



MiniCapt® Mobile Microbial Air Sampler

OPERATIONS MANUAL

MiniCapt® Mobile Microbial Air Sampler Operations Manual



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Quality Statement

The Quality Policy of Particle Measuring Systems is to strive to meet or exceed the needs and expectations of our customers, and to align the activities of all employees with the common focus of customer satisfaction through continuous improvement in the quality of our products and services.

Environmental Information

There are no potential means by which asbestos exposure is possible because there are no materials in the design or manufacture of the MiniCapt® Mobile Microbial Air Sampler containing asbestos.



This equipment must be properly disposed of at end-of-life by means of an authorized waste management system. Contact our Customer Response Center at (877) 475-3317 or (303) 443-7100 (International Telephone +01 3034437100) for dismantling and disposal information.

Battery Disposal

Lithium ion batteries are classified by the U.S. federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. Lithium ion batteries contain recyclable materials and are accepted by some of regional recycling programs.

Particle Measuring Systems, Inc. encourages users to check with their local municipality for lithium ion battery recycling. In North America, contact the Rechargeable Battery Recycling Corporation (RBRC) at www.rbrc.org. In Europe, contact the European Portable Battery Association. (EPBA) www.epbaeurope.org. For California consumers, contact Particle Measuring Systems, Customer Service Department at (877)-475-3317 for instructions on returning used, rechargeable batteries for reuse, recycling, or proper disposal at no cost.

Manual Conventions

WARNING

A warning in the text is used to notify the user of the potential for bodily injury or death.

CAUTION

A caution in the text is used to highlight an item that if not done, or incorrectly done, could damage the instrument and/or any materials or devices affected by the instrument.

— — NOTICE — —

A notice in the text is an instructional communication regarding requirements or policies issued by Particle Measuring Systems.

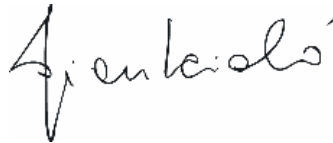
NOTE: A note in the text is used to highlight an item that is of operational importance to the user.

It is important that you observe cautions and warnings while performing the procedures described in this manual. Caution and warning labels are located on and inside the instrument to alert you to potentially hazardous conditions. Please familiarize yourself with this information.



If you have additional questions after reading this manual, navigate to the **Automated Hardware & Software Support** page on www.pmeasuring.com:
<http://www.pmeasuring.com/en/service-and-support/automated-hardware-software-support>

CE- Declaration of Conformity

Application of Council Directive(s):	2014 /30/EU, 2006/42/EC, RoHS 2011/65/EU		
Standard(s) to which Conformity is Declared:	EMC	EN 61326-1: 2013	
	Safety	EN 61010-1: 2010, 3rd Ed.	
Manufacturer's Name:	Particle Measuring Systems, Inc.		
Manufacturer's Address:	5475 Airport Boulevard Boulder, CO 80301 USA		
Manufacturer's Telephone/FAX:	+ 01 3034437100 / + 01 3034496870		
Distributor's Name:	Particle Measuring Systems, S.R.L.		
Distributor's Address:	Via di Grotte Portella 34 00044 Frascati (Roma) ITALY		
Distributor's Telephone/FAX:	+ 39 06 90530130 / + 39 06 9051315		
Type of Equipment:	Microbial Air Sampler		
Model No:	MiniCapt Mobile Microbial Air Sampler		
I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).			
Signature:	Signature:		
			
Full Name:	Scott MacLaughlin	Full Name:	Giovanni Scialo
Position:	Director of Engineering	Position:	Vice President Life Sciences
Place: Boulder	Date: July 28, 2020	Place: Rome	Date: July 28, 2020

CAUTION

All I/O cables and accessories must meet current factory specifications in order for this unit to remain in compliance with CE marking requirements. Consult the factory for details.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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Chapter 1

Introduction

The MiniCapt® Mobile Microbial Air Sampler is a portable biological sample collection instrument that, when paired with the BioCapt® Impactor sampler head, enables efficient biological sample collection.

Airflow into the sampler head is controlled by a mass flow volumetric controller which ensures an operating flowrate of 25 LPM, 50 LPM or 100 LPM as per model specs. The controller ensures all the fluid dynamic conditions are maintained throughout the sample, and allows for tubing and altitude corrections.

By means of Modbus TCP, the MiniCapt Mobile communicates with software packages such as FacilityPro® that store and display data, and allow the user to control the MiniCapt Mobile.

The MiniCapt Mobile also allows USB connection for data download to flash devices, printer connections, or barcode reader integration for upload of plate information into the comments field.



Figure 1-1 MiniCapt Mobile Microbial Air Sampler

Physical Description

Front

Touchscreen

- The touchscreen is located on the top of the MiniCapt Mobile chassis.
- The touchscreen is backlit when the unit is powered on.

LEDs

Two LEDs are located below the touchscreen:

- **Sampling LED:**
 - During sampling – LED solid GREEN
 - Not sampling – LED off
- **Status LED:**
 - Powered-on – LED solid GREEN
 - Warning – LED flashes YELLOW
 - Alarm – LED flashes RED

Connections

NOTE: If any modifications are made to the factory connectors, make sure to verify the 18 VDC and GND lines before connection to the MiniCapt unit.

All connections are found at the base of the unit's chassis.

Local Power Supply and Charge-Battery Connector

Power can be provided through the internal battery pack or the external AC to DC power supply which requires 100 - 240 V, 50/60 Hz AC power to produce the 18 VDC to power the unit. The internal battery pack can also be charged while installed inside the unit by connecting the unit to the external AC to DC power supply.

The **Power** button turns power **ON** and **OFF**.

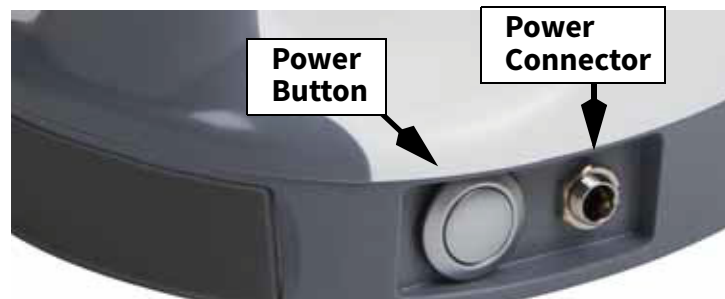


Figure 1-2 Power Button and Power Connector

Ethernet Port

The UTP Ethernet port near the base of the MiniCapt Mobile chassis (see **Figure 1-3**) allows the unit to communicate with FacilityPro software by connecting an Ethernet cable from the microbial sensor to the Ethernet hub. The communication is via Modbus.



Figure 1-3 USB port and Ethernet port

USB Port

The USB port (see **Figure 1-3**) is used for data download, printer connection or barcode reader integration.

Compressed Gas Connections and External Alarm

The **Compressed Gas Port** and the **Compressed Gas Solenoid Connector** towards the base of the MiniCapt Mobile chassis allows connections to the Compressed Gas Kit (see **Figure 1-4**).

The compressed gas solenoid connector can also be used to activate an external alarm or any 12 VDC device when the alarm activates. See **Chapter 8** Warnings and Alarms Setup or Contact Particle Measuring Systems for more information about connectivity to external alarm devices.

NOTE: External alarm cannot be activated when sampling occurs in “Compressed Gas Mode.”

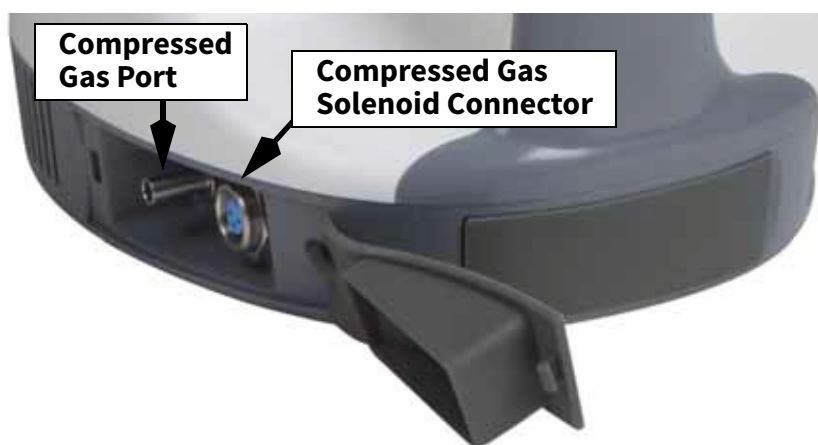


Figure 1-4 Compressed Gas Port and Compressed Gas Solenoid Connector

Exhaust Vents

Exhaust exits through the vents on the base of the MiniCapt Mobile chassis. An accessory for connecting tubing to the exhaust (P/N 1000019071) can be purchased from Particle Measuring Systems.



Figure 1-5 Exhaust Vents

General Characteristics

The MiniCapt Mobile Microbial Air Sampler makes it possible to pre-set sampling programs that can be activated from the touchscreen or via Modbus.

The data saved from previous samplings are stored in memory, which can then:

- be downloaded via the USB connection
- transferred to a software package via Modbus TCP
- printed using the USB connect for a printer

When there is not enough system memory to store data from a new sampling session, the oldest sample record is deleted and automatically overwritten.

Fluid-Dynamic System Characteristics

The MiniCapt Mobile uses a rotary blower that is able to sample a constant flow of 25, 50 or 100 LPM and is controlled by a volumetric flow controller.

Warning and Alarm Systems

The MiniCapt Mobile has operating alarms that automatically manage anomalous events:

- that do not compromise the sampling (warnings)
- that could compromise the sampling accuracy (alarms)

Both alarms and warnings are signaled if the event takes place for more than 10 seconds. Alarms and warnings are stored in memory by the system.

See **Chapter 8** Warnings and Alarms Setup.

Flowrate Monitoring Warning

The system checks to see if the difference between the working flow and the ideal flow (25 LPM, 50 LPM or 100 LPM) is within a 5% tolerance. If not, the unit will provide a visual warning and an audio warning, and will record the event. If the unit recovers, the audio and visual warning is removed but is still recorded.

Flowrate Monitoring Alarm

The system checks to see if the difference between the working flow and the ideal flow (25 LPM, 50 LPM or 100 LPM) is within tolerance. At 20% difference, the instrument will turn off and not continue to sample.

Audio and visual alarms are indicated until cleared by the user. The alarm is also recorded in the sample data.

Battery Charge Monitoring Alarm

When the MiniCapt Mobile is operated via battery power (i.e., power not supplied from the line current), the battery charge is checked in real time.

Two checks are used by the sampler to detect a discharged battery. A discharged battery will cause a visual indication and an alarm.

- The first battery check occurs when the instrument is started. This helps to avoid sampling with a battery that is insufficiently charged.
- The second battery check occurs regularly during the sampling. Whenever the battery charge drops outside the 10% tolerance the system provides a warning, but will continue to sample. If ignored, the sample may terminate and shut the system off.

The use of EEPROM (a resident data memory with non-volatile memory) ensures that no data stored in memory can be changed, altered or lost by an inefficient battery or by the complete absence of the battery.

Configuration

The MiniCapt Mobile requires configuration of the following operating parameters for sampling:

- Choice of sampling mode (Time or Volume)
 - (Time mode) Sampling duration
 - 25 LPM: from 1 to 400 minutes
 - 50 LPM: from 1 to 200 minutes
 - 100 LPM: from 1 to 100 minutes
 - (Volume mode) Sampling volume in liters from 1 to 9999 L
- Start delay: time delay before sample is started 0 to 139 minutes
- Number of sampling intervals: from 1 to 1000 intervals
- Waiting (pause) between an interval and the next, from 0 to 139 minutes

Available Memory

The MiniCapt Mobile Microbial Air Sampler is outfitted with non-volatile EEPROM memory that is able to store up to:

- 3,000 samples
- 400 areas/locations
- 50 recipes

NOTE: If there are 3,000 records in memory, the oldest record will be automatically discarded for storage of the new record.

Specifications

Table 1-1 MiniCapt Mobile Microbial Air Sampler Specifications

		25M	50M	100M
Sampling flowrate		25 Liters/minute	50 Liters/minute	100 Liters/minute
Battery (Lithium ion) ¹		12 hours	7 hours	6 hours
Power		18 VDC, 3.9 A Battery: Rechargeable Lithium Ion battery pack Nominal Voltage: 14.8 VDC Capacity: 6400 mAh Manufacturer P/N WP-CVI-03 External AC to DC Power Supply: PEAD72-13-1-B18 AC Input: 100-240V~, 2.0A, 50-60 Hz DC Output: 18 VDC, 3.78 A AC input voltage fluctuation shall not exceed +/- 10%		
Memory		3,000 samples; 400 Areas/Locations; 50 Recipes		
Sampling modes		Volume or Time; Interval sampling		
Sampling interval	Time:	1 – 400 min	1 – 200 min	1 – 100 min
	Volume:	1 – 9999 L	1 – 9999 L	1 – 9999 L
Agar Plate		Diameter: 86 - 92 mm		
		Volume: 18 - 32 ml		
		Depth: 3 - 6 mm		
Communication		Modbus TCP; USB for data download; USB for printer connection		
Display		4.3” VGA (480 x 272) LCD with touchscreen		
Display Languages		English, French, German, Italian, Japanese, Korean, Spanish, Chinese (traditional or simplified), Russian, Portuguese		
Dimensions (h, w, d)		10.2 x 5.7 x 5.9 in (26.0 x 14.5 x 15.0 cm)		
Weight		4.6 lb (2.1 kg)		
Operating environment		Temperature: 32 - 104 °F (0 - 40 °C) Humidity: 10 – 90% RH		
Maximum altitude		6,562 ft (2000 m)		
Calibration interval		Recommended every 12 months		
Installation Requirements				
		Indoor use only Pollution degree 2 Over-voltage Category I Ordinary Protection (Not protected against harmful ingress of moisture.) External AC to DC Power Supply: Over-voltage Category II Class I Equipment (Electrical earth ground from the mains power source to the product input is required for safety.)		

Table 1-1 MiniCapt Mobile Microbial Air Sampler Specifications

	25M	50M	100M
Sampler Head			
Materials	AISI 316L Stainless Steel		
Number of inlets	20 (precision-cut slits)		
Type	25/50 LPM and 100 LPM		
Accessories			
Isolator Kit, including the Isolator Stand and Impactor (no lid, clamp and gasket)			
	P/N 90790043	P/N 90790043	P/N 90790044
Compressed Gas Kit			
	P/N 90790052	P/N 90790050	P/N 90790051
Remote Sampling ISP			
	P/N 90790045	P/N 90790046	P/N 90790047

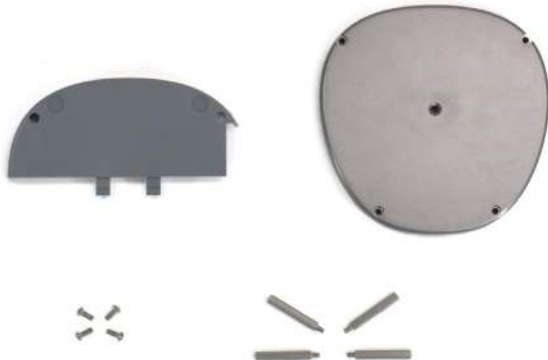
Table 1-1 MiniCapt Mobile Microbial Air Sampler Specifications

	25M	50M	100M
Remote Sampling Top Adapter with 3/4-in Tri-clamp Connection to BioCapt or BioCapt Single-Use			
	P/N 90790048		
	NOTE: BioCapt or BioCapt Single Use not included.		
MiniCapt Mobile Spare Impactor Head			
	P/N 1000019036	P/N 1000019036	P/N 1000019035
Spare Transparent Sterile Filter for the Compressed Gas Kit Exhaust <i>Standard and Gamma Irradiated Versions</i>			
	Standard: P/N FL37 Gamma Irradiated: P/N 1000021454		
MiniCapt Transportation Case			
	P/N 1000021319		

Table 1-1 MiniCapt Mobile Microbial Air Sampler Specifications

	25M	50M	100M
MiniCapt Power Supply/ Battery Charger			
	P/N 1000019008		
MiniCapt Lithium Battery Pack			
	P/N 1000019006		
Thermal Printer Kit			
	P/N 90790070		
Thermal Paper			
	1000000975		

Table 1-1 MiniCapt Mobile Microbial Air Sampler Specifications

	25M	50M	100M
Mounting Base Kit			
	P/N 90790072		
Barcode Reader			
	P/N 90790071		
Spare Red Silicone Rubber O-ring			
	P/N 1000021241		
Spare Impactor Head Lid Cover			
	P/N 1000019051		
MiniCapt IQ/OQ Validation Protocol	P/N 1000021474		
DataAnalyst Software	P/N 450800		

Chapter 2

Unpacking and Installation

Unpacking Instructions

Inspecting for Any Shipping Damage

Before you begin unpacking the MiniCapt Mobile Microbial Air Sampler, perform a visual inspection to see if the shipping container was damaged during shipping.

If the shipping container is damaged, STOP unpacking and notify the shipper and Particle Measuring Systems at 1-877-475-3317, or email to support@pmeasuring.com. Follow any instructions you receive on how to proceed.

Unpacking

>> To unpack the MiniCapt Mobile Microbial Air Sampler:

1. Carefully open the container and remove the MiniCapt Mobile Microbial Air Sampler.
2. Ensure that all components listed in the following section are included, and inspect each item for damage. When handling the impactor head, wear gloves to prevent finger residue on the stainless steel (see **Appendix E**, Cleaning Procedures).
3. If any components are damaged, immediately notify the shipper and Particle Measuring Systems.
4. After you have determined that the shipment is undamaged, store the packing materials for future shipping needs. Warranties may not apply if return shipping containers are inadequate.

Packing List

Review the Packing List sent with your shipment to ensure that all the items listed are included in your shipment. If any items are missing, contact Particle Measuring Systems Customer Service Center at (877) 475-3317 or (303) 443-7100.

A packing list is provided in **Table 2-1** as an example only. The list included with your shipment will be specific to your order and the model ordered.

Table 2-1 Sample Packing List^a

Item	Quantity
MiniCapt Mobile Microbial Air Sampler	1
Impactor Sampler Head	1
Lithium Ion Battery Pack	1
Power Supply	1

- a. Refer to the actual Packing List enclosed with your shipment.

Accessories

If accessories are purchased, the following items may have been shipped.

Table 2-2 Accessories for the MiniCapt Mobile Microbial Air Sampler

Accessory	Part Number
Isolator Kit for 25 LPM, 50 LPM	90790043
Isolator Kit for 100 LPM	90790044
Remote Sampling ISP Kit for 25 LPM	90790045
Remote Sampling ISP Kit for 50 LPM	90790046
Remote Sampling ISP Kit for 100 LPM	90790047
Remote Sampling top	90790048
Compressed Gas Kit for 25 LPM	90790052
Compressed Gas Kit for 50 LPM	90790050
Compressed Gas Kit for 100 LPM	90790051
BioCapt Single-Use Remote Sampling Kit 25/50 LPM	90790053
1/2" barb fitting to 3/4" Tri-Clamp connection for 25 LPM, 50 LPM	90790056
3/4" barb fitting to 3/4" Tri-Clamp connection for 100 LPM	90790057
3/4" Tri-Clamp clamp	90790058
3/4" Tri-Clamp gasket	90790059
BioCapt Single-Use Horizontal Mounting Plate Bracket with 3/4" Tri-Clamp	90790060
Thermal printer Kit	90790070
Wasp Barcode reader	90790071
Mounting Base Kit	90790072
DataAnalyst Software	450800
1/2" Polyurethane tubing	1000009341
3/4" Polyurethane tubing	1000012960
Thermal printer spare pieces	
- PR, R datamax Microflash 2TE	1000021246
- CD, R, Power Microflash 2TE	1000021346
- CD, R, USB Microflash 2TE	1000021347

Items you Need to Provide

If the following items were not included, you will need to provide:

- Tri-clamp
- Tri-clamp gasket
- Tri-clamp to barb fitting $\frac{3}{4}$ "
- Tri-clamp to barb fitting $\frac{1}{2}$ "
- Remote sampling adaptor

Installation

The following instructions are included to guide you through the installation process. Please pay close attention to the **NOTE**, **CAUTION**, and **WARNING** text.

NOTE: Please refer to **Appendix E Cleaning Procedures** before the sampler's first use.

Installation includes the following steps:

- Selecting an appropriate location (see **Select a Location** on page 2-4).
- Positioning or mounting the unit.
- Installing the battery (see **Install the Battery Pack** on page 2-5).
- Connecting the power supply for main operation or charging (see **Connect the Power Supply** on page 2-6).
- Connecting a communications cable (if applicable).
- Adjusting the plate height and width (see **Adjust the Plate Height in the Plate Holder** on page 2-14).
- Connecting sample tubing or sample probe (as applicable).

Select a Location

When choosing the location for the MiniCapt Mobile Microbial Air Sampler(s), consider the following to improve the utility of the unit.

- **Sample Point**

Position the MiniCapt to ensure that the sampler head is pointed toward the airflow.

CAUTION

Do NOT use the MiniCapt Mobile Microbial Air Sampler with sample tubing greater than the following lengths:

- 5 meters long for the 25 LPM and 50 LPM units
- 3 meters long for the 100 LPM unit

The above lengths indicate total amount of tubing used. There should be no more than 2 meters of upstream tubing used.

Lengths greater than the designated distance can cause the following negative effect:

A decreased flow through the sample chamber, resulting in inaccurate microbial collection.

- **Accessibility**

The MiniCapt should be readily accessible for connecting and disconnecting cables, fittings and tubing as required.

- **Interference with existing equipment**

Installation of the instrument into equipment should allow for ease of access to the equipment and not hinder operations.

- **Visibility**

The MiniCapt's touch screen should be visible during sampling for sampling and alarm notifications.

- **Cables**

Any cables used during sampling or recharging of the battery should reach without strain.

- **Environmental conditions**

The MiniCapt should be located in an environment consistent with its temperature, humidity, altitude, and other relevant specifications.

- **Electromagnetic interference**

The MiniCapt should be located away from strong electromagnetic fields.

Install the Battery Pack

The battery pack will be installed inside the base of the MiniCapt Mobile Microbial Air Sampler (see **Figure 2-1** and **Figure 2-2**).



Figure 2-1 Bottom of the MiniCapt Mobile Microbial Air Sampler



Figure 2-2 Battery chamber with the cover removed

>> To install the battery pack:

1. Be sure the MiniCapt is not connected to Mains power.
2. Lay the MiniCapt on its side.
3. Slide the battery chamber lid off.
4. Connect the black plug on the battery pack to the black plug in the battery chamber.
5. Push the cord and battery into the battery chamber.
6. Slide the battery chamber lid back on.

Connect the Power Supply

WARNING

Ensure that the external AC to DC power supply has a proper earth ground supply cord.

>> To connect the power supply:

1. Plug the power supply cord into Mains power.
2. Plug the other end of the power supply cord into the **Power Connector** on the lower-right side of the MiniCapt (see **Figure 2-3**).



Figure 2-3 Power Connector

Disconnect the Power Supply

>> To disconnect the power supply:

1. Unplug the power supply cord from Mains power.
– OR –
Unplug the power supply cord from the **Power Connector** on the lower-right side of the MiniCapt (see **Figure 2-3**).

Power Up the MiniCapt

>> To power the MiniCapt ON:

1. Be sure you have installed the battery as described on page 2-5.
2. Be sure you have connected the power supply cord to mains power and to the MiniCapt as described above.
3. Press the **Power** button on the lower-right side of the MiniCapt (see **Figure 2-3**).
4. After the MiniCapt has **Power**, the **Home** screen displays (see **Figure 2-4**).



Figure 2-4 Home screen

If the **Home** screen does not appear, test the power source and the power supply. If the power source, battery and power supply are installed correctly, but the unit still does not turn on, contact your Particle Measuring Systems technical support.

Charge the Battery

It is recommended to charge the unit for at least 4 hours before the first use.

The system operates off the battery for normal operations and will charge the battery when connected to main power through the AC/DC power supply. If main power is connected the unit will run off main power.

NOTE: If the battery is not sufficiently charged, the system may shutdown unless connected to AC power.

>> To charge the battery:

1. Install the battery as described on page 2-5.
2. Connect the power supply cord to Mains power and to the MiniCapt as described on page 2-6.
3. Turn on the MiniCapt as described on page 2-7.
4. Note the time of day so you will know when the MiniCapt has been connected to mains power for at least 4 hours.

Adjust the Plate Holder Diameter

If the agar plate you intend to use does not fit inside the plate holder brackets, you can adjust the brackets in the plate holder to increase or decrease its diameter. The MiniCapt Mobile can be used with an agar plate having an external diameter between 86 and 92 mm.

This procedure requires:

- A 1.5 mm hex driver
- An agar plate

WARNING



Remove power to the unit prior to removing sampler head.

>> **To adjust for the plate's diameter:**

1. Remove the sampler head (see **Figure 2-6**).

WARNING



After removing the sampling head, take care to ensure loose items are not dropped into the opening to the blower.



Figure 2-5 Sampler head on MiniCapt



Figure 2-6 Sampler head off of the MiniCapt



Figure 2-7 Sampler head removed

2. Remove the plate holder by rotating it counterclockwise until it comes off.

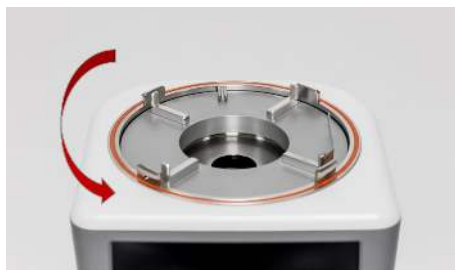


Figure 2-8 Rotate plate holder counterclockwise to remove it

3. Lay the plate holder on a flat surface (see **Figure 2-9**), bottom up.

Notice the bottom of the plate holder has socket head cap crews (see **Figure 2-10**) that match up with the brackets on the top of the plate holder.



Figure 2-9 Plate holder removed

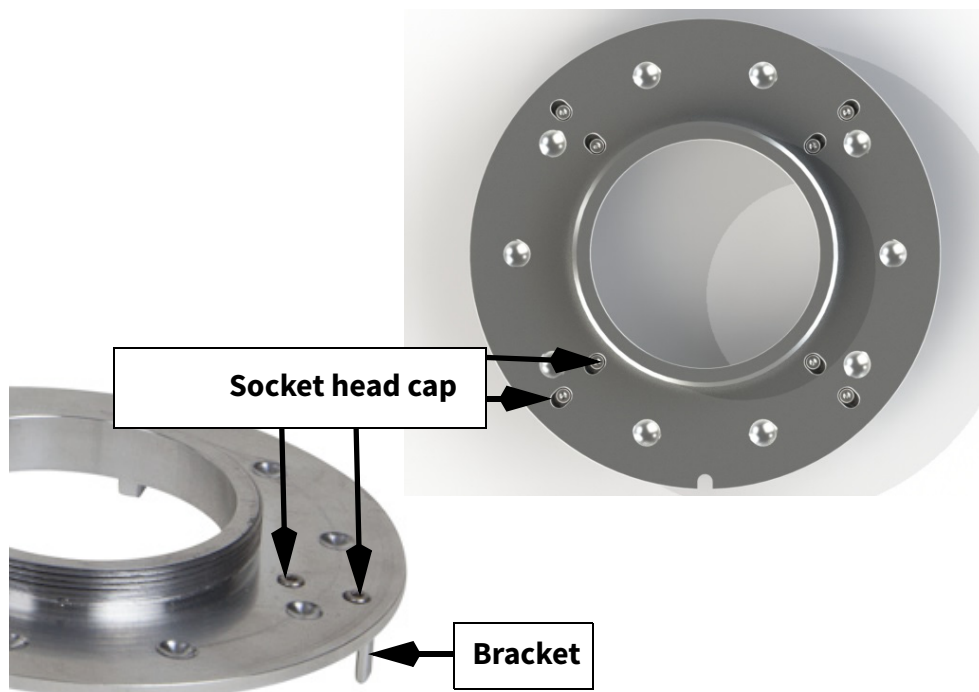


Figure 2-10 Plate holder bracket socket head cap screws

4. Depending on the size of your Petri plate, you will need to use a 1.5 mm hex driver to either:
 - Loosen the screws to allow each bracket limited movement across the plate holder, OR
 - Completely remove the screws to line up the brackets over the other set of holes. Then, leave the screws loose to allow each bracket limited movement across the plate holder.

The outer set of holes fits 86-89 mm diameter Petri plates, and the inner set fits 89 - 92 mm plates.

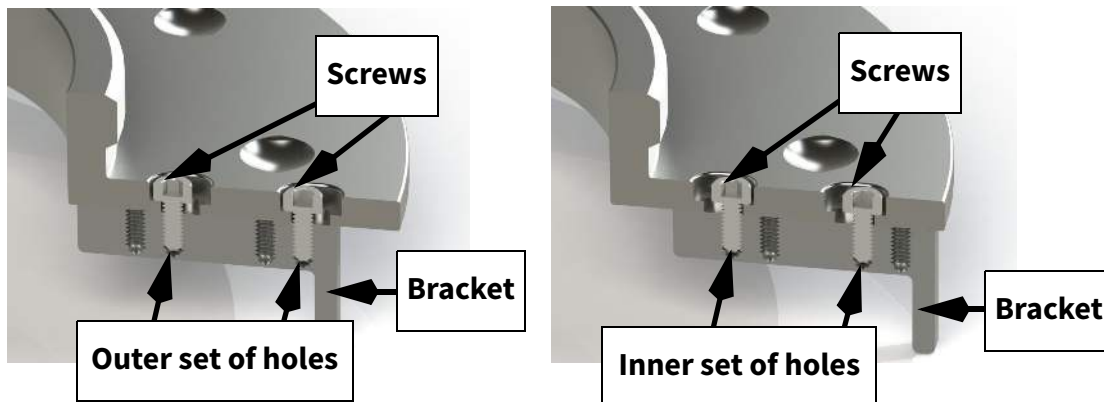


Figure 2-11 Outer (left) and inner (right) set of bracket holes

5. Flip the plate holder upright and place the Petri plate on the brackets.

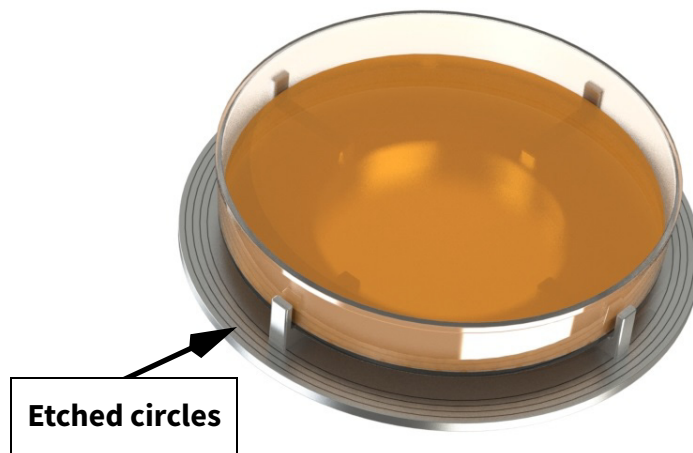


Figure 2-12 Petri dish placed on plate holder brackets

6. Center the dish with respect to the circles etched into the plate holder (see **Figure 2-12**) and move the brackets to hold the dish in that location. If the MiniCapt Mobile will be used to sample in the upright position (not horizontally), ensure the brackets allow the plate to lay flat against the plate holder.
7. Remove the dish and flip the plate holder, being careful not to move any of the brackets. Using the 1.5 mm hex driver, tighten all 8 socket head cap screws to hold the brackets in place.
8. If you are not using the MiniCapt Mobile to sample in a horizontal orientation, disregard this step. Flip the plate holder upright, and insert the dish again. Turn the plate holder over and loosen one bracket's screws enough to push the bracket inwards to fit tightly against the dish. Tighten the bracket's screws once again.
9. Reinstall the plate holder on the MiniCapt Mobile by turning clockwise (see **Figure 2-7** on page 2-10.)
10. Reinstall the sampler head. Plate diameter adjustment is complete.

NOTE: If the MiniCapt is to be used in a horizontal orientation (with the Petri dish on its side), extra care should be taken to ensure the dish is fully seated against the 4 brackets.

Adjust the Plate Height in the Plate Holder

To ensure the MiniCapt Mobile operates at its optimal performance, adjust the plate holder to ensure the agar plate is in the proper placement.

The MiniCapt Mobile can be used with any agar plate having the following dimensions:

- A **diameter** from 86 to 92mm
- An **agar volume** from 18 to 32ml
- An **agar depth** from 3 to 6mm

Plate height adjustments

WARNING



Remove power to the unit prior to removing sampler head.

>> To adjust for the plate height:

1. Remove the sampler head by turning counterclockwise.

WARNING



After removing the sampling head, take care to ensure loose items are not dropped into the opening to the blower.



Figure 2-13 Sampler head on MiniCapt



Figure 2-14 Sampler head off of the MiniCapt

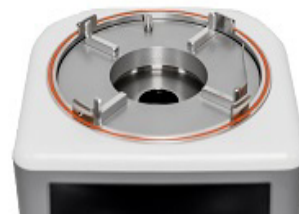


Figure 2-15 Sampler head removed

2. If you are using an instrument manufactured prior to January 2016, skip this step:
 - Unlock the adjustable plate by rotating the locking pin clockwise.

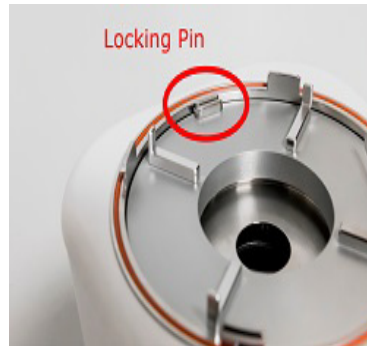


Figure 2-16 Locking pin of the adjustable plate

3. Turn the plate holder counterclockwise until it is flush with the top plane of the sampler (this is approximately 2-3 clicks from being loose).
 - If the plate is unscrewed completely and becomes loose, tighten clockwise until one or two clicks have been engaged.
4. Turn the plate holder clockwise for the following plate pour volumes:
 - **32 ml pour** – turn the plate holder 4 complete turns
 - **25 ml pour** – turn the plate holder 3 complete turns
 - **18 ml pour** – turn the plate holder 2 ½ turns
5. For fine adjustment:
 - a. Establish the setting from above.
 - b. Place the agar plate on the plate holder.
 - c. Remove the lid from the agar plate.



