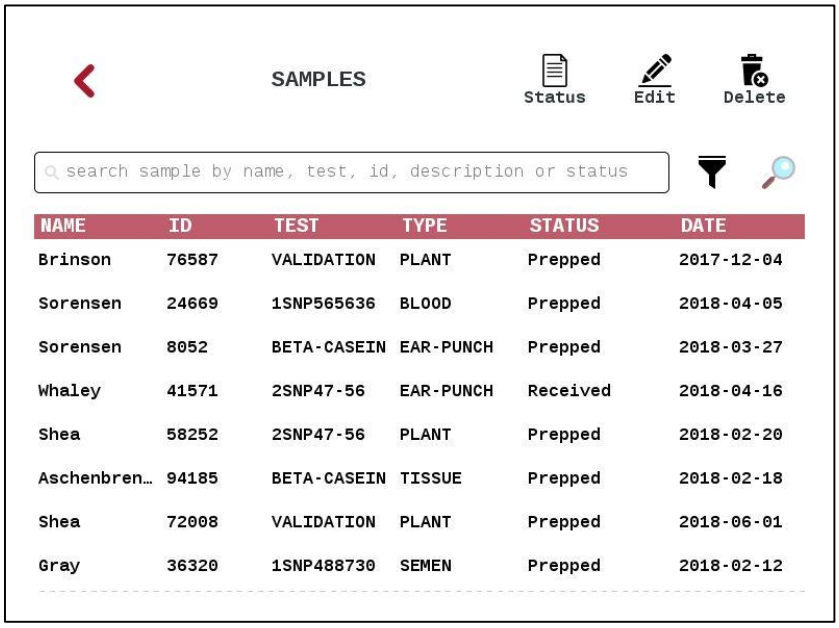
1. Tap the search bar
2. Use the keyboard to type one of the following. This is case-insensitive.
    a. First Name
    b. Last Name
    c. Phone Number
    d. Email
3. If the search returns a result, the result will be displayed below in the user list

You are free to edit the user or delete the user by using the associated icons in the top right of the screen. For more information please see the appropriate sections above.



Find Samples/Status

From the Solas 8™ menu screen, tap the  icon to open the Find Samples/ Status functionality. This will display information about the samples that you have entered on Solas 8™.



NAME	ID	TEST	TYPE	STATUS	DATE
Brinson	76587	VALIDATION	PLANT	Prepped	2017-12-04
Sorensen	24669	1SNP565636	BLOOD	Prepped	2018-04-05
Sorensen	8052	BETA-CASEIN	EAR-PUNCH	Prepped	2018-03-27
Whaley	41571	2SNP47-56	EAR-PUNCH	Received	2018-04-16
Shea	58252	2SNP47-56	PLANT	Prepped	2018-02-20
Aschenbren…	94185	BETA-CASEIN	TISSUE	Prepped	2018-02-18
Shea	72008	VALIDATION	PLANT	Prepped	2018-06-01
Gray	36320	1SNP488730	SEMEN	Prepped	2018-02-12

The Name column displays the last name of the user, the Status column displays where in the process your sample is. The options for the Status column are Received, Prepped, and Tested.

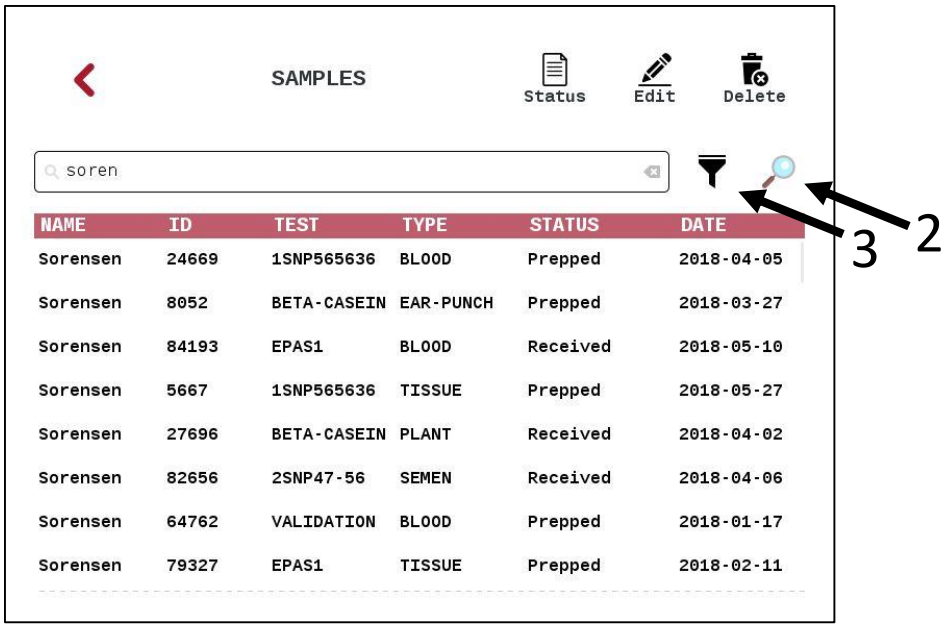
Received – The sample has been entered into the database, however no actions have been performed.

Prepped – The sample has had its DNA isolated with a MagicTip™ kit, but not genotyped yet with a C-SAND™ kit.

Tested – The DNA has been isolated, and genotyped.

Each of these columns can be sorted in ascending or descending order by tapping on each column header.

Searching the Database



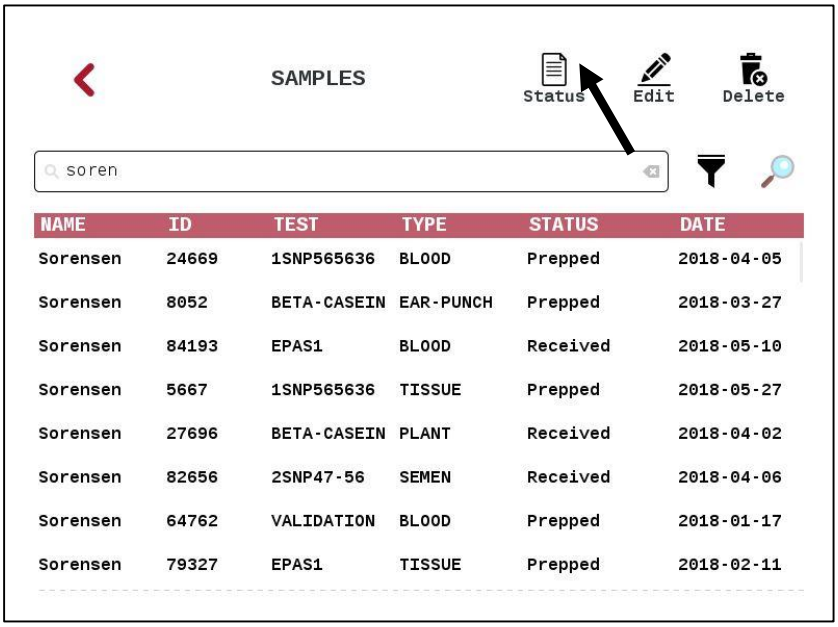
1. Tap in the search bar and begin typing to search your database by any of the following. The search is case insensitive:
    - User last name
    - Test Type
    - Sample ID
    - Description
    - Status
2. If the results are too great, you may tap the **Filter** icon to further define your search parameters.
3. Tap the appropriate sample in the window below
4. In the top right of your screen, various actions are available. Please see the following sections for the functionality.

Sample Status

To see sample status, from the Find Samples/Status application, search for a sample using the method described in the above section, titled “Searching the Database”.

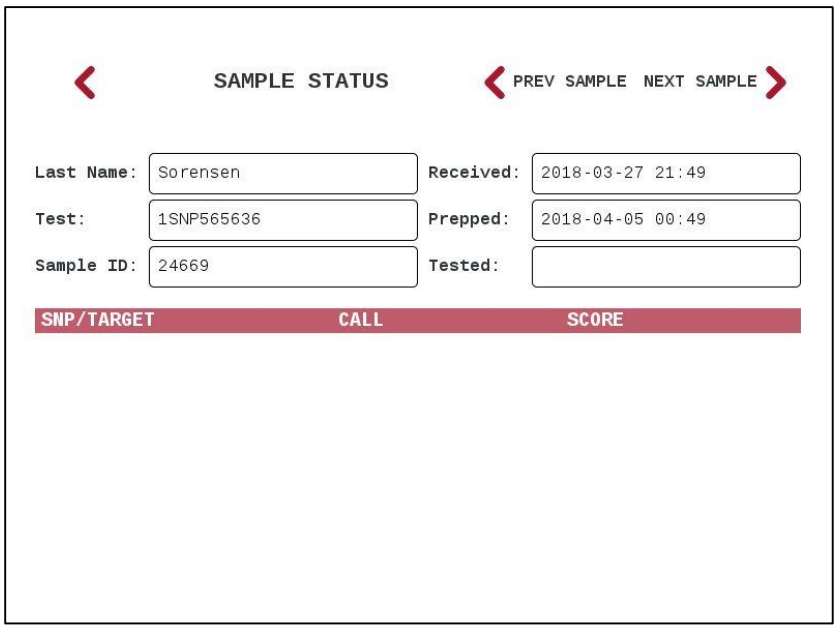
Once you have selected a sample:

1. Tap the **Status** icon in the top right corner of the screen



2. The last name, test name, sample ID and the dates received, prepped and tested are displayed for the sample.

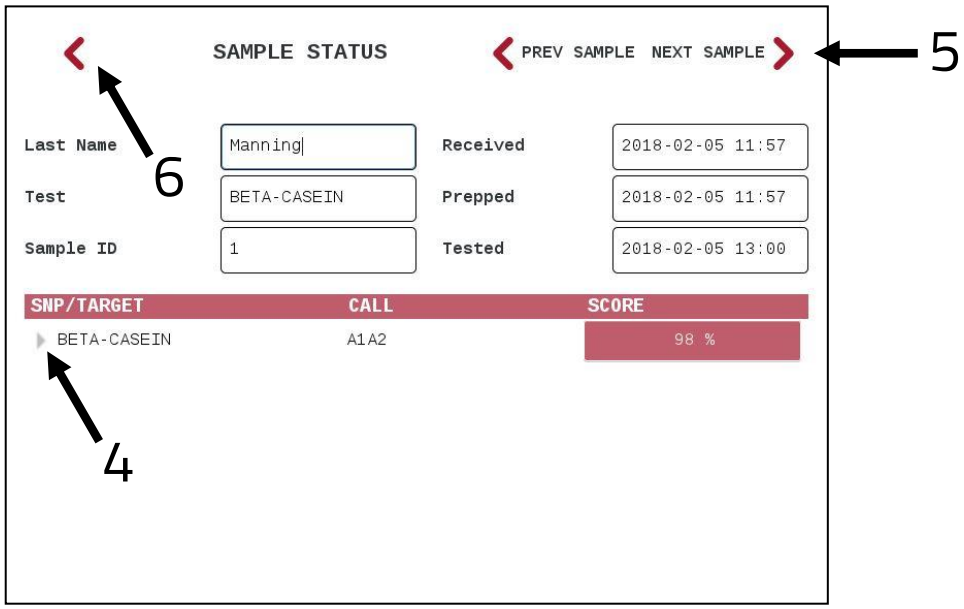
   NOTE: If the sample has not been prepped or tested yet, those fields will be blank.



3. Below, in the table view, the results are displayed.

   NOTE: If the sample has not been tested yet, the results will not appear in the table.

4. If you would like to view more details about the sample, tap the arrow to the left of the SNP/Target result column.



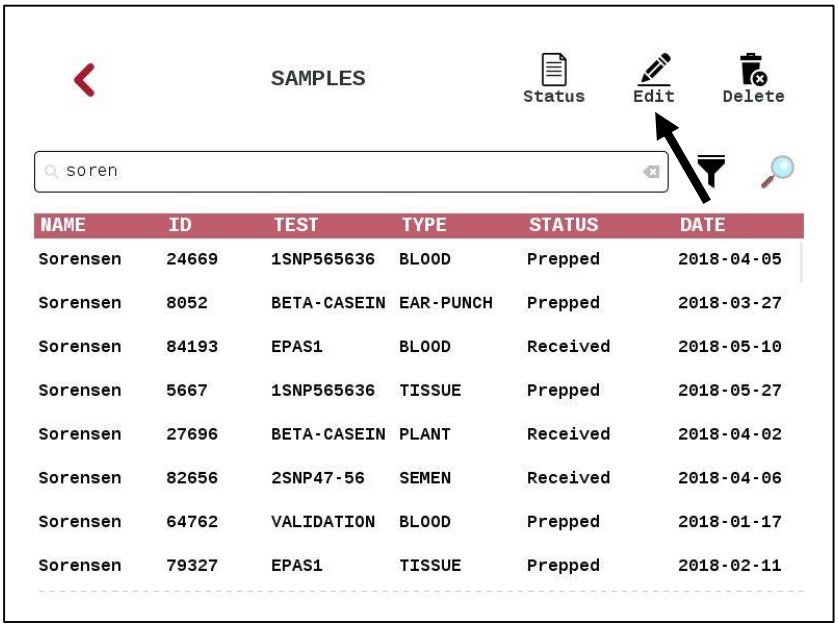
5. You can cycle through various sample results by tapping the navigation icons in the top right corner.
6. Tap the back button in the top left to return to the previous screen.

Edit Sample

To edit a sample, from the Find Samples/Status application, search for a sample using the method described in the above section, titled “Searching the Database”.

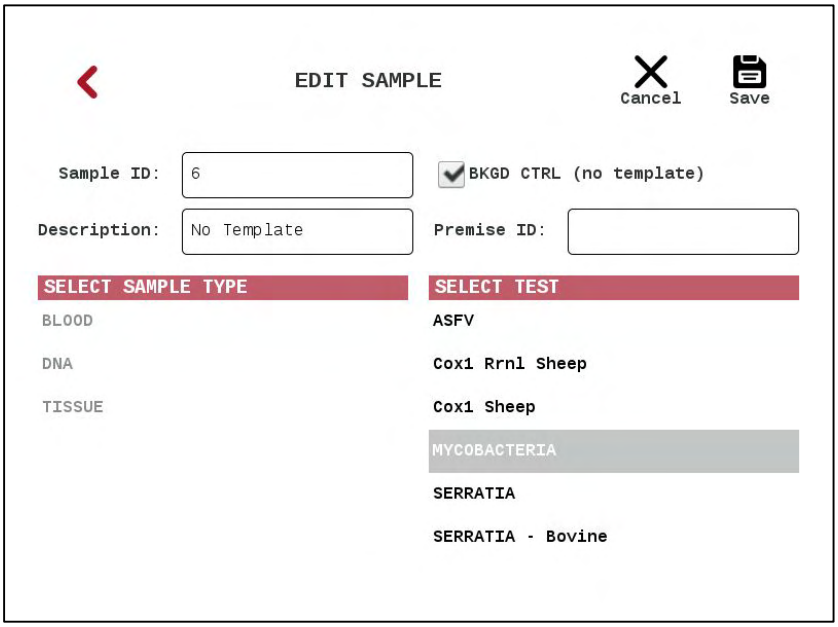
Once you have selected a sample:

1. Tap the **Edit** icon near the top right corner of your screen.



NAME	ID	TEST	TYPE	STATUS	DATE
Sorensen	24669	1SNP565636	BLOOD	Prepped	2018-04-05
Sorensen	8052	BETA-CASEIN	EAR-PUNCH	Prepped	2018-03-27
Sorensen	84193	EPAS1	BLOOD	Received	2018-05-10
Sorensen	5667	1SNP565636	TISSUE	Prepped	2018-05-27
Sorensen	27696	BETA-CASEIN	PLANT	Received	2018-04-02
Sorensen	82656	2SNP47-56	SEMEN	Received	2018-04-06
Sorensen	64762	VALIDATION	BLOOD	Prepped	2018-01-17
Sorensen	79327	EPAS1	TISSUE	Prepped	2018-02-11

2. The following screen appears, where you can edit the Sample ID, Premise ID, and Description for that sample, as well as sample type and test name.



3. Tap the back arrow to return to the previous screen.

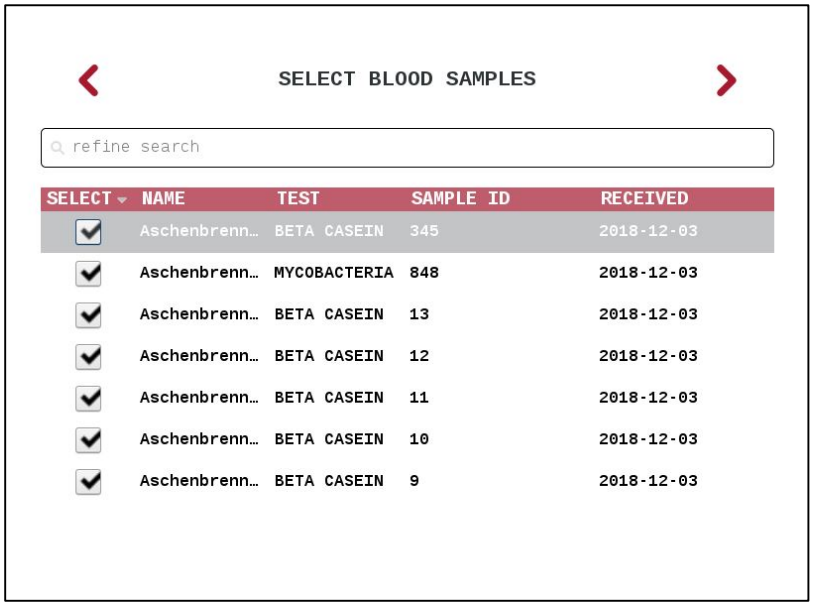
Nucleic Acid Isolation Application

Isolation of DNA or RNA

From the Solas 8™ menu screen, tap on the icon to open the Nucleic Acid Isolation Application. Ensure you tap on the Kit that corresponds to your sample type.

