

ApexZ

AIRBORNE PARTICLE COUNTER



Operators Manual

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LWS Part Number: 248083466-1 R13

Table of Contents

Safety	2
About this Manual	2
General Safety	2
Installing the battery	5
Compliance	9
FCC Notice	9
Introduction.....	10
Overview.....	10
Specifications.....	11
Enclosure and Ports – ApexZ3	12
Enclosure and Ports - ApexZ50.....	13
Optional Printer	14
LED Handle.....	16
Operating ApexZ.....	18
Sample Settings Dashboard.....	19
Manual Sample.....	20
Sample Settings	20
Sample Mode.....	21
Beep Mode	22
Concentration Mode	22
Channel Alert Settings	23
Environmental Alerts.....	24
Save Manual Sample	25
Start Manual Sample	25
Preset Samples	26
Assign Preset to Location	26
Start Preset Sampling	27
Sample Plans.....	28
Select a Sample Plan.....	29
Select a Location.....	29
Save Sample Plan.....	29
Certification Sample	30
Quick Certification	32

View Options	33
Data Table View	33
Sample Grid View	35
Histogram View	39
Graph View	40
Environmental View	41
Sampling with Data Tags	42
Data Records Screen.....	44
View Data Records.....	44
Status Bar.....	46
Data Tags	47
Export Data Records	48
Make Report from Data Records.....	49
Filter Data Records	52
Delete all data records	58
Reports	60
Report Screen	60
Filter Report List	62
Export Report	64
Delete a Report.....	65
Audit Trail	66
Settings	70
Instrument Settings	71
Network Time Protocol	72
Set Current Date	72
Set Current Time.....	75
Audio/Visual	76
Brightness	76
Language.....	76
Decimal Mark.....	76
Digit Grouping.....	76
Options	77
Channel Options	77
User Options	79

Sample Options	80
Zero-Count Modes.....	81
Zero-Count on the Home Screen.....	82
Data Tag Options	83
Audit Trail Comment Options.....	88
Output	89
USB	89
Print – On-Board Printer.....	89
Print – Network Printer	90
CIFS	91
Output Formatting - Print.....	91
Output Formatting - .csv/.xlsx	96
Output Formatting - .pdf	99
Configuration.....	103
Save ApexZ configuration file to USB key.....	103
Load ApexZ configuration file from a USB key	104
Connectivity.....	105
LMS XChange Software 2.x.....	105
Network - Ethernet.....	106
Network - Wi-Fi	108
Active Directory AD/LDAP	112
CIFS - Common Internet File System	114
Network Printer.....	115
3 rd Party API - Application Programing Interface	117
Locations and Groups	118
View Locations.....	118
Create New Locations.....	119
Edit a Location	120
Delete a Location.....	121
Add a New Group	122
Assign Locations to a new Group	123
Edit a Group.....	125
Delete a Group	126
Presets.....	128

Add a Preset	128
Enter Preset Sample Settings.	129
Edit Channel.....	130
Enter Warning and Alarm settings	130
Preset Name	132
Locations linked to Presets.....	133
Sample Plans.....	134
Add New Sample Plan	134
Preset - Sample Settings.....	140
Delete Sample Plan.....	147
Certifications	148
Add a Certification.....	148
Certification Types.....	148
Edit a Certification	158
Delete a Certification.....	159
Users & Permission Levels.....	160
Users.....	160
Edit User	165
Delete User.....	166
User Login.....	167
User Logout	168
Administrator Permission Level	169
Add new Permission Level.....	169
Permissions.....	169
Users.....	170
Assign AD Group to Permission Level.....	171
Prioritize Permission Levels.....	173
Permission Level Name	173
Edit Permission Level Settings	174
Service	176
Maintenance.....	176
About Screen	179
Service Login.....	180
Calibration	181

Trouble Shooting 182

Clean and Disinfect 183

Zero-Counting 184

 Zero-Count Modes..... 184

 Zero-Count on the Home Screen..... 185

Trouble Shooting 186

Clean and Disinfect 187

Terminology..... 188

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Safety

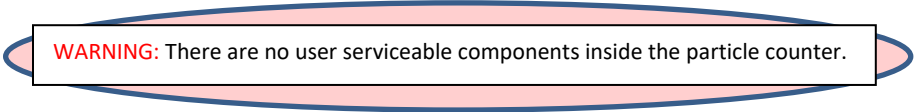
About this Manual

This manual describes the setup, operation and use of the Lighthouse Worldwide Solutions ApexZ family of Portable Airborne Particle Counters. The word “ApexZ”, “unit”, or “instrument” may be used in place of a specific model in this ApexZ Operators Manual.