Figure 2-17 Agar plate on the plate holder

6. Check to see if the media contacts the underside of the MiniCapt sampler head.
7. If contact does not occur:
 - Raise the plate holder 1 click incrementally until contact is made (see **Figure 2-18**).

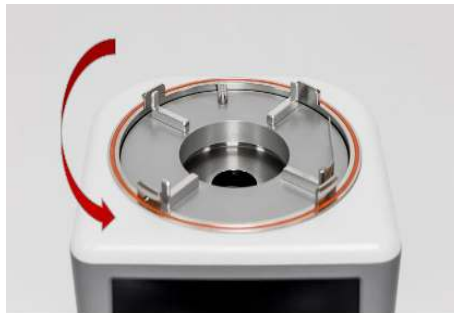


Figure 2-18 Rotate plate holder counterclockwise to raise it

8. Once contact is made, it is essential to lower the plate holder 5 clicks (0.5mm):
 - a. Remove the agar plate.
 - b. Rotate the plate holder clockwise (see **Figure 2-19**).

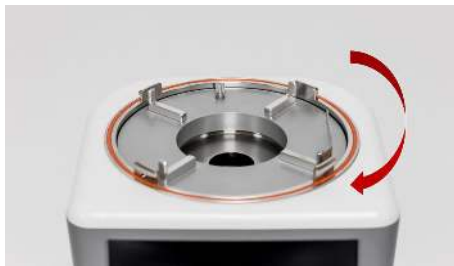


Figure 2-19 Rotate plate holder clockwise to lower it

9. Clean the MiniCapt sampler head and discard the test agar plate.

This procedure establishes the accurate sampler head position for the media type used, ensuring maximum collection efficiency.

Lock the Plate Holder

1. At the end of the sample plate height adjustment, secure the plate holder position by turning the locking pin counterclockwise only until it feels snug and the plate holder cannot be moved with a gentle push of fingers.
 - a. Use a flat screwdriver or a similar tool to ensure a secure lock.

Chapter 3

Display

The touchscreen on the MiniCapt Mobile Microbial Air Sampler is used to configure the instrument and create and run sampling recipes.

The fields and buttons on the **Home** screen and on the configuration screens are described in detail in this chapter.

Home Screen

When the instrument is first turned on, the **Home** screen appears (see **Figure 3-1**).

When the **Home** screen is not currently displayed, click  the **Home** button to return to the **Home** screen.

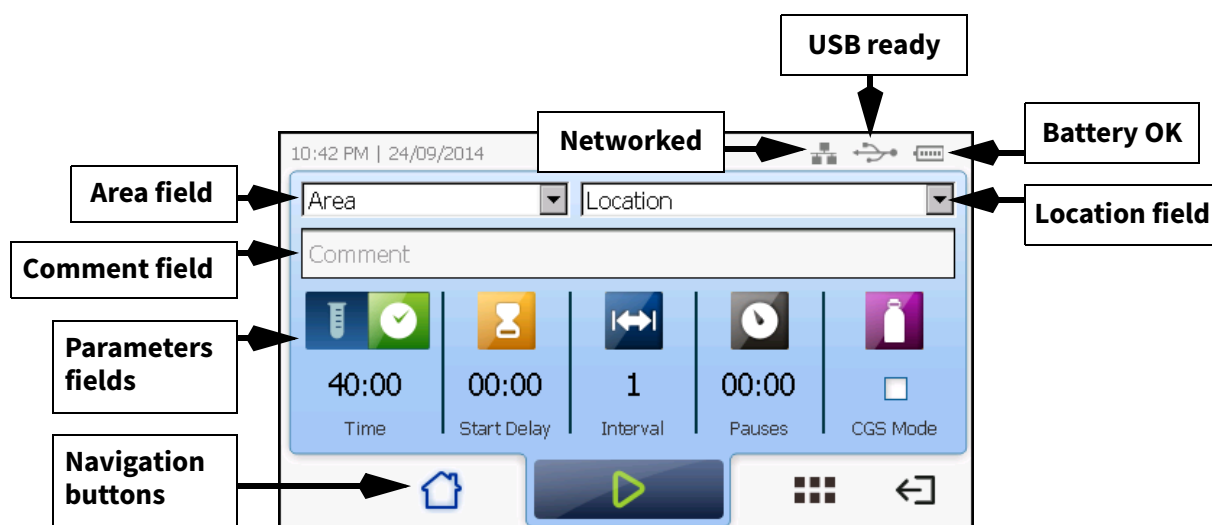


Figure 3-1 Home screen (**Time** view)

The current time and date appear at the top-left of the **Home** screen in the format **hh:mm AM or PM** and **dd/mm/yyyy** respectively.

The three fields at the top of the **Home** screen (**Area**, **Location**, **Comment**) are described in **Table 3-1** on page 3-2.

Table 3-1 Fields on the **Home** screen

Field	Description
Area list field	Select the name of the sampling area in which the instrument is being used. If no area names have been defined, select the blank and type in a name for the area. Area names are defined in the Configure Locations screen (described in Chapter 6 Locations and Areas.
Location list field	Select the name of the location within the sampling area. If no location names have been defined, select the blank and type in a name for the location. Location names are defined in the Configure Locations screen (described in Chapter 6 Locations and Areas
Comment field	Click in this field to define comments such as plate information. Scanning a barcode with the Barcode Reader accessory transfers the barcode number to this field.

The fields across the middle of the **Home** screen define the parameters for a sampling. These fields are described in **Table 3-2**.

Table 3-2 Parameters fields and check box on the **Home** screen

Button	Description
Time field – OR – 	Touch the clock to view the Time field. Displays the current setting for the sampling duration in minutes: • 25 LPM – from 1 to 400 minutes • 50 LPM – from 1 to 200 minutes • 100 LPM – from 1 to 100 minutes
Volume field 	Touch on the value to enter a different number of minutes and seconds (mm:ss) Touch the test tube to view the Volume field. Displays the current setting for the sampling volume in liters: • From 1 to 9999 liters
Start Delay field 	Touch on the value to enter a different number of liters. Displays the current setting for length of the delay between pressing the Start Sampling button and actual onset of sampling. • In minutes and seconds (mm:ss) • From 0 to 139 minutes Touch on the value to enter a different value.

Table 3-2 Parameters fields and check box on the **Home** screen (Continued)

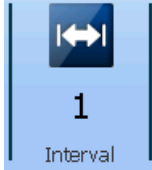
Button	Description
Intervals field 	Displays the current setting for the number of samples in a single run. From 1 to 1000 Touch on the value to enter a different value.
Pauses field 	Displays the current setting for the length of time between the intervals. - In minutes and seconds (mm:ss) - From 0 to 139 minutes Touch on the value to enter a different value.
☒ CGS Mode check box 	When checked ☒ , the MiniCapt will communicate with the compressed gas attachment.

Table 3-3 Buttons on the **Home** screen

Button	Description
 Home button	This button can be ignored on the Home screen because the button is BLUE not BLACK.
 Start Sampling button	Touch to start sampling. (See Chapter 4 Sampling.)
 Features Menu button	Touch to display the Features Menu screen, which has buttons for accessing the following configuration screens: - Recipes - Locations - Data - Users - Setup
 Exit button	Touch to exit out of security.

Features Menu Screen

The **Features Menu** screen (see **Figure 3-4**) has buttons for accessing the screens you will use to define configurations for the MiniCapt Mobile Microbial Air Sampler.



Figure 3-2 MiniCapt **Features Menu** screen

The buttons on the **Features Menu** screen are described in **Table 3-4**.

Table 3-4 Buttons on the **Features Menu** screen

Button	Description
 Recipe button	Touch to display the Recipes screen where you can view a list of existing sampling recipes and advance to the New Recipe screen or the Modify Recipe screen. See Chapter 5 Recipes.
 Location button	Touch to display the Locations screen where you can view a list of existing Location and Area definitions and advance to the New Location screen or the Modify Location screen. See Chapter 6 Locations and Areas.
 Data button	Touch to display the Data Submenu screen where you can advance to: - The Report Records screen for viewing or exporting stored sample data reports. - The Warning and Alarms screen for configuring warnings and alarms. See Chapter 8 Warnings and Alarms Setup.
 User button	Touch to display the Users screen where you can add, remove or modify user access. See Chapter 14 User Management.

Table 3-4 Buttons on the **Features Menu** screen (Continued)

Button	Description
 Setup button	Touch to display the Setup Menu screen where you can access the configuration screens for: • Alarm Comments See Chapter 8 Warnings and Alarms Setup, Alarm Comments on page 8-6. • Time and Date See Chapter 9 Time and Date Setup. • Network See Chapter 10 Network Communication. • Units See Chapter 12 Units for Measurements. • Import See Chapter 11 Import. • Export See Chapter 13 Export. • Sound See Chapter 8 Warnings and Alarms Setup • System Status See Chapter 15 System Status • Queue Setting See Chapter 16 Queue Size • Calibration Notification See View the Calibration Notification Screen on page 17-1in Chapter 17 Calibration • Calibrate Screen See View the Calibrate Screen on page 17-5 in Chapter 17 Calibration • Pressure Settings See Chapter 19 Maintenance and Performance Checks • Software Update See Software Update on page 3-9 • Language See Select the Display Language on page 3-6 • About See About Screen on page 3-14
 Back button	Return to the previous screen.
 Home button	Return to the Home screen.
 Features button	This button can be ignored on the Features Menu screen because the button is BLUE not BLACK.
 Exit button	Exit out of security.

Select the Display Language

The MiniCapt screens can be displayed in any of the following languages:

- Chinese (Simplified)
- Chinese (Traditional)
- English
- French
- Italian
- German
- Japanese
- Korean
- Portuguese
- Spanish

>> To select the language to display:

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 3-3**).
The **Features Menu** screen appears (see **Figure 3-4**).

TIP: To view the **Home** screen, touch  the **Home** button.

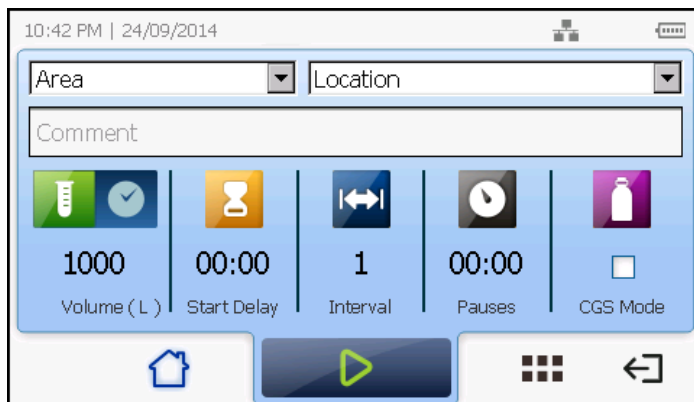


Figure 3-3 Home screen



Figure 3-4 Features Menu screen

2. Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** appears (see **Figure 3-5**).

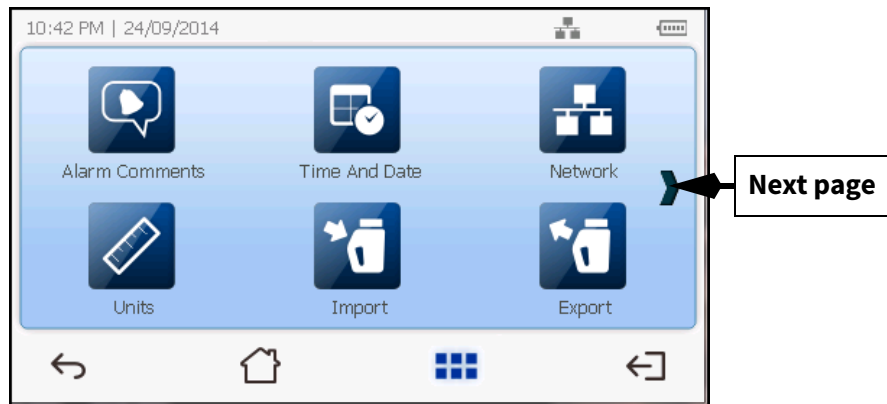


Figure 3-5 Setup Submenu screen

3. Touch  the **Next Page** button on the **Setup Submenu** screen (see **Figure 3-5**).

Page 2 of the **Setup Submenu** screen displays (see **Figure 3-6**).



Figure 3-6 Setup Submenu screen, page 2

4. Touch  the **Next Page** button on page 2 of the **Setup Submenu** screen (see **Figure 3-6**).

Page 3 of the **Setup Submenu** screen displays (see **Figure 3-7** on page 3-8).

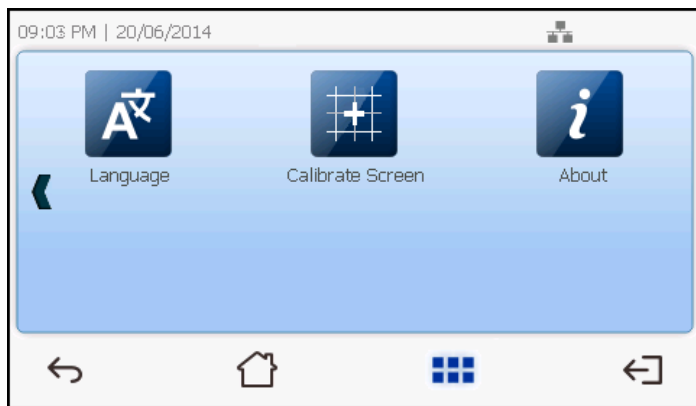


Figure 3-7 Setup Submenu screen, page 3

5. Touch  the **Language** button on page 3 of the **Setup Submenu** screen (see **Figure 3-7**).
The **Language** screen appears (see **Figure 3-8**).



Figure 3-8 Language screen

6. Touch the desired language on the **Language** screen.
 - Touch  the **Features Menu** button to return to the **Features Menu** screen.
 - Touch  the **Home** button to return to the **Home** screen.
7. The language you selected will be displayed in the screens.

Software Update

The **About** screen displays the software version currently installed (see **About Screen** on page 3-14).

>> To update software in the MiniCapt Mobile Microbial Air Sampler:

1. Prepare an external USB drive with the software program on it.
2. Insert the external USB drive into the USB port on the front of the MiniCapt base (see **Figure 3-9**).



Figure 3-9 USB port on the front of the MiniCapt base

3. On the **Home** screen, press  the **Features Menu** button (see **Figure 3-10**).
The **Features Menu** screen appears (see **Figure 3-11** on page 3-10).

TIP: To view the **Home** screen, touch  the **Home** button.

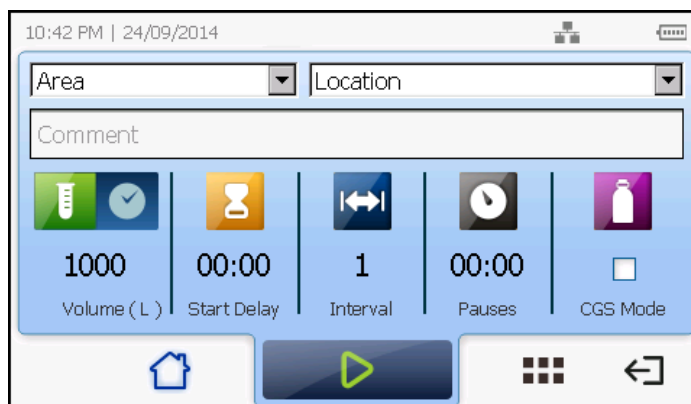


Figure 3-10 Home screen

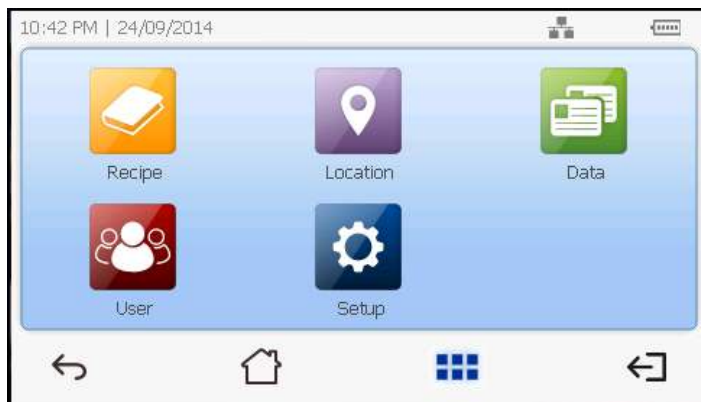


Figure 3-11 Features Menu screen

- a. Touch  the **Setup** button on the **Features Menu** screen (see **Figure 3-11**).
The **Setup Submenu** appears (see **Figure 3-12**).

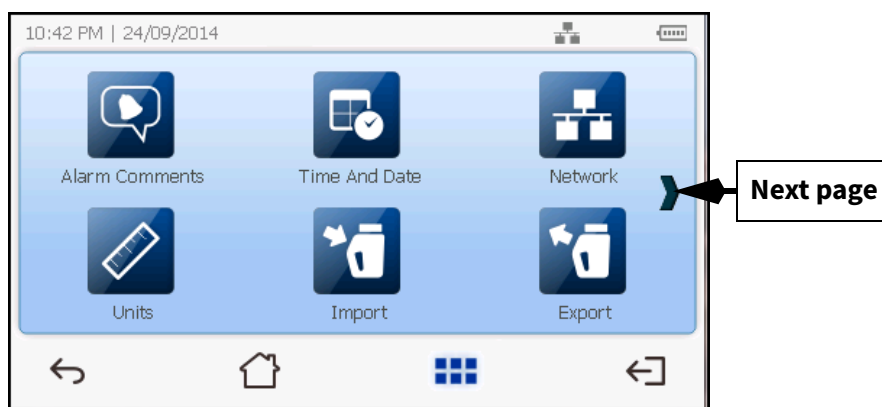


Figure 3-12 Setup Submenu screen

4. Touch  the **Next Page** button on the **Setup Submenu** screen (see **Figure 3-12**).
Page 2 of the **Setup Submenu** screen displays (see **Figure 3-13**).

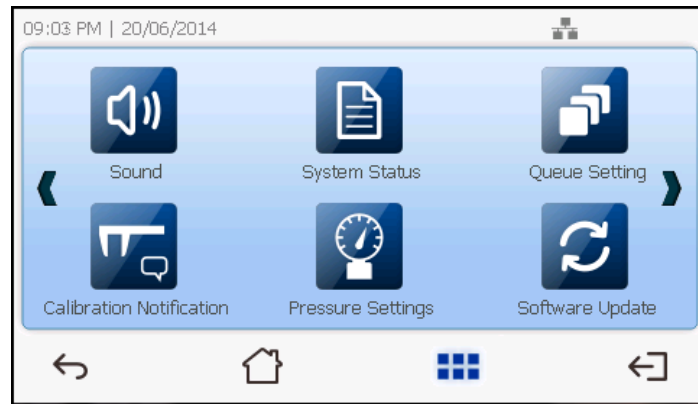


Figure 3-13 Setup Submenu screen, page 2

5. Touch  the **Software Update** button on Page 2 of the **Setup Submenu** screen (see **Figure 3-13** on page 3-11). The **Software Update** screen displays (see **Figure 3-14**).

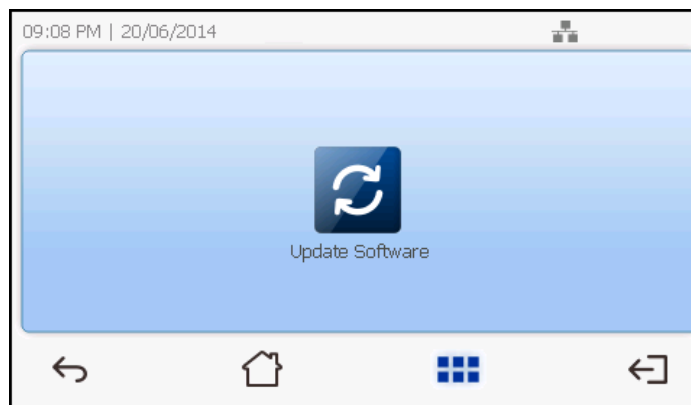


Figure 3-14 Software Update screen

6. Touch  the **Update Software** button on the **Software Update** screen (see **Figure 3-14**). The **Update Software** screen displays (see **Figure 3-15**)

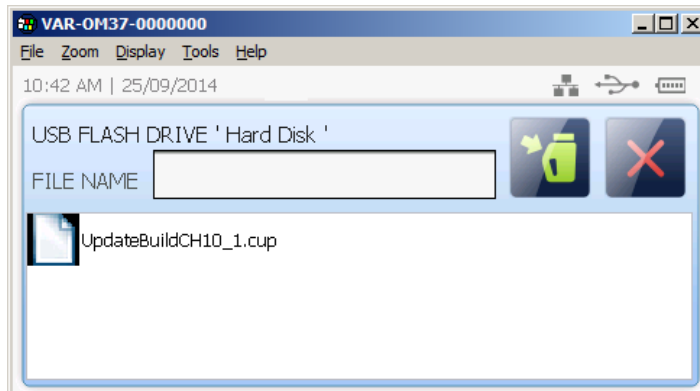


Figure 3-15 Update Software screen

7. In the **Update Software** screen, touch the software update file you want to run. The file choice appears selected (see **Figure 3-16** on page 3-12).

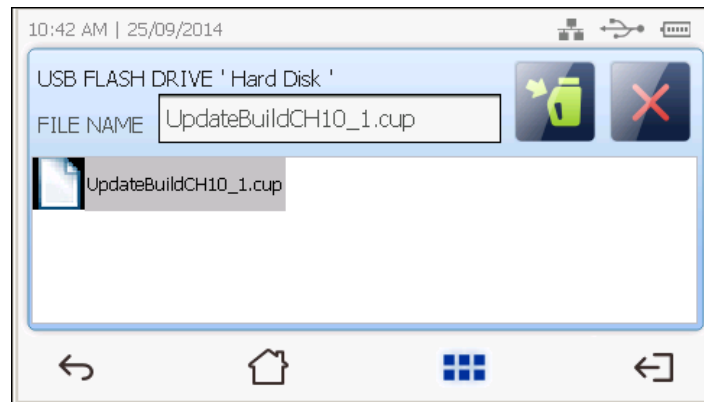


Figure 3-16 Update Software screen with a file selected

8. Touch  the **Upload** button on the **Update Software** screen to begin the update. The **Update Confirmation** screen displays (see **Figure 3-17**).

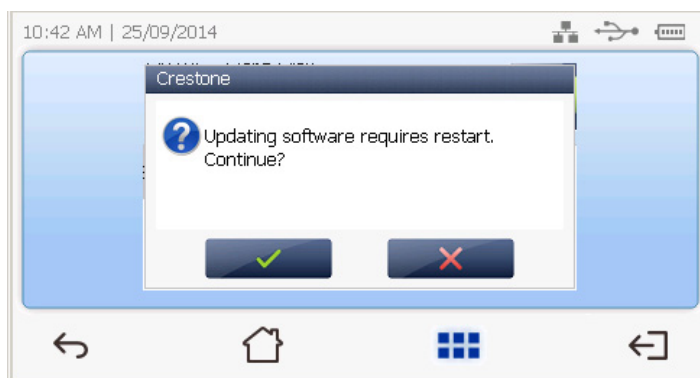


Figure 3-17 Update Confirmation screen

9. Touch  the **Checkmark** button in the **Update Confirmation** screen to begin the software update.
The hourglass symbol spins during the update process (see **Figure 3-18**).
10. When the hourglass symbol disappears, the MiniCapt will automatically reboot.

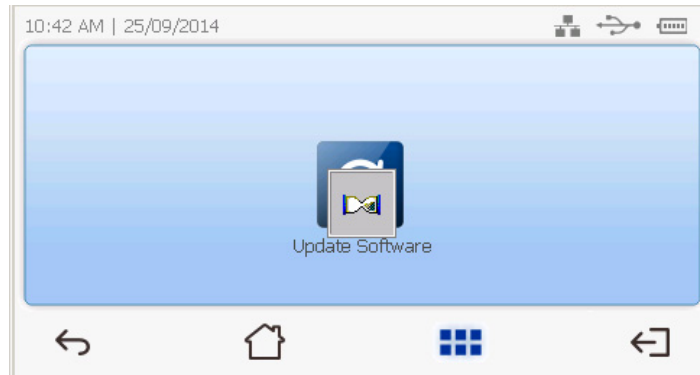


Figure 3-18 Hourglass symbol in **Update Software** screen while running update

About Screen

The **About** screen for the MiniCapt Mobile Microbial Air Sampler displays information about the software version currently installed.

>> **To view the About screen:**

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 3-3**).
The **Features Menu** screen appears (see **Figure 3-4**).

TIP: To view the **Home** screen, touch  the **Home** button.

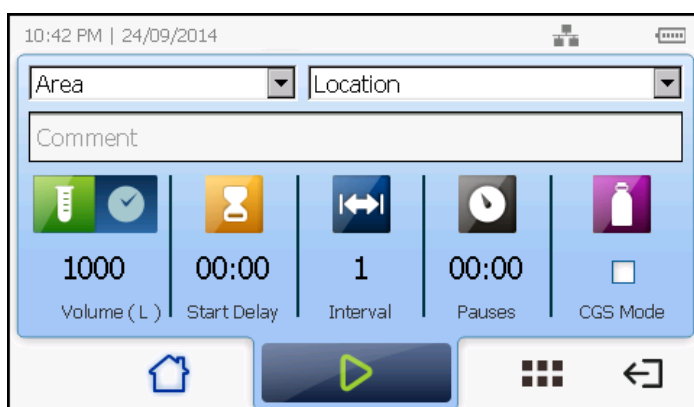


Figure 3-19 Home screen



Figure 3-20 Features Menu screen

2. Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** appears (see **Figure 3-5**).

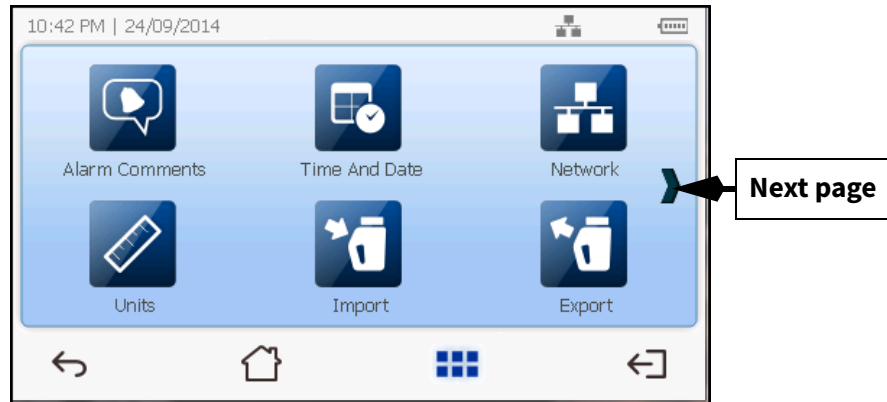


Figure 3-21 Setup Submenu screen

3. Touch  the **Next Page** button on the **Setup Submenu** screen (see **Figure 3-21**).

Page 2 of the **Setup Submenu** screen displays (see **Figure 3-22**).

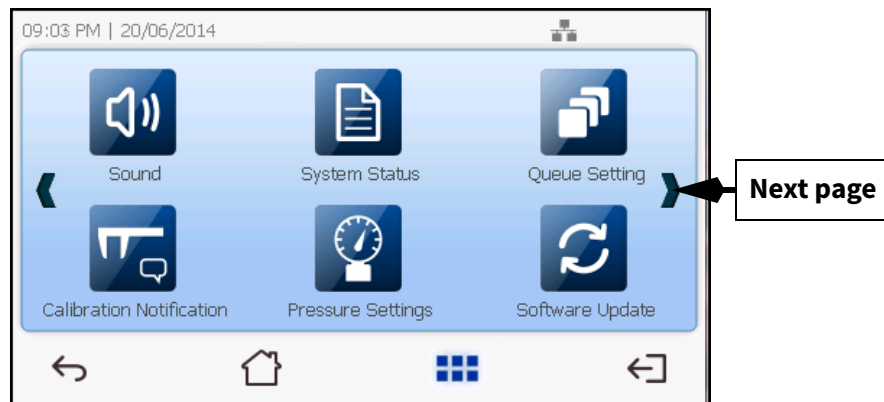


Figure 3-22 Setup Submenu screen, page 2

4. Touch  the **Next Page** button on page 2 of the **Setup Submenu** screen (see **Figure 3-22**).

Page 3 of the **Setup Submenu** screen displays (see **Figure 3-23**).

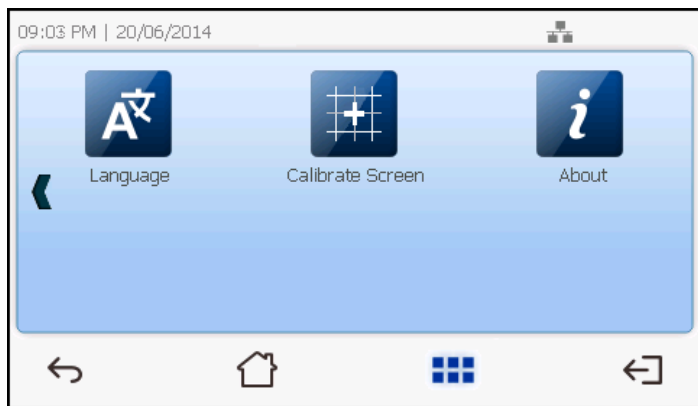


Figure 3-23 Setup Submenu screen, page 3

5. Touch  the **About** button on page 3 of the **Setup Submenu** screen (see **Figure 3-23** on page 3-16).
The **About** screen appears (see **Figure 3-24**).

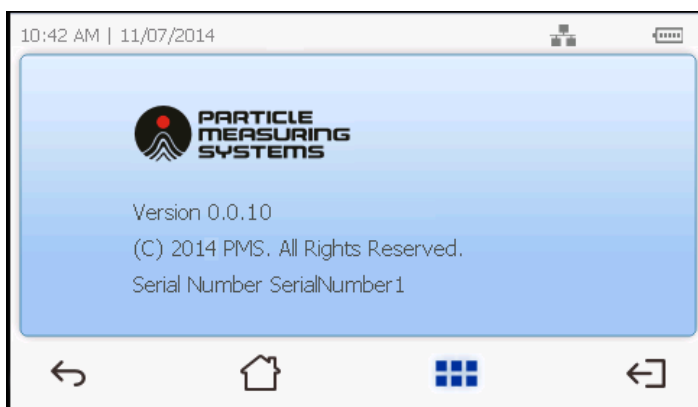


Figure 3-24 About screen showing software version number

Touch  the **Features Menu** button to return to the **Features Menu** screen.

-OR-

Touch  the **Home** button to return to the **Home** screen.

Chapter 4

Sampling

The basic steps for sampling with the MiniCapt Mobile Microbial Air Sampler are described in this chapter.

What You Need to Perform a Sampling

>> **To run a sample you will need the following items:**

- The MiniCapt installed as described in **Chapter 2** Unpacking and Installation, **Installation** on page 2-3.
- Definitions in the MiniCapt Mobile Microbial Air Sampler for:
 - A location (described in **Chapter 6** Locations and Areas).
 - An area (described in **Chapter 6** Locations and Areas).
 - A recipe (described in **Chapter 5** Recipes, **Set Up a New Recipe** on page 5-3).
- A sterile agar plate.

Load the Agar Plate

>> To load an agar plate into the MiniCapt:

TIP: Follow aseptic technique to load the agar plate into the MiniCapt.

1. Remove the sampler head (see **Figure 4-2**).

Sampler Head



Figure 4-1 Sampler head on MiniCapt

Figure 4-2 Sampler head off of MiniCapt

The plate holder will be exposed (see **Figure 4-3**).

WARNING



Remove power to the unit prior to removing sampler head.

WARNING



After removing the sampling head, take care to ensure loose items are not dropped into the opening to the blower.



Figure 4-3 Plate holder exposed

2. Place the agar plate on the plate holder (see **Figure 4-4**).



Figure 4-4 Agar plate on the plate holder with agar plate lid still in place

3. Remove the lid from the agar plate.
4. Place the sampler head on top of the agar plate (see **Figure 4-5**). Ensure the sample head is fully seated prior to sampling.



Figure 4-5 Sampler head on MiniCapt

5. Turn on the MiniCapt by pressing the **Power** button (see **Figure 4-6**).

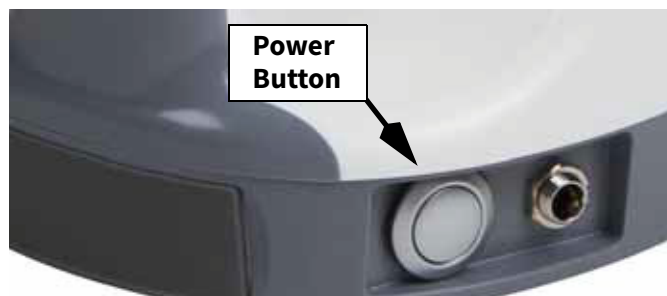


Figure 4-6 Power button and Power Connector port

6. When the MiniCapt is first turned on, the **Home** screen appears (see **Figure 4-7**).

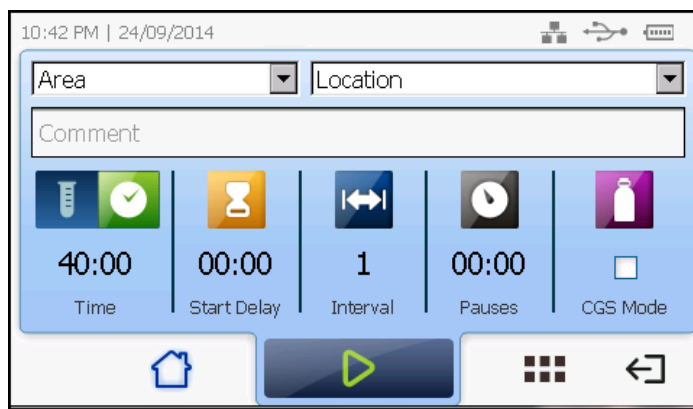


Figure 4-7 Home screen (**Time** view)

7. In the **Area** field at the top left of the **Home** screen, touch the down arrow button to display the list of available areas (see **Figure 4-8**).
8. Touch the area you want to use.