1. Tap Next in the upper right corner.

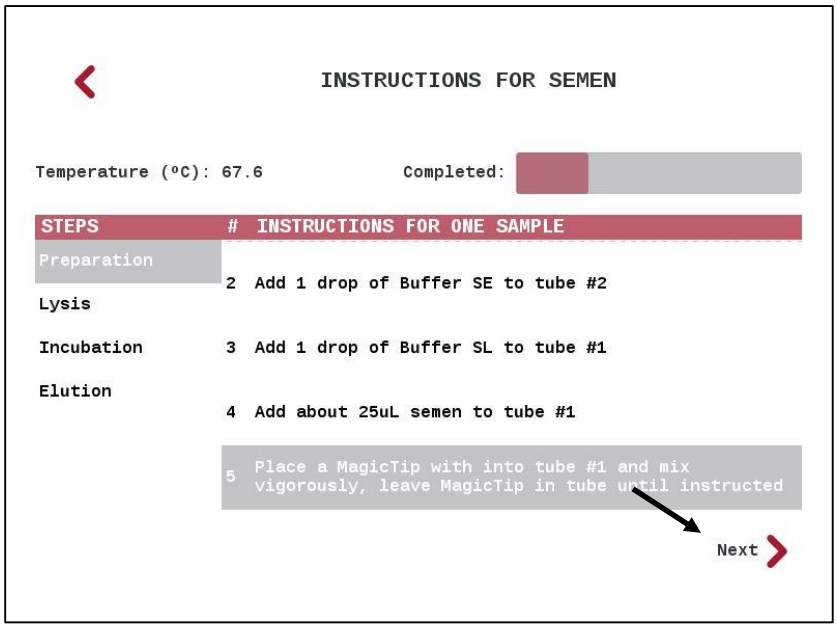
2. The next screen will display samples that are available to prepare, of the same sample type that you have selected on the previous screen.
3. Place a checkmark on up to 8 samples to prepare in the coming steps. There is a search bar to make sample selection easier. The samples that were entered first will appear first, and the most recent samples will appear last.
4. Tap Next.



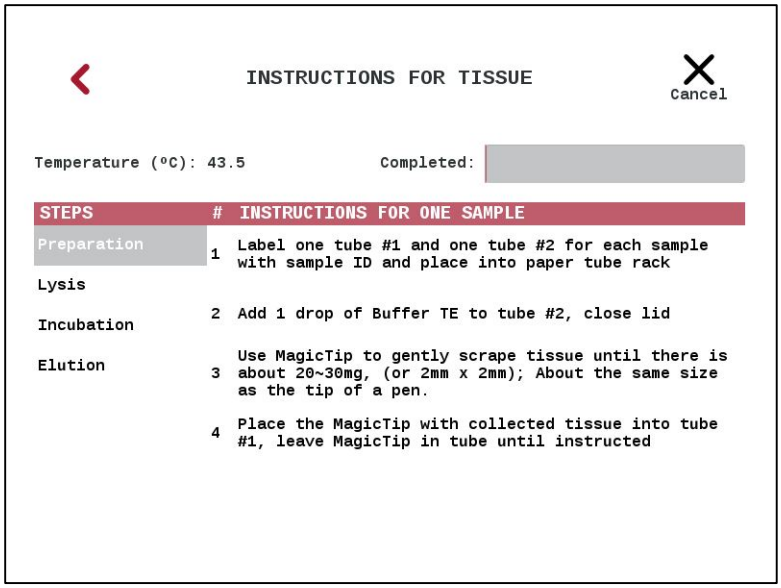
5. A confirmation window appears. Tap **Yes** to continue. Past this step, you will not be able to return to previous steps.

CAUTION HOT: The lower block in the Solas 8™ will begin heating. Use caution.

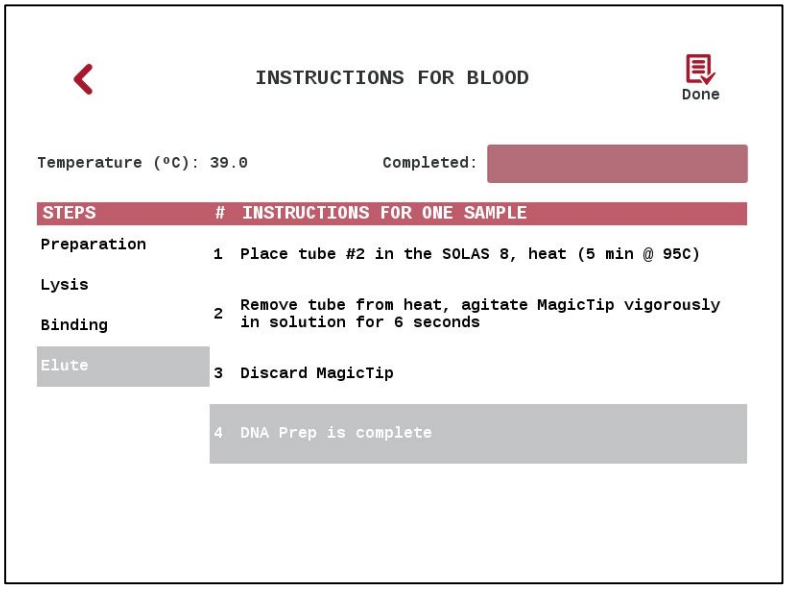
6. The steps to isolate DNA are now displayed on the left side of the screen,with the instructions on the right.
7. As you complete each instruction, tap (on the right side) to mark that instruction complete.
8. When the instructions on that page are complete, a Next button will appear in the lower right corner of the screen to continue to the next step.
9. Tap **Next** when available.



10. Continue through each step and instruction, remembering to tap each instruction as it is completed, so that you can proceed to future steps. An overview of the process is shown along the left side of the screen, and a progress bar shows an overview of the progress.
11. On all timed steps, a Start button will appear in the window. Tap Start and an on-screen timer will start. If the button says Wait, please wait for the lower block to heat up.



12. When each timed step is completed, the Solas 8™ will return to the instructions screen. Continue onto the next step.
13. Once the isolation process is complete for your samples, the **Done** icon will appear in the top right of your screen. Tap **Done** to continue.



14. You will be returned to the Sample Selection screen, referenced in Step 3. Tap the back button to return to the kit selection screen.

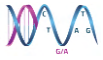
NOTE: The nucleic acid isolation method that runs on the Solas 8™ is specific to the sample type that the user selects. For example, if you select Hair Follicles, all the samples associated with that sample will appear. The method used for isolating DNA from hair follicles will appear.

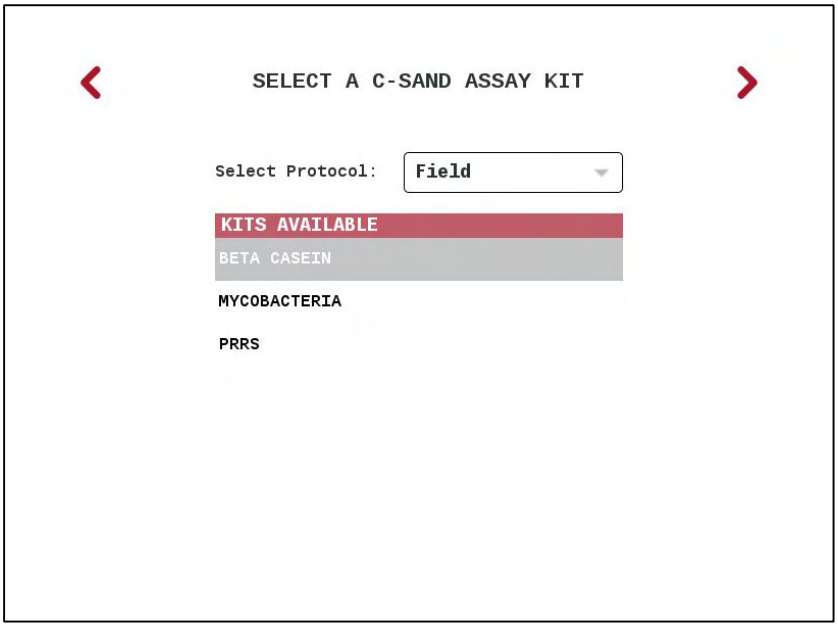
When this process is complete for any sample, the sample status of that sample in the relational database will be updated from received to prepped.

Nucleic Acid Analysis Application

Run Test

The tests that are run using the Nucleic Acid Analysis application on the Solas 8™ involve 2 steps. The first step involves a ligation procedure that involves specific probes. The second step involves detecting the ligated probes using fluorescent tags. The entire protocol is available on the screen and the device will walk you through each step.

1. On the Solas 8™ menu screen, tap on  to open the Nucleic Acid Analysis Application. The following screen appears:

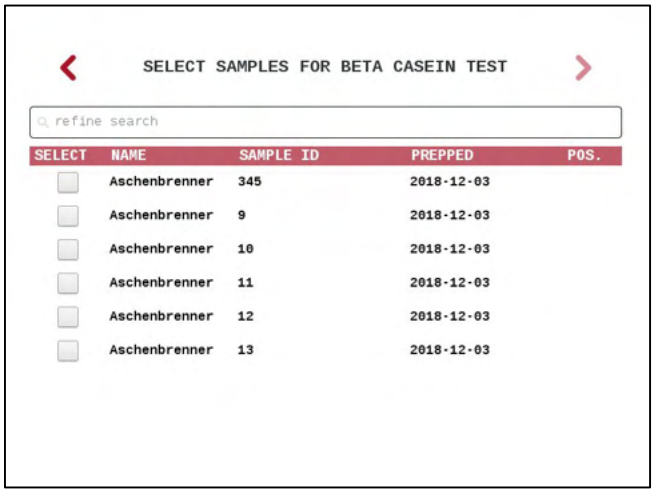


2. Tap the proper C-SAND™ Assay type from the "Tests Available" column.

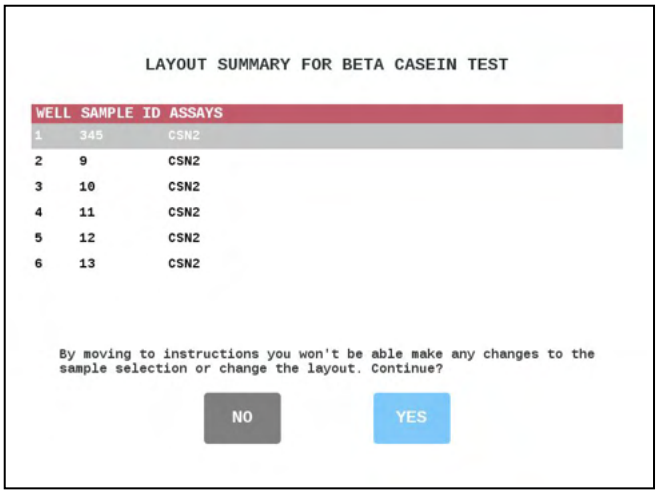
   NOTE: This application runs custom or standard tests that are available on your system.

   NOTE: Custom tests that you have ordered will be available only on the machine that you purchased and ordered the test for. If you have multiple machines, you can specify which Solas 8™ will get the custom test.

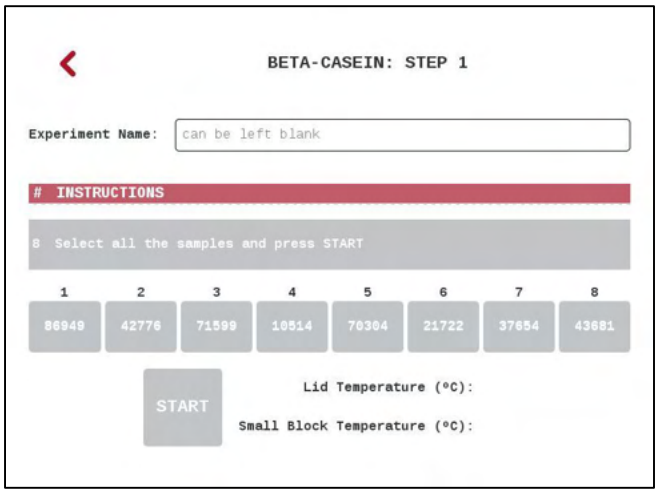
3. Select the Protocol (as Field or Lab) associated with your kit. The process will vary for each.
4. Tap **Next** in the upper right corner of your touchscreen.
5. On the following screen, all samples that have been marked for that test will appear, sorted by the date that they were prepped.
6. Select up to 8 samples, clicking in the order of well 1-8 and proceed to the next screen. The order will appear in the right-most column of the table, seen in the next image.



7. The following screen appears, Tap **YES** or **NO** after confirming the layout, assay and well assignments.



8. To Continue Step 1, the following screen appears. You may enter a test name if you desire, otherwise, please follow the instructions on screen, tapping each as it is completed.

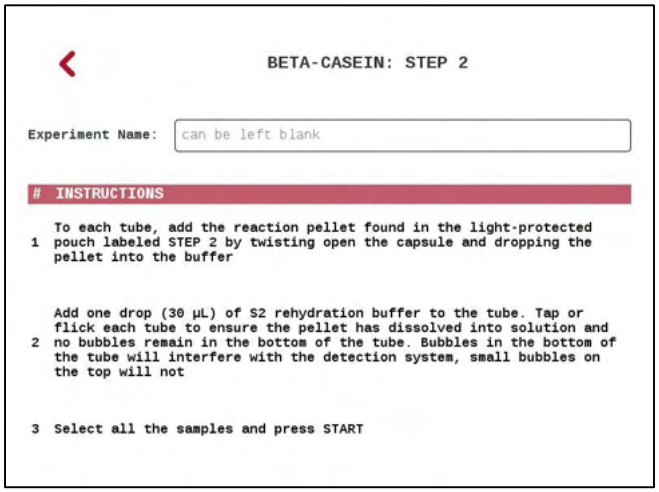


A status screen will appear for the reaction, and the Solas 8™ will begin the test.

Note: The sample order should be exactly as indicated on the screen.

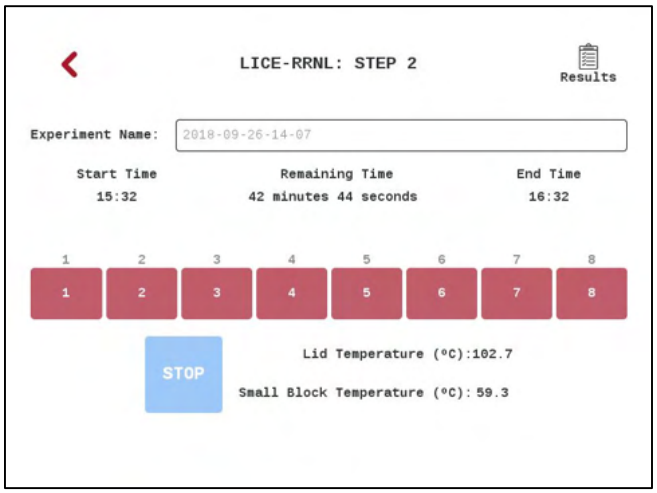
CAUTION HOT: The upper block in the Solas 8™ will begin heating. The heated lid over the upper block in the Solas 8™ will also begin heating.

12. Close the upper block heated lid and lock using the existing handle. Select all the samples and tap on **Start** to begin Step 1.
13. Do not open the upper lid during the test, or the test may have incomplete or incorrect results.
14. When Step 1 completes, the Solas 8™ will present a screen with instructions such as the following.



15. Follow the instructions. Tap each instruction as it is completed. Close the lid, tap each sample and tap **Start**.

WARNING BRIGHT LIGHT: During sample testing, opening the lid may expose the user to intense non-laser light that could affect vision.



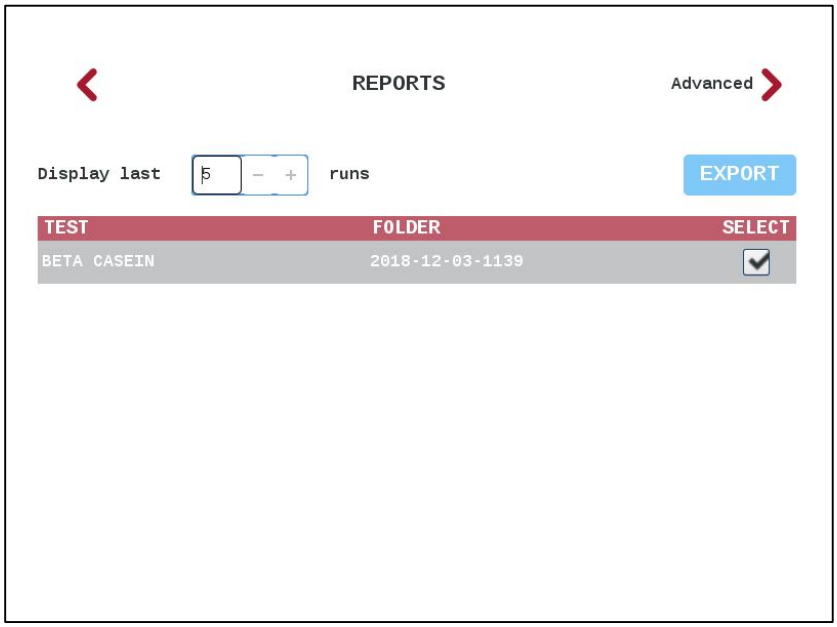
16. Your Solas 8™ will automatically move through Step 2. In the top right corner, there is a Results icon. During the test, if this is tapped, a screen will display the real time results of each sample being analyzed (shown below). In the top right corner, there is a Stop and Save Icon. This will allow you to end your test prematurely, in the event that your Solas 8™ has called all samples early.

17. When the test is completed, a banner will appear on the status screen stating that Genotyping is Complete.
18. The Genotype may be viewed in the Results section.

Report Generation

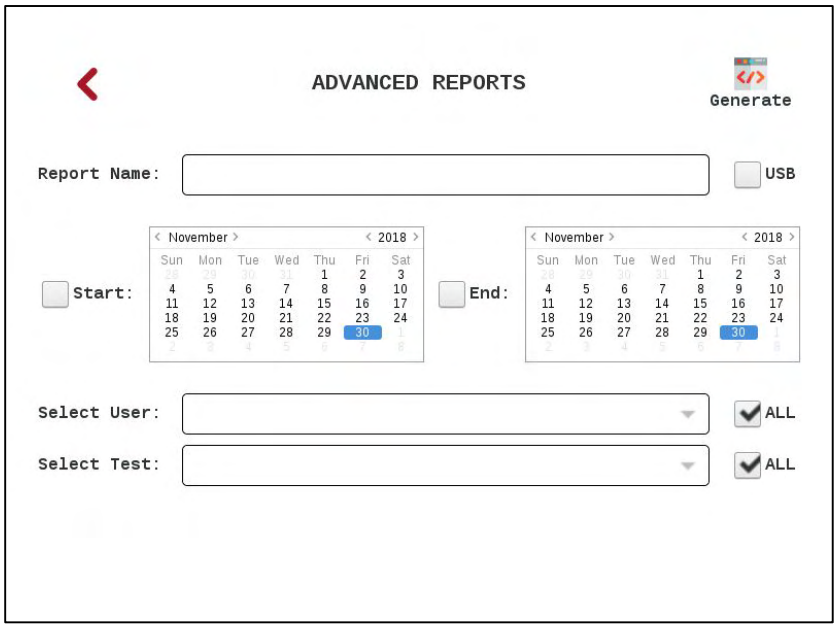
To generate a Report from the Home screen, tap 

. The Following screen will appear.