General Safety

Warnings and cautions are used throughout this manual and the reader should become familiar with the meaning of a warning before operating the particle counter. Most warnings will appear next to the subject or step to which it applies. Take care when performing any procedures preceded by or containing a warning. The classifications of warning are defined as follows:

- Laser – pertaining to exposure to visible or invisible LASER radiation.
- Electrostatic – pertaining to electrostatic discharge.
- Network Connection – pertaining to communication ports and instrument damage.



WARNING: There are no user serviceable components inside the particle counter.

Laser Safety

This product is a Class 1 LASER product (as defined by FDA 21 CFR, §1040.10 and IEC 60825-1:2014) when used under normal operation and maintenance. Performing service on the internal sensor can, however, result in exposure to invisible radiation. The particle counter has been evaluated and tested in accordance with EN 61010-1:2012, "Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use" and IEC 60825-1:2014, "Safety of LASER Products". For further technical assistance, contact our Technical Support Team at 1-800-945-5905 (USA Toll Free), or 1-541-770-5905.



Laser Warning Label

WARNING: There are no user-serviceable components inside the particle counter. The use of controls, adjustments, or procedures other than those specified within this manual may result in personal injury and/or damage to this instrument.

Battery Safety

Battery Type:

National Power Sm-Energy®

Model: SM221

Lithium-Ion Rechargeable Battery, 14.4V, 6.45Ah, 93Wh



Battery Level Indicator Button

- Press here to display blue LED battery charge level 25-50-75-100%



Note: The ApexZ Smart Batteries have a power-saving function where they will go into a hibernation mode after not being used for a period of a few weeks. While in this mode pressing the Test button will not show any charge present on the battery, and the battery will not power the unit. To “wake” the battery, power must be applied to it, such as being inserted into an ApexZ unit that has DC power applied.

Installing the battery

- **Insert battery 1** into the lower battery slot.

Note: ApexZ has dual battery slots and can operate with either one or two batteries installed. With two batteries installed both batteries will self-adjust and drain their charge evenly together.

- **Insert battery 2** into the upper battery bay. You will feel a slight pressure and clicking as the battery seats down fully in the battery bay.



- **Close the battery door.** Tighten down the battery door screw.



Hot swapping the batteries

If there are two batteries installed in the unit, the ApexZ will allow the user to remove one battery while the instrument is powered on and sampling. This allows the user to continue to sample with one battery while recharging the second battery. A charged second battery may then be reinstalled into the instrument while ApexZ is still sampling.

Hot swapping allows the user to install a newly charged battery and then remove a low charge battery while the instrument is sampling under battery power.

Use the optional battery charger (PN 017789753: Dual Battery Charger) to charge batteries outside of the ApexZ instrument.

Batteries inserted into ApexZ will always charge while ApexZ is plugged into the AC power with the AC power adapter and power cord.

WARNING: DO NOT disconnect the power cord or remove the battery while the instrument is powering down. These actions will cause corruption of firmware.



WARNING: Only use batteries provided with the ApexZ by Lighthouse Worldwide Solutions. Use of unauthorized batteries may cause damage to equipment, void warranty, and pose a threat to safety.



Charging the batteries outside of ApexZ

Optional Dual Bay Desktop Charger for charging up to 2 ApexZ batteries at the same time. Batteries not included.



Power Safety

Start Up

- Press the power button to turn on the ApexZ particle counter. **DO NOT HOLD the power button down.**



Shut Down

- To shut down press the power button once. **DO NOT HOLD the power button down.**



Users are not required to logout before ApexZ is shut down. If Users are enabled, shutting down the ApexZ will logout the current user and will require a user to login when the ApexZ is next started. It is permissible to shut down the ApexZ particle counter from any one of the user interface screens.

WARNING: DO NOT disconnect the power cord or remove the battery while the instrument is powering down. These actions will cause corruption of firmware.

WARNING: Do not press and hold the Power button to shut down. This will cause a hard reset and can damage the unit, it is not recommended.

WARNING: If the ApexZ is shut down during a sample, that sample will not be completed or saved.