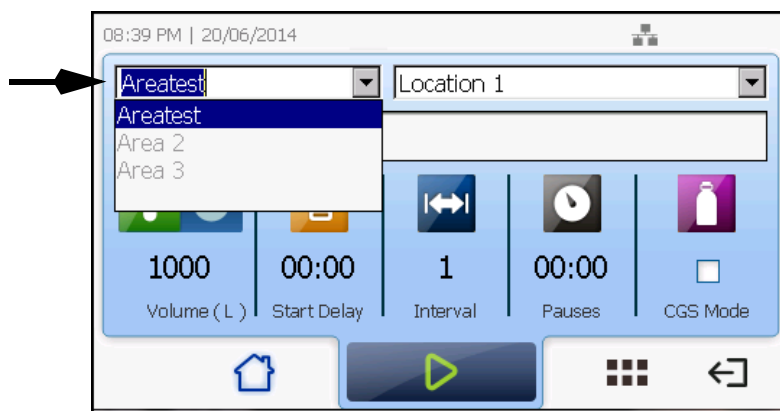


Figure 4-8 Home screen showing the **Area** field's list

9. In the **Location** field at the top right of the **Home** screen, touch the down arrow button to display the list of available locations (see **Figure 4-9** on page 4-5).

10. Touch the location you want to use.

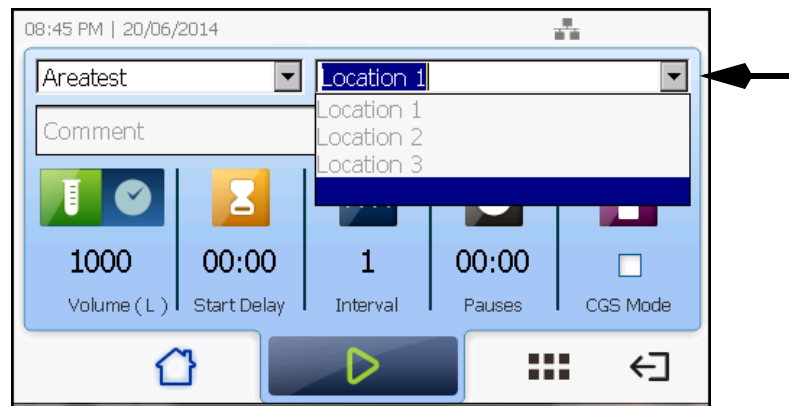


Figure 4-9 Home screen showing the **Location** field's list

11. If you want to enter notes about the sampling run, touch the **Comment** field to display the **Keyboard** screen.
The **Keyboard** screen appears (see **Figure 4-10**).

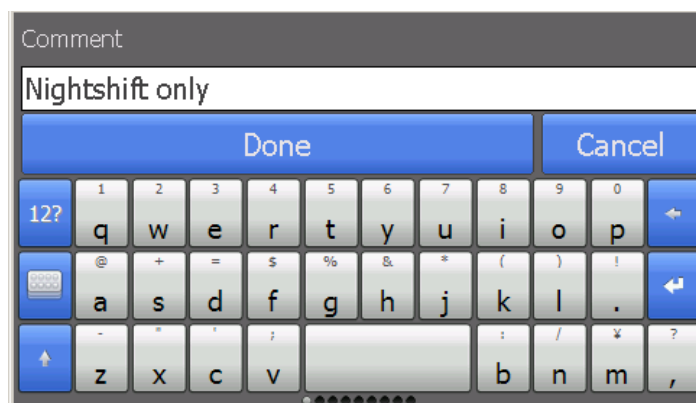


Figure 4-10 Keyboard screen for entering a comment

12. Use the keyboard to enter comments:
- Touch the keys to enter the text for the comments.
 - Touch  the **Done** button in the keyboard screen.
 - The **Keyboard** screen closes.
 - The comments text appears in the **Comment** field of the **Home** screen.
13. Touch  the **Start Sampling** button in the **Home** screen.

The MiniCapt runs the recipe associated with the location displayed in the **Location** field.

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Chapter 5

Recipes

A recipe defines how you want to perform a sampling. That is, a recipe contains instructions such as where the sampling is taking place, when to begin a sampling, how long to sample, and so on.

This chapter describes how to set up a recipe, how to modify a recipe, and how to delete a recipe for the MiniCapt Mobile Microbial Air Sampler.

View the Recipe List Screen

>> To view the Recipes List screen:

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 5-1**).

The **Features Menu** screen appears (see **Figure 5-2**).

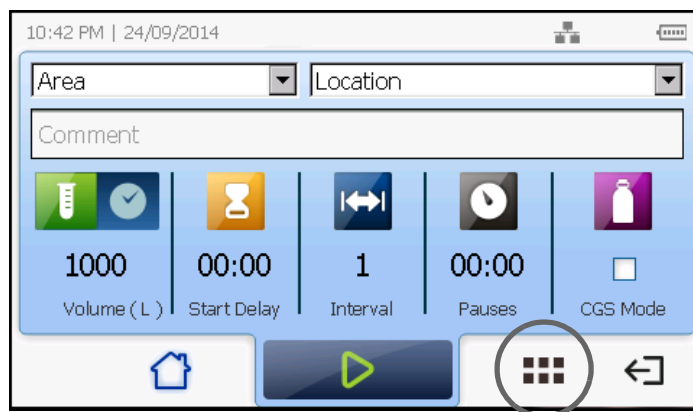


Figure 5-1 Home screen

TIP: To view the **Home** screen, touch the **Home**  button.



Figure 5-2 Features Menu screen

2. Touch  the **Recipe** button on the **Features Menu** screen.

The **Recipes List** screen appears (see **Figure 5-3**).

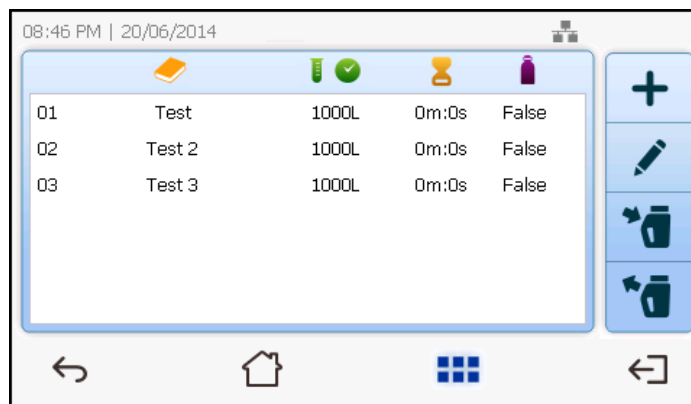


Figure 5-3 Recipes List screen

Set Up a New Recipe

>> To define a new recipe:

1. View the **Recipes List** screen as described in **View the Recipe List Screen** on page 5-1.
 - If no recipes definitions exist, the **Recipes List** screen appears with no recipes in the list (see **Figure 5-4**).

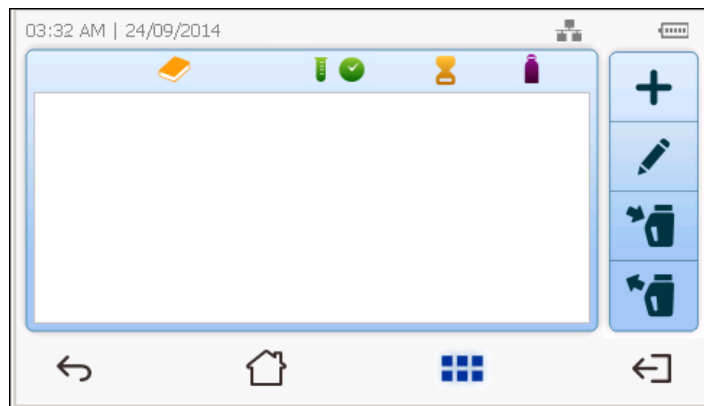


Figure 5-4 New Recipe screen

- If recipe definitions already exist, the **Recipes List** screen appears (see **Figure 5-5**).
- a. Touch  the **Plus** button in the **Recipes List** screen (see **Figure 5-5**) to display the **New Recipe** screen shown in **Figure 5-4**.

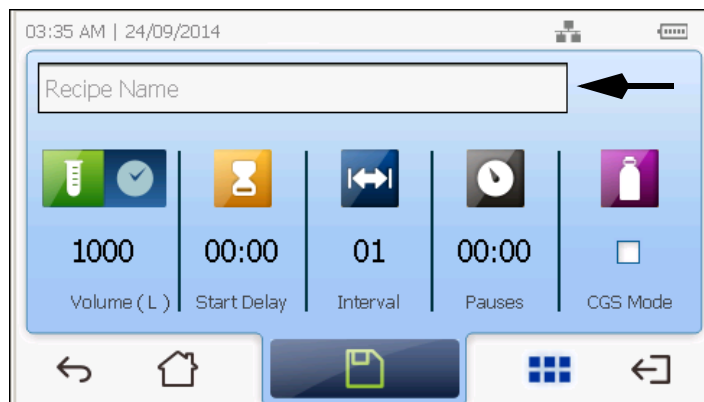


Figure 5-5 Recipes List screen

2. At the top of the **New Recipe** screen (see **Figure 5-4**), touch the **Recipe Name** field to display the **Keyboard** screen.
The **Keyboard** screen appears (see **Figure 5-6** on page 5-4).

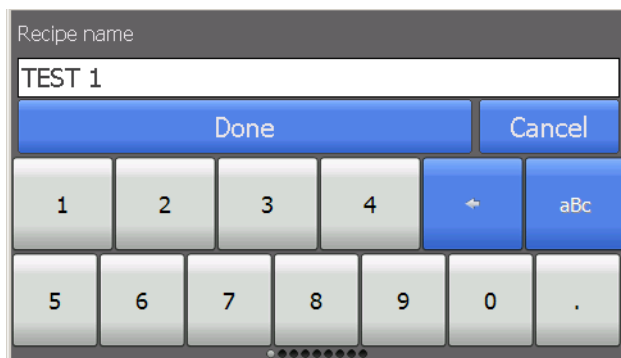


Figure 5-6 Keyboard screen for entering a recipe name

3. Use the keyboard to enter a name for the recipe (maximum 16 characters):
 - a. Touch each letter in the name to spell out the recipe's name.
 - b. Touch  the **Done** button in the keyboard screen.
 - The **Keyboard** screen closes.
 - The recipe name appears in the field at the top of the **New Recipe** screen (see **Figure 5-7**).

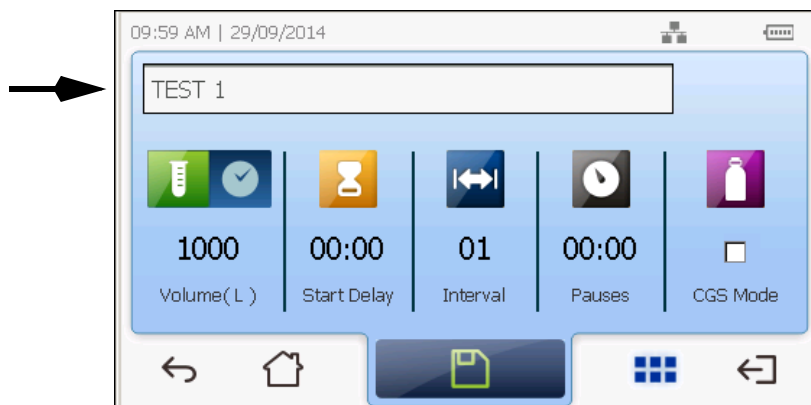


Figure 5-7 New Recipe screen showing a recipe name defined

4. In the **New Recipe** screen, touch the button for the sampling mode you want to use for the recipe:

- **Time** mode (**Figure 5-7** shows the buttons for the **Time** mode.)



– OR –

- **Volume** mode (**Figure 5-8** shows the buttons for the **Volume** mode.)

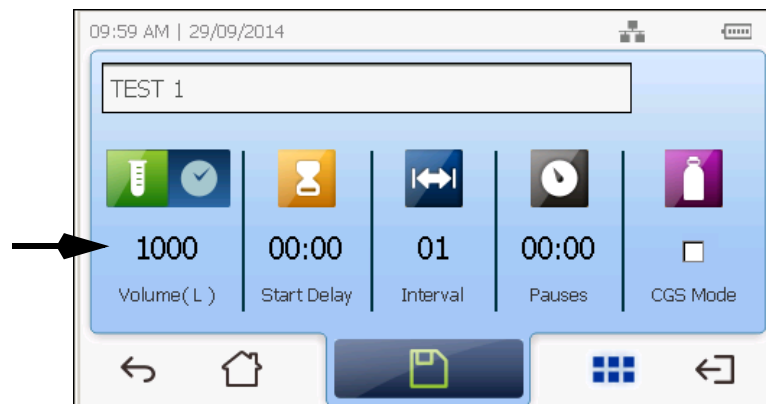


Figure 5-8 New Recipe screen showing **Volume** buttons and fields

5. Define the values for the fields and check box. These are described in **Chapter 3** Display in **Table 3-2** on page 3-2).

- The **Time mode** fields and check box are:
 - **Time** field
 - **Start Delay** field
 - **Interval** field
 - **Pauses** field
 - **CGS Mode** check box

- The **Volume mode** fields are:
 - **Volume** field
 - **Start Delay** field
 - **Interval** field
 - **Pauses** field
 - **CGS Mode** check box
6. Touch  the **Save** button in the **New Recipe** screen to save the recipe.
The recipe definition is saved.

Modify a Recipe

A recipe's definition can be modified.

>> To modify a recipe:

1. View the **Recipes List** screen as described in **View the Recipe List Screen** on page 5-1.
2. Touch the recipe you want to work with to highlight it.

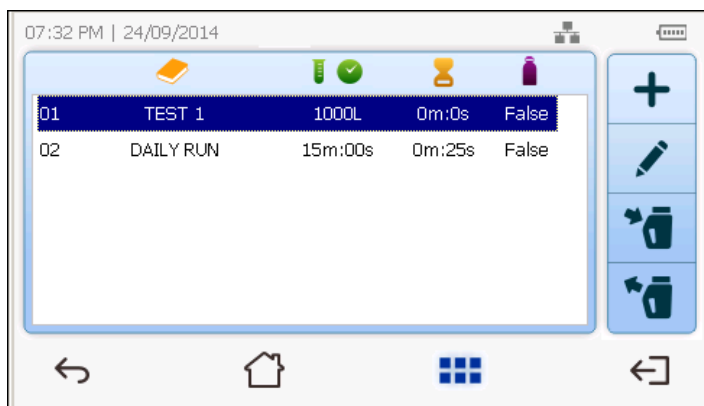


Figure 5-9 Recipes List screen with a recipe selected

3. Touch  the **Edit** button in the **Recipes List** screen (see **Figure 5-9** on page 5-6).
The **Recipe** screen appears (see **Figure 5-10**).

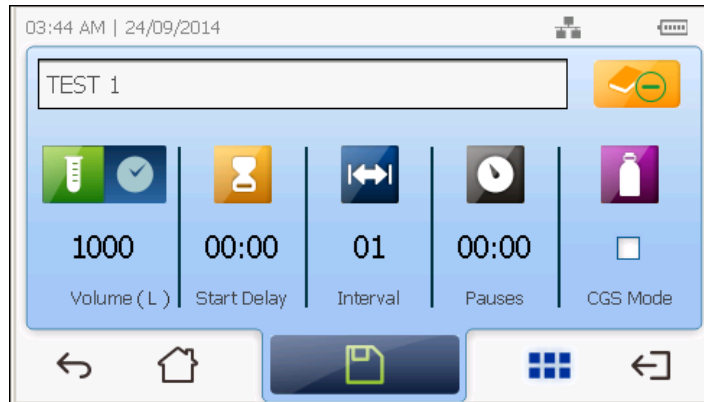


Figure 5-10 Modify Recipe screen

4. Modify values as needed:

- The **Time mode** fields and check box are:
 - **Time** field
 - **Start Delay** field
 - **Interval** field
 - **Pauses** field
 - **CGS Mode** check box
- The **Volume mode** fields are:
 - **Volume** field
 - **Start Delay** field
 - **Interval** field
 - **Pauses** field
 - **CGS Mode** check box

5. Touch  the **Save** button in the **Recipe** screen to save changes to the recipe.
The recipe definition is saved.

Delete a Recipe

A recipe's definition can be deleted.

>> To delete a recipe:

1. View the **Recipes List** screen as described in **View the Recipe List Screen** on page 5-1.
2. In the **Recipes List** screen, touch the recipe you want to delete to highlight the recipe.

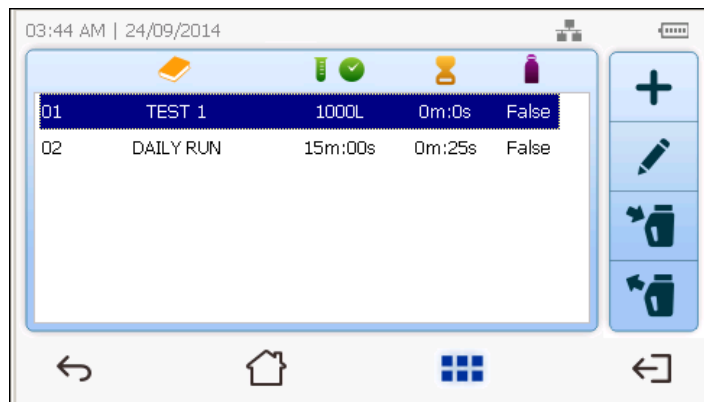


Figure 5-11 Recipes List screen with a recipe selected to delete

3. Touch  the **Edit** button in the **Recipes List** screen (see **Figure 5-11**).
The **Modify Recipe** screen appears (see **Figure 5-12**).

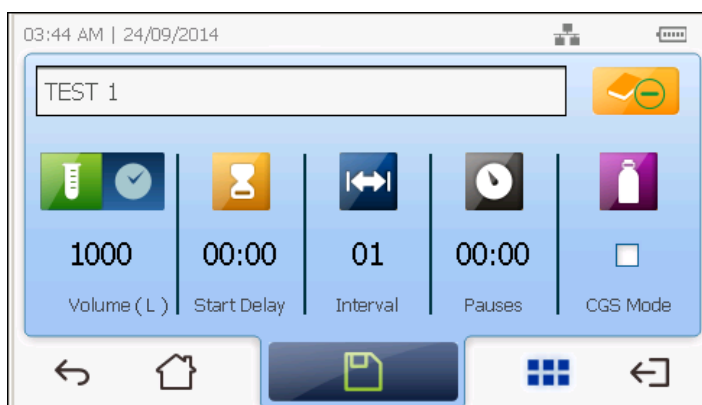


Figure 5-12 Modify Recipe screen showing the **Delete** button

4. Touch  the **Delete** button in the **Modify Recipe** screen (see **Figure 5-12**).
The **Delete** message appears (see **Figure 5-13** on page 5-9).

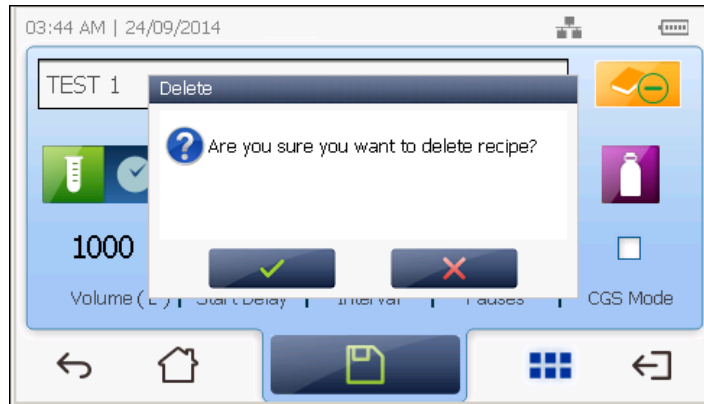


Figure 5-13 Delete message: Are you sure you want to delete recipe?

5. Touch  the GREEN checkmark button in the **Delete** message.
The recipe is deleted.

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Chapter 6

Locations and Areas

Sampling runs on the MiniCapt Mobile Microbial Air Sampler require the following information:

- Area
- Location
- Recipe

This chapter describes how to set up a definitions for locations and area.

Locations and Areas for Sampling

A physical location and an area in the plant can be associated with a recipe to use for a sampling run. You will use the **New Location** screen to define each location and its area and recipe.

A location definition contains the following information:

- Location name
- Area the location is associated with
- Recipe the location is associated with

View the Locations List Screen

>> To view the Locations List Screen:

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 6-1**).
The **Features Menu** screen appears (see **Figure 6-2**).

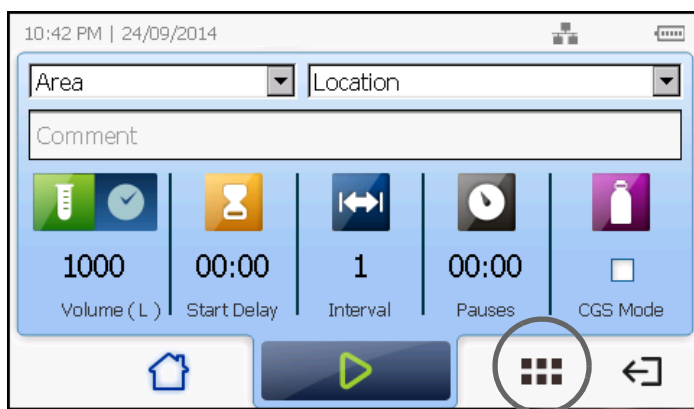


Figure 6-1 Home screen



Figure 6-2 Features Menu screen

2. Touch  the **Location** button on the **Features Menu** screen (see **Figure 6-2**).
The **Locations List** screen appears (see **Figure 6-3**).

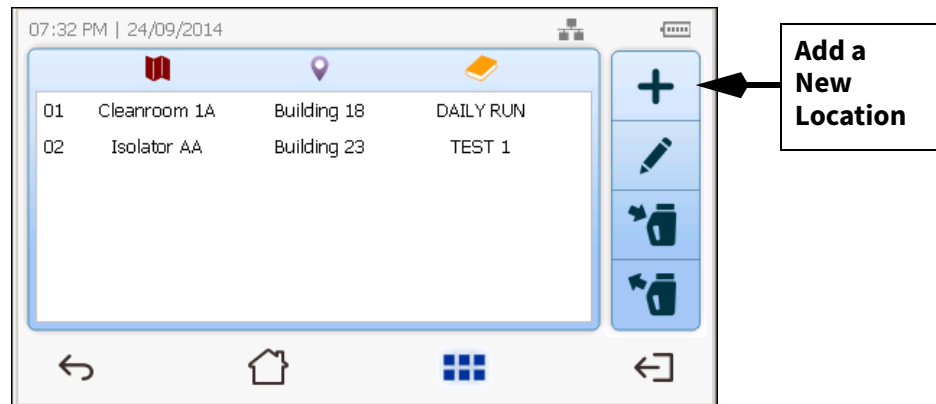


Figure 6-3 Locations List screen

Add a Location and an Area, and Associate with a Recipe

>> To define a location and an area:

1. View the **Locations List** screen as described in **View the Locations List Screen** on page 6-2.
2. Touch  the **Plus** button in the **Locations List** screen (see **Figure 6-3**) to display the **New Location** screen shown in **Figure 6-4**.

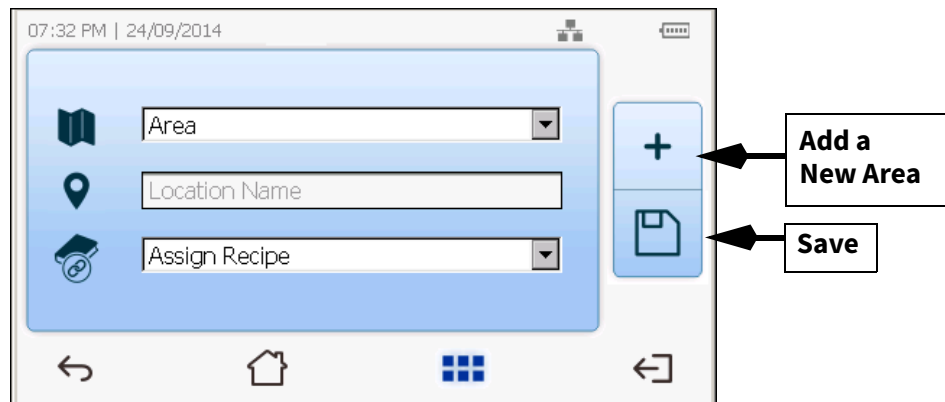


Figure 6-4 New Location screen

3. Touch the **Location** field  in the middle of the **New Location** screen to display the **Location Name Keyboard** screen (see **Figure 6-5**).

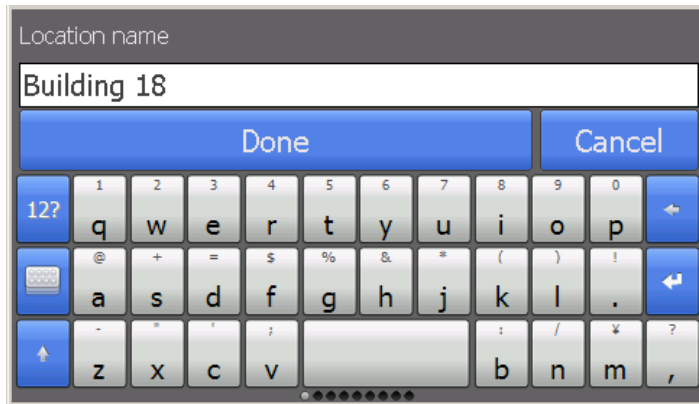
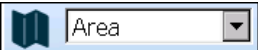


Figure 6-5 Location Name Keyboard screen for entering a Location name

4. Use the keyboard to enter a name for the location (maximum 16 characters):
 - a. Touch each letter in the name to spell out the location's name.
 - b. Touch  the **Done** button in the keyboard screen.
 - The **Location Name Keyboard** screen closes.
 - The location name appears in the **Location** field in the middle of the **New Location** screen.
5. In the **Area** field  at the top of the **New Location** screen, touch the down arrow button to display the list of areas already defined, then touch the location's area from the drop down list.

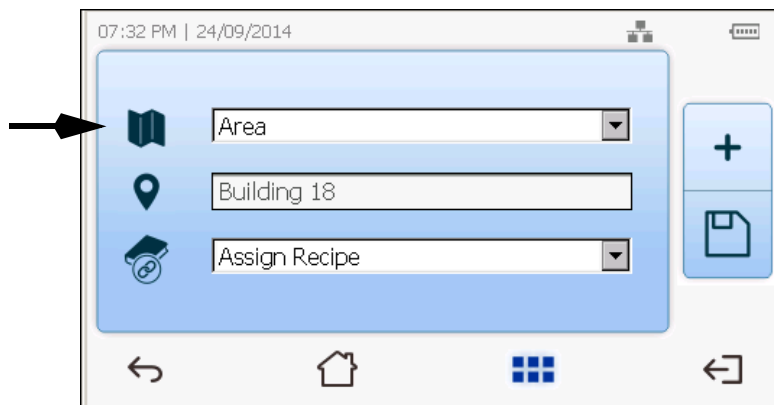


Figure 6-6 New Location screen **Area** field for entering an area name

- If the location's area is not in the drop down list, touch  the **Plus** button in the **New Location** screen to define a new **Area** name. The **Keyboard** screen appears (see **Figure 6-7**).

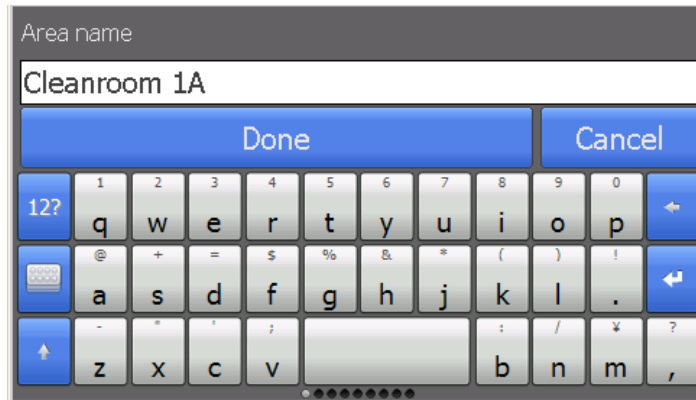


Figure 6-7 Area Name Keyboard screen for entering an area name

6. Use the keyboard to enter a name for the area:
 - a. Touch each letter in the name to spell out the area's name.
 - b. Touch  the **Done** button in the keyboard screen.
 - The **Keyboard** screen closes.
 - The area name appears in the field at the top of the **New Location** screen.
7. In the **Assign Recipe** field  at the bottom of the **New Location** screen, touch the down arrow button to display the list of recipes already defined, then touch the recipe to associate with the location you are defining (see **Figure 6-8** on page 6-5).

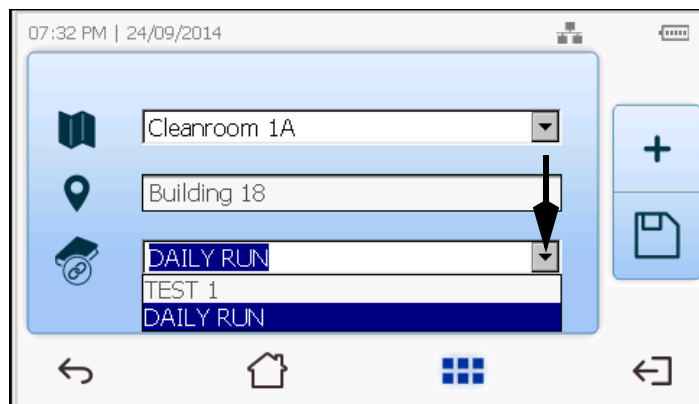


Figure 6-8 New Location screen for selecting a recipe to assign

8. Touch  the **Save** button in the **New Location** screen to save the new **Location** definition.
The **New Location** screen closes and the **Locations List** screen appears.

Modify a Location Definition

A location definition can be modified or deleted.

>> To modify a location definition:

1. View the **Locations List** screen as described in **View the Locations List Screen** on page 6-2.

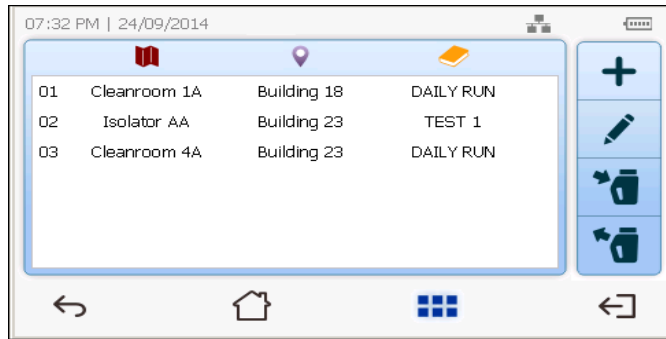


Figure 6-9 Locations List screen

2. Touch the Location you want to modify (see **Figure 6-11**).

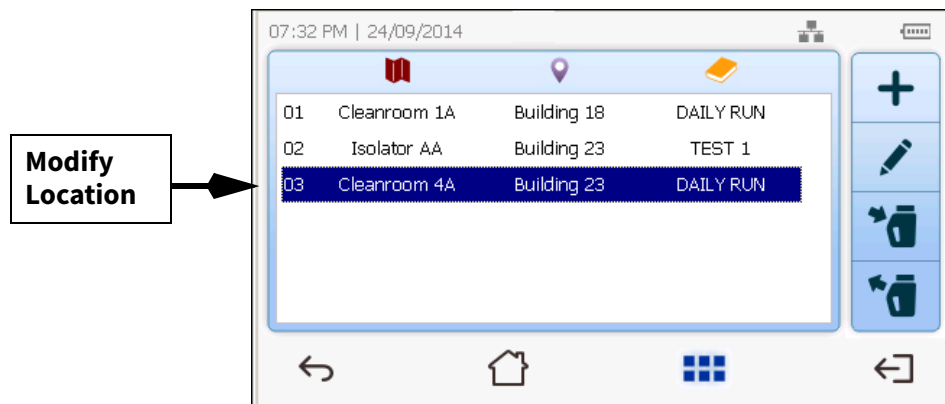


Figure 6-10 Location selected in the **Locations List** screen

3. Touch  the **Modify** button in the **Locations List** screen (see **Figure 6-10**) to display the **Modify Location** screen shown in **Figure 6-11** on page 6-7.

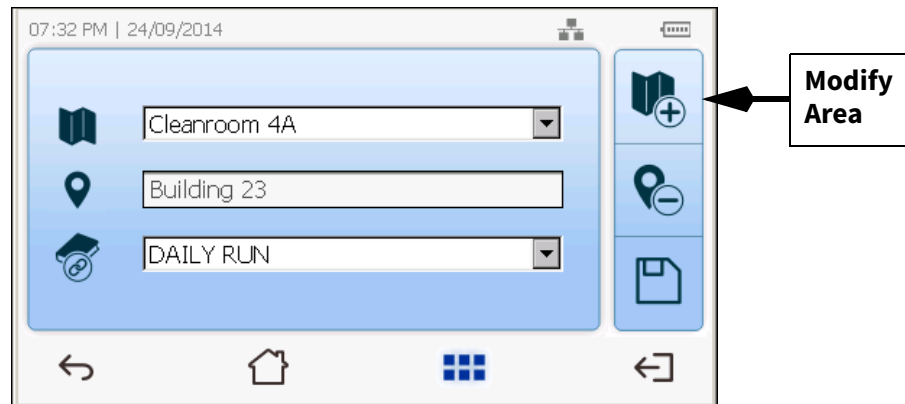


Figure 6-11 Modify Location screen

4. In the **Area** field  at the top of the **Modify Location** screen, touch the down arrow button to display the list of areas already defined, then touch the desired area from the drop down list.
 - If the location's area is not in the drop down list, touch  the **Modify Area** button in the **Modify Location** screen to define a new **Area** name. The **Keyboard** screen appears (see **Figure 6-12**).

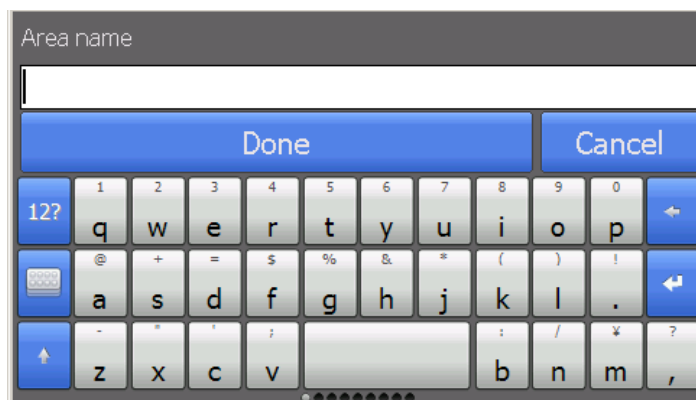


Figure 6-12 Keyboard screen for entering an area name

- c. Use the keyboard to enter name for the area, 16 character maximum:
 - Touch each letter in the name to spell out the area's name.
 - Touch  the **Done** button in the keyboard screen.
 - The **Keyboard** screen closes.
 - The area name appears in the field at the top of the **Modify Location** screen.