1. Below the title, there is a field labeled “Display last”. This field will display a number that can be changed to the user’s preference and will display that number of C-SAND™ test results in the table below.
2. Please select any C-SAND™ results that you would like to have exported.
3. Once you insert a USB drive to any available USB port on the right side of the Solas 8™, you can now tap the **EXPORT** button.
4. Tapping the **EXPORT** button will copy certain information from the tests that you have selected. For each test, the following information will be copied to your USB drive:
    a. Genotyping.pdf
        i. A PDF file containing all calling results, and sample information from your selected tests. This can only be opened if you have Adobe Reader software, available from https://get.adobe.com/reader/
    b. Genotyping.csv
        i. A CSV file containing all calling results, and sample information from your selected tests. This can be opened using any spreadsheet editor, or text editor.
    c. Genotyping.html
        i. This is a file that will contain a link to each test’s result that will enable you to view results without your Solas 8™ powered on or connected to your network.

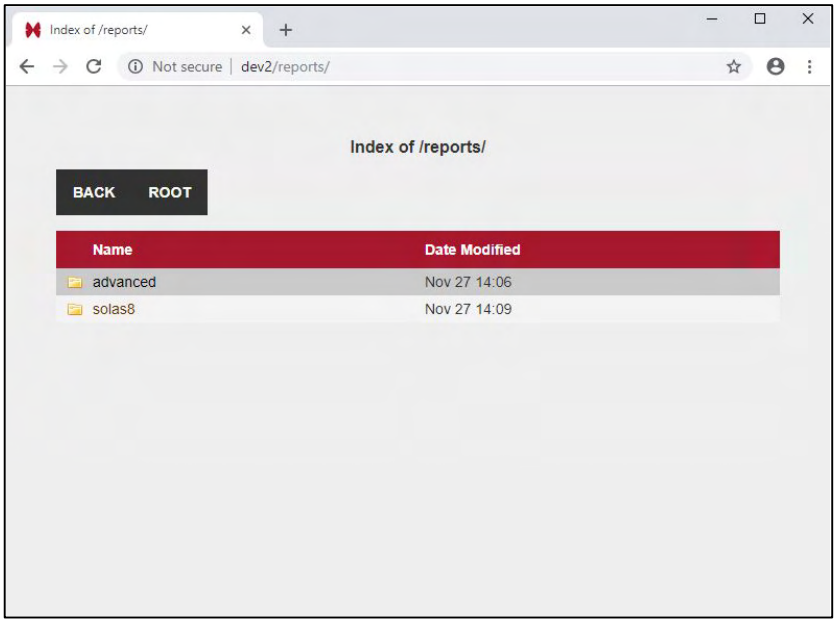
5. If you would like to further filter the information contained in the report, please tap the **Advanced** arrow in the top right corner of your screen. The following screen appears:



6. In order to filter by either Start Date or End Date, tap one or both of the corresponding checkboxes, and tap a date in each calendar window.
7. In order to filter by User, tap the dropdown and select an existing user in your Solas 8™ machine.

Note: Samples are always added under a User.

8. In order to filter by Test type, tap the dropdown and select a C-SAND™ test.
9. It is not required, however if you would like to name your report, please enter a name in the Report Name field.
10. To copy this detailed report to a USB, please tap the checkbox labelled USB to the right of the Report Name field.
11. To generate your report, tap the Generate icon in the top right corner of the screen.
12. If your Solas 8™ is connected to the network, you can also access the report by browsing to your Solas 8™ by entering either the hostname or the IP into your browser's address bar, and then clicking reports, then Advanced, then the name of your report. This is shown below.



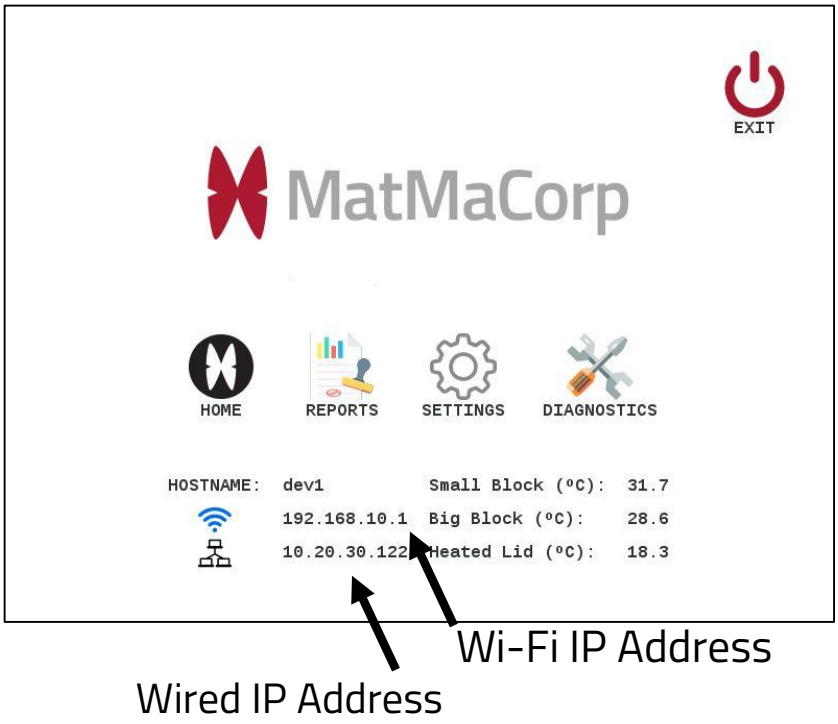
13. In addition to the 3 files explained in step 4 above, this advanced report will also contain two additional files:
    a. Samples.html
        i. This file will open in your web browser and will contain information from all samples that match the filtering done in step 6 through step 8 above.
    b. Samples.csv
        i. A CSV file containing all sample information from your selected tests. This can be opened using any spreadsheet editor, or text editor.

Raw Data

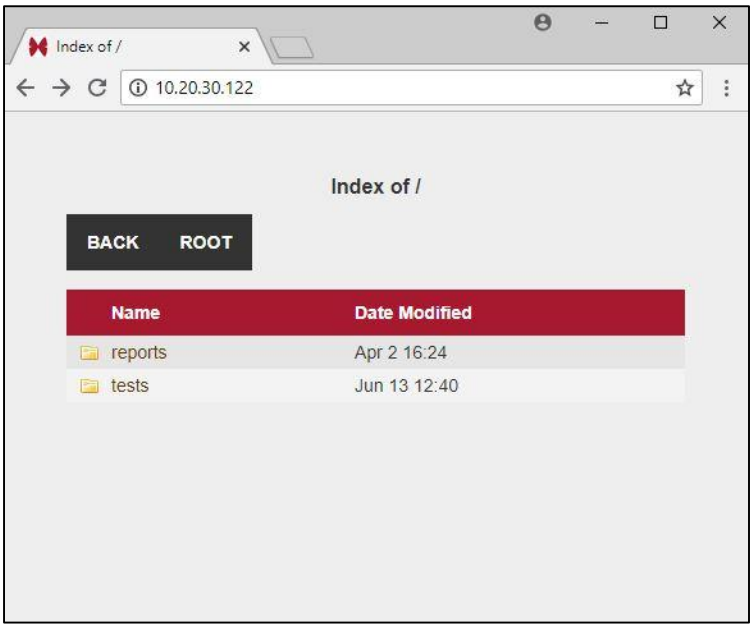
Once your Solas 8™ has started the Nucleic Acid Analysis Application, it will start collecting data. Once data is being collected, you can view the results in real time, using either your smart phone or another networked computer if you can access the Internet Protocol (IP) address of your Solas 8™.

This IP address can be found on the home screen of your Solas 8™. This will also work with your Solas 8™ in "Direct Connection" mode. Simply type either address into the address bar of your internet browser as shown in the image above step 1 below.

For more information on placing your Solas 8™ into "Direct Connection" mode, please see the relevant section in Chapter 1 titled "Using your Solas 8™ as an Access Point".



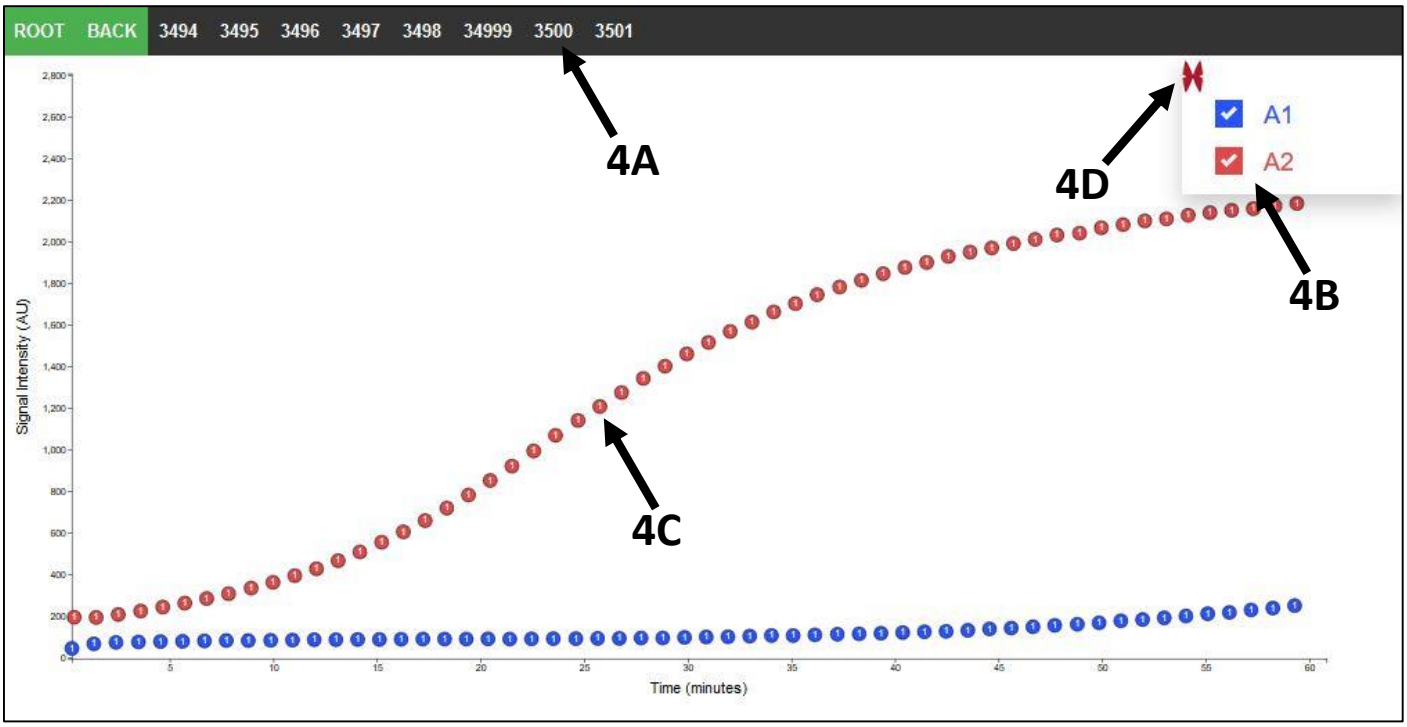
Once you have navigated to the IP Address above in a browser, the following screen will appear.



1. Click the Tests folder
2. Click the corresponding kit type
3. On the next screen that displays, click on the name of the test.

   NOTE: If you did not assign a name to the test, the date and time of the test will be used instead.

4. The next screen will display the plots in real time, updated every 2 minutes. Further explanation will be given below.



4A – **Hovering** over these labels will display the data from those tubes and tests. If you **click on** a single label, this plot will stay visible on the screen, enabling you to directly compare tubes or samples. **Double clicking** on any Sample ID at the top of the screen will allow the user to overlay all samples in the display. Double click again to undo.

4B – **Click** the checkboxes in the legend to display or hide the data series.

4C – **Hovering** over individual data points will display details about that point.

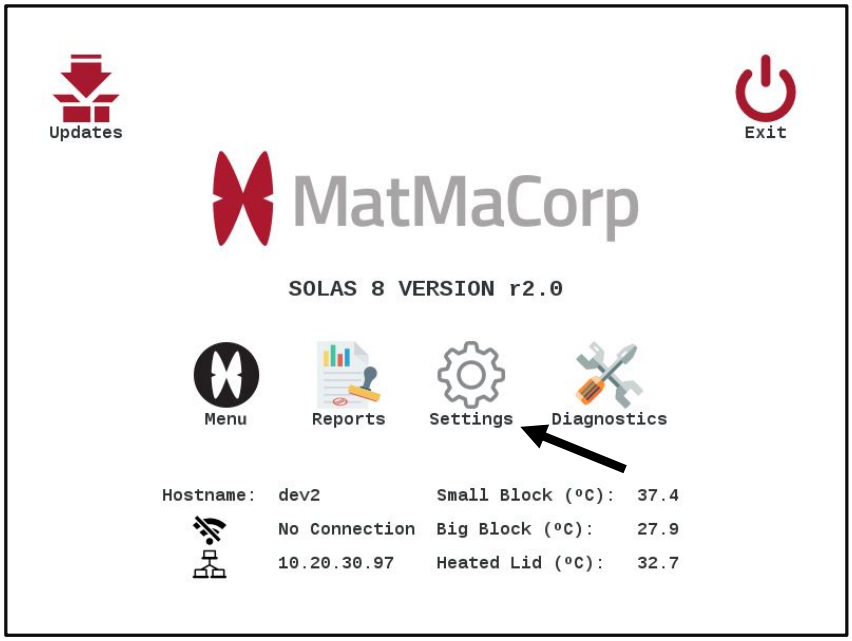
4D – **Clicking and dragging** the MatMaCorp Logo in the upper left of the legend will enable the legend to be moved. **Double clicking** this same logo will both hide the legend and generate a shareable link to the current view. Double click the logo again to un-hide the legend.

Data Backup

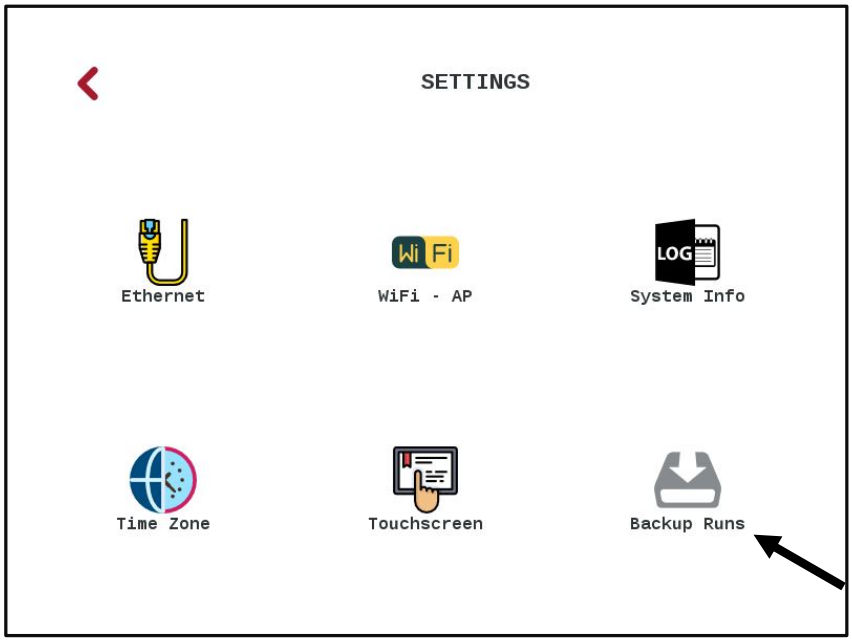
Your Solas 8™ system can export all of the sample and test history to any USB flash drive inserted into one of the four USB 2.0 ports located on the right face of the device.

This enables the user to analyze the data collected from your Solas 8™ completely independent of the device itself. You can attach your USB drive to another computer and browse the exported data, using the file named index.html on your flash drive to assist you in navigating the data.

In order to export your data, please first return to the homepage of your device:



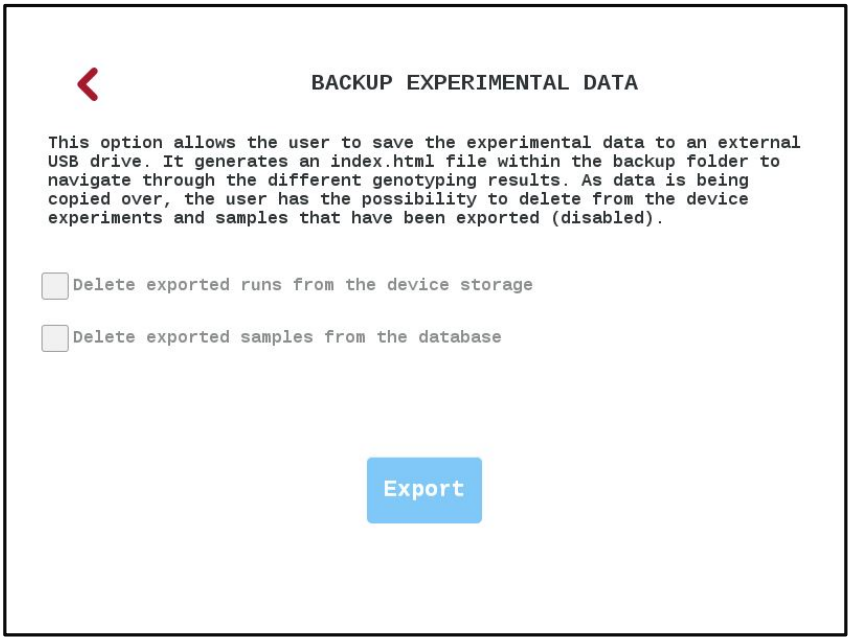
Tap on the **Settings** Icon, then the **Backup Runs** icon, shown below:



The Data Backup screen appears, and you are given two options.