Sampling Safety

WARNING: While the flow path components will not be adversely affected, sampling reactive gasses such as hydrogen and oxygen can be dangerous. Appropriate precautions should be taken. Sampling of any pressurized gasses without the use of properly designed diffuser can cause damage to the instrument and void the warranty. **DO NOT allow water, solvents, or other liquids to enter the instrument, as they can damage the instrument and void the warranty.**

Operating Safety

WARNING: The use of controls, adjustments, or procedures other than those specified within this manual may result in personal injury and/or damage to this instrument. Attempts by untrained personnel to disassemble, alter, modify, or adjust the electronics or optics may result in personal injury and damage to the instrument and will void its warranty. There are no user-serviceable components inside the particle counter. Only factory authorized service personnel should repair or service this instrument and its optical system. Only use the power supply provided by Lighthouse with the ApexZ instrument. Failure to meet this requirement will void the CE certification, void the instrument warranty, and can result in serious personal injury.

Electrostatic Safety Information

WARNING: Electrostatic discharge (ESD) can damage or destroy electronic components. Therefore, any service or maintenance work should be done at a static-free workstation. A static-free workstation requires an ESD consultant to evaluate the work environment and propose the equipment and apparel needed for a workstation to be successful.

Compliance

FCC Notice



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

Class A Digital Devices

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

NOTE: Any changes or modifications not expressly approved by Lighthouse Worldwide Solutions could void your authority to operate this equipment.

FCC RF Exposure Statement

This equipment complies with FCC RF exposure limits set forth for an uncontrolled environment. This equipment was verified for RF exposure and found to comply with FCC OET-65 RF exposure requirements.

WARNING: Making changes to the antenna or the equipment is not permitted. Doing so may result in the equipment exceeding the FCC RF exposure guidelines. This equipment must not be co-located or operated in conjunction with any other antenna or radio transmitter.

Introduction

Overview

This operating manual introduces the Lighthouse **ApexZ** portable particle counters ApexZ3 and ApexZ50 and includes instructions for inspecting, installing, using, and maintaining the instrument.



ApexZ3



ApexZ50

Retain the original box that the Apex unit shipped in, to facilitate returns for calibration or service. Lighthouse also offers a custom ApexZ shipping case to ensure shipping does not impact the calibration of the unit.

Description

The ApexZ portable particle counter comes standard with 6 particle-size channels (ApexZ3: 0.3, 0.5, 1.0, 3.0, 5.0, 10.0 microns), (ApexZ50: 0.5, 0.7, 1.0, 3.0, 5.0, 10.0 microns) and a flow rate of (ApexZ3: 1.0 CFM), (ApexZ50: 100LPM). The instrument uses a LASER diode light source and LASER beam shaping optics to illuminate a cross section of the air flow path. As particles move along this path, they cross the LASER beam and scatter light. The scattered light rays from particles cutting through the beam are steered to a photodiode using a system of collection optics. The photodiode converts the image into a current which is converted to a voltage and amplified by an electronic circuit. The amplitude of the voltage pulse is proportional to the light scattered, which in turn is proportional to the size of the particle. The voltage pulses created by the particle are then processed by additional electronics that analyze the height of each pulse and therefore, the size of each corresponding particle. The result is that the number of particles of various sizes is determined. The ApexZ is effective in both ultra-clean areas (such as ISO Class 2 or Grade A) and in more traditional clean zones rated as ISO Class 3 or higher. Refer to Specifications in this manual for additional instrument information.

Accessories Included

ApexZ Includes: USB flash drive with lanyard (includes ApexZ3/ApexZ5 Read Me First and Operators Manual), ISO probe (ApexZ3: 1 CFM, ApexZ50 100 LPM), Zero-Count filter (ApexZ3 1 CFM fittings, ApexZ50 100 LPM fittings), USB to Micro-B cable, Exhaust Barb, Printed Instrument Read-Me-First, 10ft Bev-A-Line sample tubing, 24 VDC 5.0 amp power adapter and power cord, 1 Li-Ion Smart battery (2 battery slot capacity), 2x rolls of printer paper (units with printers only), Calibration certificate, Software Download Instructions.