5. To modify the location currently defined, touch the **Location** field

 in the middle of the **Modify Location** screen to display the **Keyboard** screen (see **Figure 6-13** on page 6-8).

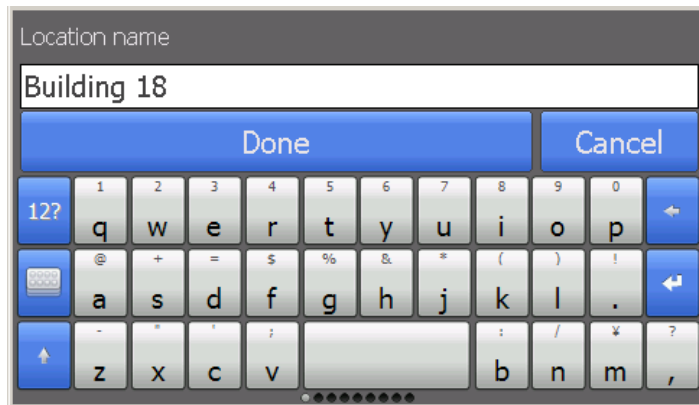


Figure 6-13 Keyboard screen for entering a location name

6. Use the keyboard to enter a name for the location:
- Touch each letter in the name to spell out the location's name.
 - Touch  the **Done** button in the keyboard screen.
 - The **Keyboard** screen closes.
 - The location name appears in the **Location** field in the middle of the **Modify Location** screen.

7. In the **Recipe** field  at the bottom of the **Modify Location** screen, touch the down arrow button to display the list of recipes already defined, then touch the recipe to associate with the location you are modifying.

Touch  the **Save** button in the **Modify Location** screen to save the **Location**

8. The **Modify Location** screen closes and the **Location List** screen appears.

Delete a Location Definition

>> To Delete a location definition:

1. View the **Locations List** screen as described in **View the Locations List Screen** on page 6-2.

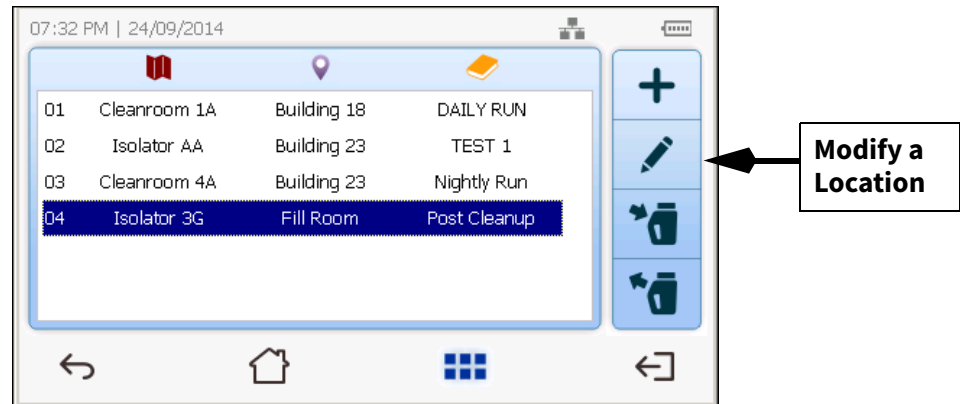


Figure 6-14 Locations List screen

2. Touch the location you want to delete (see **Figure 6-14**)
3. Touch  the **Modify** button in the **Locations List** screen (see **Figure 6-14**) to display the **Modify Location** screen shown in **Figure 6-15**.

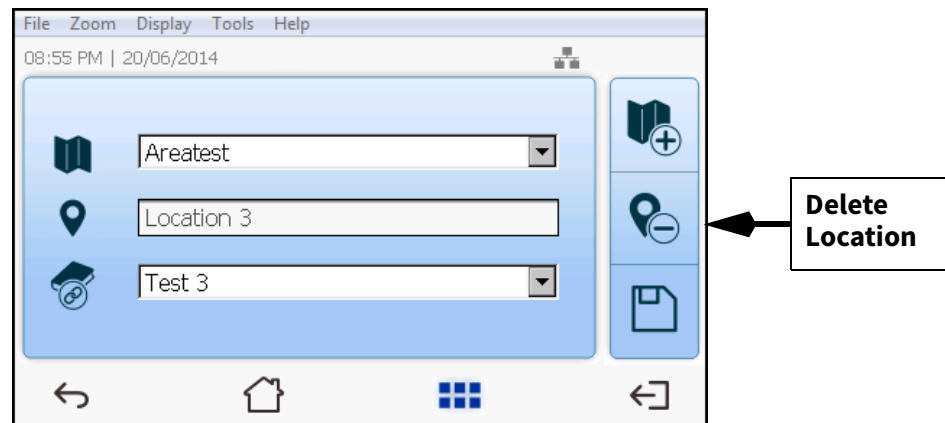


Figure 6-15 Modify Location screen

4. Touch  the **Delete Location** button in the **Modify Location** screen (see **Figure 6-15**) to delete the location displayed in the **Location** field

 Location Name

The **Delete** message appears (see **Figure 6-16** on page 6-10).

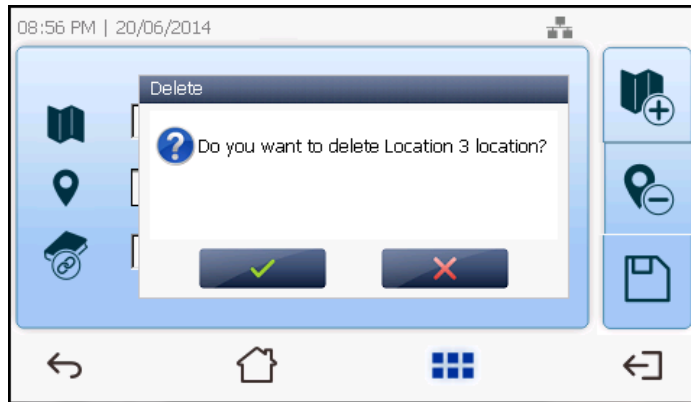


Figure 6-16 Delete message: Are you sure you want to delete location?

5. Touch  the GREEN checkmark button in the **Delete** message.
 - The location is deleted.
 - The **Location List** screen appears.

Chapter 7

Reports

This chapter describes how to view and manage report records for the MiniCapt Mobile Microbial Air Sampler. You can:

- View a report record, which is a record of events for a sampling run.
- Search for a specific report record.
- Delete a report record.
- Export a report record.

View the Reports List Screen

>> To view the Reports List screen:

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 7-1**).
The **Features Menu** screen appears (see **Figure 7-2**).

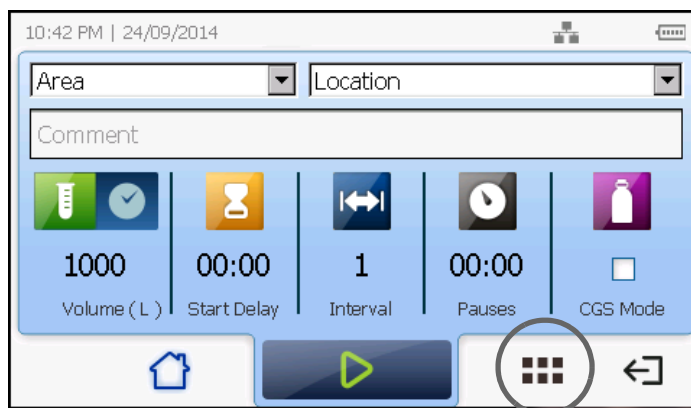


Figure 7-1 Home screen



Figure 7-2 Features Menu screen

2. Touch  the **Data** button on the **Features Menu** screen.

The **Data Submenu** screen displays (see **Figure 7-3**).



Figure 7-3 Data Submenu screen

3. In the **Data Submenu** screen, touch



the **Report Records** button.

The **Reports List** screen appears (see **Figure 7-4**).

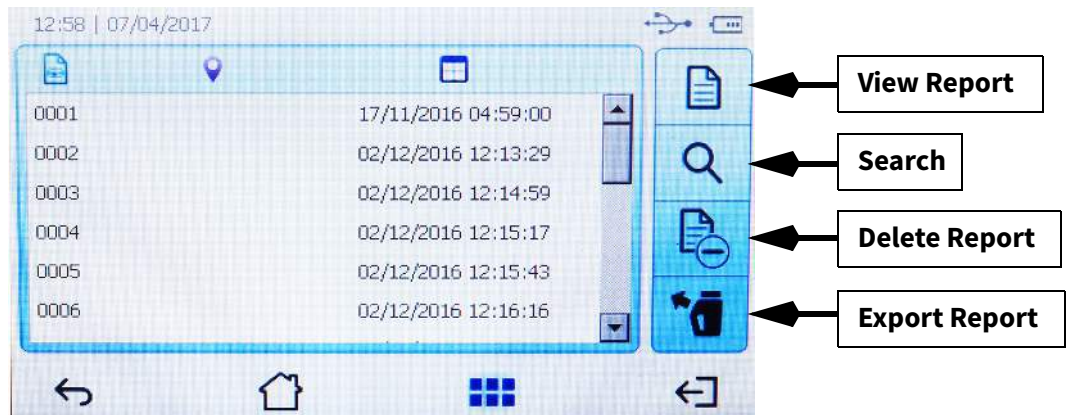


Figure 7-4 Reports List screen

View a Report

>> To view a report record for a sampling run:

1. Open the **Reports List** screen as described in **Export a report record.** on page 7-1.
2. In the **Reports List** screen, use one of the following methods to view a report:

METHOD 1:

- a. Touch the scroll bar to scroll to the name of the report you want to view.
- b. Touch that report item.
- c. Touch the view report button.
The **Report Record** screen displays the report you selected (see **Figure 7-6**).

METHOD 2:

- a. In the **Reports List** screen, touch  the **Search** button.

The **Search for Report** screen displays (see **Figure 7-5**).

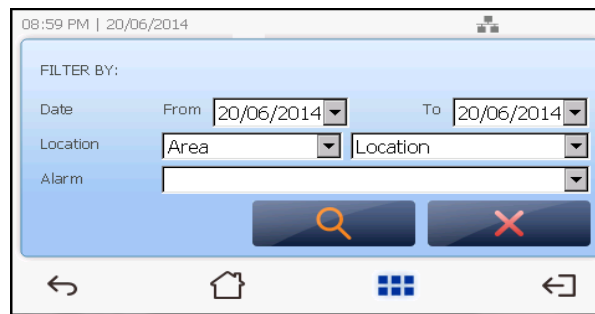


Figure 7-5 Search for Report screen

- b. In the **Search for Report** screen, touch the list button on any of the following fields to display the field's list.
 - **From** field – The beginning date of a sampling run.
 - **To** field – The ending date of a sampling run.
 - **Area** field – The area used in the sampling run.
 - **Location** field – The location used in the sampling run.
 - **Alarm** field – The type of alarm that occurred in the sampling run.
- c. Touch  the **Search** button in the **Search for Report** screen.
The **Report Record** screen displays the report that matches the search criteria (see **Figure 7-6** on page 7-5).

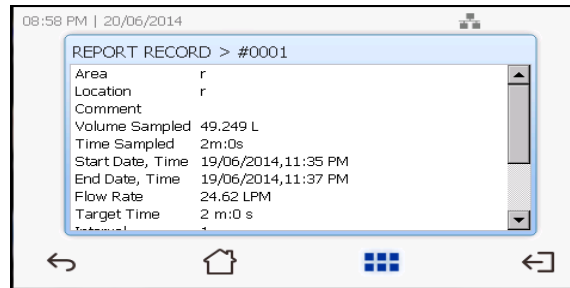


Figure 7-6 Report Record screen

Delete a Report Record

>> To delete a sampling run's report record:

1. Open the **Reports List** screen as described in **View the Reports List Screen** on page 7-1.

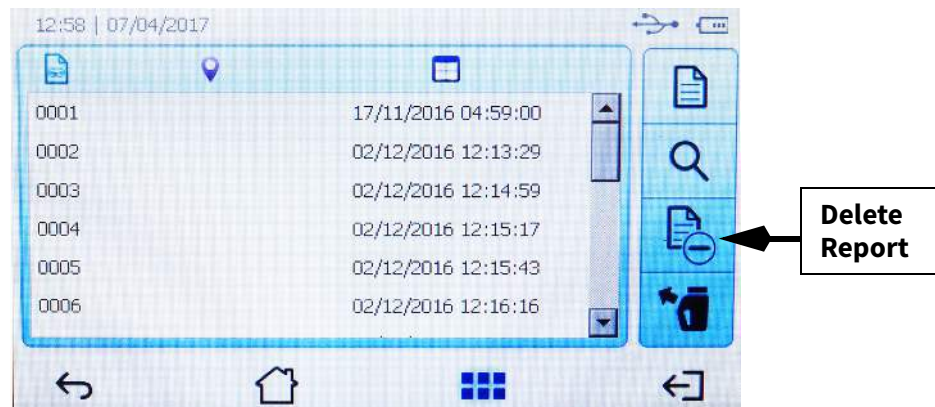


Figure 7-7 Reports List screen

2. Touch the report you want to delete to highlight it.
3. Touch  the **Delete Report** button.
 - The report is deleted.

Export a Report Record

>> To export a sampling run's report record:

1. Insert an external USB drive into the USB port on the front of the MiniCapt base (see **Figure 7-8**).



Figure 7-8 USB port on the front of the MiniCapt base

2. Open the **Data Submenu** as described in **Figure 7-1** and **Figure 7-2**.

3. Select the desired report format (HTML or CSV), and then touch  the **Report Records** button. The **Data Submenu** screen appears (**Figure 7-9**).

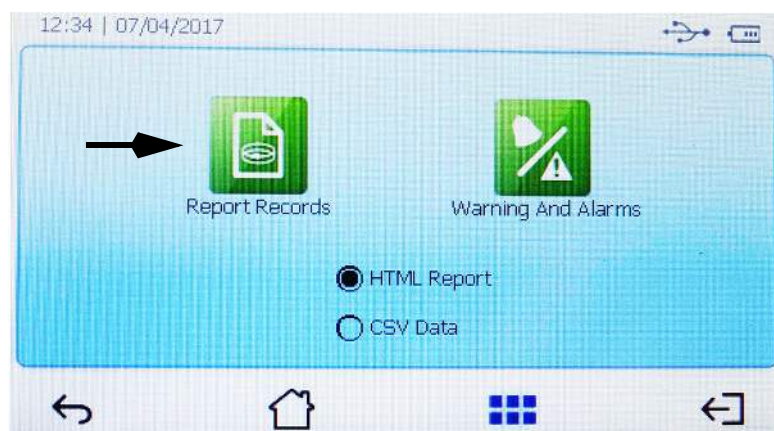


Figure 7-9 Report Records button, Data Submenu screen

4. Touch the **Export** button on the **Reports List** screen (**Figure 7-10**).

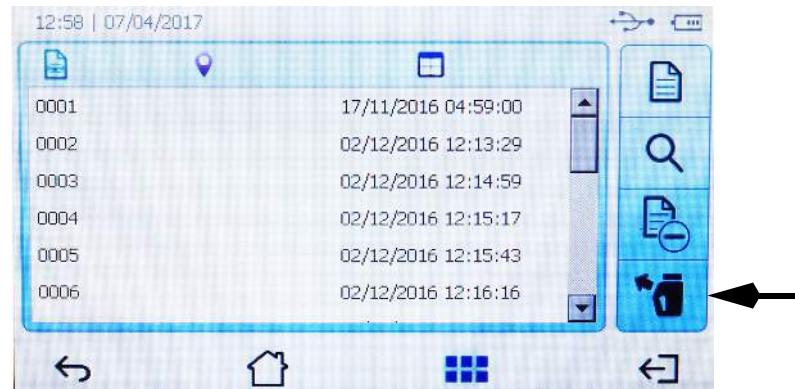


Figure 7-10 Export button, Reports List screen

5. When selected, the report is highlighted and marked. Press the green checkmark button (**Figure 7-11**).

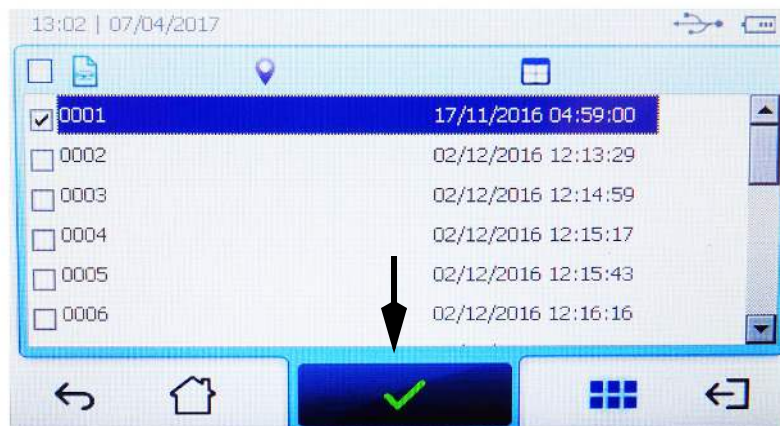


Figure 7-11 Reports Selection screen

6. Enter a file name and press the **Export Report** button. The report is copied to the external USB drive. A sample HTML Report is displayed in **Appendix F**, Sample HTML Reports.



Figure 7-12 Example “Test” file export

NOTE: With the improved export functionalities to USB in a secure HTML format, it is important to keep the USB storage device connected to the MiniCapt Mobile USB port during exporting. If it is removed, a restart may be necessary to clear any system errors.

NOTE: When viewing an HTML file, ensure the browser supports Unicode (UTF-8) encoding for proper unit display.

Chapter 8

Warnings and Alarms Setup

This chapter describes configuration of warnings and alarms for the MiniCapt Mobile Microbial Air Sampler.

Warnings:

A warning will occur if the flow is $\pm 5\%$ of the calibrated flowrate (up to $\pm 20\%$).

The warning will be visual on the screen as well as audible if sound is configured. See **Audio for Warnings and Alarms** on page 8-10.

Alarms:

An alarm will occur if the flow is outside of 20% of the calibrated flowrate.

The alarm will be visual on the screen as well as audible if selected and the MiniCapt will turn off.

An alarm comment will need to be entered using the drop down menu. See **Alarm Comments** on page 8-6.

View the Warnings and Alarms List Screen

>> To view the Warnings and Alarms List screen:

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 8-1**).
The **Features Menu** screen appears (see **Figure 8-2** on page 8-2).

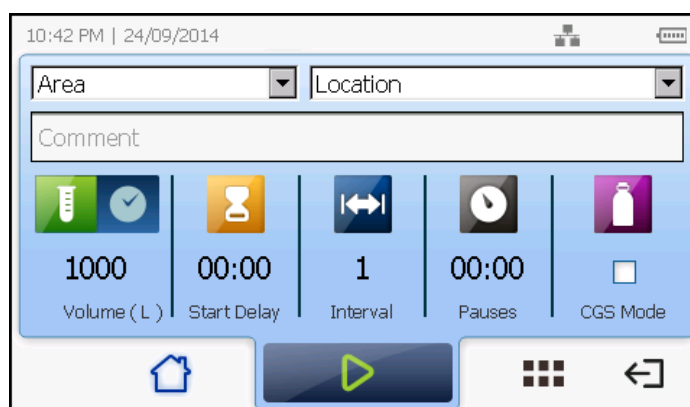


Figure 8-1 Home screen



Figure 8-2 Features Menu screen

2. Touch  the **Data** button on the **Features Menu** screen.

The **Data** screen displays (see **Figure 8-3**).

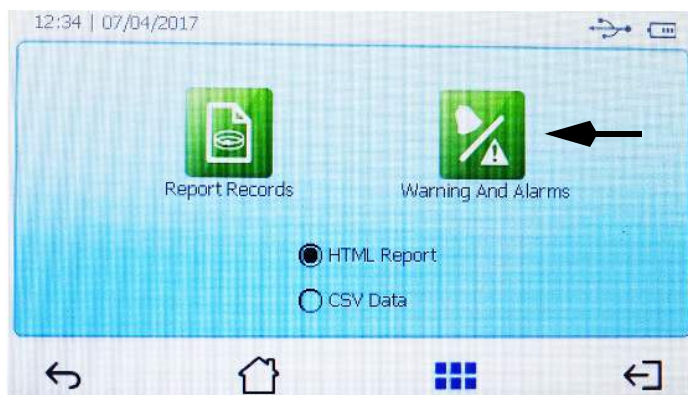


Figure 8-3 Warning and Alarms button, Data Submenu screen

3. In the **Data** screen, touch  the **Warnings and Alarms** button.

The **Warnings and Alarms** list screen appears (see **Figure 8-4**).

4. Select a report and press the **View** button to view the report.

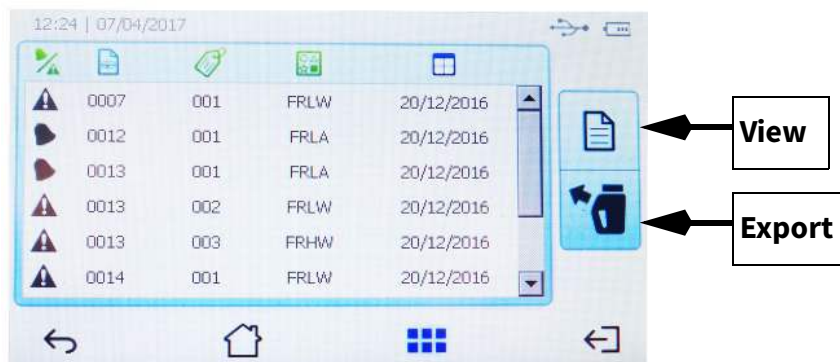


Figure 8-4 Warnings and Alarms List screen

Export Warning and Alarms Reports

>> To export a sample's Warning and Alarms:

1. Insert an external USB drive into the USB port on the front of the MiniCapt base (see **Figure 8-5**).



Figure 8-5 USB port on the front of the MiniCapt base

2. Open the **Data Submenu** screen as described in steps 1 - 2 of procedure **View the Warnings and Alarms List Screen** starting on page 8-1.
3. Select the desired report format (HTML or CSV), and touch the **Warning and Alarms** button.

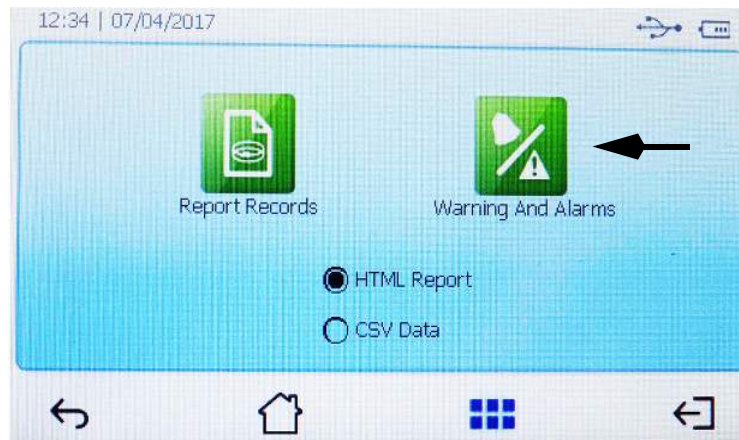


Figure 8-6 Warning and Alarms button, Data Submenu screen

4. From the previous step, you should be on the **Warning and Alarms List** screen (see **Figure 8-7**). Touch the **Export** button.

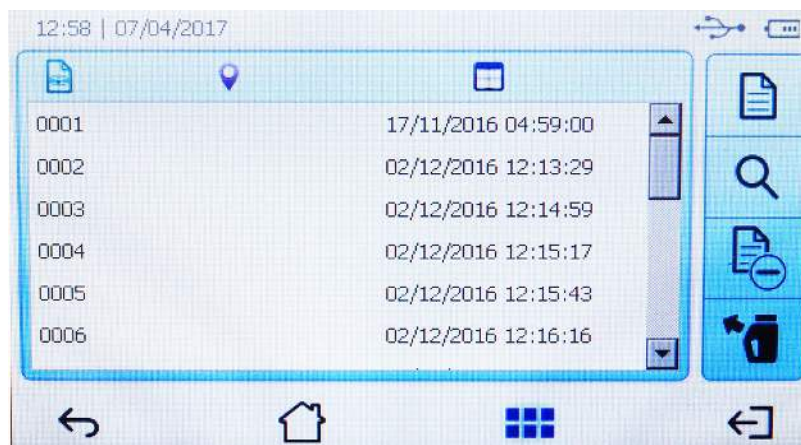


Figure 8-7 Export button, Warning and Alarms List screen

5. The **Warning and Alarms Selection** screen appears (**Figure 8-8**). Touch the report(s) for exporting. When selected, the report is marked in an adjacent box to the left.

6. Press the green checkmark button when finished selecting reports.

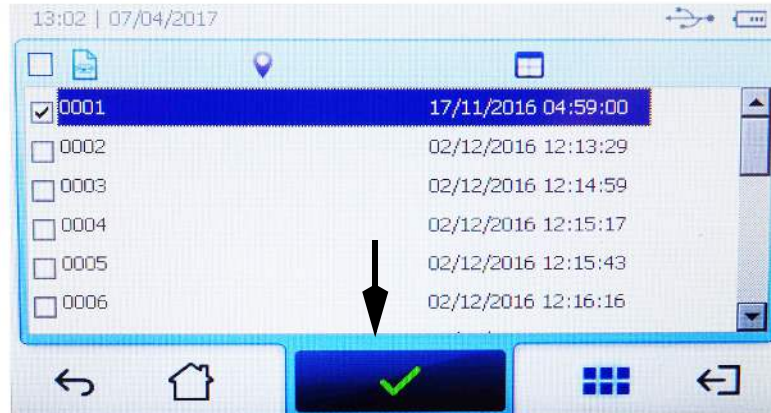


Figure 8-8 Warning and Alarms Selection screen

7. Enter a file name and press the **Export Report** button. The report is copied to the external USB drive. A sample HTML report is displayed in **Appendix F**, Sample HTML Reports.



Figure 8-9 Example “Test” file exported

NOTE: With the improved export functionalities to USB in a secure HTML format, it is important to keep the USB storage device connected to the MiniCapt Mobile USB port during exporting. If it is removed, a restart may be necessary to clear any system errors.

NOTE: When viewing an HTML file, ensure the browser supports Unicode (UTF-8) encoding for proper unit display.

Alarm Comments

You can pre-program up to 20 different comments that describe alarm conditions. Comment definitions display in the **Comment** dropdown list of the **Home** screen. Then, if an alarm occurs during a sampling run, you must select the comment that applies so that the comment for the alarm related to the event is saved with the record for the sampling run.

>> To view the Alarm Comments screen:

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 8-10**).

The **Features Menu** screen appears (see **Figure 8-11**).

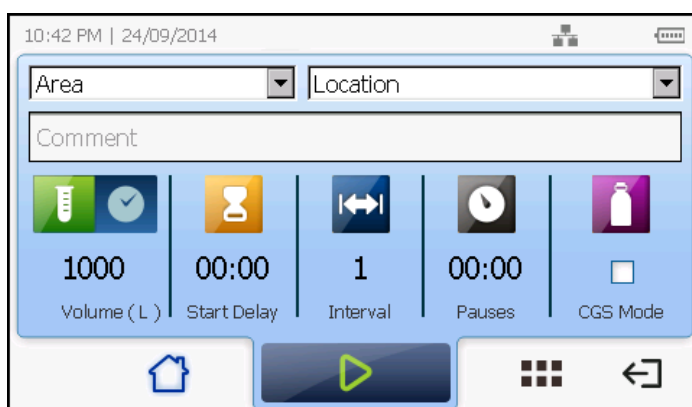


Figure 8-10 Home screen



Figure 8-11 Features Menu screen

2. Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** screen displays (see **Figure 8-12** on page 8-7).



Figure 8-12 Setup Submenu screen

3. Touch  the **Alarm Comments** button on the **Setup Submenu** screen.
- The **Alarm Comments** screen displays (see **Figure 8-13**).

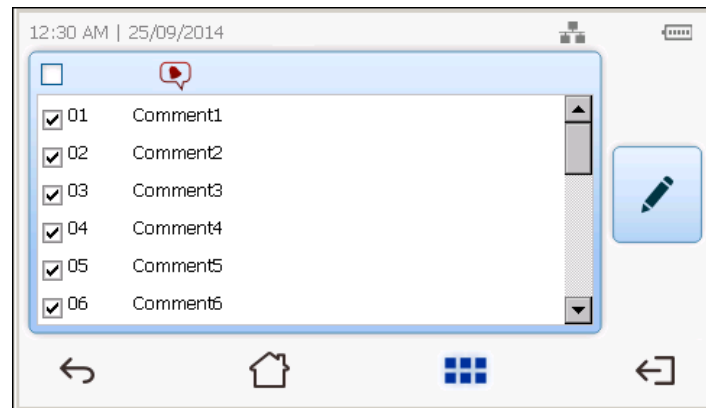


Figure 8-13 Alarm Comments List screen

Modify an Alarm Comment

>> To modify and alarm's comment:

1. Open the **Alarm Comments List** screen as described in step 3 of the **To view the Alarm Comments screen:** procedure.

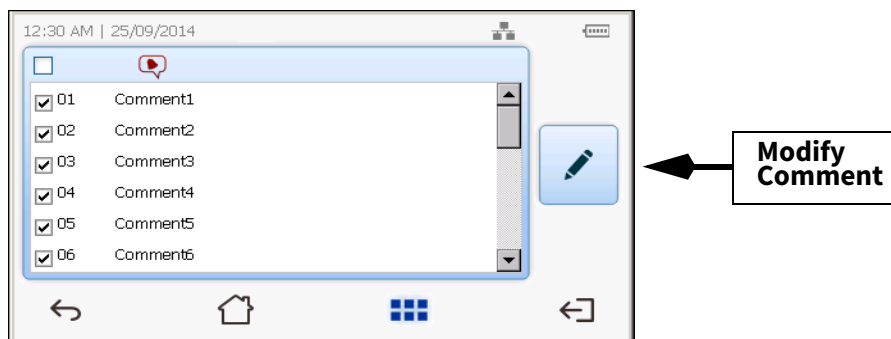


Figure 8-14 Alarm Comments List screen

2. In the **Alarm Comments List** screen, touch the scroll bar to scroll to the comment you want to modify, then touch that comment item to highlight it.
3. Touch  the **Modify** button in the **Alarm Comments List** screen (see Figure 8-14) to display the **Alarm Comment Keyboard** screen (see Figure 8-15).

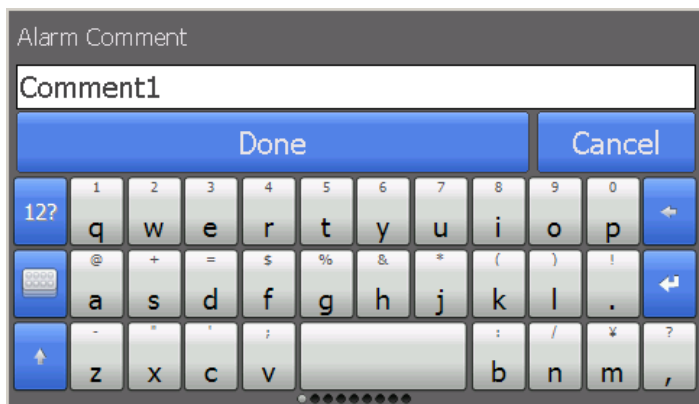


Figure 8-15 Alarm Comment Keyboard screen for entering a Location name

4. Use the keyboard to enter a comment to link to the alarm (maximum 64 characters):
 - a. Touch each letter in the name to spell out the text for the comment.
 - b. Touch  the **Done** button in the keyboard screen.
 - The **Alarm Comment Keyboard** screen closes.
 - The **Alarm Comments List** screen displays with the new comment listed (see **Figure 8-16** on page 8-9).

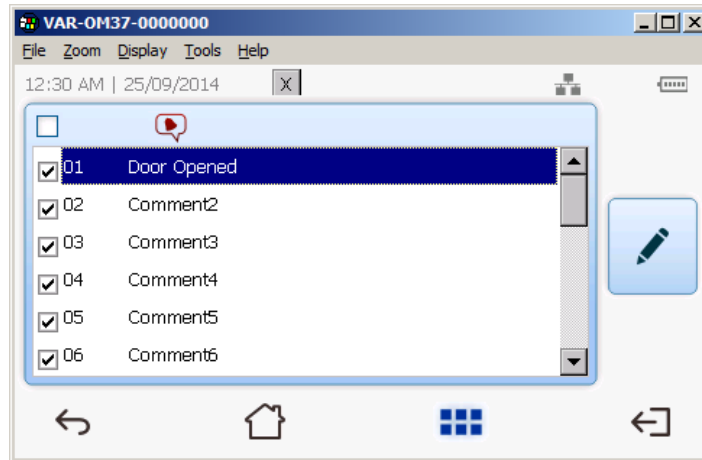


Figure 8-16 Alarm Comments List screen with a comment defined

Audio for Warnings and Alarms

The **Sounds** screen is used to link audible sounds to the following events:

- Warning Notification
- Alarm Notification
- End of Sample Notification
- Touch Sounds

>> **To view the Sounds screen:**

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 8-17**).

The **Features Menu** screen appears (see **Figure 8-18**).

TIP: To view the **Home** screen, touch  the **Home** button.

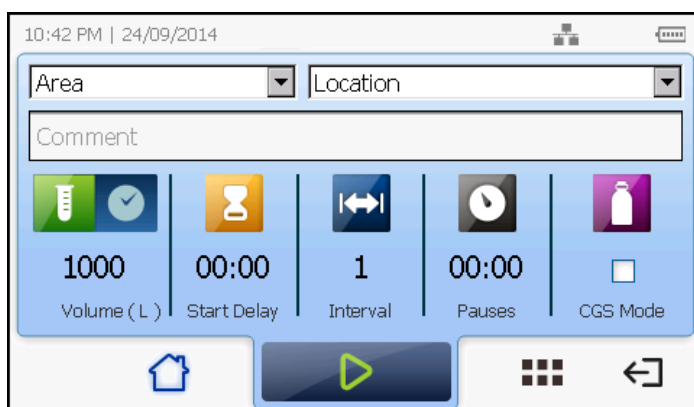


Figure 8-17 Home screen



Figure 8-18 Features Menu screen

2. Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** appears (see **Figure 8-19** on page 8-11).