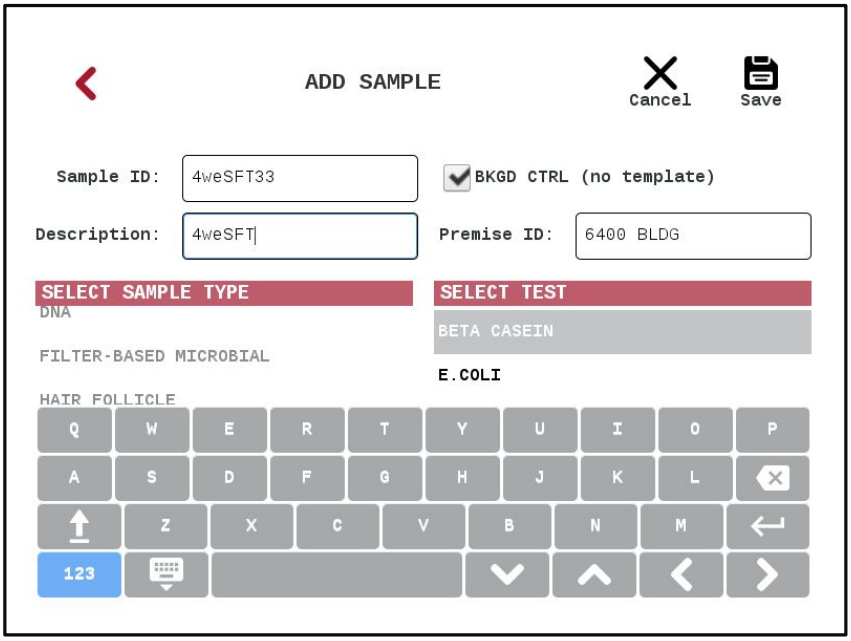
1. Tap on the first option to Delete exported runs from the Solas 8™ storage. This is useful if you would like to free up space on your device.
2. The second option is Delete exported samples from the database. Use this if you would like to clean the exported samples from the device's database.

Both options are shown below.



BKGD CTRL - Background Control Sample

When entering a sample for a specific user, you have the possibility to tell the system this sample is a Background Control (BKGD CTRL). A BKGD CTRL is treated by the system like any other samples except it won't contain the template DNA when performing the C-SAND™ assay. This is used to constrain the calling algorithm for a specific channel and assay.



Only one BKGD CTRL can be run at a time. This constraint is particularly important for TARGET detection. We recommend running one BKGD CTRL the first time you receive a new C-SAND™ assay.

Note: One BKGD CTRL is not the BKGD CTRL for the entire machine, just that specific C-SAND™ Assay. If desired, please run one BKGD CTRL each time the C-SAND™ Assay background is causing miscalls.

Chapter 3 – Cleaning the Solas 8™

CAUTION – Use only the cleaning methods specified in the manufacturer's user documentation. It is the responsibility of the operator or other responsible person to ensure the following requirements are met:

- No decontamination or cleaning agents are used that could cause a HAZARD as a result of a reaction with parts of the equipment or with material contained in the equipment.
- The instrument is properly decontaminated if hazardous material is spilled onto or into the equipment, and/or prior to having the instrument serviced at your facility or sending the instrument for repair, maintenance, trade-in, disposal, or termination of a loan.
- Before using any cleaning or decontamination methods (except those recommended by the manufacturer), users should confirm with the manufacturer that the proposed method will not damage the equipment.

Device Enclosure

First, always power off your device before cleaning by navigating to the Start screen, and tapping the **Exit** icon in the upper right, and then tap **Shutdown**. When the loading bar is completely black, tap the power switch on the left side of the Solas 8™ and disconnect the power lead.

The case of the Solas 8™ can be cleaned from minor soiling by using a clean lint-free cloth that has been slightly dampened with water.

The case of the Solas 8™ can be cleaned from more significant soiling by using a clean lint-free cloth that has been slightly dampened with a solution of water and mild dish soap.

Change the water or water/soap solution often to avoid picking up particulates which may scratch or otherwise damage your case.

Please ensure that no moisture drips into your device, as this is not covered by the warranty.

Touchscreen

First, always power off your device before cleaning by navigating to the Start screen and tapping the **Exit** icon in the upper left, and then tap **Shutdown**.

When the loading bar is completely black, tap the power switch on the left side of the Solas 8™ and disconnect the power lead.

The touchscreen of the Solas 8™ can be cleaned from minor soiling with a clean, lint-free cloth that has been dampened with water. Ensure that no liquid drips into your Solas 8™.

If the touchscreen is significantly soiled, it can be cleaned with a clean, lint-free cloth that has been dampened with a solution of 25% Isopropanol. Please ensure this procedure is not completed more than twice a year otherwise the protective coatings that have been applied to your touchscreen may degrade.

1. Using one of the methods above, start in the center of the screen
2. Working outward in a circular motion, using light pressure, start cleaning the screen.
3. When a cloth has been soiled itself, please change cloths so as to not scratch the screen.
4. Continue until you have reached the outer boundaries of the screen.
5. If the soiling is more severe than a cleaning can take care of, please call Support, and they can inform you of other options that may be available to you.

Please ensure that no moisture falls into the device, as any resulting damage will not be covered by the warranty.

Chapter 4 – Troubleshooting the Solas 8™

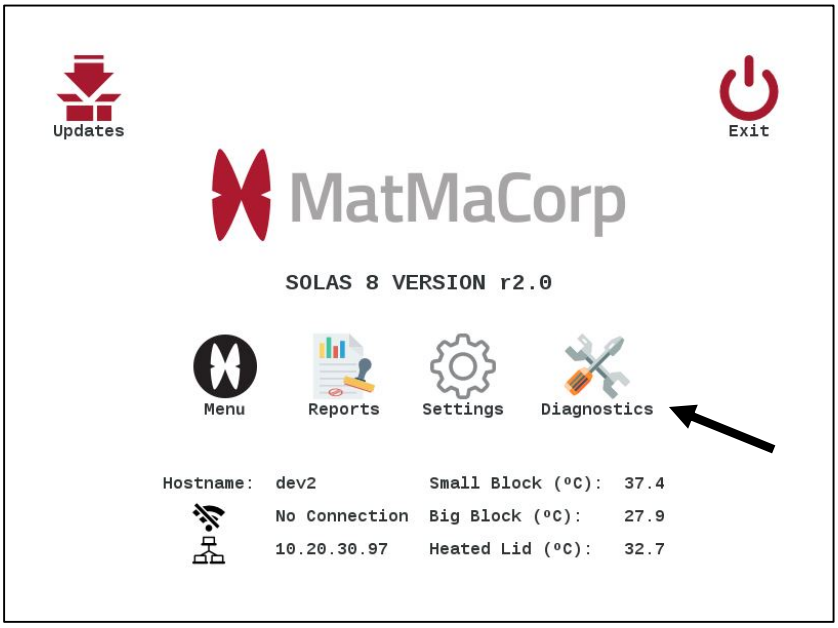
In the event the Solas 8™ exhibits unwanted behavior, please restart the device, as this will solve most issues.

There are no user-serviceable components inside your Solas 8™. Please do not open your Solas 8™, as this may void your warranty.

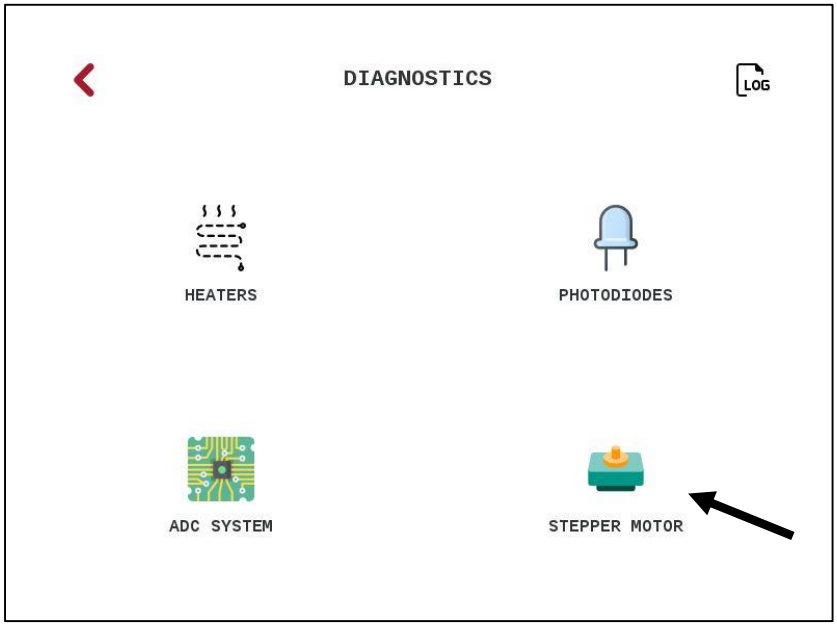
Problem	Possible Causes	Corrective Action
Device will not power on	Circuit Breaker tripped	Contact an electrician or other qualified personnel to restore power. Move the Solas 8™ to another circuit.
	Device unplugged	Ensure power supply is plugged into the Solas 8™ and to the outlet.
	Fuse blown	Contact MatMaCorp support department. There are no user-replaceable fuses in the Solas 8™.
Unable to tap accurately	Touchscreen out of calibration	Perform the touchscreen calibration routine outlined in the Touchscreen Calibration section below
	Liquid or other contaminate on surface of touch screen	Perform the cleaning procedure in Chapter 3 -> Touchscreen
Top block does not heat	Protocol step not completed	The block only heats once the protocol reaches the appropriate step
	Other Issues	Perform the procedure outlined below in the section titled "Heating/Cooling Rate" Contact MatMaCorp support department.
Bottom block does not heat	Heating Issues	Perform the procedure outlined below in the section titled "Heating/Cooling Rate" Contact MatMaCorp support department.

No network access (Wired)	Incompatible Ethernet cable	Insert another Ethernet cable (Cat 5e or better)
	Software not registering connection	Restart the Solas 8™ device
	Bad Ethernet wall jack	Contact your IT Department
	Improper network settings	Contact your IT Department
No network access (Wireless)	Improper Wi-Fi connection settings	Repeat the steps in Chapter 1 -> Wireless Networking Configuration
	Too far away from access point	Move the Solas 8™ to a location that is closer to your access point
Phone or laptop says no internet access when in AP Mode	The device cannot reach the internet when connected to the Solas 8™	This is expected behavior based on security risk mitigation policies. You will be able to see results.
Lid of top block does not close or lock	Incorrect tube configuration	Please only use the Solas 8™ with MatMaCorp C-SAND™ Assays and tubes provided in kit.
Screen is blank	Software has not loaded completely	Please wait for the software to finish loading
	Other Issues	Contact MatMaCorp support department.
Custom C-SAND™ kit is not appearing on your Solas 8™	Your Solas 8™ has not updated	On the Start screen, please tap the **Update** icon
	Manufacture of the test has not been completed yet	Contact MatMaCorp.
	Custom C-SAND™ kit not assigned to your Solas 8™ online at matmacorp.com	Log on to your profile, and make sure the C-SAND™ Assay is assigned correctly.
Curves on the result plot appear “jagged”	Solas 8™ needs to be calibrated	Perform the calibration steps in the section titled “Alignment Calibration Procedure”
Curves on the plot appear flat, or do not exhibit an expected increase	Expired/Improper kit use	Please refer to the instructions and troubleshooting in the C-SAND™ and MagicTip™ kits.
	Other Issue	Perform the calibration steps in the below section titled “Photodiodes” and “ADC System Check”

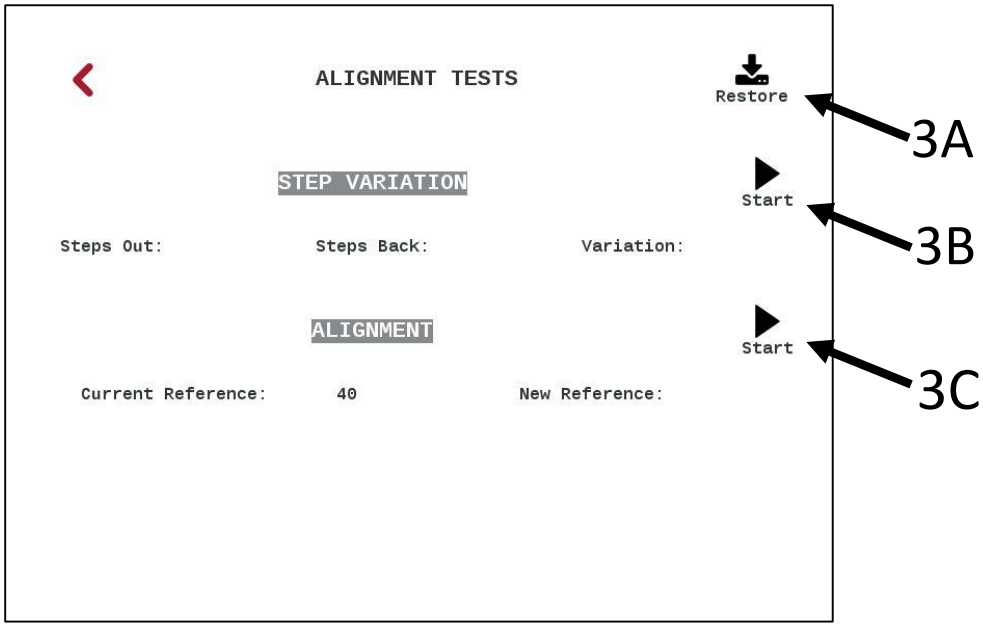
1. From your Solas 8™ Start screen, tap the **Diagnostics** icon.



2. Tap the **Stepper Motor** icon.

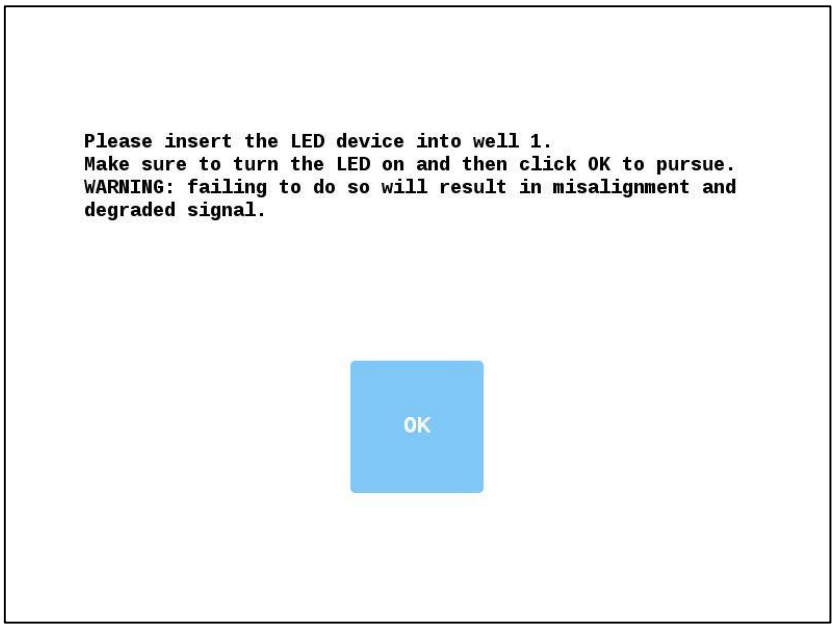


3. The following screen appears. The functionality of each icon is outlined below:

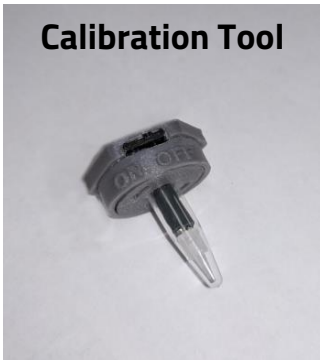


3A – Tapping this icon restores the factory position calibration
3B – Tapping this icon checks the detection system
3C – Tapping this icon will realign the detection system, if you insert the MatMaCorp Calibration device into well 1 (leftmost well of upper block) in your Solas 8™ device. More information is provided below in Step 4 of this section.

4. If you wish to recalibrate the alignment of your Solas 8™, tap the **Start** button called out as "3C" above. The following warning will appear:



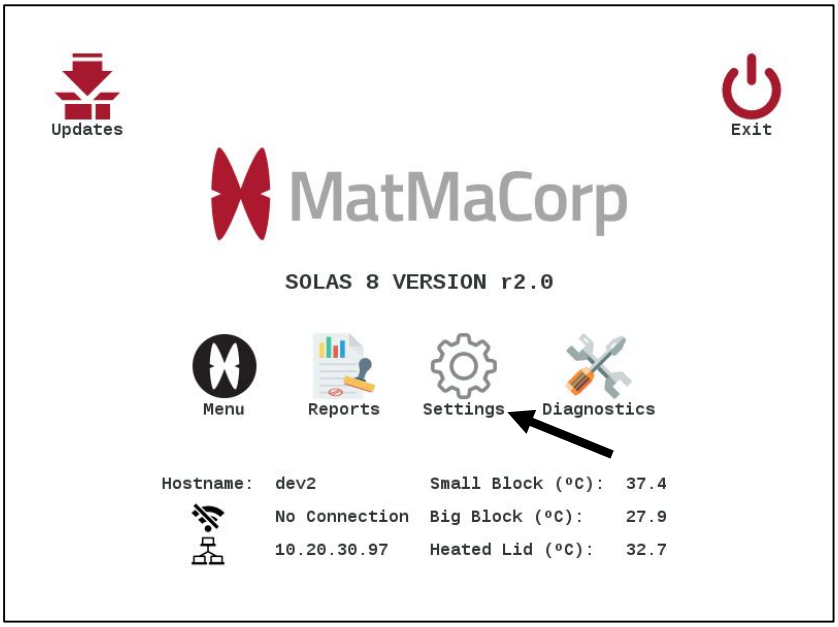
Once you have turned ON and inserted the calibration tool into well 1 of the upper block, tap OK and the calibration will begin. The LED device (calibration tool) comes with the Solas 8™ device. It will look like the calibration tool in the image to the right:



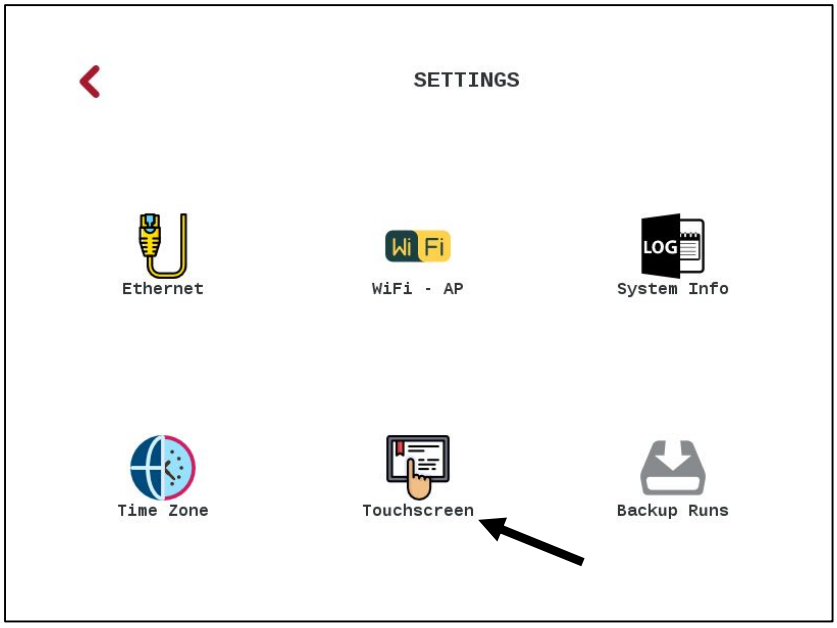
Touchscreen Calibration Procedure

On the occasion that the touchscreen needs recalibration, follow this procedure:

1. From the Start screen, tap the **Settings** icon.



2. Tap the **Touchscreen** icon.

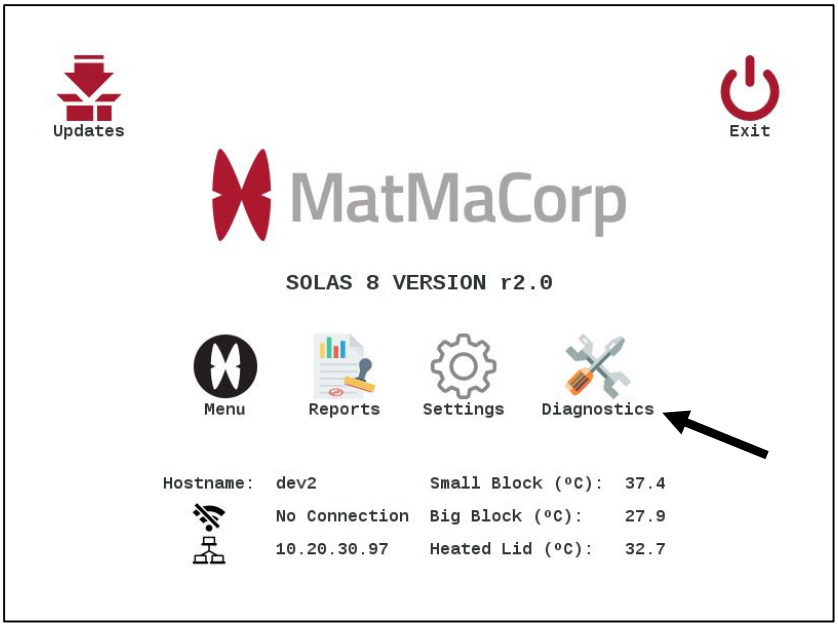


3. Tap each of the red targets with your finger. If you would like more accuracy, please feel free to use a stylus designed for a resistive screen.