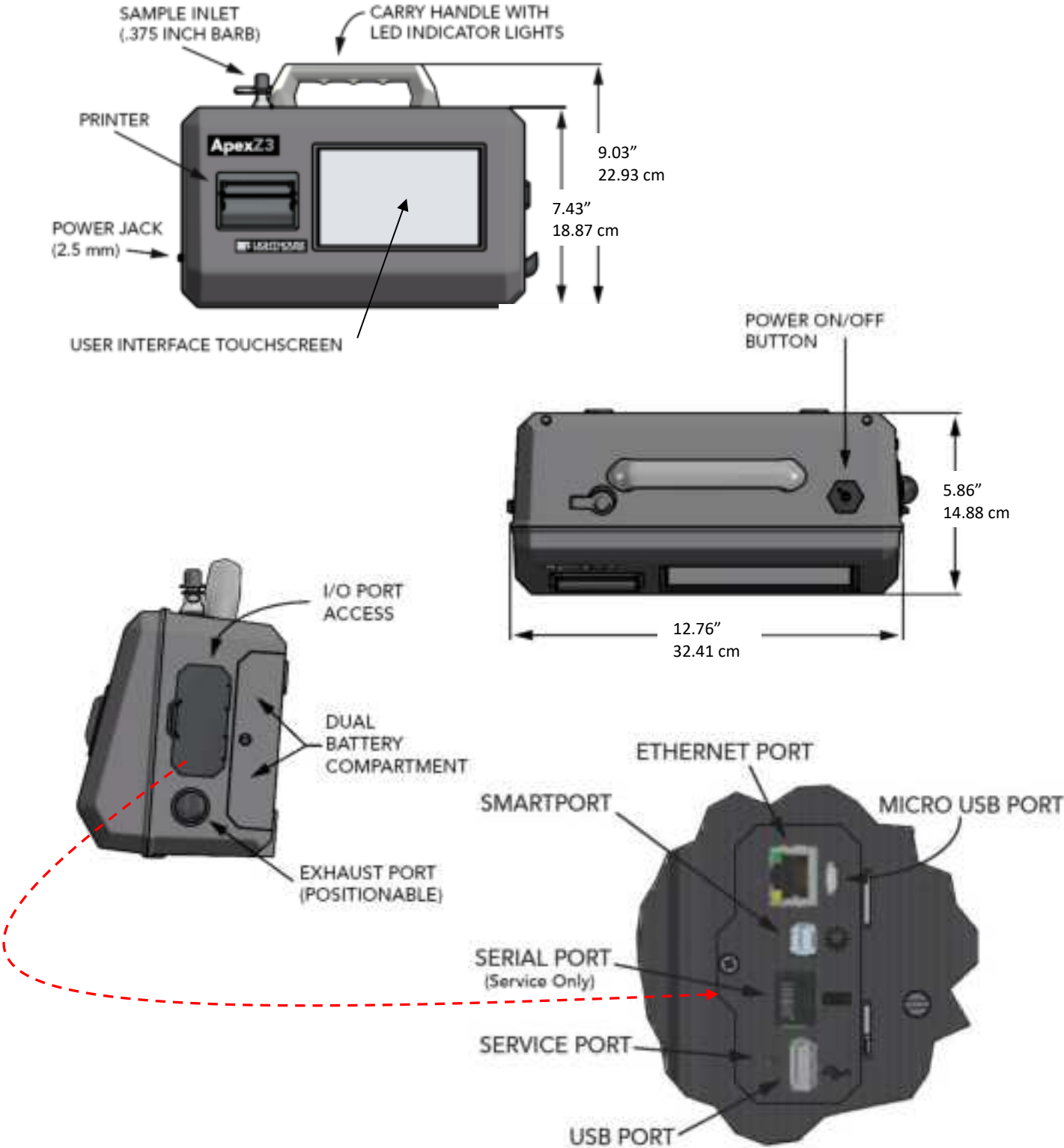
Sampling Techniques and Best Practices

Lighthouse recommends following the guidelines of ISO 14644-21.