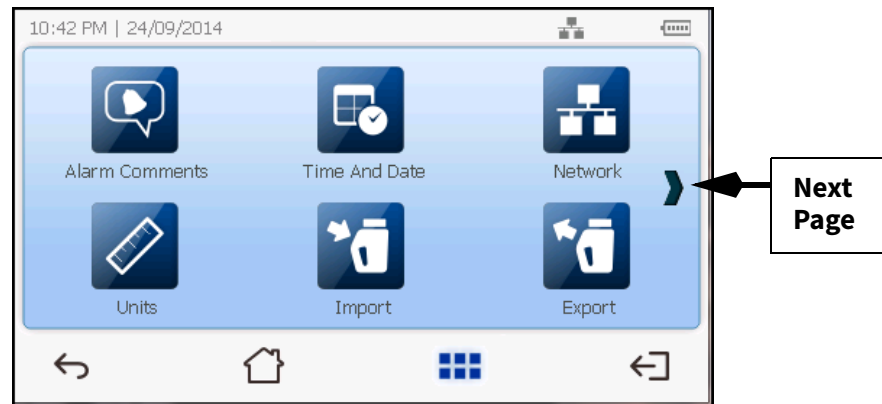


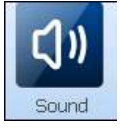
Figure 8-19 Setup Submenu screen

3. Touch  the **Next Page** button on the **Setup Submenu** screen (see **Figure 8-19**).

Page 2 of the **Setup Submenu** screen displays (see **Figure 8-20**).



Figure 8-20 Setup Submenu screen, page 2

4. Touch  the **Sound** button on page 2 of the **Setup Submenu** screen (see **Figure 8-20**).

The **Sounds** screen appears (see **Figure 8-21** on page 8-12).

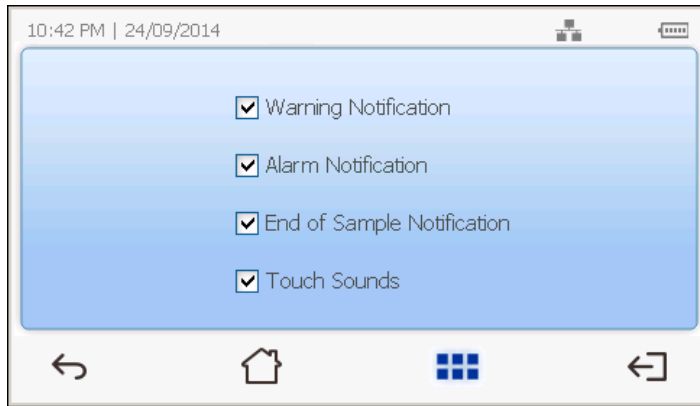


Figure 8-21 Sounds screen showing all events check marked for sound

5. If you want to turn off sound for an event listed in the **Sounds** screen, touch that event's check box to remove the checkmark (see **Figure 8-22**).

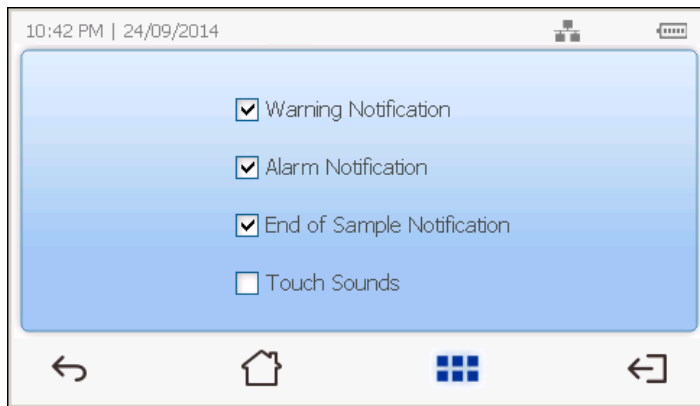


Figure 8-22 Sounds screen showing some events check marked for sound

6. Touch  the **Features Menu** button to return to the **Features Menu** screen.
-OR-
Touch  the **Home** button to return to the **Home** screen.

7. External Alarm Connection

The external alarm activation is driven using the compressed gas auxiliary port. The auxiliary port powers any external device working at a 12VDC with a maximum current of 10W (800mA). The external alarm connection requires the connector product number (PN) 1000019268.

+12VDC = pin 2

GND = pin 3

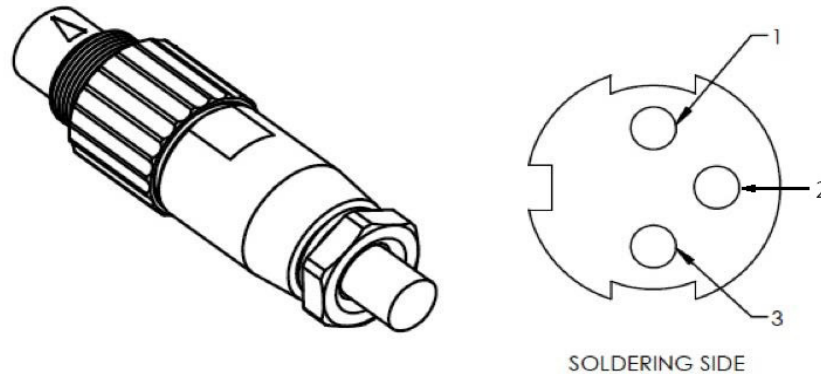


Figure 8-23 Connection diagram for auxiliary external alarm connection

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Chapter 9

Time and Date Setup

This chapter describes how to configure the current time and date for the MiniCapt Mobile Microbial Air Sampler.

View the Time and Date Screen

>> To view the Time and Date screen:

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 9-1**).
The **Features Menu** screen appears (see **Figure 9-2**).

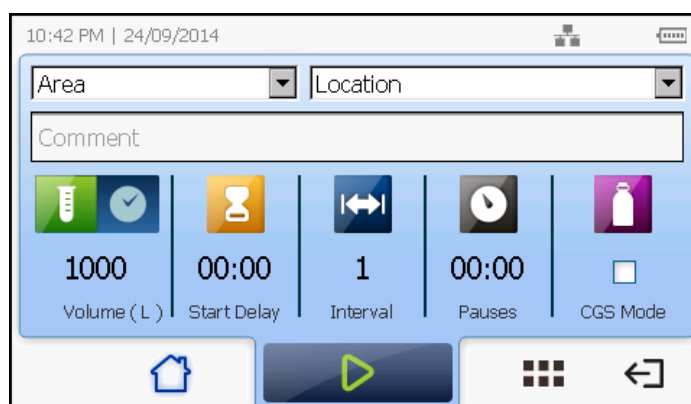


Figure 9-1 Home screen



Figure 9-2 Features Menu screen

2. Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** screen displays (see **Figure 9-3** on page 9-2).

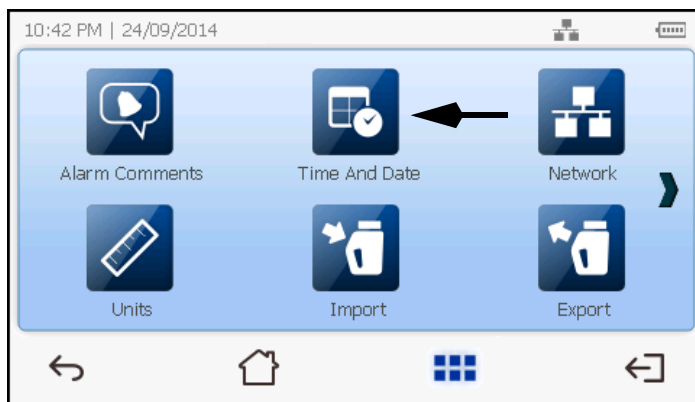


Figure 9-3 Setup Submenu screen

3. Touch  the **Time and Date** button on the **Setup Submenu** screen.

The **Time and Date** screen displays (see **Figure 9-4**).

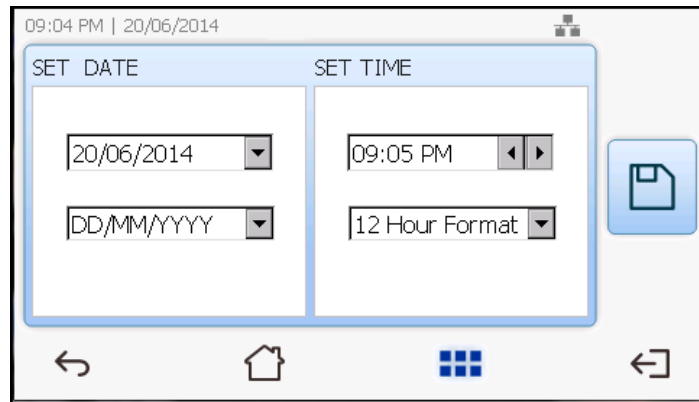


Figure 9-4 Time and Date screen

Set the Time and Date

The date can be entered in three different formats

- Day, month, year
- Month, day, year
- Year, month, day

The time can be entered in two different formats

- 12 hour clock
- 24 hour clock

>> To set the time and date:

1. View the **Time and Date** screen as described in **View the Time and Date Screen** on page 9-1.

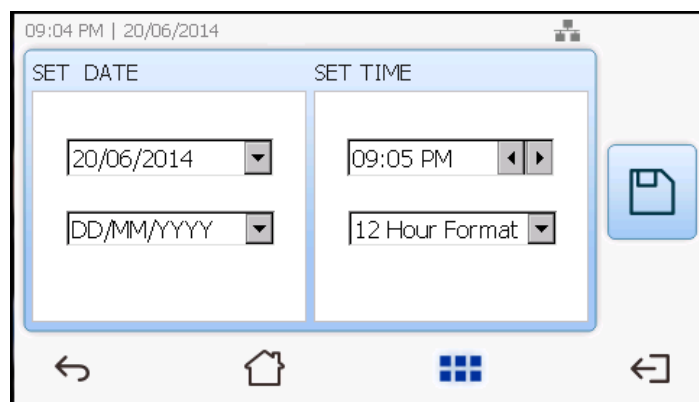


Figure 9-5 Time and Date screen

2. In the top date field of the **SET DATE** pane in the **Time and Date** screen, touch  the list button to display a calendar (see **Figure 9-6**).

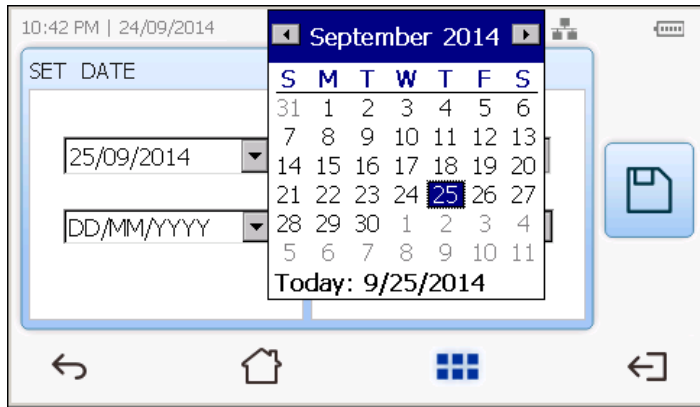


Figure 9-6 Time and Date screen calendar for setting the current date.

3. Touch  the left arrow or  the right arrow to scroll to the current month.
4. Touch the day of the month to select the current date.
 - The calendar closes.
 - The date you selected displays in the top date field of the **SET DATE** pane in the **Time and Date** screen.
5. In the bottom date field of the **SET DATE** pane in the **Time and Date** screen, touch  the list button to view the format choices for the date, then touch a format. The choices are:
 - **DD/MM/YYYY**
 - **MM/DD/YYYY**
 - **YYYY/MM/DD**

NOTE: To facilitate data analysis with DataAnalyst, set the Date format to **MM/DD/YYYY**.

6. In the bottom field of the **SET TIME** pane in the **Time and Date** screen, touch  the list button to view the clock format you want to use, then touch that item.
7. In the top field of the **SET TIME** pane in the **Time and Date** screen, touch the hour, then touch  the left arrow or  the right arrow to scroll to the current hour.

8. In the top field of the **SET TIME** pane in the **Time and Date** screen, touch the minutes, then touch  the left arrow or  the right arrow to scroll to the current minutes.
9. In the top field of the **SET TIME** pane in the **Time and Date** screen, touch **AM** or **PM** if necessary, then touch  the left arrow or  the right arrow to scroll to your choice.
10. Touch  the **Save** button in the **Time and Date** screen to save the time and date definitions.
11. Touch  the **Features Menu** button to return to the **Features Menu** screen.
-OR-
Touch  the **Home** button to return to the **Home** screen.

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Chapter 10

Network Communication

This chapter describes how to set the IP address for MiniCapt Mobile Microbial Air Sampler IP address for communicating with the local area network.

View the Network Screen

>> To view the Network screen:

- 1 On the **Home** screen, touch  the **Features Menu** button (see **Figure 10-1**).
The **Features Menu** screen appears (see **Figure 10-2**).

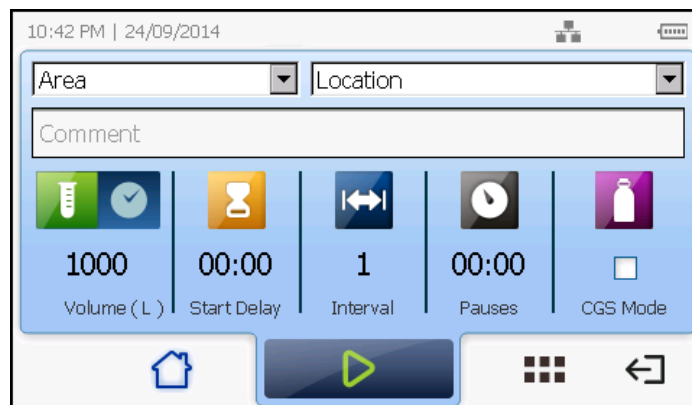


Figure 10-1 Home screen



Figure 10-2 Features Menu screen

- 2 Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** screen displays (see **Figure 10-3** on page 10-2).

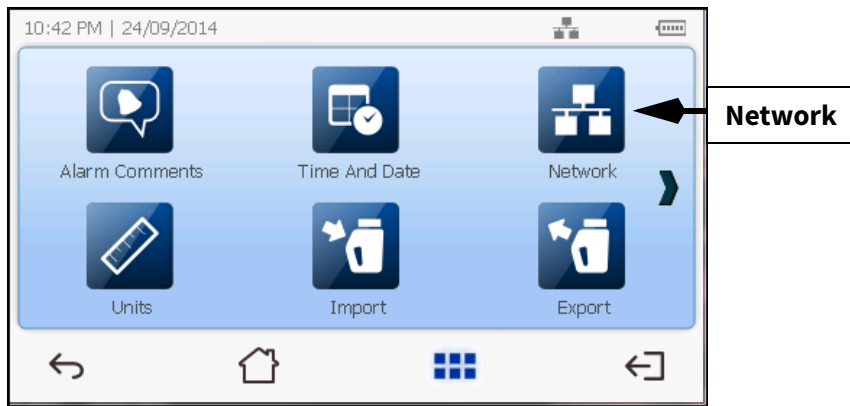


Figure 10-3 Setup Submenu screen

- 3 Touch  the **Network** button on the **Setup Submenu** screen.

The **Network** screen displays (see **Figure 10-4**).

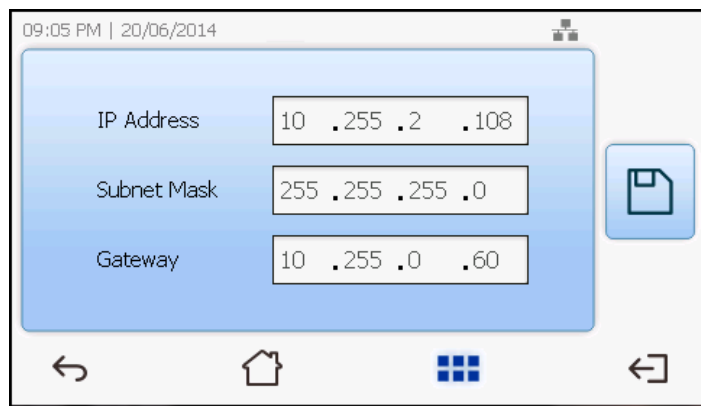


Figure 10-4 Network screen

Set the IP Address for the MiniCapt

>> **To set the IP address for the MiniCapt:**

1 View the **Network** screen as described in View the Network Screen on page 10-1.

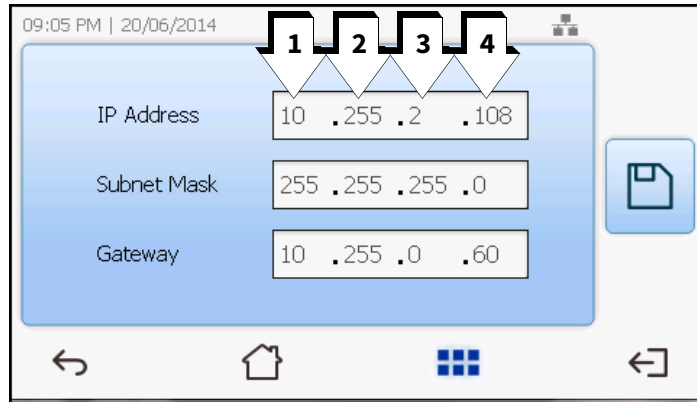


Figure 10-5 Network screen

2 There are 4 positions in the **IP Address** field.

Touch a position in the **IP Address** field in the **Network** screen (see **Figure 10-5**) to display the **Keyboard** screen for entering the value for that position (see **Figure 10-6**).



Figure 10-6 Keyboard screen for entering the IP Address

a. Use the keyboard to enter the IP Address:

- Touch the numbers on the keyboard to define the IP Address.

b. Touch  the **Done** button in the keyboard screen.

- The IP Address number you set for that position appears in the **IP Address** field in the **Network** screen.

3 Repeat **Step 2** for other positions in the **IP Address** field as necessary.

4 Touch  the **Save** button in the **Network** screen to save the IP Address definitions.

- The **Keyboard** screen remains displayed so you can set the **Subnet Mask** and the **Gateway**.

5 Use the same method to set the values for the **Subnet Mask** and the **Gateway** fields.

6 Touch  the **Features Menu** button to return to the **Features Menu** screen.

–OR–

Touch  the **Home** button to return to the **Home** screen.

Chapter 11

Import

This chapter describes how to import certain types of data from an external USB device into the MiniCapt Mobile Microbial Air Sampler. The data types that can be imported include:

- User and access details
- Location definitions
- Recipe definitions

View the Import Screen

>> To view the Import screen:

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 11-1**).

The **Features Menu** screen appears (see **Figure 11-2**).

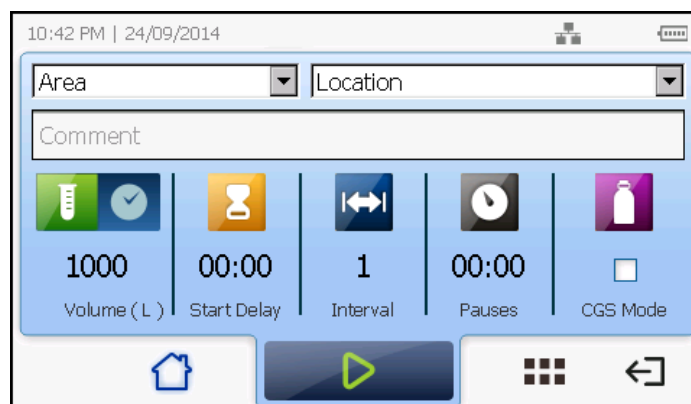


Figure 11-1 Home screen

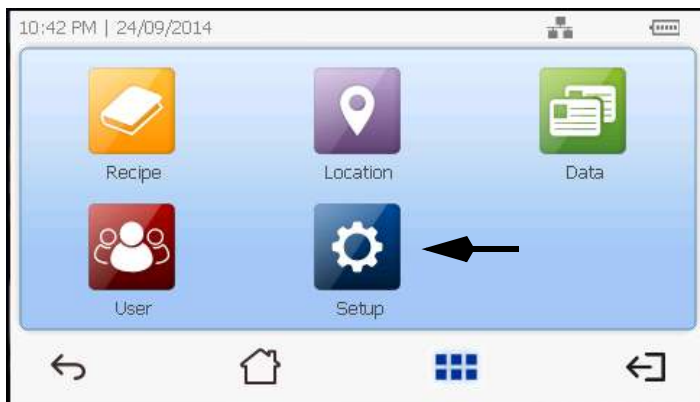


Figure 11-2 Features Menu screen

2. Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** screen displays (see **Figure 11-3**).

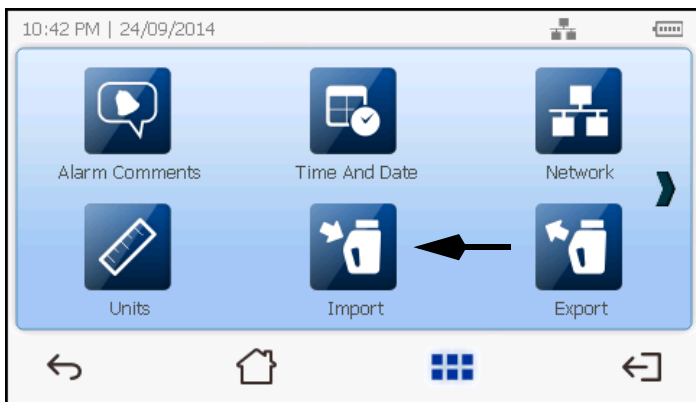


Figure 11-3 Setup Submenu screen

3. Touch  the **Import** button on the **Setup Submenu** screen.

The **Import** screen displays (see **Figure 11-4**).

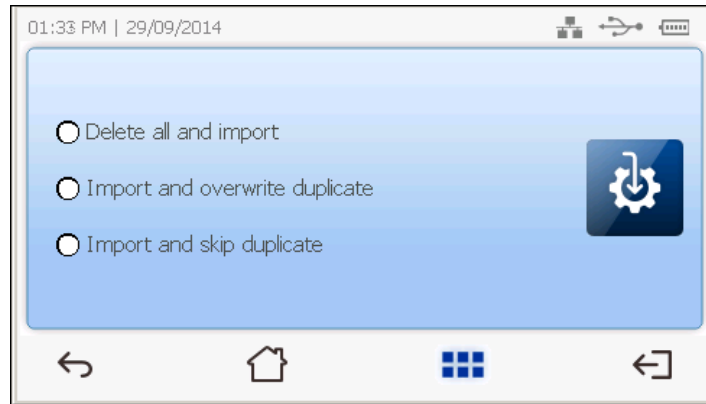


Figure 11-4 Import screen

Import Data into the MiniCapt

>> To import data files previously exported from a MiniCapt:

1. Prepare an external USB drive with the files you want to import into the MiniCapt Mobile Microbial Air Sampler.
2. Insert the external USB drive into the USB port on the front of the MiniCapt base (see **Figure 11-5**).



Figure 11-5 USB port on the front of the MiniCapt base

3. Open the **Import** screen as described in **View the Import Screen** on page 11-1.

4. Touch one of the following options for how to write the data files you are importing:
-  **Delete all and import** – Remove all existing files of the same type as those you are importing.
 -  **Import and overwrite duplicate** – Add new import files and overwrite any existing file that has the same name as the import file.
 -  **Import and skip duplicate** – Add new import files and don't overwrite any existing file that has the same name as an import file.

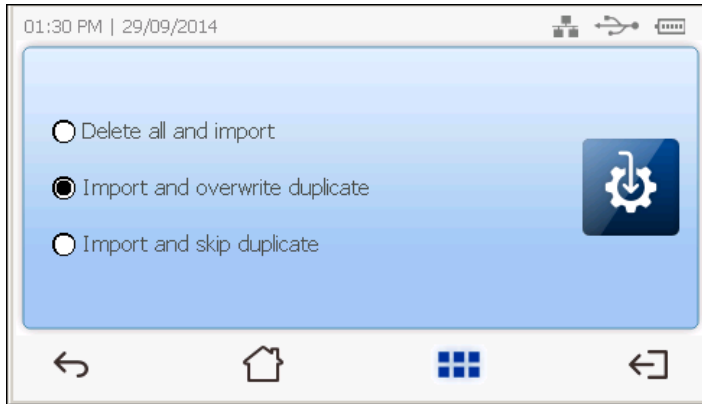


Figure 11-6 Import screen

5. Touch  the **Import Now** button in the **Import** screen to display the

USB FLASH DRIVE 'Hard Disk' screen (see **Figure 11-7** on page 11-4).

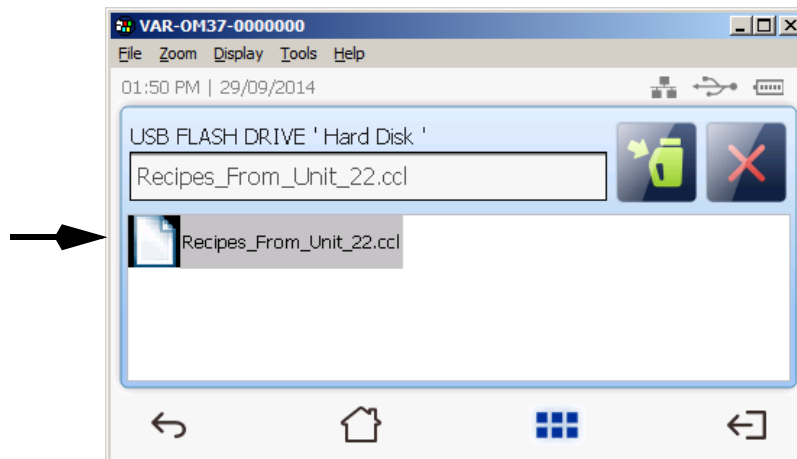


Figure 11-7 USB FLASH DRIVE 'Hard Disk' screen

6. Touch the file you want to import to select it (see **Figure 11-7**).
The file you selected appears in the **FILENAME** field in the **USB FLASH DRIVE 'Hard Disk'** screen.

7. Touch  the **Import File** button on the **USB FLASH DRIVE 'Hard Disk'** screen (see **Figure 11-7**).

- The file you selected is copied from the external USB drive to the MiniCapt.
- The **Import successful** message appears (see **Figure 11-8**).

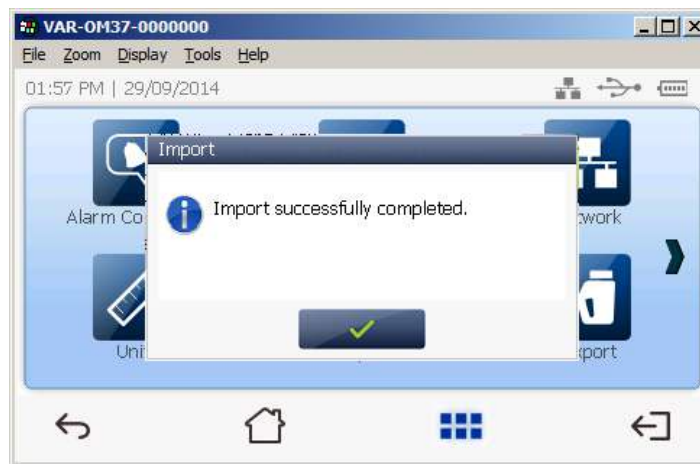


Figure 11-8 Import successful message screen.

8. Touch  the GREEN checkmark button in the **Import successful** message screen.
The **Setup Submenu** screen displays.

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Chapter 12

Units for Measurements

This chapter describes how to select the units of measurement and the decimal separator to be used by the MiniCapt Mobile Microbial Air Sampler.

View the Units Screen

>> To view the Units screen:

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 12-1**).

The **Features Menu** screen appears (see **Figure 12-2**).

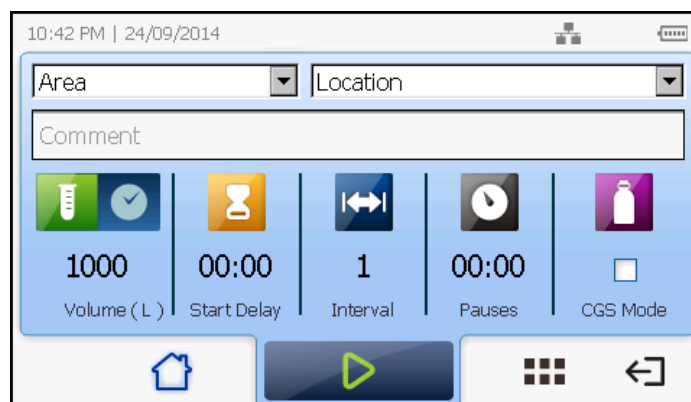


Figure 12-1 Home screen



Figure 12-2 Features Menu screen

2. Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** screen displays (see **Figure 12-3** on page 12-2).



Figure 12-3 Setup Submenu screen

3. Touch  the **Units** button on the **Setup Submenu** screen.

The **Units** screen displays (see **Figure 12-4**).

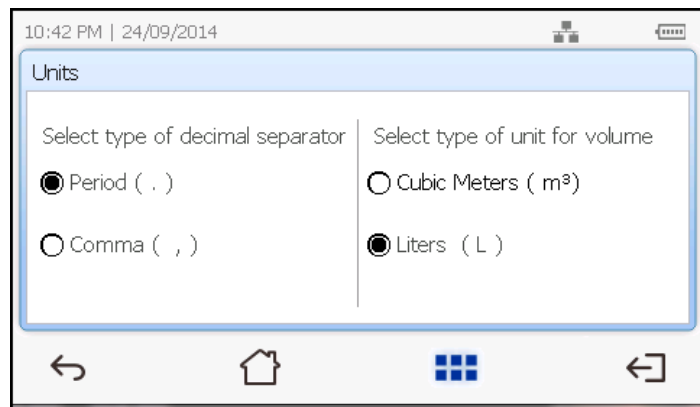


Figure 12-4 Units screen

Set the Units for the MiniCapt

The **Units** screen is used to select the decimal separator and the volume unit.

>> **To set the units for the MiniCapt:**

1. View the **Units** screen as described in **View the Units Screen** on page 12-1.

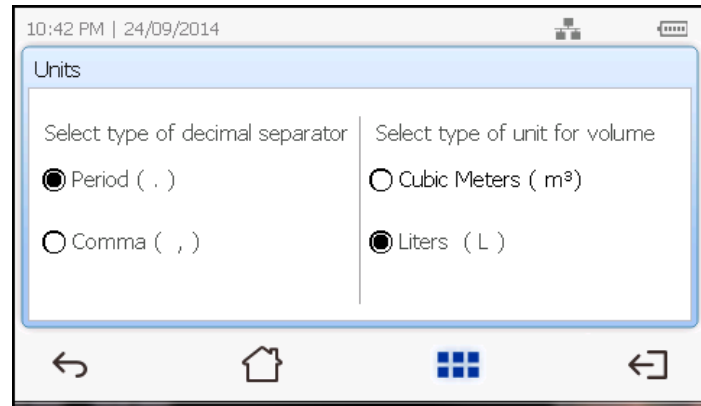


Figure 12-5 Units screen

2. In the **Select type of decimal separator** pane of the **Units** screen (see **Figure 12-5**), touch an option to select it  as your choice for the decimal separator. The choices are:
 -  **Period (.)**
 -  **Comma (,)**
3. In the **Select type of unit for volume** pane of the **Units** screen, touch an option to select it  as your choice for volume measurements. The choices are:
 -  **Cubic Meters (m³)**
 -  **Liters (L)**
4. Touch  the **Features Menu** button to return to the **Features Menu** screen.
-OR-
Touch  the **Home** button to return to the **Home** screen.

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Chapter 13

Export

This chapter describes how to export data from the MiniCapt Mobile Microbial Air Sampler to an external USB device. The types of data that can be exported include:

- User and access details
- Location definitions
- Recipe definitions

View the Export Screen

>> To view the Export screen:

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 13-1**).

The **Features Menu** screen appears (see **Figure 13-2**).

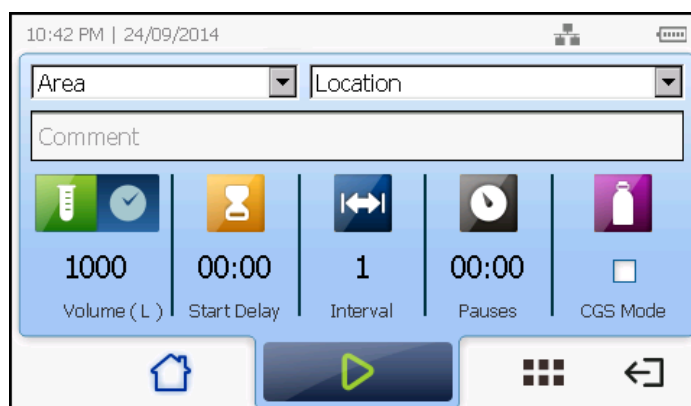


Figure 13-1 Home screen



Figure 13-2 Features Menu screen

2. Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** screen displays (see **Figure 13-3**).

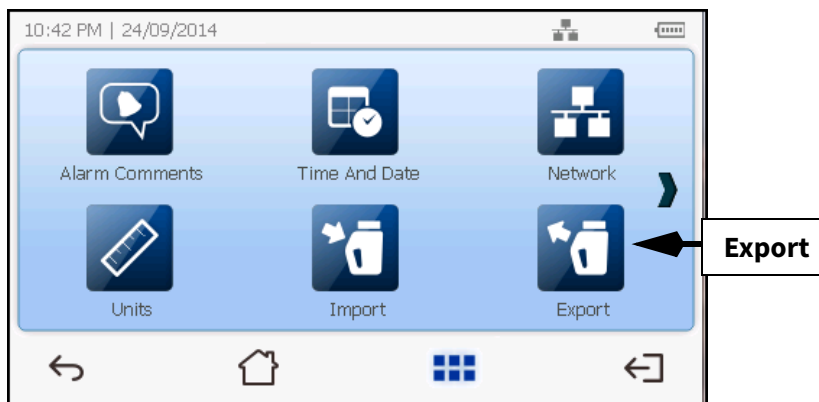


Figure 13-3 Setup Submenu screen

3. Touch  the **Export** button on the **Setup Submenu** screen.

The **Export** screen displays (see **Figure 13-4**).