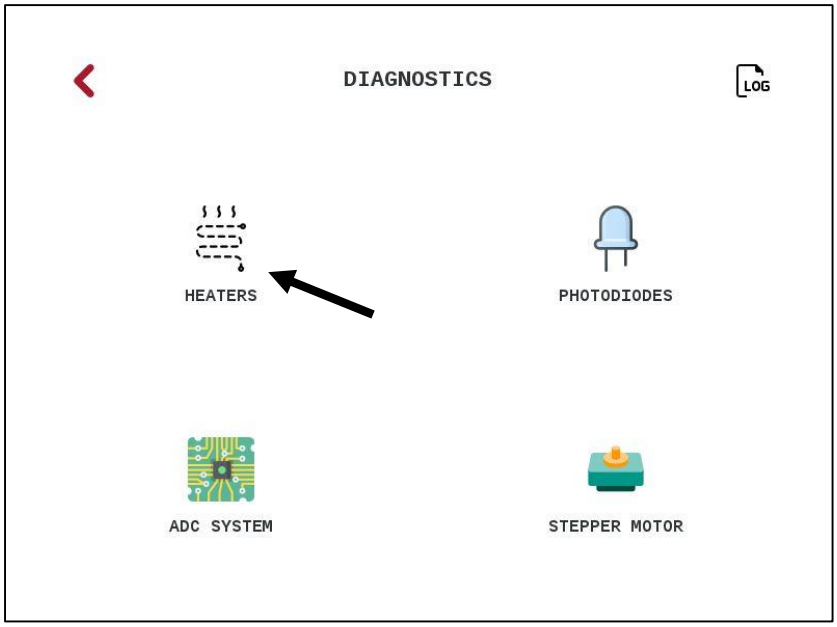
Heating/Cooling Rate

To check the heating and cooling rate of the heating and cooling elements in your Solas 8™, perform the following:

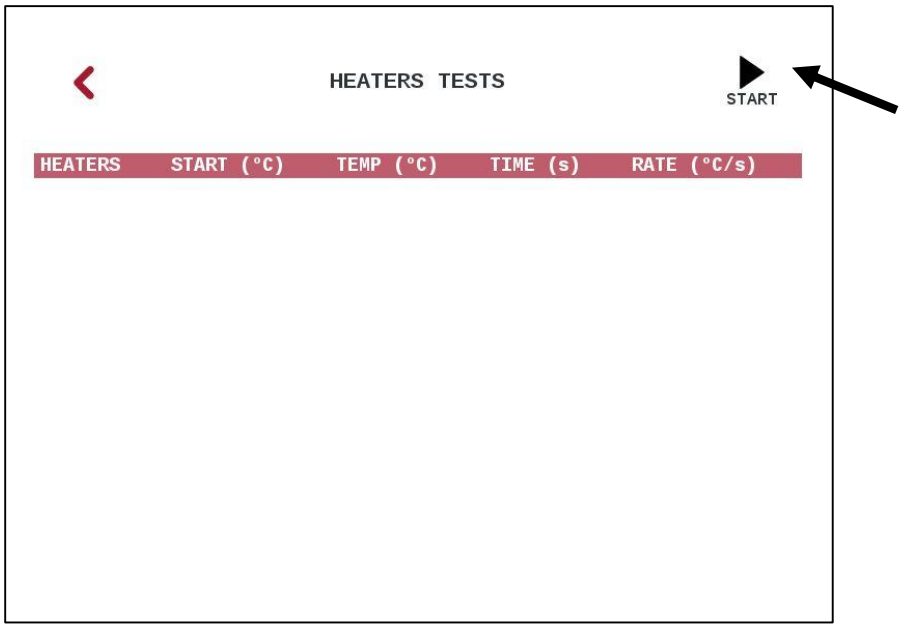
1. From the Start screen on your Solas 8™, tap the **Diagnostics** icon.



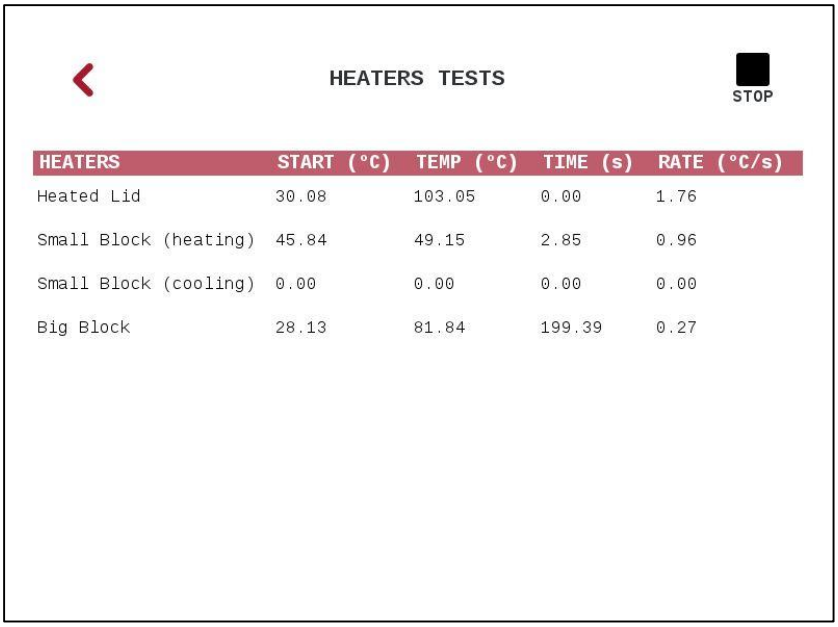
2. Tap the **Heaters** icon.



3. The following screen will appear. Tap the **Start** icon in the upper right corner of your screen.



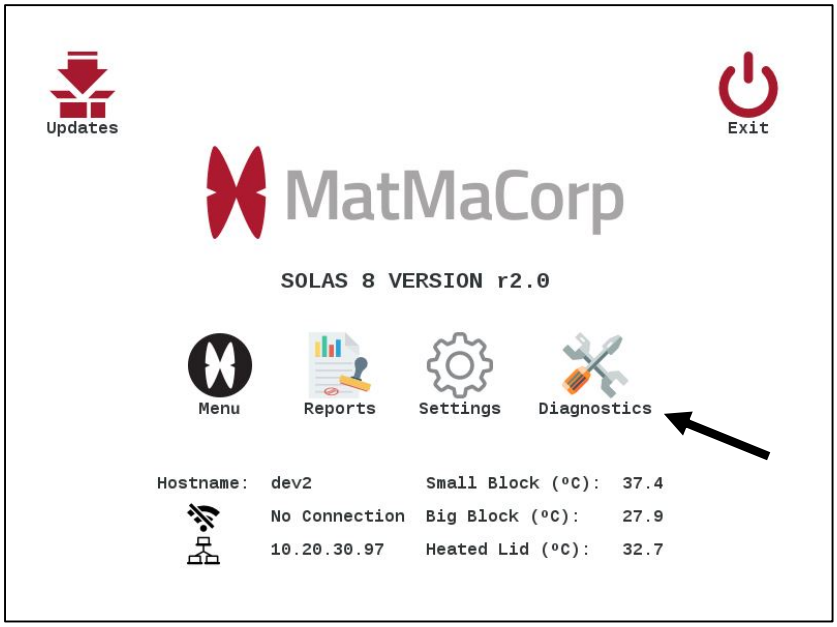
4. The list will populate, and the progress and temperature rates will appear. To stop at any time, tap the **Stop** icon in the upper right corner.



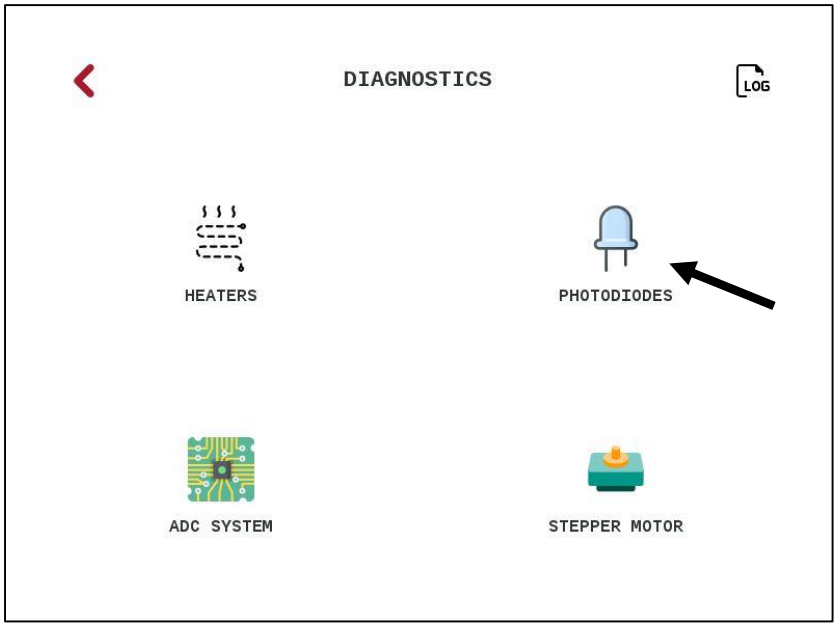
Photodiodes

To check the functionality of the detection system in your Solas 8™, perform the following:

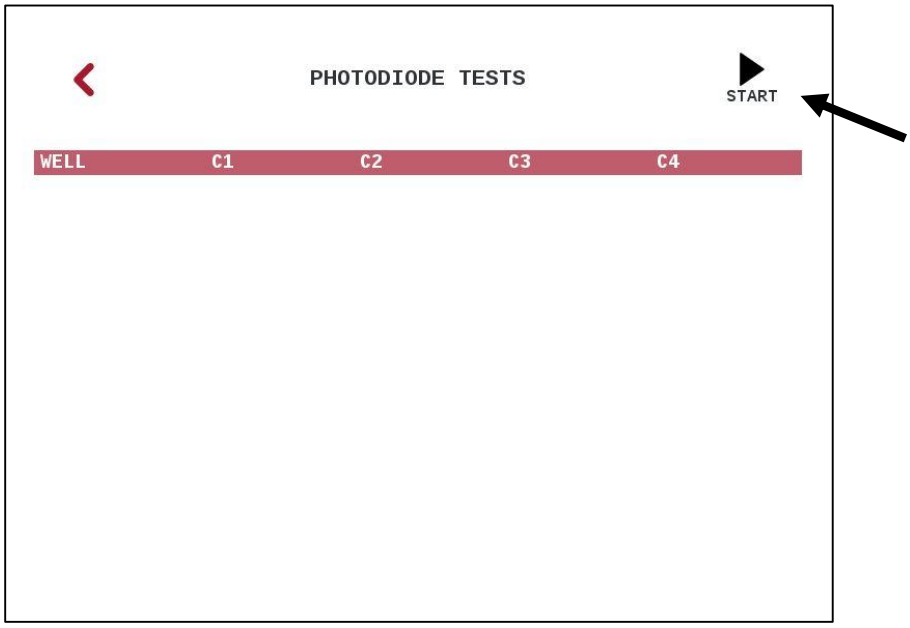
1. From the Start screen on your Solas 8™, tap the **Diagnostics** icon.



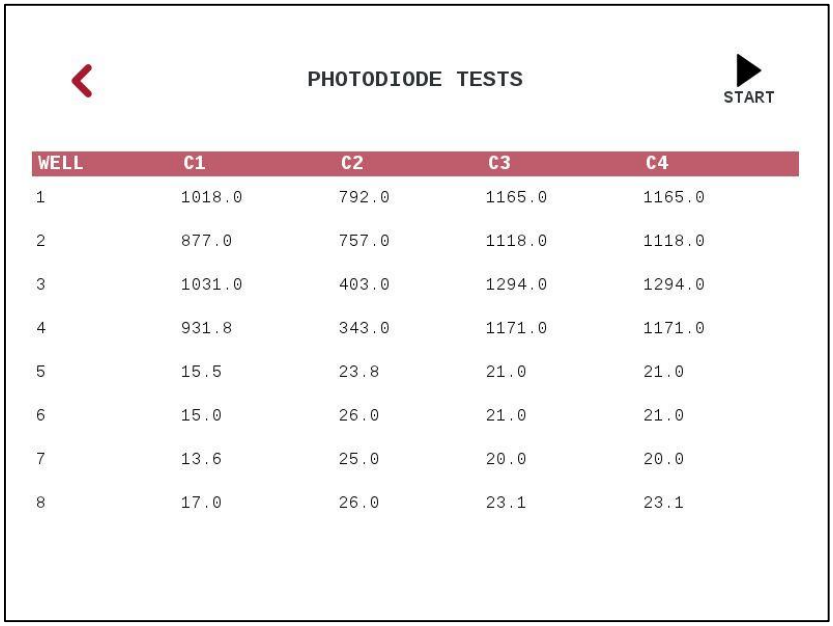
2. Tap the **Photodiodes** icon.



3. The following screen appears, tap the **Start** icon in the top right corner.
4. Remove all tubes from all wells.
5. During this diagnostic, you will see no status updates on screen until the diagnostic completes:



6. Your Solas 8™ will begin a scan of all the wells, using all channels. When the diagnostic is complete, the report will appear below the headings:

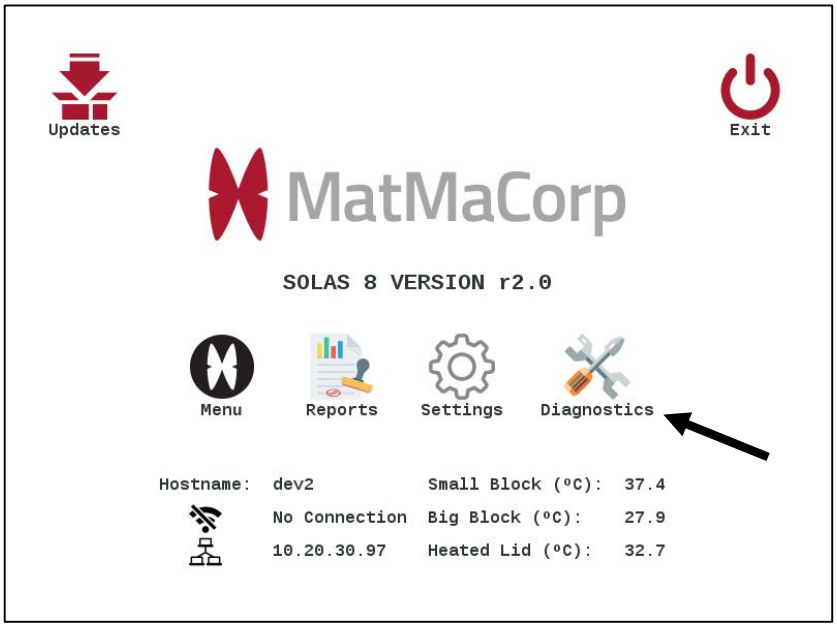


WELL	C1	C2	C3	C4
1	1018.0	792.0	1165.0	1165.0
2	877.0	757.0	1118.0	1118.0
3	1031.0	403.0	1294.0	1294.0
4	931.8	343.0	1171.0	1171.0
5	15.5	23.8	21.0	21.0
6	15.0	26.0	21.0	21.0
7	13.6	25.0	20.0	20.0
8	17.0	26.0	23.1	23.1

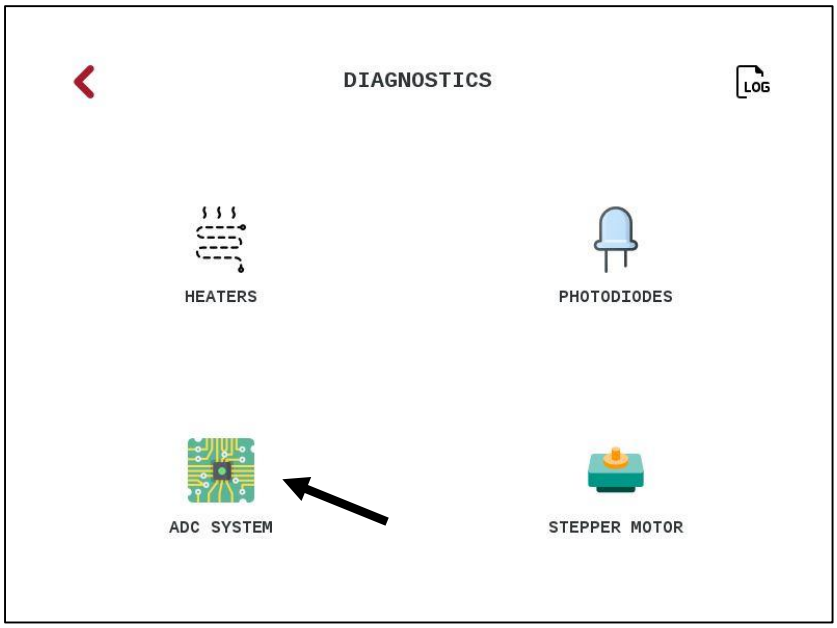
ADC System Check

To check the ADC in your Solas 8™, perform the following:

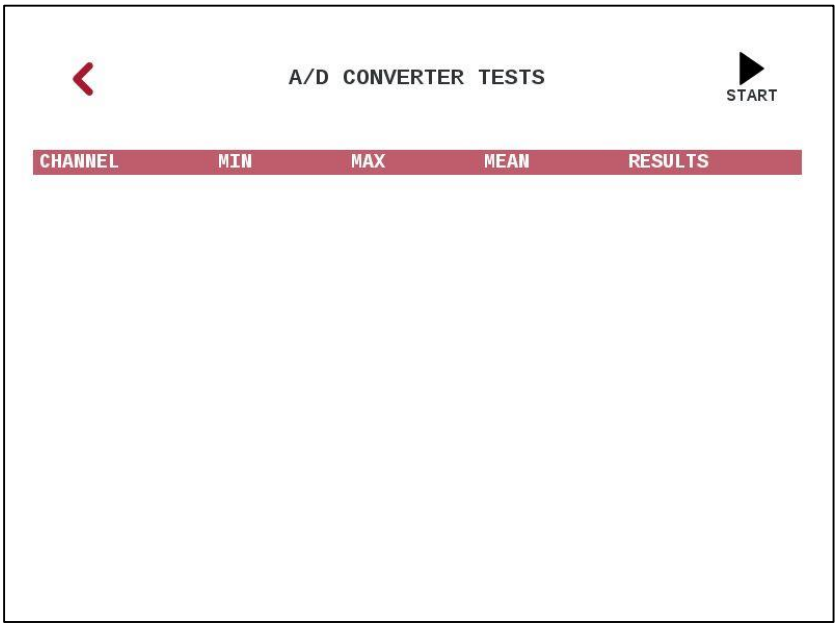
1. From the Start screen on your Solas 8™, tap the **Diagnostics** icon.