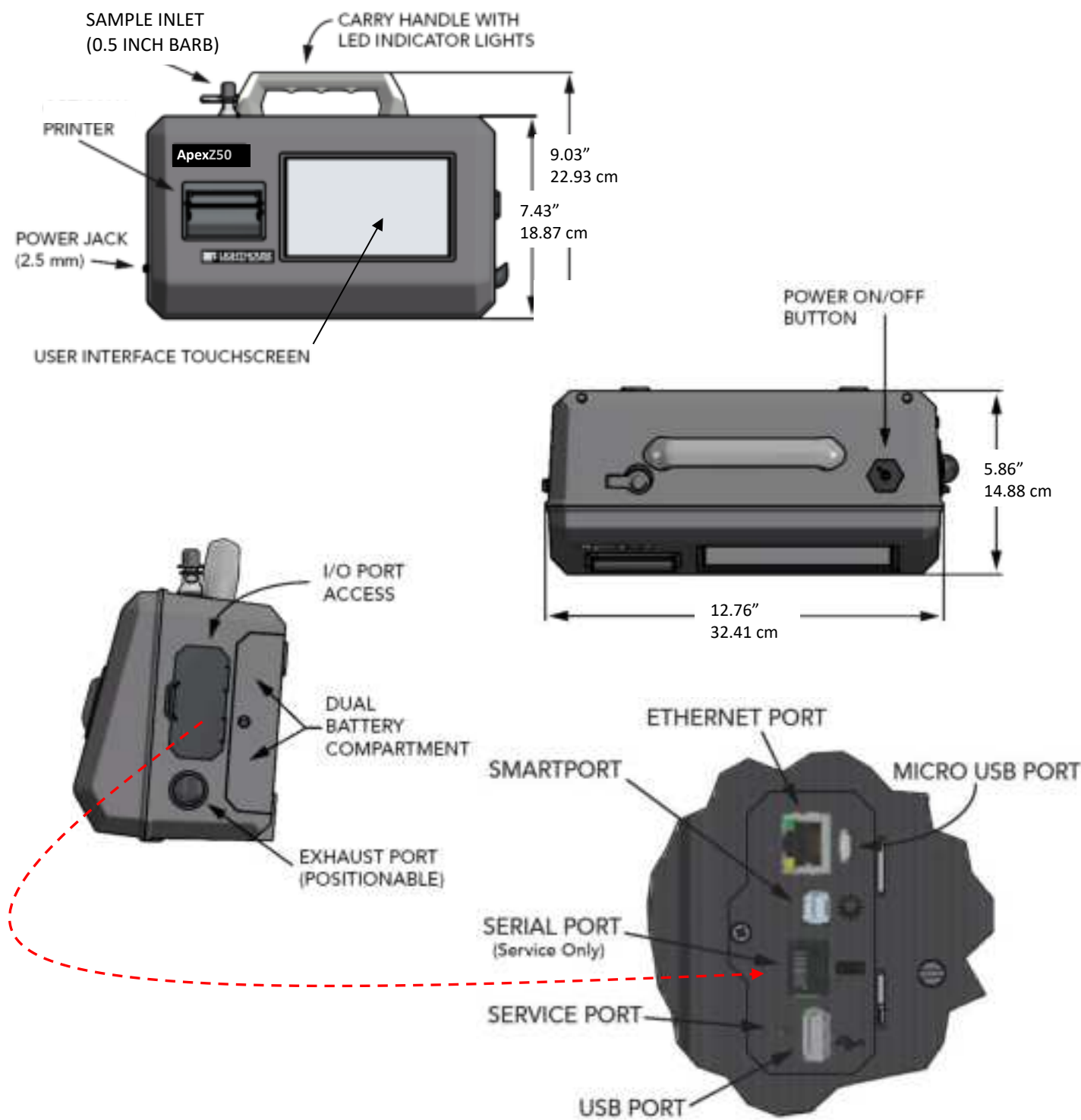
Specifications

Size Range	ApexZ3: 0.3 - 10.0 μm . ApexZ50: 0.5 – 10.0 μm .
Standard 6 Channels	ApexZ3: 0.3, 0.5, 1.0, 3.0, 5.0, 10.0 μm . ApexZ50: 0.5, 0.7, 1.0, 3.0, 5.0, 10.0 μm .
Flow rate	ApexZ3: 1.0 CFM (28.3 LPM). ApexZ50: 100 LPM.
Laser Source	Laser Diode
Zero-Count Level	< 1 count / 5 minutes (meets specifications of JIS B 9921 and reporting requirements of ISO 21501-4 Annex C).
Concentration Limits	ApexZ3: 1,000,000 particles / ft ³ @ 10% coincidence loss, suitable for ISO Class 1-8 cleanrooms ApexZ50: 300,000 particles / ft ³ @ 10% coincidence loss, suitable for ISO Class 1-8 cleanrooms
Counting Efficiency	ApexZ3: 50% @ 0.3 μm , 100% for particles > 1.5x - 2x first channel particle size. ApexZ50 50% @ 0.5 μm , 100% for particles > 1.5x – 2x first channel particle size.
Calibration	ISO 21501-4 compliant and Accredited ISO 17025.
Self-Diagnostics	Laser power/current/supply, flow out-of-range, no flow, PA background/supply/health.
Count Modes	Sample, Concentration, Beep, Custom Recipes, and Certification Modes
Data Storage	10,000 sample records, 20,000 Audit Trail records, 2500 locations, 250 Groups, 500 Presets, 500 Sample Plans, 500 Certifications, 10 Permission levels, 100 reports, and 1000 users.
Communication	Ethernet, USB standard, Wi-Fi (802.11 b/g/n).
Supporting Software	LMS XChange 2.x; LMS Express RT, LMS Pharma; LMS Professional
Environmental Sensors	Temperature/Relative Humidity probe: 0-150 °F (-17.8- to 65.6 °C) \pm 1.8 °F (0.5 °C); 0%-100% \pm 2% RH.