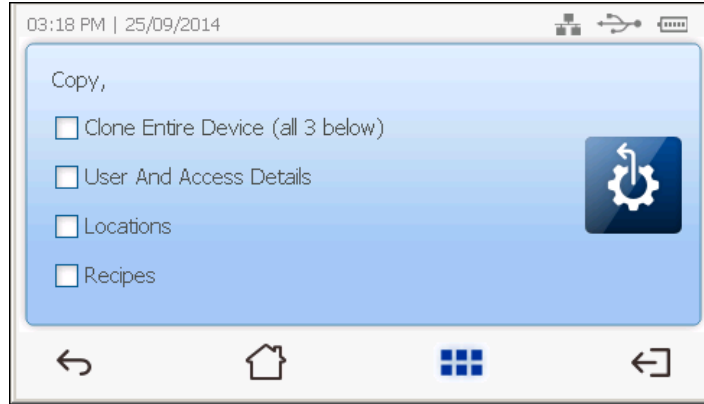


Figure 13-4 Export screen

Export Data from the MiniCapt

>> To export data from the MiniCapt:

1. Insert an external USB drive into the USB port on the front of the MiniCapt base (see **Figure 13-5**).



Figure 13-5 USB port on the front of the MiniCapt base

2. Open the **Export** screen as described in **View the Export Screen** on page 13-1.
3. Touch the check box(es) for the type(s) of data you want to export so that the check box is checked ☒:
 - ☒ **Clone Entire Device (all 3 below)**
 - ☒ **User and Access Details**
 - ☒ **Locations**
 - ☒ **Recipes**

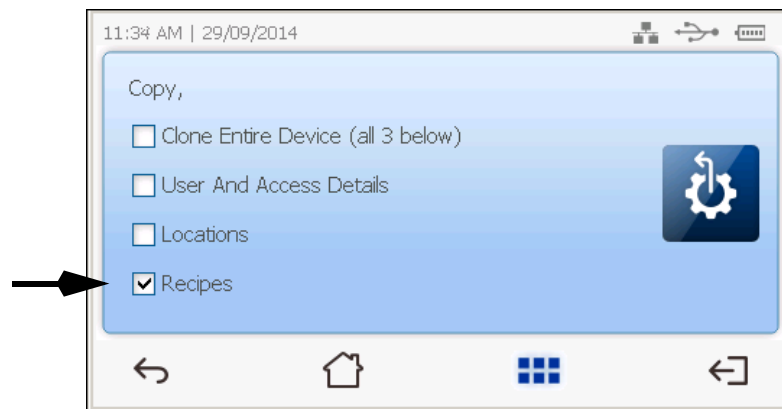


Figure 13-6 Export screen

4. Touch  the **Export Now** button in the **Export** screen to display the **USB FLASH DRIVE 'Hard Disk'** screen (see **Figure 13-7** on page 13-5).

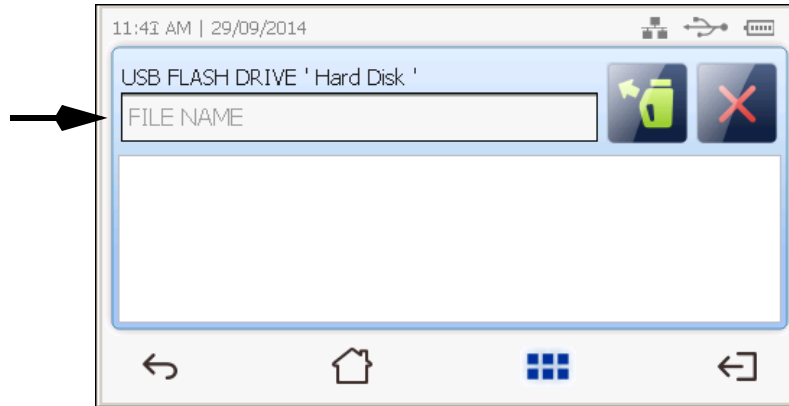


Figure 13-7 USB FLASH DRIVE 'Hard Disk' screen

5. Touch the **FILENAME** field in the **USB FLASH DRIVE 'Hard Disk'** screen to display the **Keyboard** screen (see **Figure 13-8**).

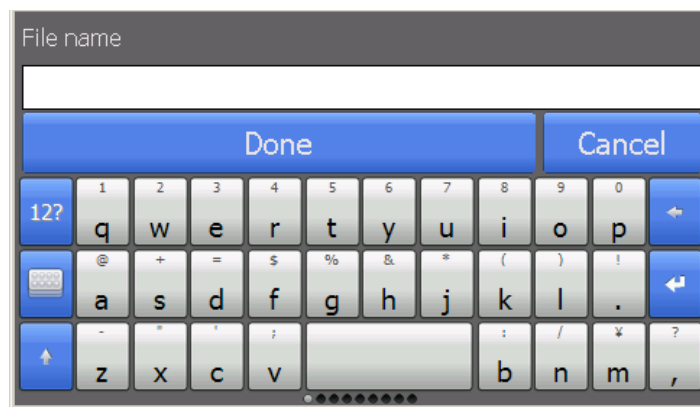


Figure 13-8 Keyboard screen for entering a name for the exported file

6. Use the keyboard to enter a name for the export file:
- Touch each letter in the name to spell out the file's name.
 - Touch  the **Done** button in the keyboard screen.
 - The **Keyboard** screen closes.
 - The file name appears in the **FILENAME** field in the **USB FLASH DRIVE 'Hard Disk'** screen (see **Figure 13-9** on page 13-6).

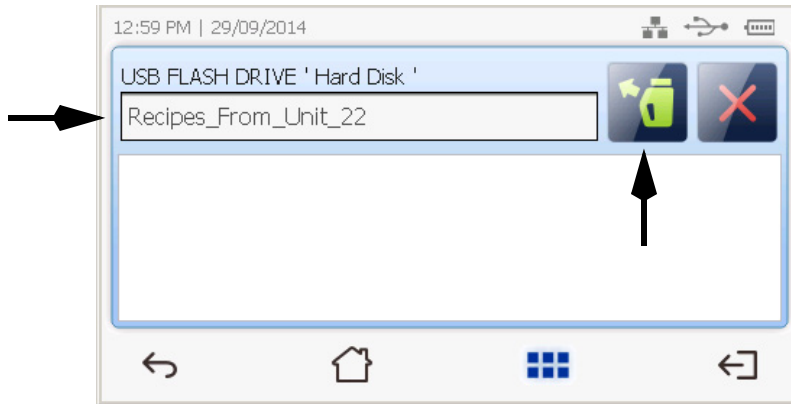


Figure 13-9 USB FLASH DRIVE 'Hard Disk' screen showing an export filename defined

7. Touch  the **Export File** button on the **USB FLASH DRIVE 'Hard Disk'** screen (see **Figure 13-9**).
 - The data items you selected are copied to the external USB drive.
 - The **Export successful** message appears (see **Figure 13-10**).

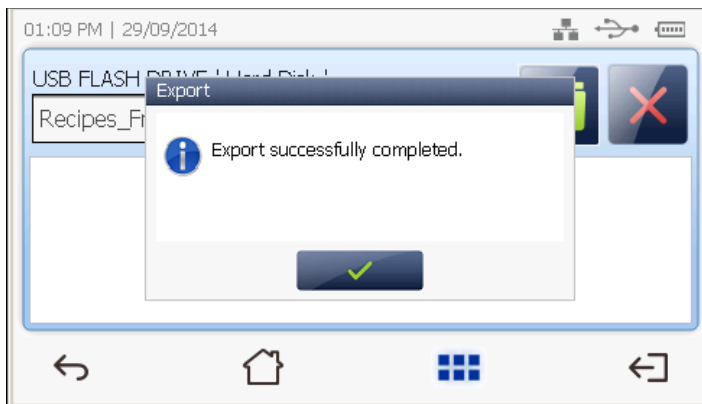


Figure 13-10 Export successful message screen.

8. Touch  the GREEN checkmark button in the **Export successful** message screen.
 - The **Setup Submenu** screen displays.

Print Data from the MiniCapt



Figure 13-11 USB port on the front of the MiniCapt base

1. Insert the USB end of the printer cable into the USB port on the front of the MiniCapt base (see **Figure 13-5**).
2. Select  to open the features menu.
3. Select  .
4. Select Report Records  .
5. Select a recipe.
6. Select export  .
7. Press the green checkmark  .
8. Report will print.

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Chapter 14

User Management

This chapter describes user management. Specifically, how to:

- View the list of current users in the **Users List** screen (see below)
- Add a user (see **Add a User** on page 14-3)
- Delete a user (see **Remove a User** on page 14-7)

Up to 50 users and passwords may be entered. There are three user levels:

- **Administrator:** Complete access.
- **Supervisor:** Able to change recipes, device settings, update the software and view sample logs, in addition to all User capabilities.
- **Operator:** Able to run a sample.

View the Users List Screen

>> To view the Users List screen:

1. On the **Home** screen, touch  the **Features Menu** button (see **Figure 14-1**).

The **Features Menu** screen appears (see **Figure 14-2**).

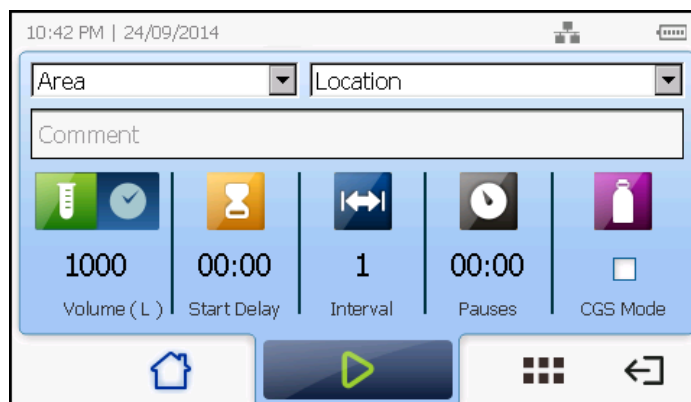


Figure 14-1 Home screen



Figure 14-2 Features Menu screen

2. Touch  the **User** button on the **Features Menu** screen.

The **Users List** screen displays (see **Figure 14-3**).



Figure 14-3 Users List screen

Add a User

>> To add a user:

1. View the **Users List** screen as described in **View the Users List Screen** on page 14-1.

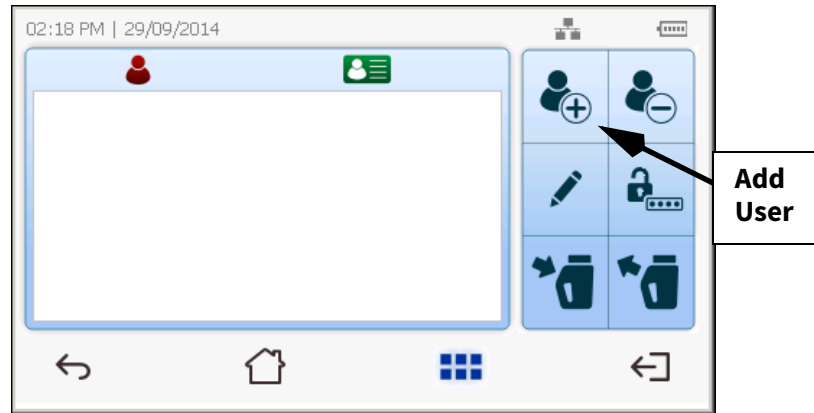


Figure 14-4 Users List screen

2. Touch  the **Add User** button in the **Users List** screen (see **Figure 14-4**) to display the **New User** screen shown in **Figure 14-5**.

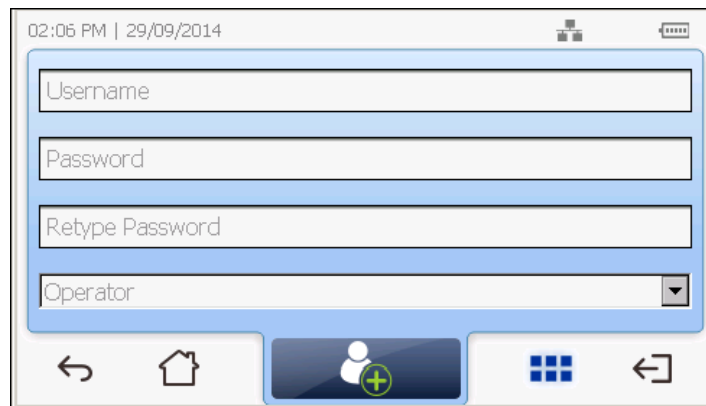


Figure 14-5 New User screen

3. Touch the **Username** field (1st field) to display the **Keyboard** screen (see **Figure 14-6** on page 14-4).

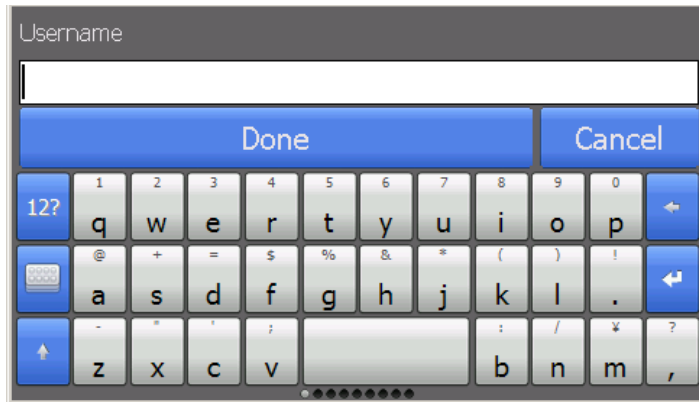


Figure 14-6 Keyboard screen for entering username

- a. Use the keyboard to enter the username:
 - Touch the keys on the keyboard to define the username, maximum 16 characters.
 - b. Touch  the **Done** button in the keyboard screen.
 - The **Keyboard** screen closes.
 - The username you set appears in the **Username** field of the **New User** screen.
4. Touch the **Password** field (2nd field) to display the **Keyboard** screen (see **Figure 14-6**).

NOTE: If Chinese Traditional, Chinese Simplified, or Japanese languages is the display language, the keyboard for password entry reverts to English. In other words only ASCII characters are allowed for passwords in these languages.

- a. Write down the password so you have a record of it to give the new user.
- b. Use the keyboard to enter the user's password:
 - Touch the keys on the keyboard to define the user's password.
- c. Touch  the **Done** button in the keyboard screen.
 - The **Keyboard** screen closes.
 - The password you set appears in the **Retype Password** field of the **New User** screen.

5. Touch the **Retype Password** field (3rd field) to display the **Keyboard** screen (see **Figure 14-6**).
 - a. Use the keyboard to enter the user's password again:
 - b. Touch  the **Done** button in the keyboard screen.
 - The **Keyboard** screen closes.
 - The password you set appears in the **Password** field of the **New User** screen.
6. Define the credentials for the new user (see **Figure 14-5** on page 14-3).
 - a. Touch the **permissions** field's list button (4th field) to display the types of credentials available (see **Figure 14-7** on page 14-5).
 - b. Touch the user credentials choice for the new user.



Figure 14-7 Credentials field list in the **New User** screen

7. Touch  the **Save New User** button in the **New User** screen.
 - The **Users List** screen displays showing the new user in the list.

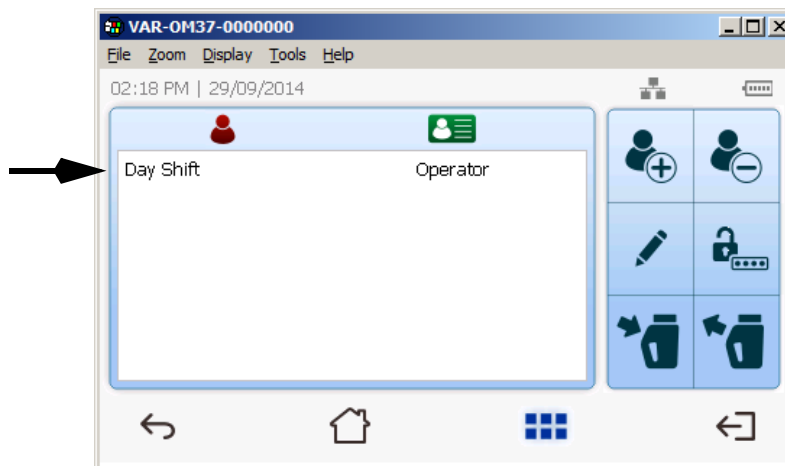


Figure 14-8 **Users List** screen showing a user definition

Modify a User

>> To modify a user:

1. View the **Users List** screen as described in **View the Users List Screen** on page 14-1.
2. Touch the name of the user you want to work with to select it.

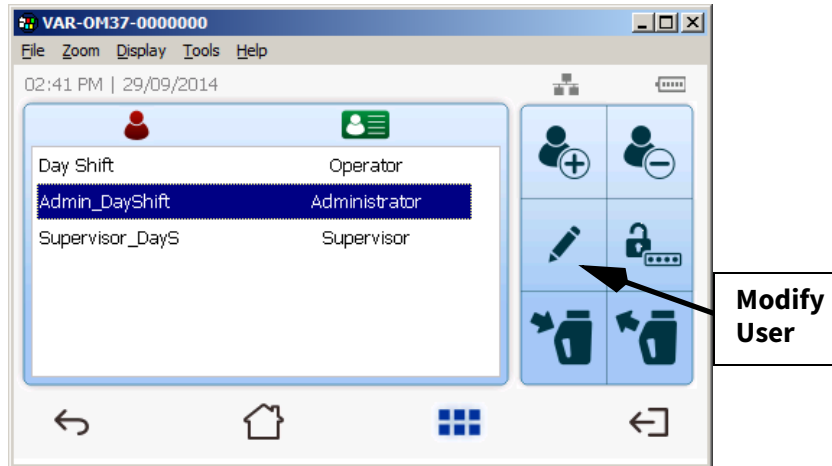


Figure 14-9 Users List screen

3. Touch  the **Modify** button in the **Users List** screen (see **Figure 14-9**) to display the **User** screen shown in **Figure 14-10**.



Figure 14-10 User screen

4. Modify the fields as described in **Add a User** on page 14-3 to define:
 - username
 - password
 - credentials
5. Touch  the **Save User Changes** button in the **User** screen. The **Users List** screen displays.

Remove a User

>> To delete a user:

1. View the **Users List** screen as described in **View the Users List Screen** on page 14-1.
2. Touch the name of the user you want to delete to select it.

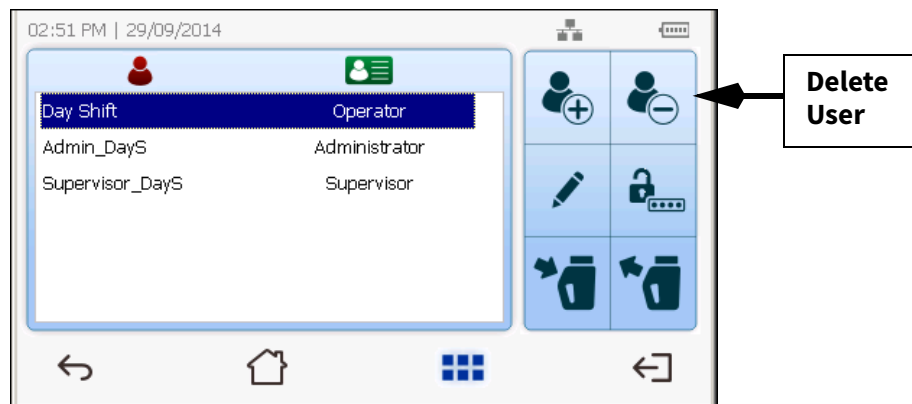


Figure 14-11 Users List screen

3. Touch  the **Delete User** button in the **Users List** screen (see **Figure 14-11**). The **Delete User Confirmation** screen displays (see **Figure 14-12**).

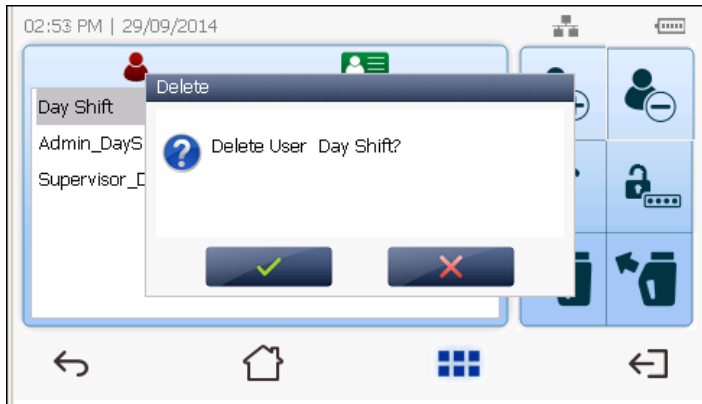


Figure 14-12 Delete User Confirmation screen

4. Touch  the GREEN checkmark button in the **Delete User Confirmation** message.
 - The user is deleted.
 - The **Users List** screen appears.

User Management

Follow this procedure to enable instrument security with the **Enable Protection** feature.

>> To activate the Enable Protection feature:

1. View the **Users List** screen as described in **View the Users List Screen** on page 14-1.
2. Touch the **Enable Protection**  button.
3. Touch the **Username** field (1st field) to display the keyboard input screen.
4. Insert the Administrator username using the keyboard.
5. Touch the **Done**  button when finished.
6. Touch the **Password** field (2nd field) to display the keyboard input screen.
7. Insert the Administrator password using the keyboard.
8. Touch the **Done**  button when finished.
9. Check if the **Enable Protection** button is active  .

The instrument needs to restart to complete **Enable Protection** activation. After restarting, you will see a Login screen display where you will be able to enter your username and password.

To disable the **Enable Protection** feature, follow the activation procedure above. The

Enable Protection button will instead switch from active  to inactive  .

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Chapter 15

System Status

This chapter describes how to view the status of the most recent MiniCapt Mobile Microbial Air Sampler sampling run in the **System Status** screen.

View the System Status Screen

>> To view the **System Status** screen:

1. On the **Home** screen, press  the **Features Menu** button (see **Figure 15-1**).
The **Features Menu** screen appears (see **Figure 15-2**).

TIP: To view the **Home** screen, touch  the **Home** button.

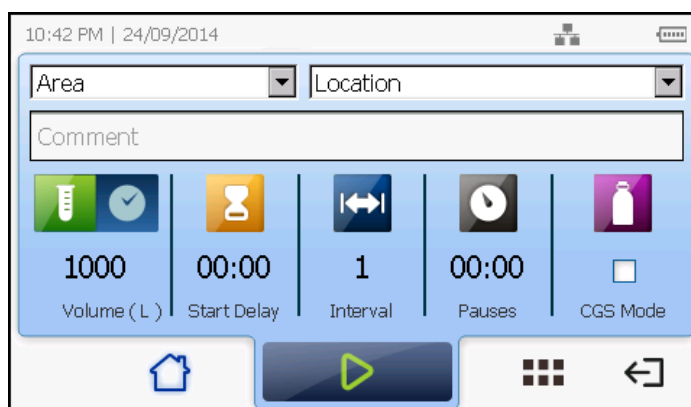


Figure 15-1 Home screen



Figure 15-2 Features Menu screen

- a. Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** appears (see **Figure 15-3**).



Figure 15-3 Setup Submenu screen

2. Touch  the **Next Page** button on the **Setup Submenu** screen (see **Figure 15-3**).
Page 2 of the **Setup Submenu** screen displays (see **Figure 15-4**).

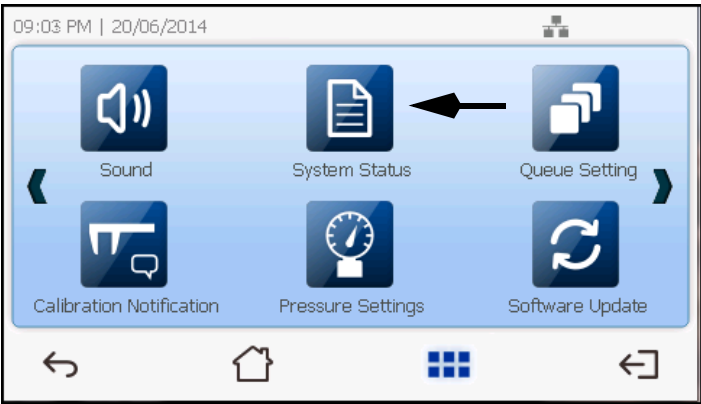
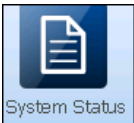


Figure 15-4 Setup Submenu screen, page 2

3. Touch  the **System Status** button on Page 2 of the **Setup Submenu** screen (see **Figure 15-4**).
The **System Status** screen displays (see **Figure 15-5** on page 15-3).

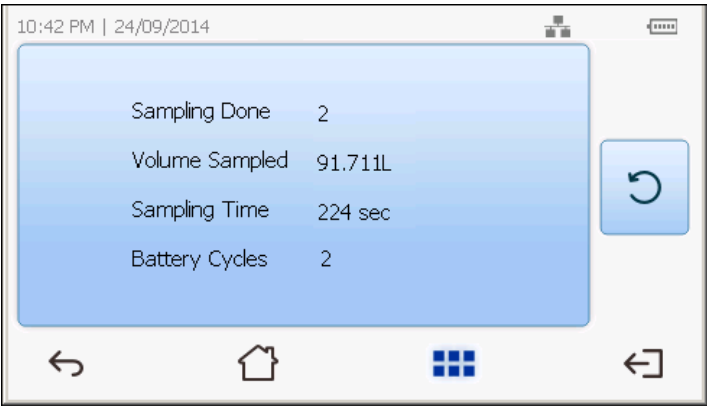


Figure 15-5 System Status screen

The components of the **System Status** screen are described in **Table 15-1**.

Table 15-1 Components of the **System Status** screen

Button	Description
Sampling Done field	Displays the ID of the most recent sampling.
Volume Sampled field	Displays the volume sampled during the sampling.
Sampling Time field	Displays the length of the sampling run in seconds.
Battery Cycles field	Displays the number of battery cycles.
 Previous button	Displays the status of the previous sample.

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Chapter 16

Queue Size

The MiniCapt Mobile Microbial Air Sampler queue retains the data for up to 3,000 sampling runs. The records are retained in the queue until you clear the queue using the **Queue Setting** screen.

This chapter describes how to set the queue size currently set for data records from sampling runs and how to clear the queue.

- See **View the Queue Setting Screen** on page 16-1.
- See **Change the Size of the Queue** on page 16-4.

View the Queue Setting Screen

>> To view the Queue Setting screen:

1. On the **Home** screen, press  the **Features Menu** button (see **Figure 16-1**).
The **Features Menu** screen appears (see **Figure 16-2**).

TIP: To view the **Home** screen, touch  the **Home** button.

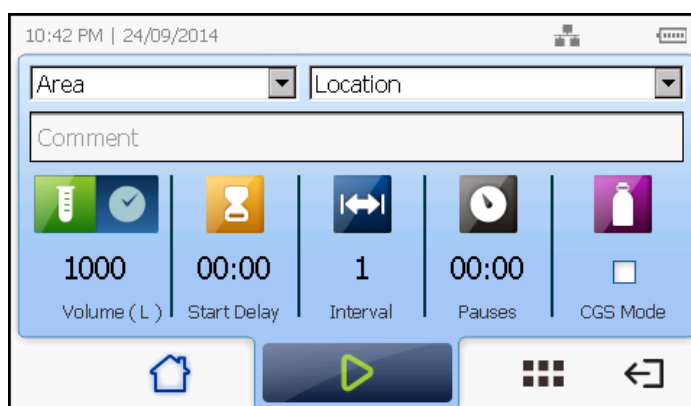


Figure 16-1 Home screen

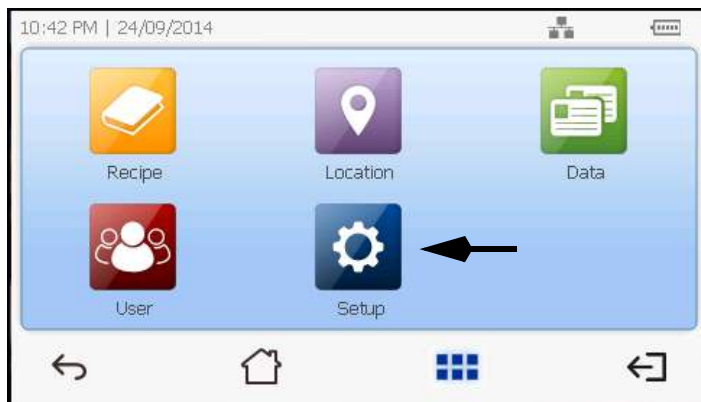


Figure 16-2 Features Menu screen

- a. Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** appears (see **Figure 16-3** on page 16-2).

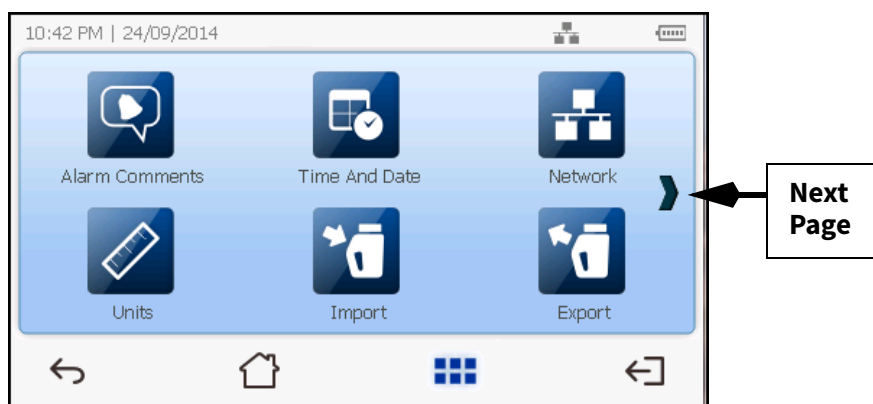


Figure 16-3 Setup Submenu screen

2. Touch  the **Next Page** button on the **Setup Submenu** screen (see **Figure 16-3**).
- Page 2 of the **Setup Submenu** screen displays (see **Figure 16-4**).



Figure 16-4 Setup Submenu screen, page 2

3. Touch  the **Queue Setting** button on Page 2 of the **Setup Submenu** screen (see **Figure 16-4**).
The **Queue Setting** screen displays (see **Figure 16-5**).

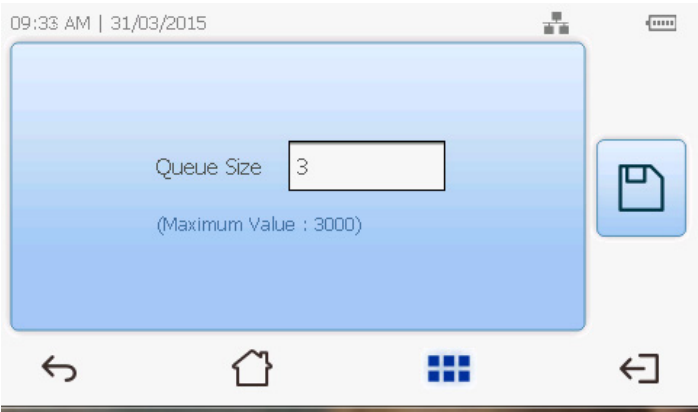


Figure 16-5 Queue Setting screen

The components of the **Queue Setting** screen are described in **Table 16-1**.

Table 16-1 Components of the **Queue Setting** screen

Button	Description
Queue field	Displays the current value of the queue size for the queue.
 Save button	Touch to save changes to the queue size setting.

Change the Size of the Queue

>> To modify the queue size:

1. View the **Queue Setting** screen as described in **View the Queue Setting Screen** on page 16-1.
2. Touch the **Queue Size** field to display the **Interval Keyboard** screen (see **Figure 16-6**).

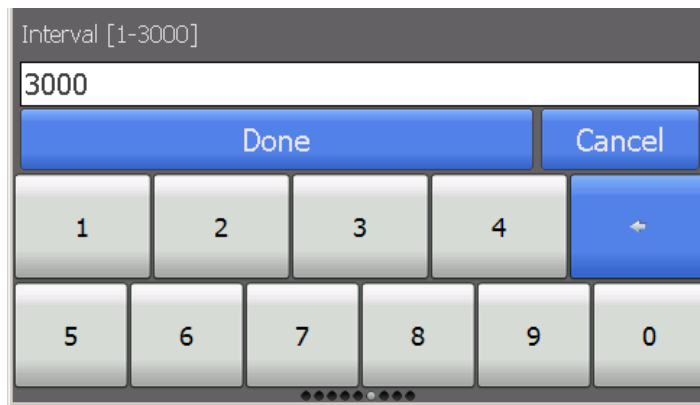


Figure 16-6 Interval Keyboard screen for setting the queue size value

3. Use the keys on the **Interval Keyboard** screen to set a value for the queue size. Maximum value is 3,000.
4. Touch  the **Done** button in the keyboard screen.
5. Touch  the **Save** button in the **Queue Setting** screen to save the change to the queue size definition.
6. Touch  the **Features Menu** button to return to the **Features Menu** screen.
-OR-
Touch  the **Home** button to return to the **Home** screen.

Chapter 17

Calibration

A MiniCapt Mobile Microbial Air Sampler touchscreen response is calibrated at the factory. After purchase, the MiniCapt's touchscreen response should be calibrated at least annually.

This chapter describes how to:

- Set the frequency for calibration notifications:
 - See **View the Calibration Notification Screen** on page 17-1
 - See **Frequency of Calibration Notification Reminders** on page 17-4
- Calibrate the touchscreen's response to touch:
 - See **View the Calibrate Screen** on page 17-5
 - See **Calibrate the Touchscreen's Response to Touch** on page 17-8

View the Calibration Notification Screen

>> **To view the Calibration Notification screen:**

1. On the **Home** screen, press  the **Features Menu** button (see **Figure 17-1**).
The **Features Menu** screen appears (see **Figure 17-2**).

TIP: To view the **Home** screen, touch  the **Home** button.