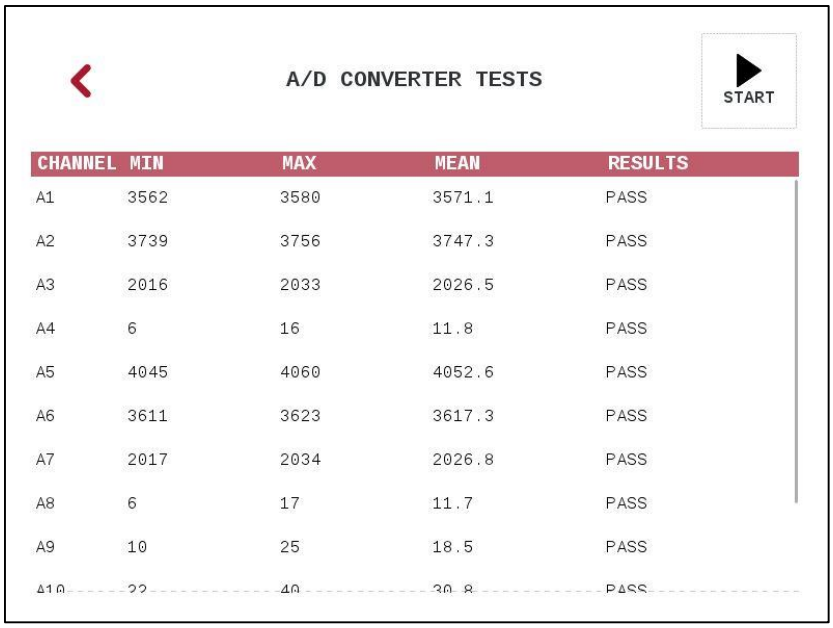
2. Tap the **ADC System** icon.



3. The following screen will appear. Tap the **Start** icon.



4. After the diagnostic completes, the results will be shown below the headers:



CHANNEL	MIN	MAX	MEAN	RESULTS
A1	3562	3580	3571.1	PASS
A2	3739	3756	3747.3	PASS
A3	2016	2033	2026.5	PASS
A4	6	16	11.8	PASS
A5	4045	4060	4052.6	PASS
A6	3611	3623	3617.3	PASS
A7	2017	2034	2026.8	PASS
A8	6	17	11.7	PASS
A9	10	25	18.5	PASS
A10	22	40	30.8	PASS

Chapter 5 - Summary of Important Features

The Solas 8™ software package is a standalone application. This can only be run from the touch screen in front of the device. A network connection or web access is not required to run the application. Detailed instructions on how to run the application are found in the other sections of this user manual.

We believe that the user interface on the touch screen is intuitive enough and fairly straightforward to get your sample information in, extract the DNA, run the C-SAND™ assay test and get results. But, for some features like email notifications from the device, it is necessary to have access to the web. If web access is not available, it is still possible to run the device, generate reports and also see fluorescence data in real time. As long as you have a device that has a web browser like a smart phone, iPad or a computer, you will be able to remotely access real time data from the Solas 8™. How this can be done is further explained below. Please note that the Solas 8™ cannot be operated from a remote device.

Network and Internet/Web Access

The following information gives you a general idea on how the Solas 8™ device connects to a network and how it functions with and without internet access.

Software and Database Updates

When software/database updates are available, machines that have web access will automatically display the update icon on the main screen. These updates will happen at regular intervals. When a C-SAND™ test (for SNP or target detection) is ordered, the specific calling algorithm and database changes will be part of the update. Additionally, if any standard test or DNA kit is ordered, all relevant protocols will also be updated. Test and kit specific updates are made only for specific machines for which the order was placed. This is to ensure confidentiality for each customer. Only general software/database updates are sent to all machines. If web access is not available, software/database updates can be sent to a specific email address and then transferred to the Solas 8™ device using a flash drive.

Email Notifications

When entering a new user into the database, it is possible to sign up for email notifications by checking the email notification checkbox. It can be an email address or the email format your phone carrier expects for emails to be sent as text message to a phone number (the message sent to a phone number can be cropped depending on the phone carrier). This convenience feature is to notify the user at the end of Step 1 and Step 2 when running a C-SAND™ assay test. It also provides the user with the results of the calls at the end of Step 2 or at the end of a test. If the calls are all made before the end of a test, a notification is sent with the results and the user has the possibility to stop the test and save the results to the database. This saves time. The notification feature works if the Solas 8™ has web access at the time the email is sent.

Hostname and Local Access Network (LAN)

When the Solas 8™ is connected to a local network through the Ethernet cable, it is possible to change the name of the machine (the hostname in Linux terminology). This name is then used to access the machine from a different computer also connected to the same network. To access the Solas 8™ device, you will need a web browser like FireFox/Google Chrome or Safari (on iPhones). Any web browser will suffice.

By default, the hostname is the serial number of the machine. It can be changed to anything that is relevant for the person using the Solas 8™ on a specific network. To change the hostname, go to Settings > Ethernet and type in the new name for the machine and then Apply. The other fields can be left blank but can also be filled based on the local network configuration the Solas 8™ is part of. The name of the machine as well as the IP address are displayed on the main screen.

Wi-Fi Connections

The Solas 8™ application provides a user interface to connect the device to a wireless network. The Wi-Fi and Access Point (see below) are mutually exclusive. To active the Wi-Fi, the access point needs to be disabled and vice-versa. When Wi-Fi is enabled, the user can select the wireless network to connect to from the dropdown menu and enter the password. Depending on the strength of the Wi-Fi signal, it can take up to a couple of minutes for the device to connect to the wireless network.

Host Name and Wi-Fi Connections

Wi-Fi and LAN (Ethernet) connections require unique hostnames. In other words, the hostname assigned to the LAN interface (Ethernet) cannot be the same as the hostname assigned to the Wi-Fi interface. For practical purposes, all of this relates to the DHCP server on the local network which handles the translation between the hostname and the IP addresses for each interface. In our case, the hostname is by default the serial number of the machine, say sol818010005. Depending on the local network configuration, if the device is connected to the Wi-Fi network, the hostname associated with the Wi-Fi interface will be sol818010005w (note the w at the end - which stands for Wi-Fi) or sol818010005.local. You could add w to the host name that you may have used in the LAN connection setup (see above) and it should also work.

At least one of these formats should work when trying to access the device using a web browser from a computer also connected to the same network. The IP addresses for each interface are displayed on the main screen and can also be used to access the machine directly from a web browser.

Direct Connection to Solas 8™ (Access Point Mode) using Wi-Fi

The direct connection option allows a Solas 8™ to be turned into a router. Any Wi-Fi capable device (like iPhone, iPad, Computer etc. with a web browser) can access the web server running on the Solas 8™ device. This is very practical if the Solas 8™ doesn't have access to any Wi-Fi or LAN network, particularly in a remote location. This allows the user to access fluorescence data in real-time and also see various reports (results) generated by the machine. **Please note: the access point mode is not a means to run the device remotely.**

To enable the Access Point Mode, the Wi-Fi needs to be disabled first. To do so, go to Settings > Wi-Fi, uncheck the "Enable Wi-Fi" checkbox then click Apply. Then go back and select Direct Connection. Select the checkbox and then the Access Point name. By default, the access point name is Solas 8™ but it can be anything that is relevant for the user. To connect to the Solas 8™ turned into a router, pick up any Wi-Fi capable device (smartphone, tablet, laptop), go into the Wi-Fi settings of your device and select the Solas 8™ network (or the name you specified). To access the machine, bring up any web browser that is installed on your device (like FireFox on Windows and Safari on Apple machines) and type in the IP address that is being displayed on the DIRECT CONNECTION screen. In the Access Point Mode, the IP you are seeing on the Direct Connection screen will be different from the Home Screen IP if this device was previously connected to a Wi-Fi or LAN network. Now, it may be something like 192.168.10.1 or similar.

Visualizing Fluorescence Data Collected by the Solas 8™ Device

The Solas 8™ device is a four channel fluorescence detection device. The molecular test (C-SAND™ Assay being run on the device is monitored by collecting fluorescence emitted from probes that are labeled with different dyes. An HTML interface has been designed to allow the visualization of this fluorescence signal in real-time. To see this, simply access the Solas 8™ through a web browser from a machine that is either connected to the same network or directly if the Solas 8™ is in Access Point Mode. In the URL bar of the web browser you can type in the IP address for the interface you are trying to access (LAN or Wi-Fi or you can use the hostname followed by the forward slash. The http:// part of the address does not need to be typed in if the hostname or IP address is followed by the forward slash (/

LAN access: http://lan-IP-address/ or http://hostname/
Wi-Fi access: http://Wi-Fi-IP-address/ or http://hostnamew (with the w at the end or http://hostname.local/
Access Point Mode: http://access-point-IP-address or http://hostname.local

The hostname used in the Access Point Mode is the same as the LAN host name which could be something you created or is the serial number of the device (default setting.

What you see with the Graphics Viewer

When you access the Solas 8™ web server, you will see two folders: reports and tests. The reports folder will hold the different reports that have been generated. The tests folder will contain the different tests that have been run or were run at that time. The tests will be grouped by name that was given to that test or date and time together (the default name setting. Selecting a test will display the measured fluorescence intensity signal (in arbitrary units as a function of time for the different samples and channels. The viewer that MatMaCorp has developed for this purpose is referred to as the Graphics Viewer.

If needed, the raw data for the signal as a function of time is accessible by clicking the DATA link in a file called scanoutput.csv. To export the data, a user can simply click on the file and copy and paste its content into a data processing software. To download the file, simply right-click and select “Save link as...”.

Generating Reports

Generating reports is a convenient way to visualize results (tested samples) in a HTML form. To generate a report, go to the Start screen and click Reports. A report needs to have a name. A user can then specify a certain number of filters (start and end date, user, test, which table to export and the format). The data being generated during an export can also be copied to a flash drive if one is inserted and the Copy to USB is checked. The **genotyping.html** file generated is a useful summary of all the general information as well as the calls that were made by the calling algorithm. It also includes 4 links (to account for each possible network configuration the Solas 8™ can be in at the time the report is created) that point to the fluorescence signal for a specific samples and SNP/Target.

A representative screen shot of a **genotyping.html** file is shown below. Reports can be generated as PDF, CSV and HTML files. Default is for all of these formats together.

genotyping.html image

beta_casein

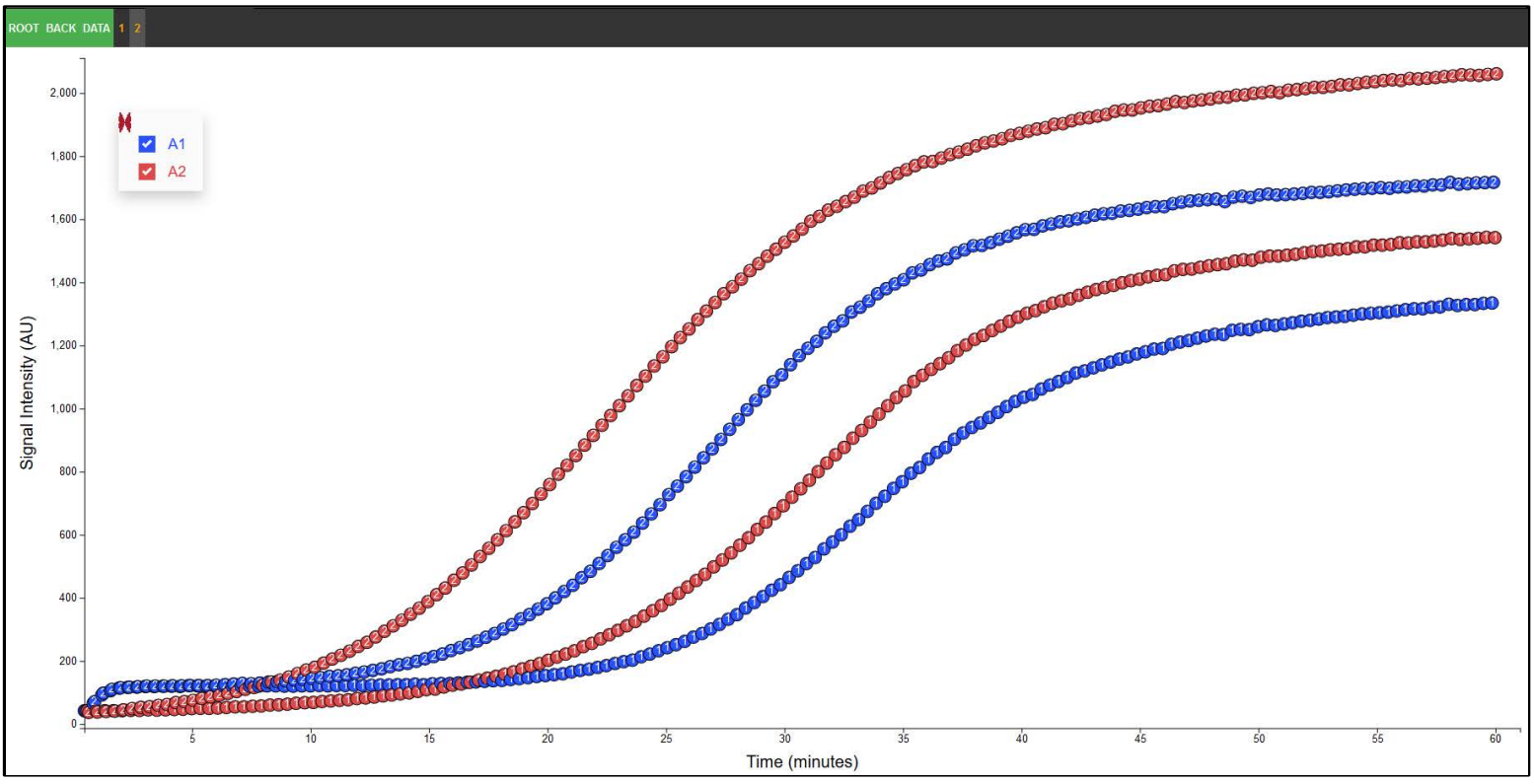
SAMPLE ID	DESCRIPTION	TESTED	TEST	ASSAY	CALL	SCORE	GRAPH ACCESS			
1		2018-09-18 17:14:01	BETA-CASEIN	BETA-CASEIN	A1A2	99.7	lan1	lan2	wifi1	wifi2
2		2018-09-18 17:14:01	BETA-CASEIN	BETA-CASEIN	A1A2	99.3	lan1	lan2	wifi1	wifi2
3		2018-09-18 17:14:01	BETA-CASEIN	BETA-CASEIN	A1A2	99.7	lan1	lan2	wifi1	wifi2
4		2018-09-18 17:14:01	BETA-CASEIN	BETA-CASEIN	A1A2	99.1	lan1	lan2	wifi1	wifi2
5		2018-09-18 17:14:01	BETA-CASEIN	BETA-CASEIN	A1A2	99.9	lan1	lan2	wifi1	wifi2
6		2018-09-18 17:14:01	BETA-CASEIN	BETA-CASEIN	A1A2	100.0	lan1	lan2	wifi1	wifi2
7		2018-09-18 17:14:01	BETA-CASEIN	BETA-CASEIN	A1A2	99.8	lan1	lan2	wifi1	wifi2
8		2018-09-18 17:14:01	BETA-CASEIN	BETA-CASEIN	A1A2	99.8	lan1	lan2	wifi1	wifi2
1		2018-09-07 17:00:25	BETA-CASEIN	BETA-CASEIN	A1A2	99.9	lan1	lan2	wifi1	wifi2
2		2018-09-07 17:00:25	BETA-CASEIN	BETA-CASEIN	A1A2	99.8	lan1	lan2	wifi1	wifi2
3		2018-09-07 17:00:25	BETA-CASEIN	BETA-CASEIN	A1A2	99.8	lan1	lan2	wifi1	wifi2
4		2018-09-07 17:00:25	BETA-CASEIN	BETA-CASEIN	A1A2	99.9	lan1	lan2	wifi1	wifi2

Fluorescence Data Examples

Some machines may come with pre-loaded data that were generated under different conditions. A set of data (shown below) shows the capabilities of the system for different applications ranging from the detection of bacteria and virus to SNP genotyping for marker assisted breeding. The data is viewed using the MatMaCorp Graphic Viewer that is available on the Solas 8™ and accessible using a web browser like FireFox or Apple's Safari.