Touch Screen Display	7.0 inch (8.89 cm), 1200 x 800 IPS color touch screen.
Speakers	2x adjustable speakers up to 70 dB to indicate status and alerts.
Carry Handle	With RGB LEDs for status and alarms.
Print	Optional embedded panel-mount printer; IPP (Internet Printing Protocol)
Reports	FED 209E, ISO-14644-1: 1999, ISO-14644-1: 2015, EU GMP: 2008, and EU GMP: 2022 regulatory pass/fail reports displayed on screen or printed.
Alert	User configurable warnings and alarms.
Sample Inlet	ApexZ3: 3/8-inch Inlet nozzle. ApexZ50: 1/2-inch inlet nozzle.
Sample Output	Internally filtered to HEPA standard (>99.97% @ 0.3 μm); with rotatable exhaust fitting for directed flow.
Vacuum Source	Internal blower, automatic flow control.
Enclosure	Chemically Resistant Polycarbonate blend, conductive lining, VHP compatible.
Power	External power supply input: 100-240 VAC, 50/60Hz, 1.4A Output: 24 VDC, 5A, 120W MAX
Battery Battery Run Time	2x Li-Ion battery capacity, removable and rechargeable. ApexZ3: 2 batteries 11 hours nominal use, 50% duty cycle no printing. ApexZ50: 2 batteries 8 hours nominal use, 50% duty cycle no printing.
Dimensions	12.76"(l) x 6.23" (w) x 8.88" (h), [32.41 x 15.82 x 22.55 cm].
Temperature Range	(50°F - 104°F) (10°C - 40°C), 20% - 95% relative humidity, non-condensing.
Weight	7.05 lbs. (3.19 kg) without batteries, battery weight 1.35 lbs. (0.61 kg).
Languages	English, Spanish, Portuguese, German, French, Italian, Russian, Chinese, Korean, Japanese, Turkish, Thai.