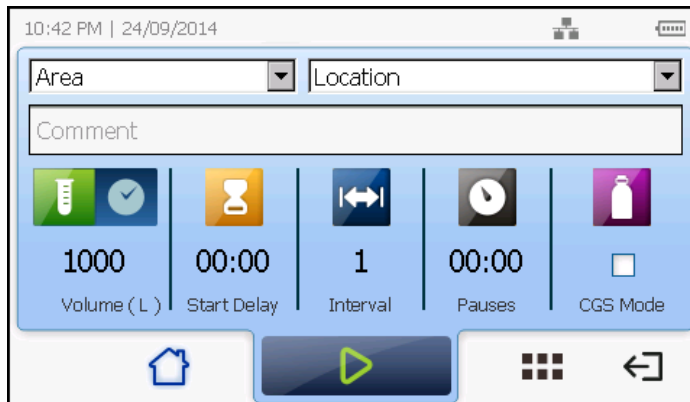


Figure 17-1 Home screen



Figure 17-2 Features Menu screen

- a. Touch  the **Setup** button on the **Features Menu** screen.

The **Setup Submenu** appears (see **Figure 17-3** on page 17-2).

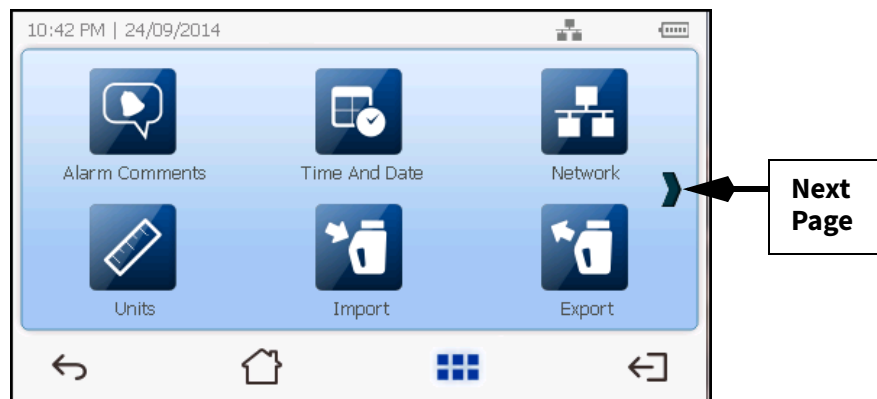
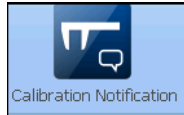


Figure 17-3 Setup Submenu screen

2. Touch  the **Next Page** button on the **Setup Submenu** screen (see **Figure 17-3**).
Page 2 of the **Setup Submenu** screen displays (see **Figure 17-4**).



Figure 17-4 Setup Submenu screen, page 2

3. Touch  the **Calibration Notification** button on Page 2 of the **Setup Submenu** screen (see **Figure 17-4**).
The **Calibration Notification** screen displays (see **Figure 17-5**).

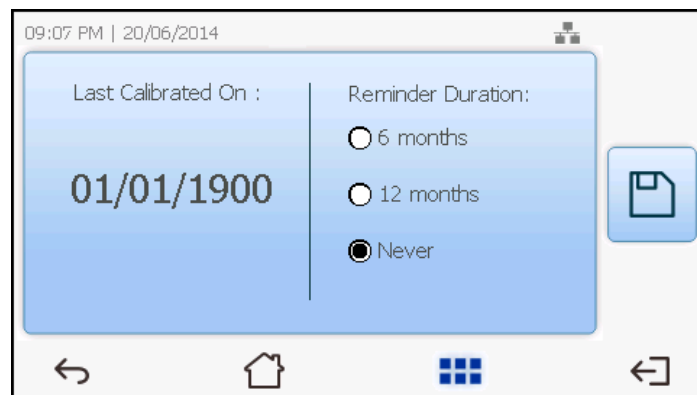


Figure 17-5 Calibration Notification screen

The components of the **Calibration Notification** screen are described in **Table 17-1**.

Table 17-1 Components of the **Calibration Notification** screen

Button	Description
Last Calibrated On field	Displays the date the MiniCapt was last calibrated.
 Reminder Duration options	Touch an option button to set the trigger for the calibration reminder notification to one of the following time periods:  6 months  12 months  Never
 Save button	Touch to save changes to the calibration notification setting.

Frequency of Calibration Notification Reminders

>> To change the frequency of calibration notification reminders:

1. View the **Calibration Notification** screen as described in **View the Calibration Notification Screen** on page 17-1.
2. In the **Reminder Duration** pane of the **Units** screen (see **Figure 17-5** on page 17-3), touch an option to select it  as your choice for the calibration reminder frequency. The choices are the following time periods:
 -  **6 months** (notification begins at 5 months then counts down each time unit is powered ON)
 -  **12 months** (notification begins at 11 months then counts down each time unit is powered ON)
 -  **Never**
3. Touch  the **Save** button in the **Calibration Notification** screen to save change to the calibration reminder notification setting.
4. Touch  the **Features Menu** button to return to the **Features Menu** screen.
–OR–
Touch  the **Home** button to return to the **Home** screen.

View the Calibrate Screen

The MiniCapt's touchscreen response is calibrated using the **Calibrate** screen.

>> **To view the Calibrate screen:**

1. On the **Home** screen, press  the **Features Menu** button (see **Figure 17-2**).
The **Features Menu** screen appears (see **Figure 17-3**).

TIP: To view the **Home** screen, touch  the **Home** button.

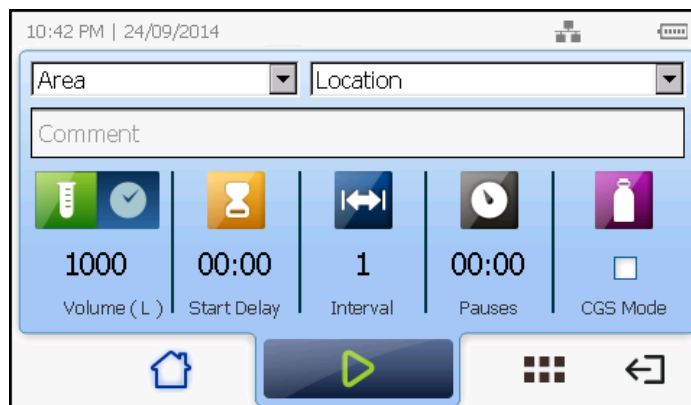


Figure 17-6 Home screen



Figure 17-7 Features Menu screen

- b. Touch  the **Setup** button on the **Features Menu** screen.
The **Setup Submenu** appears (see **Figure 17-8** on page 17-6).

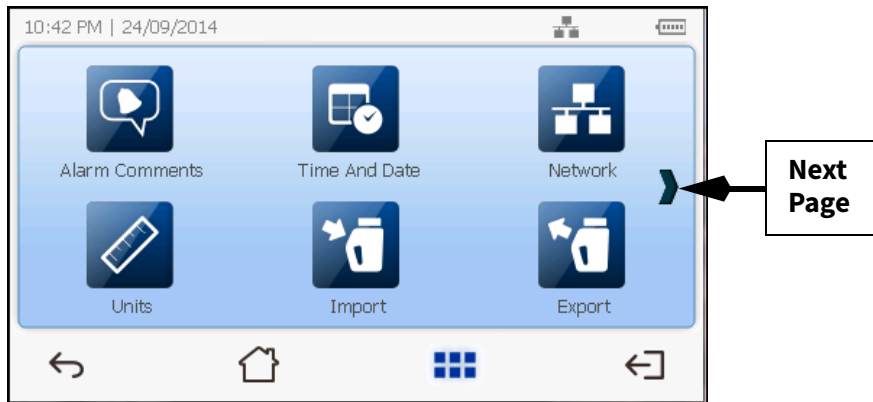


Figure 17-8 Setup Submenu screen

2. Touch  the **Next Page** button on the **Setup Submenu** screen (see **Figure 17-8**).
Page 2 of the **Setup Submenu** screen displays (see **Figure 17-9**).

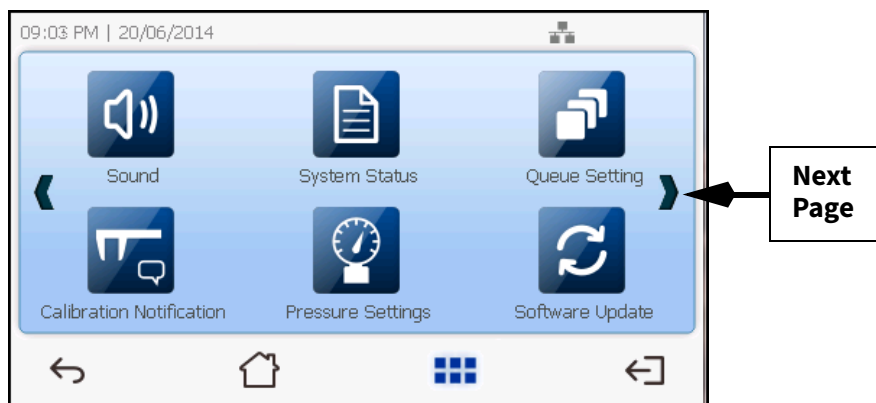


Figure 17-9 Setup Submenu screen, page 2

3. Touch  the **Next Page** button on page 2 of the **Setup Submenu** screen (see **Figure 17-9**).
Page 3 of the **Setup Submenu** screen displays (see **Figure 17-10**).



Figure 17-10 Setup Submenu screen, page 3

4. Touch  the **Calibrate Screen** button on Page 2 of the **Setup Submenu** screen (see **Figure 17-10** on page 17-7). The **Calibrate** screen displays (see **Figure 17-11**).

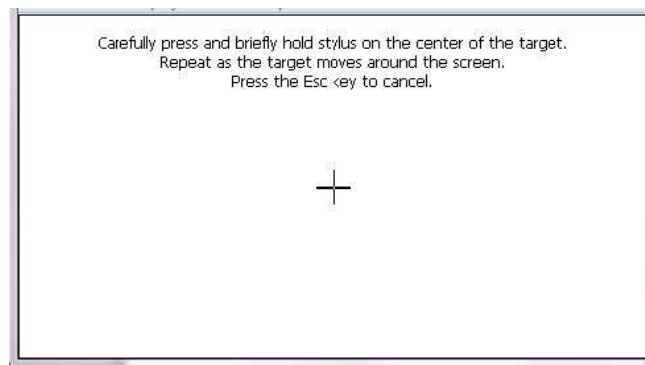


Figure 17-11 Calibrate screen

Calibrate the Touchscreen's Response to Touch

The MiniCapt's touchscreen response is calibrated using the **Calibrate** screen.

>> To calibrate the touchscreen's response to touch:

1. View the **Calibrate** screen as described in **View the Calibrate Screen** on page 17-5.
2. Locate a stylus that you can use to touch the screen.
3. Touch and hold the stylus on the + plus sign displayed on the **Calibrate** screen.
4. As the + plus sign moves to a new position on the **Calibrate** screen, touch and hold the stylus on it until the + plus sign moves to a new position.
5. After all the + plus sign touch points have been touched, the message shown in **Figure 17-12** appears in the **Calibrate** screen.



Figure 17-12 **Calibrate** screen calibration complete message

6. Touch anywhere in the **Calibrate** screen to close it and return to Page 3 of the **Setup Submenu** screen.

Chapter 18

Accessories

Accessories for the MiniCapt Mobile Microbial Air Sampler are available in the following kits:

- Isolator Monitoring Kit (see **Isolator Monitoring Kit** on page 18-2).
- Remote Sampling ISP Kit (see **Remote ISP Sampling Kit** on page 18-3).
- Remote Connection to BioCapt and BioCapt Single-Use Kit (see Remote Connection to BioCapt on page 18-4 and Remote Connection to BioCapt Single-Use on page 18-6).

Part numbers for the kits are provided in **Accessories for the MiniCapt Mobile Microbial Air Sampler** on page 2-2 of **Chapter 2** Unpacking and Installation **Table 2-2**.

Isolator Monitoring Kit

The Isolator Monitoring Kit (see **Figure 18-1** on page 18-2) can be used for sampling in an isolator.

There are two Isolator Monitoring kits:

- 25/50 LPM units
- 100 LPM unit

NOTE: For correct sampling, ensure the correct kit for required flowrate is used.

Part numbers for the kits are provided in **Table 2-2 Accessories for the MiniCapt Mobile Microbial Air Sampler** on page 2-2.

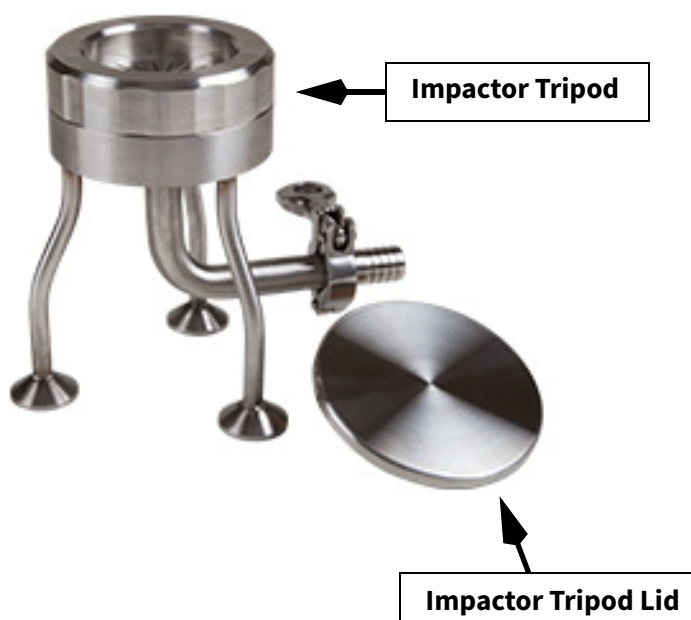


Figure 18-1 Isolator Monitoring Kit components

>> To install the Isolator Monitoring Kit on the MiniCapt:

1. Follow step 1 in the instructions in Load the Agar Plate Load the Agar Plate on page 4-2 for installing the agar plate.
2. Place the **Remote Sampling Adaptor** on the MiniCapt.
3. Place the **Impactor Tripod** inside the isolator.

4. Connect the **Impactor Tripod** to the **Remote Sampling Adaptor**:
 - a. Use a Tri-Clamp to attach one end of the tubing to the **Remote Sampling Adaptor**.
 - b. Use a Tri-Clamp to attach the other end of the tubing to the **Impactor Tripod**.

Remote ISP Sampling Kit

The Remote Sampling ISP Kit can be used to attach the MiniCapt Mobile Microbial Air Sampler to an ISP (Isokinetic Sampling Probe).

An isokinetic sampling probe is used to capture particles passing through a defined area for a defined time without disturbing the particle paths.

There are three Remote Sampling ISP kits:

- 25 LPM unit
- 50 LPM units
- 100 LPM unit

NOTE: For correct sampling, ensure the correct kit for required flowrate is used.

Part numbers for the kits are provided in **Table 2-2 Accessories for the MiniCapt Mobile Microbial Air Sampler** on page 2-2.

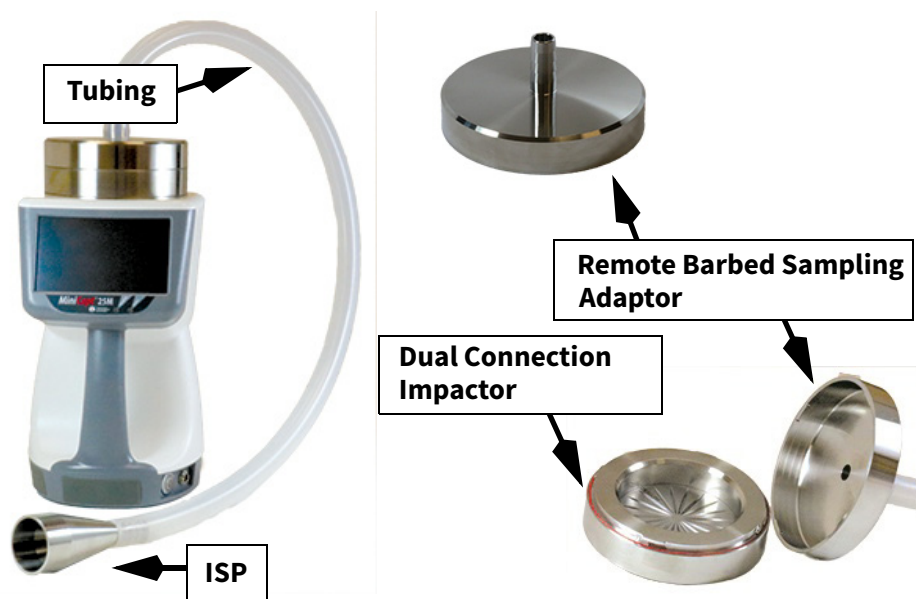


Figure 18-2 Remote ISP Sampling Kit components

>> To install the Remote Sampling ISP Kit on the MiniCapt:

1. Follow steps 1 and 2 in Load the Agar Plate Load the Agar Plate on page 4-2 to install the agar plate.
2. Place the **Dual Connection Impactor** over the agar plate on the MiniCapt.
3. Place the **Remote Sampling Adaptor** on top of the **Dual Connection Impactor**.
4. Use a Tri-Clamp to attach one end of the tubing to the **Remote Sampling Adaptor**.
5. Attach the other end of the tubing to the **ISP**.

Remote Connection to BioCapt

The Remote Connection to BioCapt can be used to attach the MiniCapt Mobile Microbial Air Sampler to a Impactor.

The remote sampling top adapter with a 3/4-inch Tri Clamp connection, can be ordered from Particle Measuring Systems. (P/N 90790048).

To install the Remote Connection to BioCapt Kit on the MiniCapt:

1. Follow steps 1 and 2 in the instructions in Load the Agar Plate Load the Agar Plate on page 4-2 to install the agar plate. Remove the sampler head and expose the plate holder (see **Figure 4-1** Sampler head on MiniCapt, **Figure 4-2** Sampler head off of MiniCapt, and **Figure 4-3** Plate holder exposed).
2. Place the **Remote Sampling Adaptor** on the MiniCapt.



Figure 18-3 Remote sampling adaptor.

3. Place the **Impactor** at the suitable sampling point.
4. Connect the **Impactor** to the **Remote Sampling Adaptor**:
 - a. Use a Tri-Clamp to attach one end of the tubing to the **Remote Sampling Adaptor**.
 - b. Attach the other end of the tubing to the **Impactor**.
 - BioCapt impactors are available in different configurations (25/50 and 100 lpm) and different design styles including: side outlet barbfitting, side outlet tri-clamp, and mushroom bottom outlet.



Figure 18-4 BioCapt Stainless Steel

Remote Connection to BioCapt Single-Use

The Remote Connection to BioCapt can be used to attach the MiniCapt Mobile Microbial Air Sampler to a Single-Use Impactor.

The Remote Connection to BioCapt Single-Use may only be used with 25/50 LPM units.

To install the Remote Connection to BioCapt Single-Use Kit on the MiniCapt:

1. Follow steps 1 and 2 of Load the Agar Plate on page 4-2 to install the agar plate. Remove the sampler head and expose the plate holder (see **Figure 4-1** Sampler head on MiniCapt, **Figure 4-2** Sampler head off of MiniCapt, and **Figure 4-3** Plate holder exposed).
2. Place the **Remote Sampling Adaptor** on the MiniCapt.
3. Place the **Single-Use Impactor** inside the isolator or at the suitable sampling point.
4. Connect the **Impactor** to the **Remote Sampling Adaptor**:
 - a. Use a Tri-Clamp to attach one end of the tubing to the **Remote Sampling Adaptor**.
 - b. Attach the other end of the tubing to the **Single-Use Impactor**.



Figure 18-5 BioCapt Single-Use

NOTE: BioCapt Single-Use can be purchased separately. Contact your Particle Measuring Systems representative for more information.

Chapter 19

Maintenance and Performance Checks

There are no user-serviceable items the MiniCapt Mobile Microbial Air Sampler.

Cleaning the Sampler

Cleaning the BioCapt Impactor Head

1. This is made of AISI 316L Stainless steel and can be sterilized in an autoclave.
2. Prior to autoclaving, clean the impactor head well using an approved chemical.
3. To avoid discoloration, ensure cleaner residue is completely removed prior to autoclaving and the item is dry.

Cleaning the Sampler's Housing

1. The MiniCapt Mobile Microbial Air Sampler is housed in a polycarbonate enclosure and should be periodically cleaned with a clean, lint-free cloth moistened with cleanser.
2. Prior to cleaning, disconnect the power cord from its power source.
3. The sample probe must be capped before the instrument is sterilized by means of liquid, spray or mist.
4. Turn the pump off before capping the sample probe.

The following chemicals have been shown to be acceptable for use with the MiniCapt Mobile Microbial Air Sampler:

Table 19-1 Acceptable Cleaners for the MiniCapt Mobile Microbial Air Sampler

Chemical ID	Brand Name
Isopropyl Alcohol IPA 70/30	Any
Hydrogen Peroxide (up to 6%)	Steri-perox
Sodium Hypochlorite 6%	Clorox Bleach
Sodium Hypochlorite 1%	1 part Hypochlorite 5.25% -5 parts water
Quaternary Ammonia solution	Decon-quat (prepare per manufacturer's instructions)
Phenol	Decon-phene/Decon-cycle
H2O2 and Acetic Acid	Decon-spore
Residue Remover	Decon-clean

Compatibility to Vaporous Hydrogen Peroxide (VHP)

Particle Measuring Systems has performed a multi-cycle study to investigate the compatibility of the MiniCapt Mobile instrument under typical VHP cycle conditions with subsequent analysis of the instrument.

Based on the results of the functional, visual, qualification and calibrations tests, we can conclude that the instrument MiniCapt Mobile Microbial Air Sampler is compatible under typical user conditions, if kept in "Off-Mode" inside a VHP decontaminated environment. This is applicable to all models of the MiniCapt Mobile Series (25, 50 & 100 LPM) taking into consideration that they are identical in construction.

NOTE: Check the plate height adjustment after cleaning to ensure it is still correct

WARNING

Disconnect the power cord from its power source.

The sample probe must be capped before the instrument is sterilized by means of liquid, spray, or mist. Turn the pump off before capping the sample probe.

The MiniCapt Mobile Microbial Air Sampler is housed in a polycarbonate enclosure and should provide many years of trouble-free performance. Periodically it may be helpful to wipe the enclosure with a clean, lint-free cloth moistened with cleanser.

Cable Connectors

Occasionally a cable connector may be damaged through an accident. If a connector is damaged, be careful not to aggravate the problem by forcing a cable into a damaged connector. A Particle Measuring Systems Service Representative can repair or replace damaged connectors.

Performance Checks

Complete the following procedures to verify that your instrument is operating properly.

Air Flowrate Check

The sample flowrate can be adjusted and calibrated by a Particle Measuring Systems authorized service center. Adjustments performed by an unauthorized service center may result in flowrate and microbial collection inaccuracy, as well as hardware damages.

To perform a flowrate verification, a flow meter with suitable range for the instrument type (25, 50, or 100 LPM) and the appropriate adapter is required (contact Particle Measuring Systems for further information).

>> To check the air flowrate:

1. Disconnect all sample tubing and sample probes.
2. Connect the unrestricted test flow meter to the sample inlet fitting.
3. Run a sample and monitor the flow meter readings.

The measured flow should be the following:

- 25 LPM $\pm$ 5%
- 50 LPM $\pm$ 5%
- 100 LPM $\pm$ 5%

A flowrate error greater than $\pm 5\%$ results in sample warnings.

A flowrate error greater than $\pm 20\%$ results in an alarm.

Low flow could be due to a blockage.

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Chapter 20

Troubleshooting

Use this chapter to help troubleshoot issues with the MiniCapt Mobile Microbial Air Sampler, such as power issues, communication messages, errors and leaks.

Troubleshooting Matrix

Problem	Symptoms	Possible Cause	Try
No Power	No lights Or No communications	Power supply not connected to a power source	Check the seating of the power supply cable in the unit. Verify that the power supply is plugged in.
		Electrical power source fault	Check the electrical outlet for power, including any power strips or surge protectors.
		Power supply faulty	Try a different power supply.
Communications not established – FacilityPro displays “Communications Error”	Unable to view data from working sampler	Batteries are not charged	Verify batteries are charged.
		Ethernet cable problem	Replace the Ethernet cable that connects the sampler to an Ethernet hub.
		Unit not configured correctly	Re-configure the unit. First check the sensor’s IP Address and the computer’s IP Address.
		Computer hardware or software problem	Substitute a computer with known good Ethernet capability. Refer to your computer’s Ethernet carded documentation to correct the fault.

Alarms and Warnings List

Alarms and Warnings	
Area with same name already exist.	
Battery charge is below 10%	
Battery charge is below 5%	
BCLA	Battery charge Low Alarm
BCLW	Battery charge Low Warning
Cannot delete. Only one administrator present.	
Cannot Delete. Recipe is already assigned.	
Duplicate Locations Found.	
Error while importing locations.	
Error while importing recipes.	
Error while importing users.	
File cannot be saved due to low disk space.	
FRHA	flowrate High Alarm
FRHW	flowrate High Warning
FRLA	flowrate Low Alarm
FRLW	flowrate Low Warning
In CGS mode, pressure in the head is above 400 Pa.	
In CGS mode, pressure in the head is above 400 Pa.	
In CGS mode, pressure in the head is above 400 Pa or below 100 Pa.	
In CGS mode, pressure in the head is below 100 Pa.	
In CGS mode, pressure in the head is below 100 Pa.	
In CGS mode, pressure in the head is too high (500 Pa).	
In CGS mode, pressure in the head is too low (0 Pa).	
Invalid file selected to import.	
Invalid Input	
Invalid user name or password.	
Location with same name already exist.	
Measured flowrate is greater than 20% of the target flowrate.	
Measured flowrate is greater than 5% of the target flowrate.	
Measured flowrate is lower than 20% of the target flowrate.	
Measured flowrate is lower than 5% of the target flowrate.	
No administrator present. Protection disabled.	

No device recognized.	
PHA	Pressure High Alarm
PHW	Pressure High Warning
PLA	Pressure Low Alarm
PLW	Pressure Low Warning
Recipe with same name already exist.	
The disk space is low._	
The product supports to add 50 users only.	
The product supports to add 400 areas only.	
The product supports to add 400 locations only.	
The product supports to add 50 recipes only.	
There are no users added.	
There is no locations added.	
There is no recipe present.	
Unexpected interruption of MODBUS communication	
USB device is not connected.	
User already exists	
Value cannot be greater than 240.	

Air Flowrate Errors

As a result of the performance check procedure (see **Performance Checks** on page 19-3 of **Chapter 19** Maintenance and Performance Checks), the flowrate at the sampler's inlet should be the following.

- 25 LPM $\pm$ 5%
- 50 LPM $\pm$ 5%
- 100 LPM $\pm$ 5%

A flowrate error greater than $\pm 5\%$ results in sample warnings.

A flowrate error greater than $\pm 20\%$ results in an alarm.

Low flow could be due to an obstructed orifice, leaks or insufficient vacuum.

See **Chapter 19** Maintenance and Performance Checks, **Air Flowrate Check** on page 19-3.

Appendix A

Communications

Communications with the MiniCapt are available via Modbus TCP. The instrument presents a single TCP/IP Ethernet connection at port 502 using the standard Modbus protocol.

Two specification documents were used in the development of the Modbus interface:

- MODBUS MESSAGING ON TCP/IP IMPLEMENTATION GUIDE V1.0b
- MODBUS APPLICATION PROTOCOL SPECIFICATION V1.1b

The Modbus protocol, as implemented in this instrument, utilizes generic 0-based addressing.

Modbus Overview

Each register in the Modbus map is defined to be 16 bits. The map can contain three distinct sections:

- | | |
|----------------------------|--|
| 1 Input registers | Read Only information for ID and data collection |
| 2 Holding registers | Read/Write parameters for configuring the device |
| 3 Coils | Read/Write individual bits to control the device |

The supported functions include:

- 1** Read Coils
- 3** Read Holding Registers
- 4** Read Input Registers
- 5** Write Single Coil
- 6** Write Single Holding Register
- 15** Write Multiple Coils
- 16** Write Multiple Holding Registers
- 22** Mask Write Holding Register
- 23** Read/Write Multiple Holding Registers

- Any registers accessed but not defined will generate an address error.
- Spare coils/registers will “set” without error and always return a zero value.
- Registers set with invalid data will return a function error.

The map delineates three types of register assemblies:

- Unary:** an individual 16 bit register
- Dual:** a register pair used for a 32 bit representation
- String:** a group of registers containing ASCII bytes

There is a setting available that toggles the interpretation of selected dual-register values. These values can be interpreted as integer representations of floating point numbers with a fixed scaling factor or as IEEE-754 floating point representations of that value. Refer to the register map to determine which register pairs have this feature applied. This setting can be set real-time via the associated coil.

Even though the Modbus protocol itself is standard, the contents of the registers are application specific. A description of the register map is the definitive specification for that application interface. The following Modbus register map definition has comments and notes to help with its intended use.

Input Registers

The input registers are in two sections: **Configuration** and **Data**.

Configuration Section

The **Configuration** section contains:

- Modbus Map Version
- Sensor Firmware Version
- Product Name
- flowrate and Volume Scale Factors
- flowrate
- Number of channels (Particle & Analog)

**30001:
Modbus Map Version**

This is a fixed value representing the version number of the Modbus map multiplied by 100. This version will change if/when the basic structure of the map and/or processing associated with the structure of the map is adjusted.

NOTE: Additions and/or definitions to the spare entries will not generally require a version change – they will simply be annotated as to the applicability to that particular instrument. The same reasoning is applied to unique registers and/or coils for a particular instrument – they will simply be annotated as being specific to that device.

**30002:
Sensor Firmware Version**

This is a value representing the version number of the flow controller firmware multiplied by 100.

**30003 – 30010:
Product Name**

Product name entered using ASCII bytes and positioned as shown in the map.

**30011:
flowrate Scale Factor**

The power of 10 multiplied to the flowrate and then entered into registers 30013/30014, 30222/30223 and 30229/30230. Used when the floating-point representation is disabled. The MiniCapt uses a value of 2 to represent a fixed scaling factor of 100 for flowrate.

**30012:
Volume Scale Factor**

The power of 10 multiplied to the volume and then entered into registers 30224/30225 and 30231/30232. Used when the floating-point representation is disabled. The MiniCapt uses a value of 5 to represent a fixed scaling factor of 100000 for volume.

**30013 – 30014:
flowrate**

Dual-register representation of the nominal flowrate in liters per minute. Can be integer or float depending on mode selected. The integer representation uses scale factor from register 30011.

**30015:
Number of Particle
Channels**

Processed as a variable but fixed to a value of 0 for MiniCapt.

**30016:
Number of Analog Channels**

Processed as a variable but fixed to a value of 3 for MiniCapt.

**30151 – 30152:
Sensor Firmware Version**

This is the main firmware version for the MiniCapt. Each byte represents an element of the version as shown **Table A-1** on page -4.

Table A-1 Input register – Configuration

Input Registers		Description (Configuration)	Comment	Notes
30001	unary	Modbus Map Version	Version 1.00 (Static 100)	
30002	unary	Sensor Firmware Version	Encoded Firmware version	
30003	unary	Product Name: Char 00, 01	Product Name	
30004	string	Product Name: Char 02, 03	Product Name	
30005	string	Product Name: Char 04, 05	Product Name	
30006	string	Product Name: Char 06, 07	Product Name	
30007	string	Product Name: Char 08, 09	Product Name	
30008	string	Product Name: Char 10, 11	Product Name	
30009	string	Product Name: Char 12, 13	Product Name	
30010	string	Product Name: Char 14, 15	Product Name	
30011	unary	Scale: flowrate	Multiplier in fixed: flowrate	2 (100)
30012	unary	Scale: Volume	Multiplier in fixed: Volume	5 (100000)
30013	dual	flowrate (high)	Flow * 10 Scale	Float Mode
30014	dual	flowrate (low)	Flow * 10 Scale	Float Mode
30015	unary	Number of Particle Channels	Fixed number of sizes	0 fixed
30016	unary	Number of Analog Channels	Fixed number of analogs	3 fixed
30151	unary	Sensor Firmware Version	Revision / Build	
30152	unary	Sensor Firmware Version	Minor / Major	

Data Section

The **Data** section contains:

- Calibration Date
- Serial Number
- Device Status
- Device State
- Number of data samples in queue
- Sample Data information

The **Data** section starts with what would have normally been considered configuration information - calibration date and serial number. This was added to allow for a single contiguous read when this particular information was desired along with the regular sample data. If not desired, then start reading at register 30212.

30201: Calibration Date (Month)	A value between 1 and 12.
30202: Calibration Date (Day)	A value between 1 and 31.
30203: Calibration Date (Year)	A value representing the year (e.g., 2012).
30204 – 30211: Serial Number	Serial number entered using ASCII bytes and positioned as shown in the map.
30212 – 30213: Device Status	Dual-register representation of device status. Integer bit mask matching the current coil selections for convenience. The host can use this to check for data availability, data format, etc while reading the data. A separate coil read would not be required. Values are defined in Table A-2 on page -6.
30214: Device State	Least Significant byte (LSB) is State. Most Significant Byte (MSB) is sub-state. Values are defined in Table A-2 on page -6.
30215: Number of data samples in the queue	A value of zero is identical to no data available (same meaning as coil 00/02 read as zero). The queue size setting will determine if the data register section shows real-time data or stored data. If the queue size setting has been set to one, the sample data will always represent the last real-time data packet and the queue value will be set to one if there is a data packet available. If the queue size setting is set greater than one, the sample data will represent the last data queued and the queue value will be set to one if there is any queued data available. The two types of data presentation are supported by the same Modbus register map and are delineated by how the host system processes the register/coil fields and the instrument queue setting. The data register section can be forced to show real-time data by setting the queue size to one or to show queued data by setting the queue size greater than one. Queued data is always presented oldest first. The queue size command is “set queue #” where # is a value between 1 and 3000.

30216 – 30217: Time Stamp	Dual-register representation of data packet time stamp. Integer value (type defined as time_t) representing start date/time in seconds since January 1, 1970.
30218 – 30219: Sample Time	Dual-register representation of data packet sample interval processed in units of seconds. Can be integer or float depending on mode selected. The integer representation is time in seconds multiplied by 100.
30220- 30221: Data Packet Status	Values are defined in Table A-2 on page -6.
30222 – 30223: flowrate	Dual-register representation of the real-time flowrate in liters per minute. Can be integer or float depending on mode selected. The integer representation uses scale factor from register 30011.
30224 – 30225: Volume	Dual-register representation of the real-time volume in liters. Can be integer or float depending on mode selected. The integer representation uses scale factor from register 30012.
30226: Location	Index of location value associated with data packet. Not used for MiniCapt.
30227: Number of Particle Channels	Processed as a variable but fixed to a value of 0 for MiniCapt.
30228: Number of Analog Channels	Processed as a variable but fixed to a value of 3 for MiniCapt.
30229 – 30234: Analog data	Dual-register representation of the data packet analog value. Can be integer or float depending on mode selected. The integer value represents the total averaged Flow, total Volume and total Duration for the data processed thus far in the recipe. The integer scale factor for Flow is the same as that described for registers 30222 – 30223. The integer scale factor for Volume is the same as that described for registers 30224 – 30225. The integer scale factor for Interval is 1000.