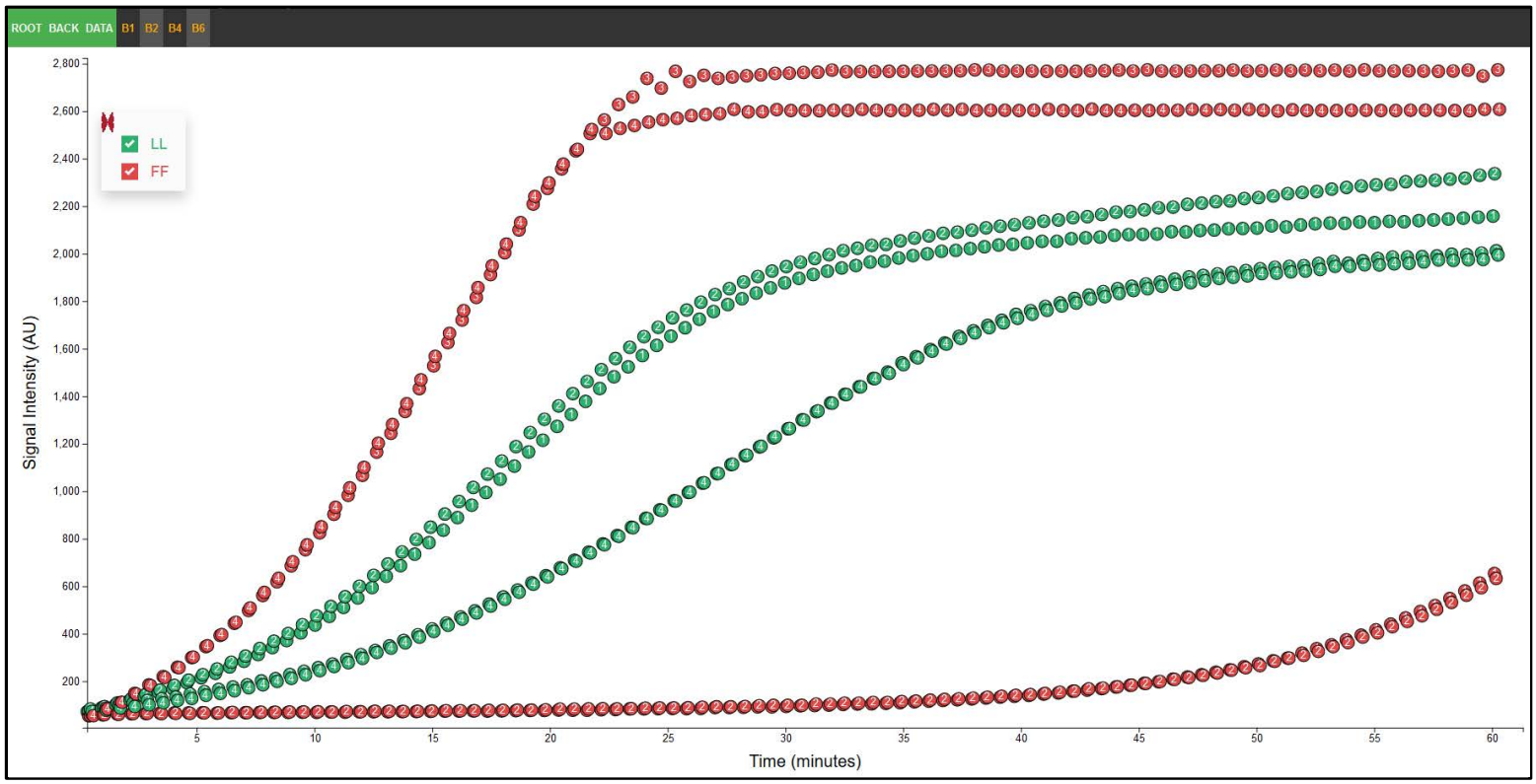
1. Single (1) SNP Test for Beta Casein

Beta casein is one of the major milk proteins found in dairy cows. A well-known genetic variation in the CSN2 gene is His67 (A1) which replaced the original Pro67 (A2). The example shown below in Figure 1 shows data from the same heterozygous animal (A1/A2). DNA was isolated using MatMaCorp's MagicTip™ kit for tissue (top sample ID2) and blood (bottom sample ID1). Blood sample typically yields less DNA that tissue as clearly seen in the Figure below. Intensity of the curve and time to reach plateau is typically correlated to amount of DNA.



2. Single (1) SNP Test for Myostatin

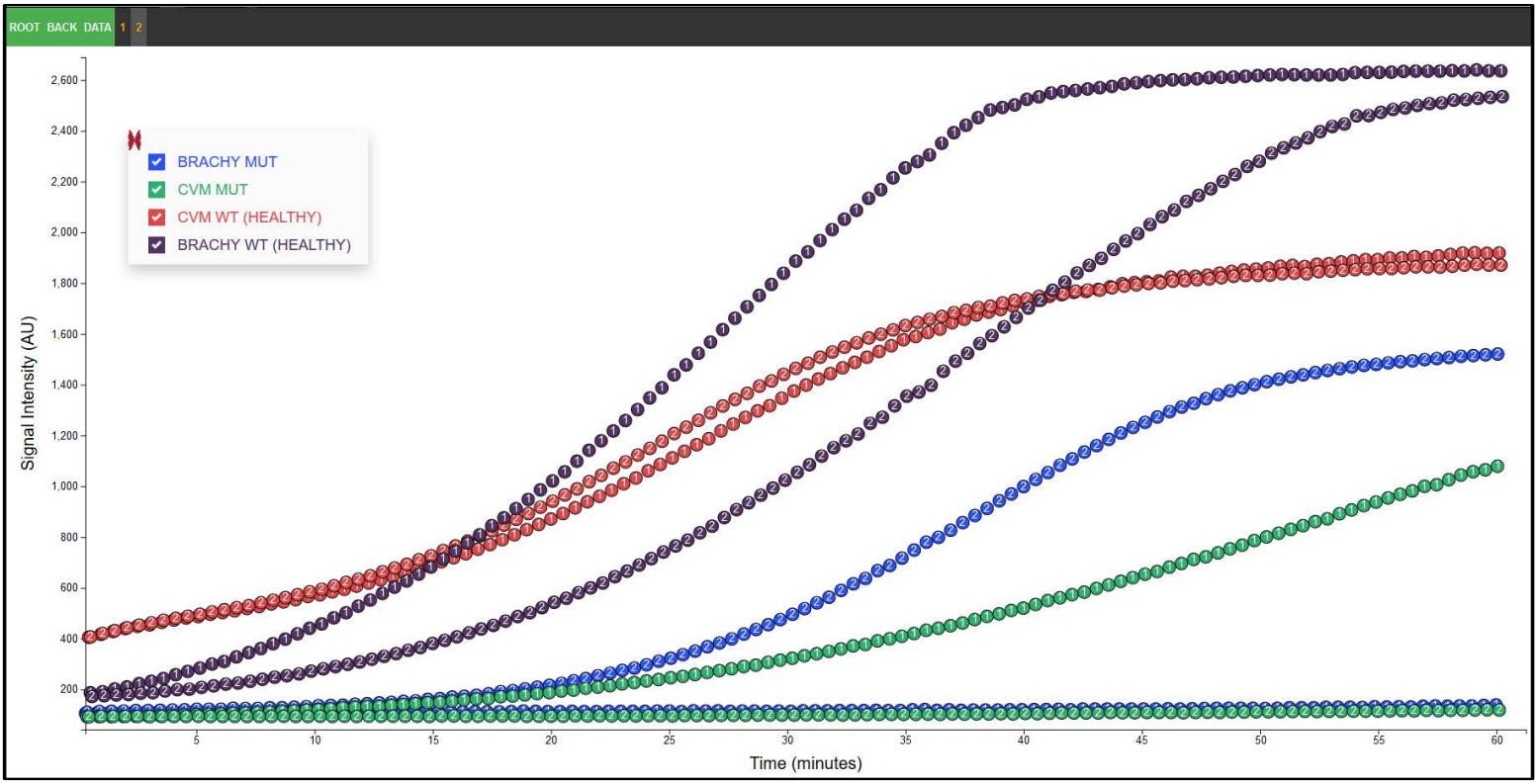
The myostatin (MSTN) or growth differentiation factor 8 (GDF8) F94L SNP is associated with an increase in meat weight and decrease in fat depth in the Limousin breed of cattle. LL homozygous will produce more muscle mass and less fat content compared to FL heterozygous and FF homozygous. In Figure 2 shown below, Sample ID B1 and B2 are homozygous LL whereas sample ID B4 and B6 are heterozygous FL. DNA used was purified using a Qiagen spin column method.



3. Biplex Test for CVM and Brachyspina in Holstein Cattle

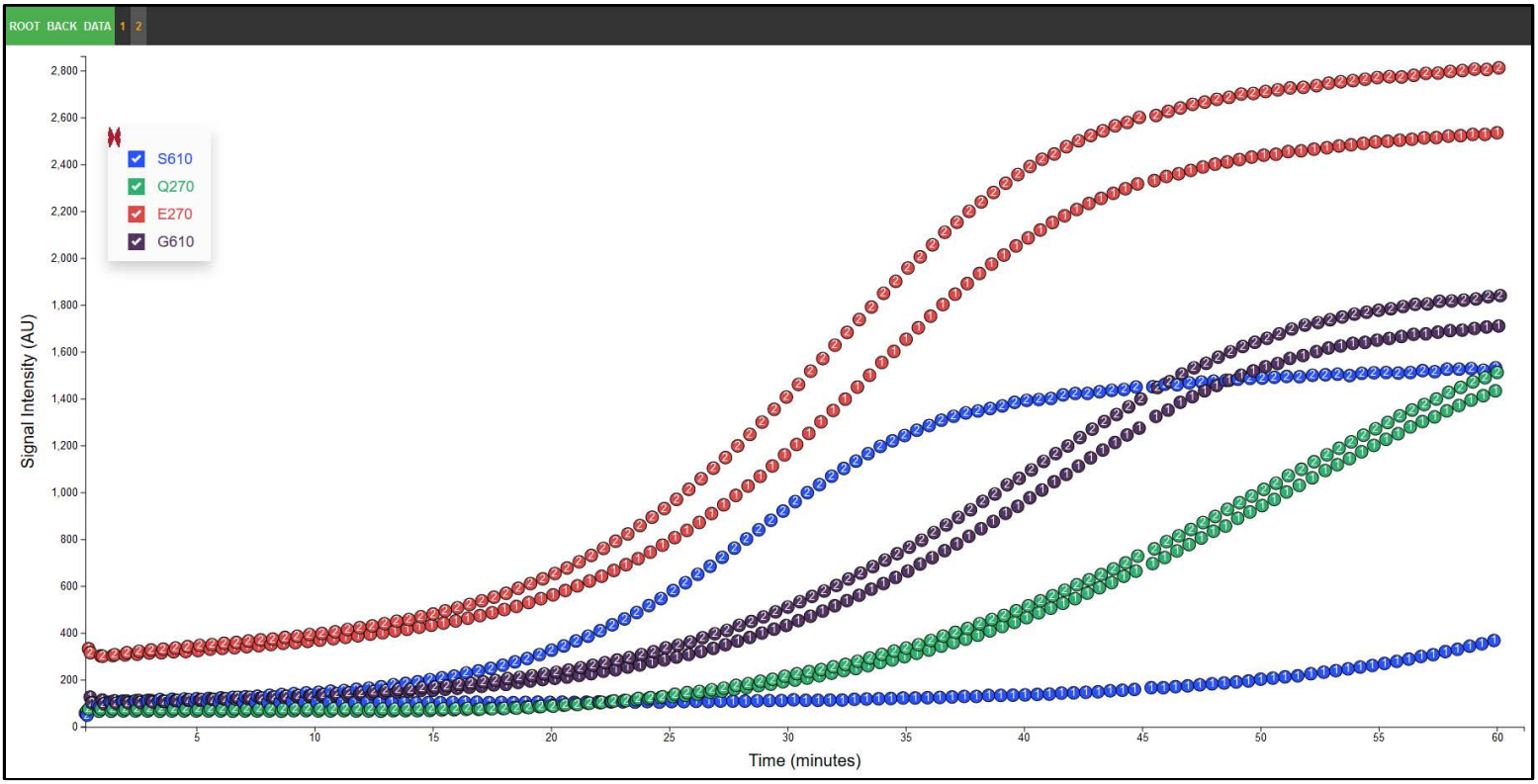
These tests were done together in a single tube and looks at two congenital genetic conditions found in Holstein cattle: Complex Vertebral Malformation (CVM) and Brachyspina. Brachyspina is a 3.3 kb deletion while CVM is a single base change.

In Figure 3 seen below, sample ID 1 is a carrier for the CVM mutation and is homozygous wild type for the Brachyspina mutation. Sample ID 2 is a carrier for the Brachyspina mutation and a homozygous wild type (healthy) for the CVM. MatMaCorp's MagicTip™ blood kit was used to isolate DNA.



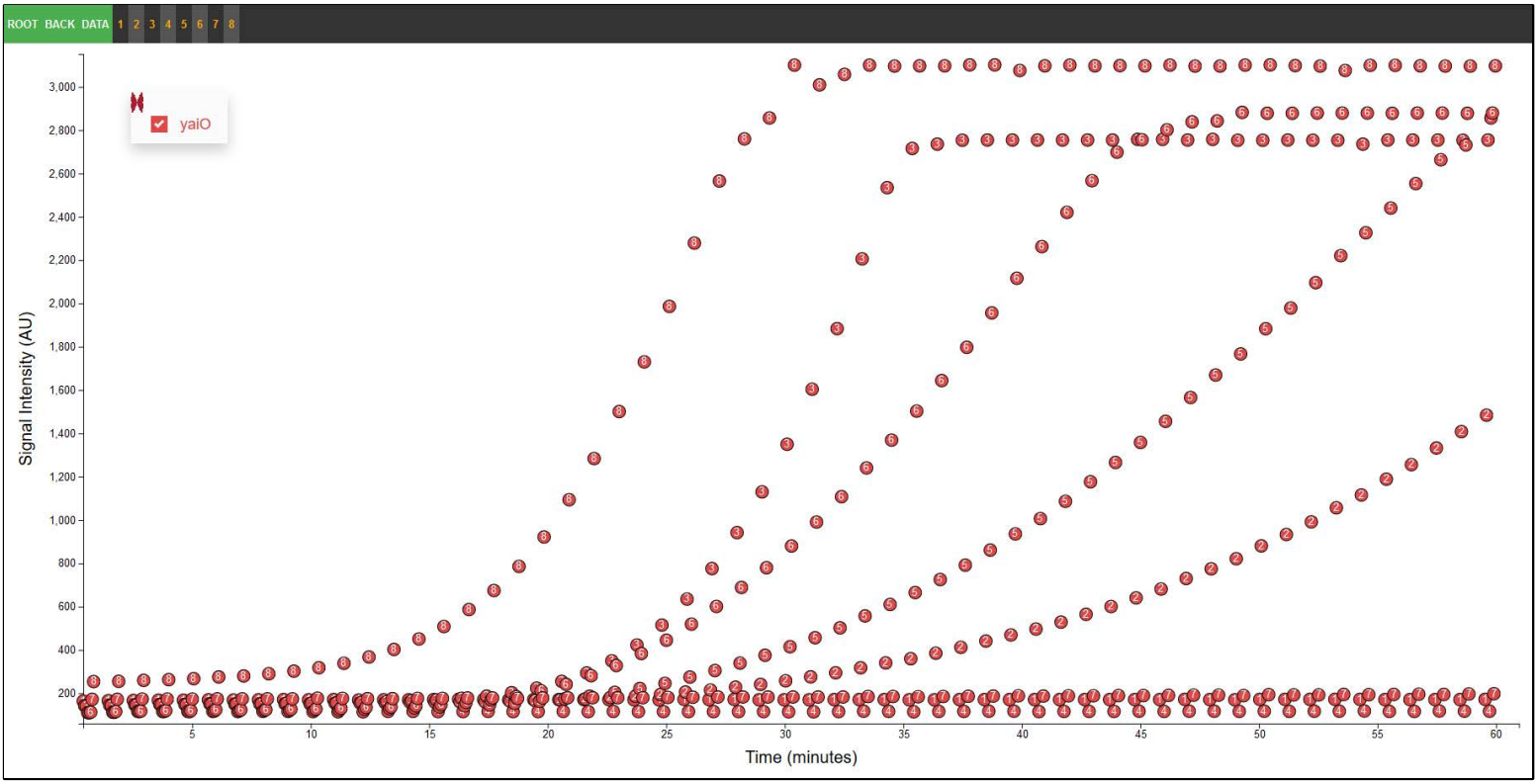
4. Two (2) SNP Test for EPAS1

Endothelial PAS domain-containing protein 1 (EPAS1) is thought to be associated with HAPH (High- altitude pulmonary hypertension) in cattle. Two variations in the gene, Q270/E270 and S610/G610, were assayed together. Figure below shows data from 2 DNA samples. Sample ID 1 heterozygous EQ270/E270 and homozygous for G610 and Sample ID2 is heterozygous for both SNPs. Blood samples were prepped using MagicTip™ Kit.