Enclosure and Ports – ApexZ3



Enclosure and Ports - ApexZ50



Optional Printer

Open Printer Door

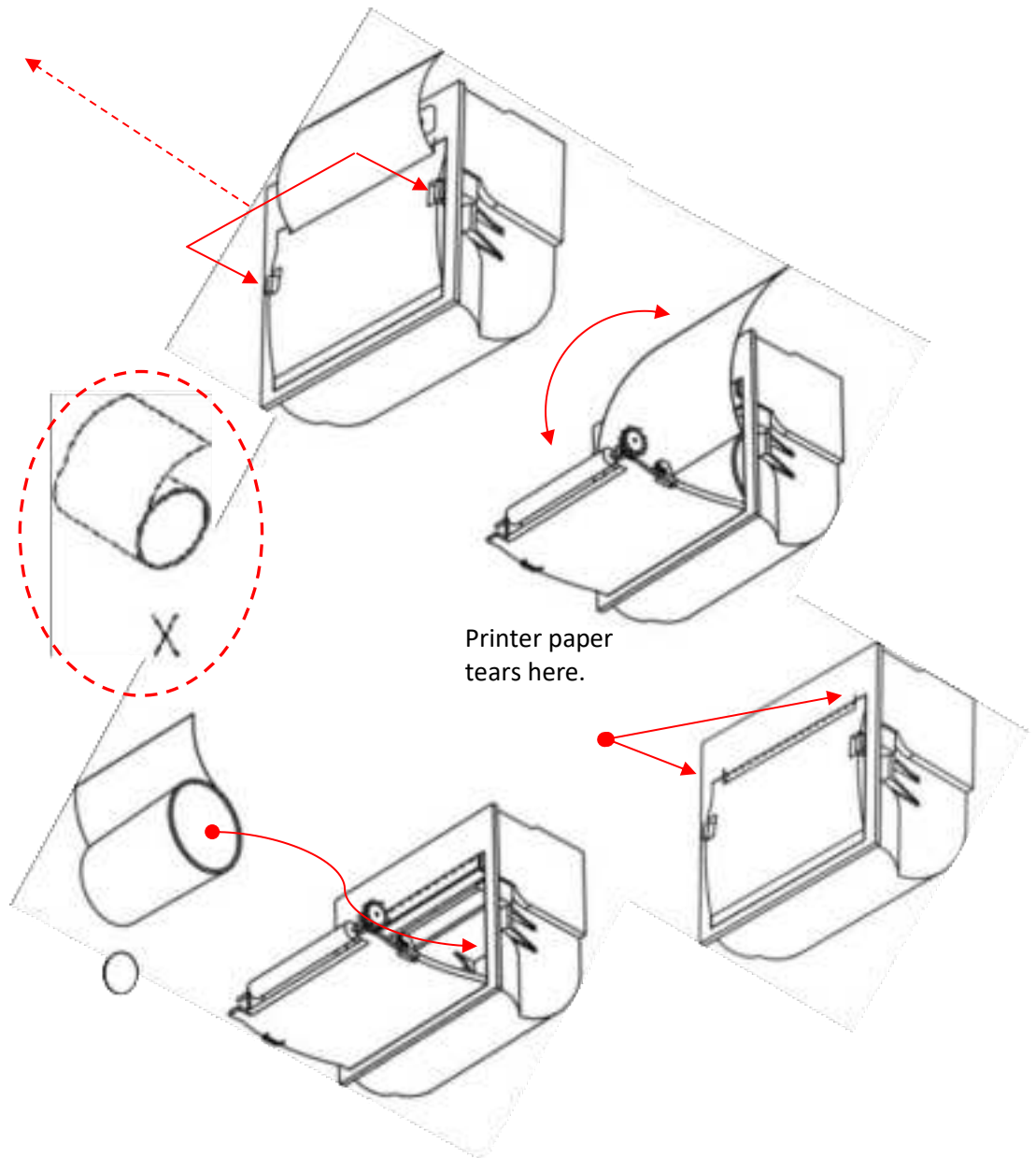
- Pinch the left and right printer door tabs and gently pull open the printer door.

Load Printer Paper

- Insert the printer paper roll with the paper feeding from the back of the roll.

Close Printer Door

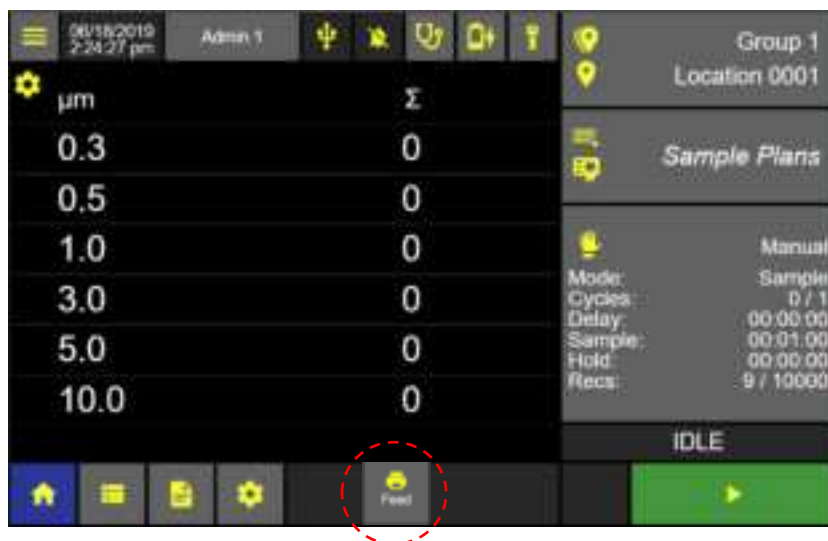
- Close the printer door so that the left and right printer door tabs snap shut.