Table A-2 Input register – Data Packet

Input Registers		Description (Data Packet)	Comment	Notes
30201	unary	Calibration Date (Month)	Calibration Date	
30202	unary	Calibration Date (Day)	Calibration Date	
30203	unary	Calibration Date (Year)	Calibration Date	
30204	string	Serial Number: Char 00, 01	Serial Number	
30205	string	Serial Number: Char 02, 03	Serial Number	
30206	string	Serial Number: Char 04, 05	Serial Number	
30207	string	Serial Number: Char 06, 07	Serial Number	
30208	string	Serial Number: Char 08, 09	Serial Number	
30209	string	Serial Number: Char 10, 11	Serial Number	

Table A-2 Input register – Data Packet (Continued)

30210	string	Serial Number: Char 12, 13	Serial Number	
30211	string	Serial Number: Char 14, 15	Serial Number	
30212	unary	Device Status (high)	Device Status Mask	
30213	unary	Device Status (low)	Device Status Mask	
30214	unary	Device State	Device State	
30215	unary	Number of data samples in queue	Number of samples in queue	
30216	dual	Time Stamp (high)	time_t	
30217	dual	Time Stamp (low)	time_t	
30218	dual	Sample Time (high)	Seconds * 100	Float Mode
30219	dual	Sample Time (low)	Seconds * 100	Float Mode
30220	dual	Data Packet Status (high)	Bit Mask	
30221	dual	Data Packet Status (low)	Bit Mask	
30222	dual	flowrate (high)	Flow * 10 Scale	Float Mode
30223	dual	flowrate (low)	Flow * 10 Scale	Float Mode
30224	dual	Volume (high)	Volume * 10 Scale	Float Mode
30225	dual	Volume (low)	Volume * 10 Scale	Float Mode
30226	unary	Location	Location value	n/a
30227	unary	Number Particle Channels	Fixed number of sizes	0 fixed
30228	unary	Number Analog Channels	Fixed number of analogs	3 fixed
30229	dual	Average flowrate (high)	Analog 1 * 10 Scale	Float Mode
30230	dual	Average flowrate (low)	Analog 1 * 10 Scale	Float Mode
30231	dual	Total Volume (high)	Analog 2 * 10 Scale	Float Mode
30232	dual	Total Volume (low)	Analog 2 * 10 Scale	Float Mode
30233	dual	Total Interval (high)	Analog 3 * 1000	Float Mode
30234	dual	Total Interval (low)	Analog 3 * 1000	Float Mode

Holding Registers

Like the coils, spares are in place between the “standard” registers and those that are designated as specific/optional. There are no specific/optional coils defined for the MiniCapt.

If the sample setting holding registers are sent while the unit is sampling, it will ignore the new settings until the next sample set is executed.

40001 - 40002: Real Time Clock	Dual-register representation of current date & time. Integer value (type defined as time_t) representing date/time in seconds since January 1, 1970.
40003: Sample Interval/Sample Volume	Sample Interval/Sample Volume. This register representation depends on the Sample Volume Mode setting (coil 00/09). When the Sample Volume Mode is disabled - this register represents the number of seconds to run a sample. When the Sample Volume Mode is enabled - this register represents the volume in liters multiplied by 100.
40004: Hold/Tare Time	Time, in seconds, processed between the pump coming up to the specified flow and starting the first sample.
40005: Repeat Count	Number of samples to process. The value must be greater than 0.
40006: Delay Time	Time, in seconds, processed between each sample.
40007 - 40032: Spare	

Table A-3 Holding Registers

Holding Registers		Description (Setup)	Comment
40001	dual	Real Time Clock (high)	time_t
40002	dual	Real Time Clock (low)	time_t
40003	unary	Sample Interval/Volume	Seconds
40004	unary	Hold/Tare Time	Seconds
40005	unary	Repeat Count	Repeat Count
40006	unary	Delay Time	Seconds
Spare	unary	26 spare registers	Reserve future “common” registers

Coils

Like the holding registers, spares are in place between the “standard” coils and those that are designated as specific/optional. There are no specific/optional coils defined for the MiniCapt.

- 00/01:** The data collection coil will enable/disable sampling.
Read: 1=Sampling Enabled, 0=Sampling Disabled.
Write: 1=Sampling Enabled, 0=Sampling Disabled.
- 00/02:** The data available coil is used to both inform the host that data is now available and to delete the queued data packet (if present).
Read: 1=Data Available, 0=No Data Available.
Write: 0=Delete queued data element, 1=No effect,
If the queue size setting has been set to one, the sample data will always represent the last real-time data packet and the data deleted will be the only data present.
If the queue size setting is set greater than one, the oldest data packet in the queue will be deleted.
- 00/03:** The data clear coil will delete all data in the queue.
Read: Always 0
Write: 1=Delete all queued data, 0=No effect
- 00/04:** The reset sensor coil will reset the sensor.
Read: Always 0
Write: 1=Reset sensor, 0=No effect
- 00/05:** Green Status LED. Not applicable for MiniCapt.
Read: 1=LED On, 0=LED Off
Write: 1=LED On, 0=LED Off
- 00/06:** Red Status LED. Not applicable for MiniCapt.
Read: 1=LED On, 0=LED Off
Write: 1=LED On, 0=LED Off
- 00/07:** External Alarm. Not applicable for MiniCapt.
Read: Always 0
Write: No effect
- 00/08:** IEEE-754 Float. IEEE-754 Float. The float control will change the specified registers from a dual-register integer with fixed scaling to a dual-register IEEE-754 float representation. The IEEE-754 version is likely to yield better resolution but it is not part of the official Modbus specification.
Read: 1=Float mode enabled, 0=Float mode disabled
Write: 1=Float mode enabled, 0=Float mode disabled
- 00/09:** Sample Volume Mode. The sample volume control will change how the unit controls sampling. If set, holding register 40003 will contain the sample volume to be processed multiplied by a factor of 100. If clear, holding register 40003 will contain the sample interval to be processed in seconds. This value can also be changed from the display. It is recommended that the coil selection be set every-time the holding registers are sent.
Read: 1=Sample Volume, 0=Sample Interval
Write: 1=Sample Volume, 0=Sample Interval
- 00/10 -** Spare.
00/32: Read: Always 0
Write: No effect

Table A-4 Coils

Coils	Description (Coils)		Comment	
00/01	Data Collection	On/Off	Sampling Control	
00/02	Data Available	Yes/No	Data Available/Queue Control	
00/03	Data Clear	Toggle	Data Queue Delete	
00/04	Reset Sensor	Toggle	Reset control	
00/05	Status LED: Green	On/Off	Status LED: Green Control	n/a
00/06	Status LED: Red	On/Off	Status LED: Red Control	n/a
00/07	External Alarm	On/Off	External alarm	n/a
00/08	IEEE-754 Float	On/Off	Modbus Float representation	
00/09	Volume Mode	On/Off	Sample Volume or Interval	
Spare	23 spare coils		Reserve “common” coils	

Data Packet Processing

The unit can provide real-time data or queued data or both. There is only one section of input registers assigned for data to handle this information.

If the unit is setup to queue data then the data shown is the oldest data in the queue. The data available coil (00/02) will be set on a read if there is data in the queue. The data available coil (00/02) can be cleared and written (i.e., set coil to zero) in which case that data element shown is popped-off of the queue. If there is more data in the queue, the new data will be shown and the data available coil (00/02) will be set again right away. If there is no more data in the queue, the data available coil (00/02) will only be set again once the next sample is completed.

If the queue is set to one, then the data shown is always the last data processed and is representative of real-time data only. Since the queue is circular - the next sample will replace the single one in the queue.

If the queue is set to a value greater than one, then the data shown is the oldest in the queue. Any data collected once the queue is full will cause the oldest data to be discarded.

Queued data will always be available - even when not sampling.

If there is no data available - the input registers (associated with the actual sample collected) will yield zeros. This is done instead of generating an execution exception so that the customer can simply read the data packet, along with the Device Status (i.e., current coil settings), in one command.

Associated Values for Specific Registry Entries

Table A-5 Associated values for specific registry entries

Device Status Entries	0x0001	Data Collection	Matches the common coil settings
	0x0002	Data Available	
	0x0004	Data Clear	
	0x0008	Reset	
	0x0010	Green Status	
	0x0020	Red Status	
	0x0040	External Alarm	
	0x0080	IEEE Float mode	
	0x0100	Volume Mode	
Device State Entries (LSB)	0	Idle	
	1	Sampling	
	2	Maintenance	n/a
	3	Error	
Device SubState Entries (MSB)	0	Idle	Normal
	0	Sampling	Normal/a
	1	Sampling	Hold/Tare
	0	Error	Flow
Data Packet Status Entries Low Register	0x0001	Laser Good	
	0x0002	Flow Good	
	0x0004	Hardware Good	n/a
Data Packet Status Entries High Register	0x0001	Battery	Specific to MiniCapt
	0x0002	Pressure	Specific to MiniCapt
	0x0004	Hi/Lo	Specific to MiniCapt

Appendix B

Report Examples

Example of Printed Reports

The printed report is produced by the instrument when it is downloaded to a USB and sent to the printer or a request to download the serial buffer is made by a serial device.

Example of Print in English

```
REPORT RECORD : 0001
Area :
Location :
Comment :
Volume Sampled : 59.361 L
Time Sampled : 0m:36s
Start Date, Time : 03/02/2015,07:18
AM
End Date, Time : 03/02/2015,07:19 AM
Flow Rate : 97.58 LPM
Target Volume : 1000.000 L
Interval : 1
Warnings : 0
Alarms : 0
User Pauses : 0
Serial Number : 104549
Operator : PMSSVC
-----
```

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Appendix C

有毒或有害的物质和元素

Part Name 部件名称	有毒或有害的物质和元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴联苯醚 (PBDE)
电源供应	X	O	X	O	O	O
印刷电路装配	X	O	X	O	O	O
机械部件	X	O	X	O	O	O
电缆	X	O	X	O	O	O
机电	X	O	X	O	O	O
电池	X	O	X	O	O	O
O: 表示用于部件的所有同族物质中所含的有毒或有害物质低于 SJ/T11363-2006 规定的限度要求。 X: 表示用于部件的至少一种同族物质中所含的有毒或有害物质高于 SJ/T11363-2006 规定的限度要求。						

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Appendix D

Compressed Gas Sampling Operation

Introduction

The MiniCapt® Compressed Gas Kit allows the MiniCapt Mobile Microbial Air Sampler to perform microbiological monitoring of compressed gases. This kit uses a special diffusion chamber mounted directly to the MiniCapt inlet, the other end of which is connected directly to the high pressure gas distribution lines.

The sampling is performed at balanced flow, where the compressed gas flow is equal to the sampling flow. The BioCapt® Impactor inlet pressure coincides with the pressure of the kit's diffusion chamber.

For safety reasons and to regulate the flowrate of the gas into the diffusion chamber, a pressure regulator is installed in the sampling line between the high pressure gas source and the inlet to the MiniCapt Mobile Compressed Gas Kit. A solenoid valve is connected downstream of the regulator and allows the MiniCapt to synchronize the flow of the gas with the start of sampling.

The Compressed Gas Kit is designed to work with either the 25 LPM, 50 LPM, or 100 LPM MiniCapt systems. The flow of the gas to be sampled is controlled using the principle of the critical orifice. Under operating pressures, the critical orifice regulates the flowrate into the diffusion chamber and the exhaust. The pressurized gas flowrate must be within $\pm 5\%$ of the airflow rate through the MiniCapt Mobile. To aid in ensuring the pressure in the diffusion chamber and the flowrate through the MiniCapt are within the correct ranges, the MiniCapt system actively monitors the gas flow should there be a change in flow.

Description

The Kit contains:

- Diffusion chamber with specially designed critical orifice
- Special dual connection BioCapt impactor
- Absolute filter (a sterile version can be purchased with the P/N 1000021454)
- Solenoid valve
- Solenoid cable
- Pressure regulator
- Pressure tubing

Diffusion Chamber

The AISI 316L stainless steel expansion chamber is connected to a dual connection BioCapt Impactor. The overpressure air is released to the environment through an absolute filter.

The threaded connection is G1/8 BSPP.

- The Compressed Gas Kit default tubing connection is 6 mm.

Special Dual Connection BioCapt Impactor

BioCapt dual connection impactor:

- Bottom: female connection with hook to attach to the base of the MiniCapt Mobile
- Top: male connection to the MiniCapt Compressed Gas Diffusion Chamber

This special dual-connection impactor differs only from the standard BioCapt Impactor in that the top connection makes it possible to connect the compressed gas diffusion chamber.

Absolute Air Filter

The absolute filter performs a dual function:

- Filtering the overpressure air that is expelled from the diffusion chamber.
- In the case of pressure inversion due to low pressure/flow from the high pressure gas source, the absolute air filter provides filtration of the incoming air to the diffusion chamber to prevent contamination. Any pressure inversion condition will immediately result in a sampling interruption and instrument alarm.

Regulator

A 0.3 – 20 bar (4.35 psi – 290 psi) 316L stainless steel regulator is used to reduce the high pressure gas source and set pressure which can be used in conjunction with the critical orifice to produce a fixed flowrate through the system. A 316L 1/4-inch NPT stainless steel adaptor fitting is used on the inlet to accept a 6 mm plastic tube from the gas source, and a 316 stainless steel 1/4-inch NPT union is used on the regulator outlet to connect to the solenoid valve.

Solenoid Valve

The solenoid is a 2/2 way direct acting, normally closed unit. The valve is made from 316L stainless steel. The solenoid coil and wiring are removable to allow for autoclaving of the valve. To ensure proper functioning of the solenoid, it must be installed downstream of the regulator.



Figure D-1 MiniCapt Mobile with Compressed Gas Kit

Specifications

Specifications for the MiniCapt Mobile Compressed Gas Kit include:

Connection	Quick release 6 mm outer diameter tubing. A different tubing connector having a thread designation of 1/4-inch NPT may be installed if necessary.
Solenoid valve	2/2 way normally closed direct control Actuator is AISI 316L 1/4-inch stainless steel Coil 12 VDC, 10 W
Regulator	Body is stainless steel 1/4-inch NPT 0.3 – 20 bar (4.35 – 290 psi)
Filter	Biological Absolute Filter >99.999% for Airborne Viral and Bacterial Particles
Operational Pressure	For instruments manufactured prior to January 2016: • 2.5 bar - 10 Bar (36 - 145 psi) For instruments manufactured after January 2016: • 25M: 0.5 - 10 bar (7.2 - 145 psi) • 50M: 1.0 - 10 bar (14.5 - 145 psi) • 100M: 1.5 - 10 bar (21.7 - 145 psi)

NOTE: A Compressed Gas Kit purchased before January 2016 can be upgraded in order to reach lower operational pressure. Contact your Particle Measuring Systems representative for more information.

Instructions for Use

The following section will demonstrate how to connect and regulate the Compressed Gas Kit with the MiniCapt Mobile Microbial Air Sampler. A PDF guide is available from Particle Measuring Systems as an additional aid in the sampling process. Visit the [Automated Hardware and Software Support page](#).

Sampling with the Compressed Gas Kit

- Switch on the MiniCapt Mobile
- Install the dual connector plate onto the MiniCapt (this is the component part with the BioCapt impactor slits). Ensure that the plate is fully seated
- Install the diffusion chamber onto the dual connector plate
- Connect the solenoid valve tubing to the tube connector
- Connect the solenoid cable to the electrical connection
- Connect the pressure tubing to the compressed air feed

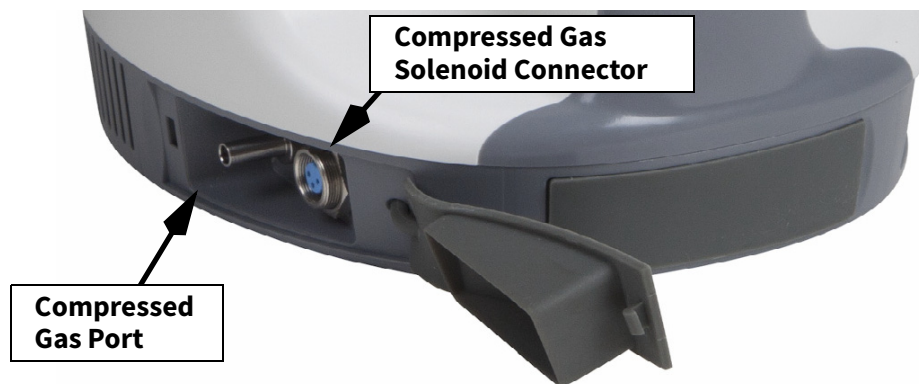


Figure D-2 Compressed Gas Solenoid connector

- Make sure the compressed gas source is connected to the compressed gas port.
- Ensure the gas source pressure is within the allowed range:
 - Compressed Gas Kit (manufactured prior to January 2016): 2.5 - 10 Bar (36 - 145 psi)
 - Compressed Gas Kit (manufactured after January 2016):
 - 25M: 0.5 - 10 Bar (7.2 - 145 psi)
 - 50M: 1.0 - 10 Bar (14.5 - 145 psi)
 - 100M: 1.5 - 10 Bar (21.7 - 145 psi)

Pressure Settings

View the Pressure Settings Screen

>> To view the **System Status** screen:

1. On the **Home** screen, press  the **Features Menu** button (see **Figure D-3**).
The **Features Menu** screen appears (see **Figure D-4**).

TIP: To view the **Home** screen, touch  the **Home** button.

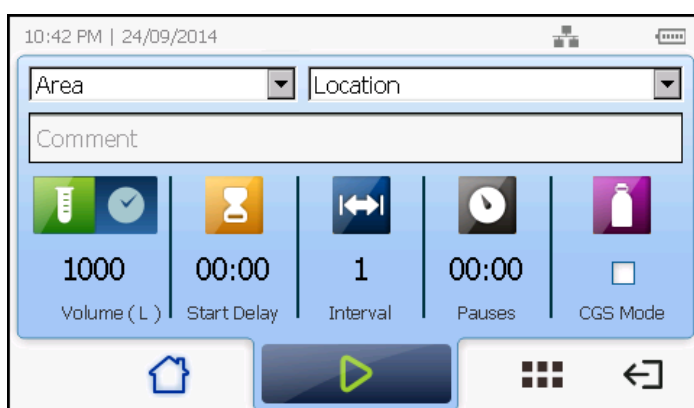


Figure D-3 Home screen



Figure D-4 Features Menu screen

- a. Touch  the **Setup** button on the **Features Menu** screen (see **Figure D-4**).
The **Setup Submenu** appears (see **Figure D-5**).

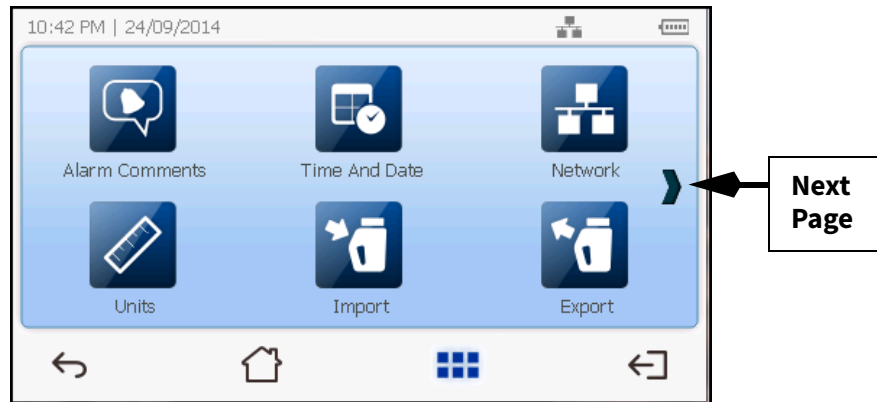


Figure D-5 Setup Submenu screen

2. Touch  the **Next Page** button on the **Setup Submenu** screen (see **Figure D-5**).
Page 2 of the **Setup Submenu** screen displays (see **Figure D-6**).



Figure D-6 Setup Submenu screen, page 2

3. Touch  the **Pressure Settings** button on page 2 of the **Setup Submenu** screen.
The **Pressure Settings** screen displays (see **Figure D-7**).



Figure D-7 Pressure Settings screen

4. The solenoid will automatically be powered on to begin gas flow.
 - During this period, the reading of the pressure in the diffusion chamber measured in Pascals (Pa) will be seen on the front screen of the MiniCapt Mobile.
 - The MiniCapt system's diffusion chamber is designed to operate within a specific pressure range. Should the pressure drift too high or low, a warning will be issued.
 - Further changes in the pressure may result in an alarm which will prematurely end the test. The pressure regulator allows adjustment of the pressure in the diffusion chamber to a value between the warning limits as shown in the table below:

	Optimal Range		Low Pressure Alarm Limit	High Pressure Alarm Limit
	Low Pressure Warning Limit	High Pressure Warning Limit		
25 LPM MiniCapt	50 Pa	200 Pa	0 Pa	250 Pa
50 LPM MiniCapt	100 Pa	400 Pa	0 Pa	500 Pa
100 LPM MiniCapt	100 Pa	400 Pa	0 Pa	500 Pa

5. Make sure the pressure regulator valve is tightened before completing the Pressure Setting.
6. Configure the sample or use an existing recipe.
7. Select the compressed gas accessory checkbox and ensure selection is active.
8. Install an agar plate onto the MiniCapt.
9. Run the sample until completion.

NOTE: Due to the added weight, it is recommended that the unit is placed on its back to avoid tipping when the kit is attached.

Maintenance and Performance Checks

Cable Connectors

Occasionally a cable connector may become damaged. If this occurs, do not worsen the problem by forcing a cable into a damaged connector. Particle Measuring Systems Service Representatives can repair or replace damaged connectors.

Cleaning Procedure

1. Prior to Autoclaving

- a. Clean the compressed gas kit with any of the following chemicals compatible with 316L stainless steel:
 - isopropyl alcohol (IPA/WFI 70/30)
 - sodium hypochlorite 1%
 - hydrogen peroxide (up to 6%)
- b. To avoid discoloration, allow all cleaner residue to evaporate prior to autoclaving.
- a. Remove the following before autoclaving:
 - the filter on the exhaust
 - tubing
 - the solenoid cable assembly, including solenoid and solenoid cable (unscrew the solenoid nut to remove)

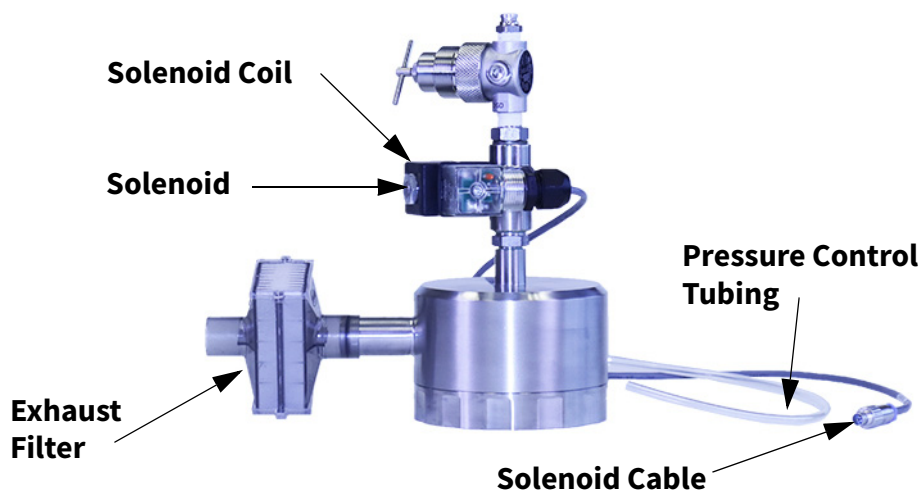
NOTE: The nut can be screwed back on for autoclaving.

2. Autoclaving the Compressed Gas Kit

- a. The stainless steel components of the MiniCapt Compressed Gas Kit can be autoclaved once per day for up to 15 minutes at a maximum temperature of 121 °C.
Refer to **Figure D-8**.

3. Cleaning the Compressed Gas Kit between Autoclave Cycles

- a. The compressed gas kit should be cleaned with isopropyl alcohol (IPA 70/30) or another appropriate cleaner (e.g. H_2O_2 , up to 6%) prior to use at each sampling location and after any known contamination event. IPA is preferred.
- b. All cleaner residues should be allowed to fully evaporate prior to sampling.

**Figure D-8** Compressed Gas (CG) Kit

Appendix E

Cleaning Procedures

Introduction

This appendix describes the recommended cleaning practices for MiniCapt® and BioCapt® impactor heads and accessories.

All delivered products and material from Particle Measuring Systems are tested and cleaned according to the most demanding cleanroom requirements. Despite this, the presence of manufacturing and/or handling residues may occur on 316L stainless steel items such as MiniCapt or BioCapt impactor heads, which undergo a complex machining process.

The presence of residues on 316L stainless steel products while autoclaving may result in discoloration of the item. Leftover residues may change in color as a result of the sterilization's high temperature.

Cleaning Guidelines for Goods upon Reception

For first time usage:

1. Unpack the impactor head(s) using gloves. (Note: Fingerprints on freshly manufactured stainless steel may result in long lasting marks on the surface.)
2. Wash the whole stainless steel surface, including mechanical parts, using an appropriate detergent solution.
 - For example, Veltek Vai's Process2Clean 1 (P2C-1) appropriately diluted (typically 1-5 Vol% in DI or WFI water).
3. Rinse each item extensively with DI or WFI water in order to completely remove any detergent residuals.
4. Ensure the impactor head is well cleaned, rinsed and dried before proceeding with the first autoclave sterilization process.

Runtime Cleaning Guidelines

1. Remove the impactor head from the sampling location.
2. Ensure no residuals (e.g. from agar) are present on the impactor head.
3. Wash the entire stainless steel surface, including mechanical parts, using an appropriate detergent solution.
 - For example, Veltek Vai's Dec-Clean, appropriately diluted, typically 0.7 Vol% (1 fl oz/gallon) in WFI water.
4. Ensure the impactor head is well cleaned and any cleaning agent residues have evaporated before proceeding with the autoclave sterilization process.

NOTE: These procedures are intended to provide general guidelines and may not be applicable in some specific manufacturing scenarios.

For more information, contact your Particle Measuring Systems local representative or go to www.pmeasuring.com.

Appendix F

Sample HTML Reports

Report Records

Is

4/5/2017 4:19:46 PM

Report Records

REPORT RECORD	Area	Location	Comment	Alarm Comment	Volume Sampled	Time Sampled	Start Date, Time	End Date, Time	Flow Rate	Target Time	Target Volume
0013					0.004 m ³	0 m:10 s	01/01/2006,12:04:38	01/01/2006,12:04:51	23.90 LPM		0.004 m ³
0014					0.003 m ³	0 m:8 s	01/01/2006,12:07:20	01/01/2006,12:07:30	23.60 LPM		0.003 m ³
0015					0.003 m ³	0 m:7 s	01/01/2006,12:09:51	01/01/2006,12:09:59	23.83 LPM	0 m:7 s	
0016					0.030 m ³	1 m:13 s	01/01/2006,12:03:03	01/01/2006,12:04:19	24.81 LPM		1.000 m ³
0017					0.014 m ³	0 m:34 s	01/01/2006,12:01:49	01/01/2006,12:02:25	24.65 LPM		1.000 m ³
0018					1.000 m ³	40 m:0 s	01/01/2006,12:08:33	01/01/2006,12:48:35	25.00 LPM		1.000 m ³

Created by

Report Records

End Date, Time	Flow Rate	Target Time	Target Volume	Interval	Warnings	Warning Details	Alarms	Alarm Details	User Pauses	Pause Details	Serial Number	Operator
01/01/2006,12:04:51	23.90 LPM		0.004 m ³	1	0		0		0		105441	
01/01/2006,12:07:30	23.60 LPM		0.003 m ³	1	0		0		0		105441	
01/01/2006,12:09:59	23.83 LPM	0 m:7 s		1	0		0		0		105441	
01/01/2006,12:04:19	24.81 LPM		1.000 m ³	1	0		0		0		105441	
01/01/2006,12:02:25	24.65 LPM		1.000 m ³	1	0		0		0		105441	
01/01/2006,12:48:35	25.00 LPM		1.000 m ³	1	0		0		0		105441	

Figure F-1 Report Records HTML table (broken)

Report Records

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Report Records

REPORT RECORD	Area	Location	Comment	Alarm Comment	Volume Sampled	Time Sampled	Start Date, Time	End Date, Time	Flow Rate	Target Time	Target Volume	Interval	Warnings	Warning Details	Alarms	Alarm Details	User Pauses	Pause Details	Serial Number	Operator
0013					0.004 m³	0 m:10 s	01/01/2006,12:04:38	01/01/2006,12:04:51	23.90 LPM		0.004 m³	1	0		0		0		105441	
0014					0.003 m³	0 m:8 s	01/01/2006,12:07:20	01/01/2006,12:07:30	23.60 LPM		0.003 m³	1	0		0		0		105441	
0015					0.003 m³	0 m:7 s	01/01/2006,12:09:51	01/01/2006,12:09:59	23.83 LPM	0 m:7 s		1	0		0		0		105441	
0016					0.030 m³	1 m:13 s	01/01/2006,12:03:03	01/01/2006,12:04:19	24.81 LPM		1.000 m³	1	0		0		0		105441	
0017					0.014 m³	0 m:34 s	01/01/2006,12:01:49	01/01/2006,12:02:25	24.65 LPM		1.000 m³	1	0		0		0		105441	
0018					1.000 m³	40 m:0 s	01/01/2006,12:08:33	01/01/2006,12:48:35	25.00 LPM		1.000 m³	1	0		0		0		105441	

Created by

Figure F-2 Report Records HTML table (full)

Report Records (Warning and Alarms)

ing And Alarms)

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Report Records (Warning And Alarms)

REPORT RECORD	Area	Location	Comment	Alarm Comment	Volume Sampled	Time Sampled	Start Date, Time	End Date, Time	Flow Rate	Target Time	Target Volume	Interval	Warnings	Warning Details
0021					0.003 m³	0 m:8 s	01/01/2006,12:47:59	01/01/2006,12:48:10	19.92 LPM		1.000 m³	1	0	
0022					0.006 m³	0 m:16 s	01/01/2006,12:09:00	01/01/2006,12:09:18	21.51 LPM		0.010 m³	1	1	1.Warning Date & Time: 01/01/2006,12:09:17 Comment: Measured flow rate is lower than 5% of the target fl
0024					0.003 m³	0 m:8 s	01/01/2006,12:11:59	01/01/2006,12:12:09	23.91 LPM		1.000 m³	1	0	
0026					0.003 m³	0 m:8 s	01/01/2006,12:16:06	01/01/2006,12:16:16	19.79 LPM		1.000 m³	1	1	1.Warning Date & Time: 01/01/2006,12:16:15 Comment: Measured flow rate is lower than 5% of the target fl

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Report Records (Warning And Alarms)

Target Volume	Interval	Warnings	Warning Details	Alarms	Alarm Details	User Pauses	Pause Details	Serial Number	Operator
1.000 m³	1	0		1	1.Alarm Date & Time: 01/01/2006,12:48:09 Comment: Measured flow rate is lower than 20% of the target flow rate	0		105441	
0.010 m³	1	1	1.Warning Date & Time: 01/01/2006,12:09:17 Comment: Measured flow rate is lower than 5% of the target flow rate	1	1.Alarm Date & Time: 01/01/2006,12:09:18 Comment: Measured flow rate is greater than 20% of the target flow rate	0		105441	
1.000 m³	1	0		1	1.Alarm Date & Time: 01/01/2006,12:12:08 Comment: In CGS mode, pressure in the head is too low (0 Pa).	0		105441	
1.000 m³	1	1	1.Warning Date & Time: 01/01/2006,12:16:15 Comment: Measured flow rate is lower than 5% of the target flow rate	1	1.Alarm Date & Time: 01/01/2006,12:16:15 Comment: In CGS mode, pressure in the head is too low (0 Pa).	0		105441	

Figure F-3 Report Records (Warning and Alarms) HTML table (broken)

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Report Records (Warning And Alarms)

REPORT RECORD	Location	Comment	Alarm Comment	Volume Sampled	Time	Start Date, Time	End Date, Time	Flow Rate	Target Time	Target Value	Interval	Warning	Warning Details	Alarms	Alarm Details	User	Pause	Serial	Operation
0021				0.003 m ³	0 min 8 s	01/01/2006,12:47:59	01/01/2006,12:48:10	19.92 LPM		1,000 m ³	1	0		1 Alarm Date & Time: 01/01/2006,12:48:09 Comment: Measured flow rate is lower than 20% of the target flow rate		0		005441	
0022				0.006 m ³	0 min 16 s	01/01/2006,12:09:00	01/01/2006,12:09:18	21.51 LPM		0.010 m ³	1	1	1 Warning Date & Time: 01/01/2006,12:09:17 Comment: Measured flow rate is lower than 5% of the target flow rate	1 Alarm Date & Time: 01/01/2006,12:09:18 Comment: Measured flow rate is greater than 20% of the target flow rate		0		005441	
0024				0.005 m ³	0 min 8 s	01/01/2006,12:11:59	01/01/2006,12:12:09	23.91 LPM		1,000 m ³	1	0		1 Alarm Date & Time: 01/01/2006,12:12:08 Comment: Measured flow rate is lower than 5% of the target flow rate		0		005441	
0026				0.003 m ³	0 min 8 s	01/01/2006,12:16:06	01/01/2006,12:16:16	19.79 LPM		1,000 m ³	1	1	1 Warning Date & Time: 01/01/2006,12:16:15 Comment: Measured flow rate is lower than 5% of the target flow rate	1 Alarm Date & Time: 01/01/2006,12:16:15 Comment: In CCS mode, pressure in the head is too low (0 Pa).		0		005441	

Figure F-4 Report Records (Warning and Alarms) HTML table (full)

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