5. Single (1) Target Test to Detect E.coli

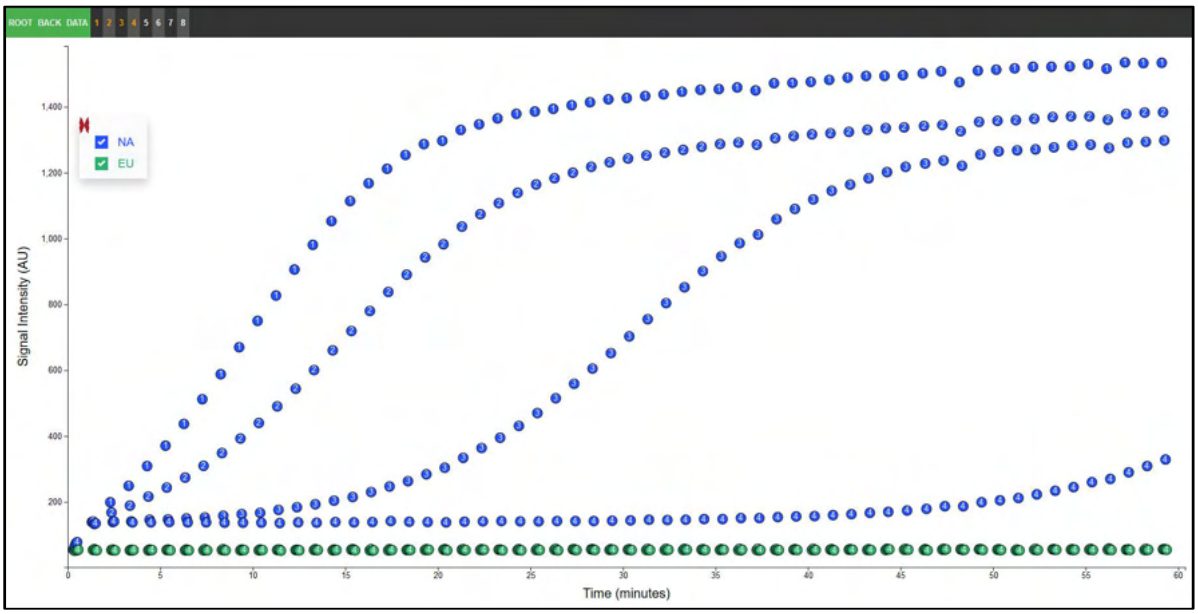
In this example, the yaiO gene was selected as the target for the specific detection and identification of E.coli. Sample ID 1 is a lysate from bacterial pellet (undiluted), Sample ID 2 is a 1:10 dilution of pellet lysate, Sample ID 3 is a MagicTip™ purified DNA from bacterial pellet, Sample ID 4 is lysate from bacterial filtration (undiluted), sample ID 5 is a 1:10 dilution of filtration lysate (from 4) and Sample ID 6 is a MagicTip™ purified DNA from filtration lysate. Sample ID 7 is background control and Sample ID 8 is a positive control DNA. Undiluted samples do not work well most probably due to excess DNA or other contaminants.



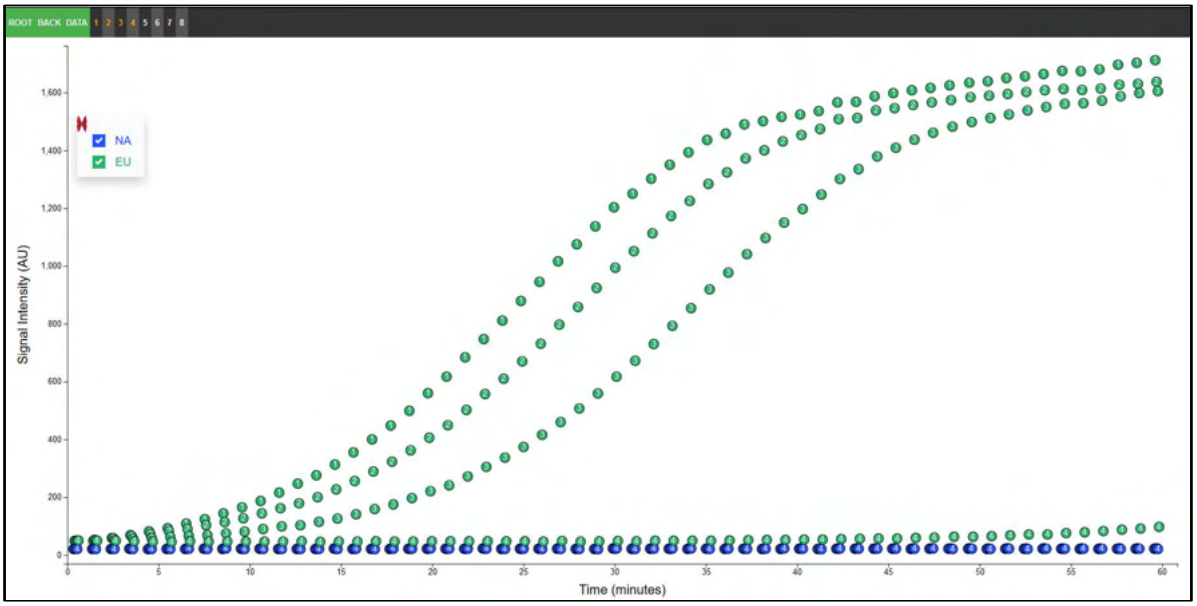
6. Two (2) Target Test for the Detection of PRRSV in Swine

This assay was designed to detect the North America (NA) and European (EU) strain of the Porcine Reproductive and Respiratory Syndrome (PRRS) virus that affect pigs. In Panel 6A, both EU (Green) and NA (blue) probes are used in the same reaction. Sample IDs 1, 2 and 3 are from high, medium and low titer serum samples from infected animals which were identified using a commercially available method as being positive for the NA strain. Sample 4 is background control. Panel 6B shows similar reaction as in Panel A except that in this case Sample IDs 1, 2 and 3 are from high, medium and low titer serum samples which were identified as positive for the EU strain using a commercially available kit. RNA was prepped using standard Trizol method.

Panel A

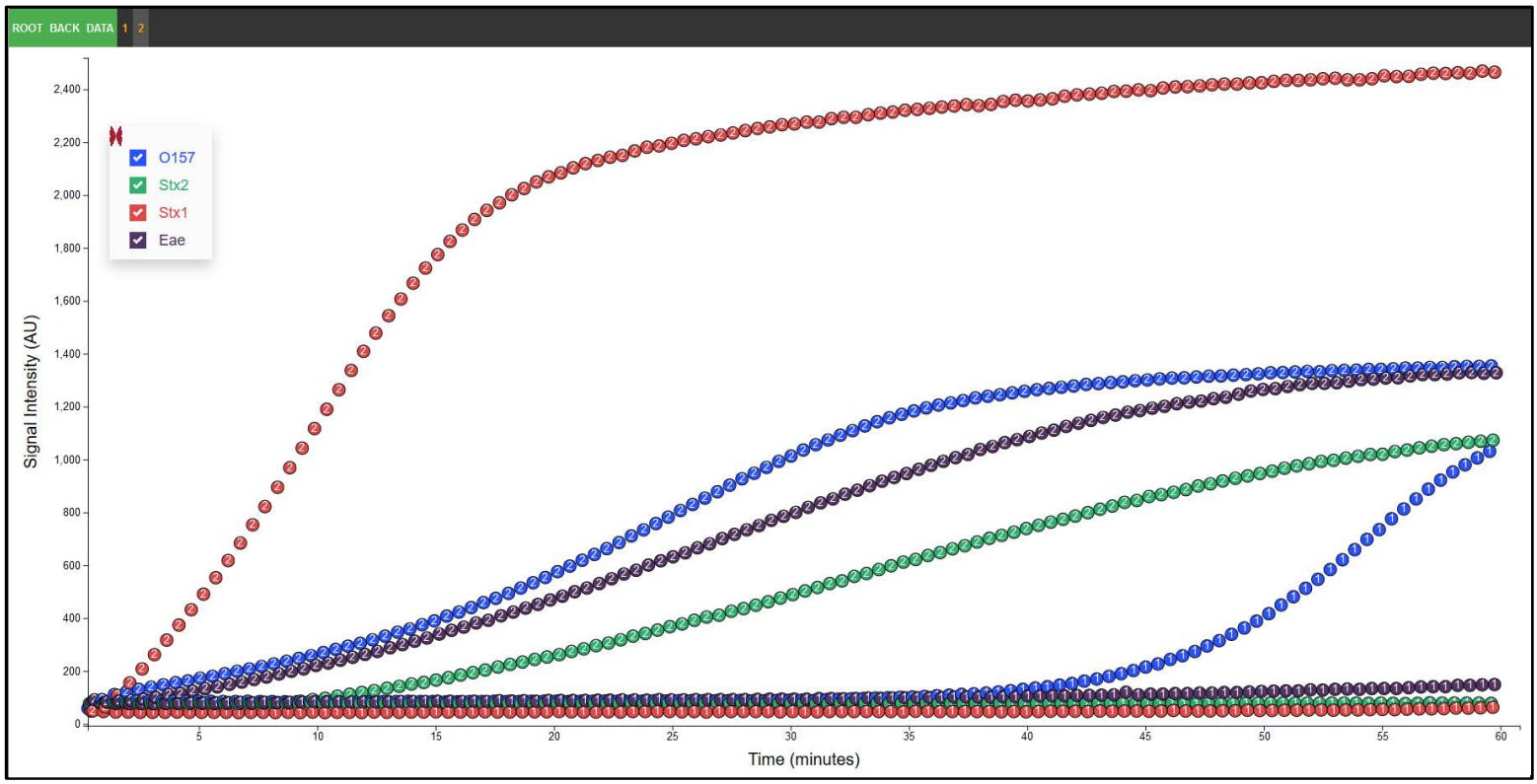


Panel B



7. Four (4) Target Test for the Detection of O157:STEC

In this test, 4 specific probes that would detect O157 (rfbE-O antigen), Stx1, Stx2 and EaeA (intimin) were tested together in one reaction. This would confirm the presence of Shiga Toxin Producing E.coli (STEC) in a sample. Sample 2 is the positive control, sample 1 is the background control. Note the non-specific background from the O157 target in the background control. DNA was purified using MagicTip™ method.



Appendix A – Safety

WARNING! GENERAL SAFETY AND RISK MITIGATION. Using this product in a manner not specified in the user documentation may result in personal injury or damage to the instrument or device. Ensure that anyone using this product has received instructions in general safety practices for laboratories and the safety information provided in this document.

- Before using any instrument device or product, read and understand the safety information provided in the user documentation provided by the manufacturer of the instrument or device.
- Before handling chemicals, read and understand all applicable Safety Data Sheets (SDSs) and use appropriate personal protective equipment. To obtain SDSs, see the MatMaCorp website, at www.matmacorp.com.

WARNING! USE NEAR WATER SOURCES. Do not use this product in locations that can be submerged by water.

Electrical Safety Information

1. Compliance is required with respect to voltage, frequency, and current requirements indicated on the manufacturer's label. Connection to a different power source than those specified may result in improper operation, damage to the equipment or pose a fire hazard if the limitations are not followed.
2. There are no operator serviceable parts inside this equipment. Service should be provided only by a qualified service technician.
3. This equipment is provided with a detachable power cord which has an integral safety ground wire intended for connection to a grounded safety outlet.
    a. Do not substitute the power cord with one that is not the provided approved type. Never use an adapter plug to connect to a 2-wire outlet as this will defeat the continuity of the grounding wire.
    b. The equipment requires the use of the ground wire as a part of the safety certification, modification or misuse can provide a shock hazard that can result in serious injury or death.
    c. Contact a qualified electrician or the manufacturer if there are questions about the installation prior to connecting the equipment.
    d. Protective earthing is provided by Listed AC adapter. Building installation shall provide appropriate short-circuit backup protection.
    e. Protective bonding must be installed in accordance with local national wiring rules and regulations.

Symbols on Your Solas 8™

Safety Symbols

Some symbols are found on the Solas 8™ to warn against potential hazards and convey important safety information. In this document, the hazard symbol is used along with one of the following user attention words:

- **CAUTION** – Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
- **WARNING** – Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.
- **DANGER** – Indicates and imminently hazardous situation that, if not avoided, will result in death or serious injury.

Symbol	Meaning
	Caution, risk of danger Consult the manual for further safety information.
	Caution, hot surface
I	ON
O	OFF

Regulatory Marks

Conformity mark	Description
CE	Indicates conformity with European Union requirements for safety and electromagnetic compatibility. CE marking on this product represents the product is in compliance with all directives that are applicable to it.
FC	Indicates conformity with the United States of America's FCC requirements for electromagnetic compatibility. US Code of Federal Regulation, Title 47, FCC Part 15.
RoHS	Indicates conformity with European Community Directive 2011/65/EU, which regulates the use of hazardous substances.
	Indicates conformity with European Community Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

RoHS/WEEE Compliance Statement

English

European Directive 2002/96/EC requires that the equipment bearing this symbol on the product and/or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams. It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities. Correct disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about the disposal of your old equipment, please contact your local authorities, waste disposal service, or the shop where you purchased the product.

Deutsch

Die Europäische Richtlinie 2002/96/EC verlangt, dass technische Ausrüstung, die direkt am Gerät und/oder an der Verpackung mit diesem Symbol versehen ist , nicht zusammen mit unsortiertem Gemeindeabfall entsorgt werden darf. Das Symbol weist darauf hin, dass das Produkt von regulärem Haushaltmüll getrennt entsorgt werden sollte. Es liegt in Ihrer Verantwortung, dieses Gerät und andere elektrische und elektronische Geräte über die dafür zuständigen und von der Regierung oder örtlichen Behörden dazu bestimmten Sammelstellen zu entsorgen. Ordnungsgemäßes Entsorgen und Recyceln trägt dazu bei, potentielle negative Folgen für Umwelt und die menschliche Gesundheit zu vermeiden. Wenn Sie weitere Informationen

zur Entsorgung Ihrer Altgeräte benötigen, wenden Sie sich bitte an die örtlichen Behörden oder städtischen Entsorgungsdienste oder an den Händler, bei dem Sie das Produkt erworben haben.

Español

La Directiva 2002/96/CE de la UE exige que los equipos que lleven este símbolo en el propio aparato y/o en su embalaje no deben eliminarse junto con otros residuos urbanos no seleccionados. El símbolo indica que el producto en cuestión debe separarse de los residuos domésticos convencionales con vistas a su eliminación. Es responsabilidad suya desechar este y cualesquiera otros aparatos eléctricos y electrónicos a través de los puntos de recogida que ponen a su disposición el gobierno y las autoridades locales. Al desechar y reciclar correctamente estos aparatos estará contribuyendo a evitar posibles consecuencias negativas para el medio ambiente y la salud de las personas. Si desea obtener información más detallada sobre la eliminación segura de su aparato usado, consulte a las autoridades locales, al servicio de recogida y eliminación de residuos de su zona o pregunte en la tienda donde adquirió el producto.

Français

La directive européenne 2002/96/CE exige que l'équipement sur lequel est apposé ce symbole sur le produit et/ou son emballage ne soit pas jeté avec les autres ordures ménagères. Ce symbole indique que le produit doit être éliminé dans un circuit distinct de celui pour les déchets ménagers. Il est de votre responsabilité de jeter ce matériel ainsi que tout autre matériel électrique ou électronique par les moyens de collecte indiqués par le gouvernement et les pouvoirs publics des collectivités territoriales. L'élimination et le recyclage en bonne et due forme ont pour but de lutter contre l'impact néfaste potentiel de ce type de produits sur l'environnement et la santé publique. Pour plus d'informations sur le mode d'élimination de votre ancien équipement, veuillez prendre contact avec les pouvoirs publics locaux, le service de traitement des déchets, ou l'endroit où vous avez acheté le produit.

Italiano

La direttiva europea 2002/96/EC richiede che le apparecchiature contrassegnate con questo simbolo sul prodotto e/o sull'imballaggio non siano smaltite insieme ai rifiuti urbani non differenziati. Il simbolo indica che questo prodotto non deve essere smaltito insieme ai normali rifiuti domestici. È responsabilità del proprietario smaltire sia questi prodotti sia le altre apparecchiature elettriche ed elettroniche mediante le specifiche strutture di raccolta indicate dal governo o dagli enti pubblici locali. Il corretto smaltimento ed il riciclaggio aiuteranno a prevenire conseguenze potenzialmente negative per l'ambiente e per la salute dell'essere umano. Per ricevere informazioni più dettagliate circa lo smaltimento delle vecchie apparecchiature in Vostro possesso, Vi invitiamo a contattare gli enti pubblici di competenza, il servizio di smaltimento rifiuti o il negozio nel quale avete acquistato il prodotto.

Industry Canada

This Class A digital apparatus complies with Canadian ICES-003.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

1. this device may not cause interference, and

2. this device must accept any interference, including interference that may cause undesired operation of the device.

Industrie Canada

Cet appareil numérique de la classe A est confrome à la norme NMB-003 Canada.

Pour réduire le risque d'interférence aux autres utilisateurs, le type d'antenne et son gain doivent être choisies de façon que la puissance isotrope rayonnée équivalente (PIRE) ne dépasse pas ce qui est nécessaire pour une communication réussie.

Cet appareil est conforme à la norme RSS Industrie Canada exempts de licence norme(s). Son fonctionnement est soumis aux deux conditions suivantes:

1. cet appareil ne peut pas provoquer d'interférences et

2. cet appareil doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

Solas 8™ Installation Checklist

To ensure the installation of your Solas 8™ goes as smoothly as possible:

Please ensure that there is appropriate space for your Solas 8™ and the Solas 8™ power supply. It is recommended that the space you select is in a dry environment, near a computer so that you can utilize the MatMaCorp Graphics Viewer more easily. The space required is approximately 10" x 11". It is recommended to place the Solas 8™ within 6 feet of the nearest power outlet.

- 10" x 11" / 36cm x 43cm (Width x Depth) or greater bench space for your Solas 8™
  - It is suggested that if you are running more than one Solas 8™ next to each other that you have 4" / 10cm of empty space on both the right and left sides of the equipment to allow for airflow.
- Solas 8™ is within 6 feet / 2 meters of the nearest power outlet

Please contact your IT department to allow your Solas 8™ to connect to the network. This is to ensure your Solas 8™ equipment will receive all updates, will ensure any potential remote troubleshooting steps are completed smoothly, and will allow you to access the Graphics Viewer.

- Your laptop or other computer is connected to the same network as your Solas 8™, or is otherwise allowed to view the Solas 8™ over TCP/80.
  - This will enable access to the Graphics Viewer
- The Solas 8™ is allowed to establish an encrypted connection to *.matmacorp.net via TCP/22 and TCP/443.
  - This will allow your Solas 8™ to receive load-balanced protocol updates and, when the end user allows, to enable remote support. For more information on enabling and disabling remote support, please see the Solas 8™ User Manual at www.matmacorp.com
- It is suggested but not required to use a wired connection with DHCP enabled.
- If the Solas 8™ will be connected to your wireless network, please have the network name and wireless network password available.

Appendix C – Contacting MatMaCorp

6400 Cornhusker Highway, Suite 300
Lincoln, Nebraska, USA 68507

Phone Support: +1-(402)-387-7900, 9am to 5pm Monday through Friday, US Central Time.

Email Support: support@matmacorp.com.

Please have your Solas 8™ connected to a wired network (if possible) with internet access and have your device's serial number available when you call. The serial number can be found on the placard attached to the underside of the Solas 8™ and will start with "sol8".

There are no user-serviceable components inside your Solas 8™. Please do not open your Solas 8™, as this may void your warranty.