WARNING: Changing the instrument language will update the instrument firmware and the printer. It will take 1-2 minutes for the update to complete. During this time make sure the ApexZ instrument has at least 50% battery life remaining or is connected to the AC adapter and do not turn off the instrument while updating. Failure to follow these instructions could cause the printer to become damaged and unusable.

Paper Feed

The printer Paper Feed button is available on the ApexZ Home Screen, Data Screen and Report Screen.



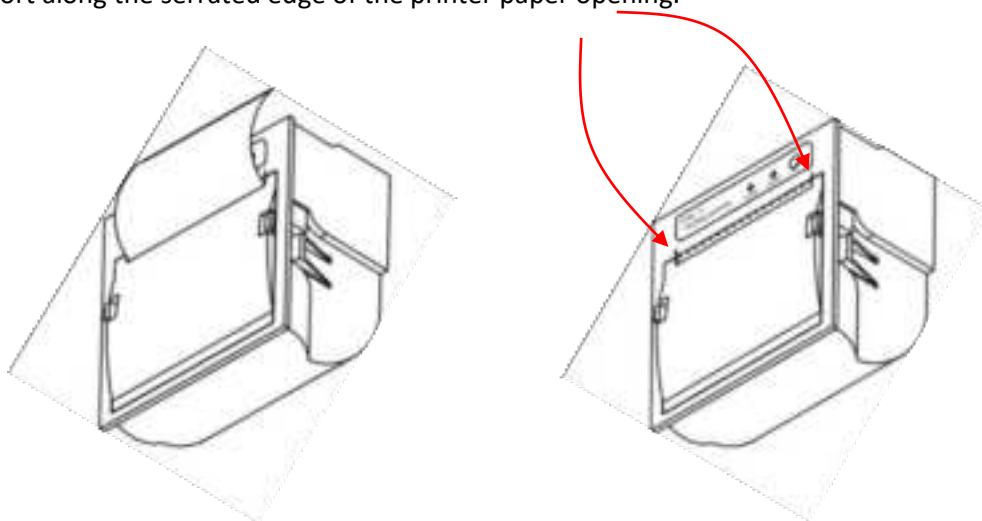
ApexZ Home Screen

Advance the printer paper

- Press the Paper Feed button to advance the paper from the ApexZ embedded printer.

Tear off the printed report

- Tear the printed report along the serrated edge of the printer paper opening.



LED Handle

The ApexZ RGB LED handle lights will light up during and after a sample to indicate warning and alarm status. If the handle LED lights are blinking, then the ApexZ is currently sampling. If the handle LED light is a solid color, the ApexZ has stopped sampling. The sampling LED color that remains lit after a sample is completed indicates the last recorded warning or alarm condition.

Blinking LED colors indicate ApexZ is **actively sampling**. (Blue also means alarms are disabled)

- | | | |
|--------------------------|-------------------|--|
| - Blinking Blue | actively sampling | no instrument faults, (warnings/alarms are disabled). |
| - Blinking Green | actively sampling | no instrument faults, no warnings, no alarms. |
| - Blinking Orange | actively sampling | no instrument faults, warning limit has been exceeded. |
| - Blinking Red | actively sampling | alarm limit exceeded and/or faults detected. |

Solid LED color indicates ApexZ is **not currently sampling**.

- | | | |
|-----------------------|------------------|---|
| - Solid Green | sample completed | no warning/alarm limits exceeded; no faults detected. |
| - Solid Orange | sample completed | warning limit exceeded, no instrument faults detected. |
| - Solid Red | sample completed | alarm limit exceeded and/or instrument faults detected. |

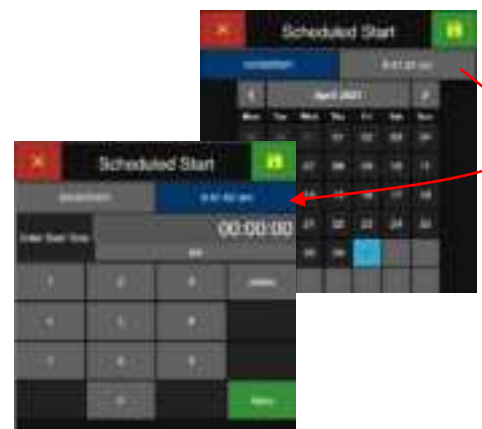
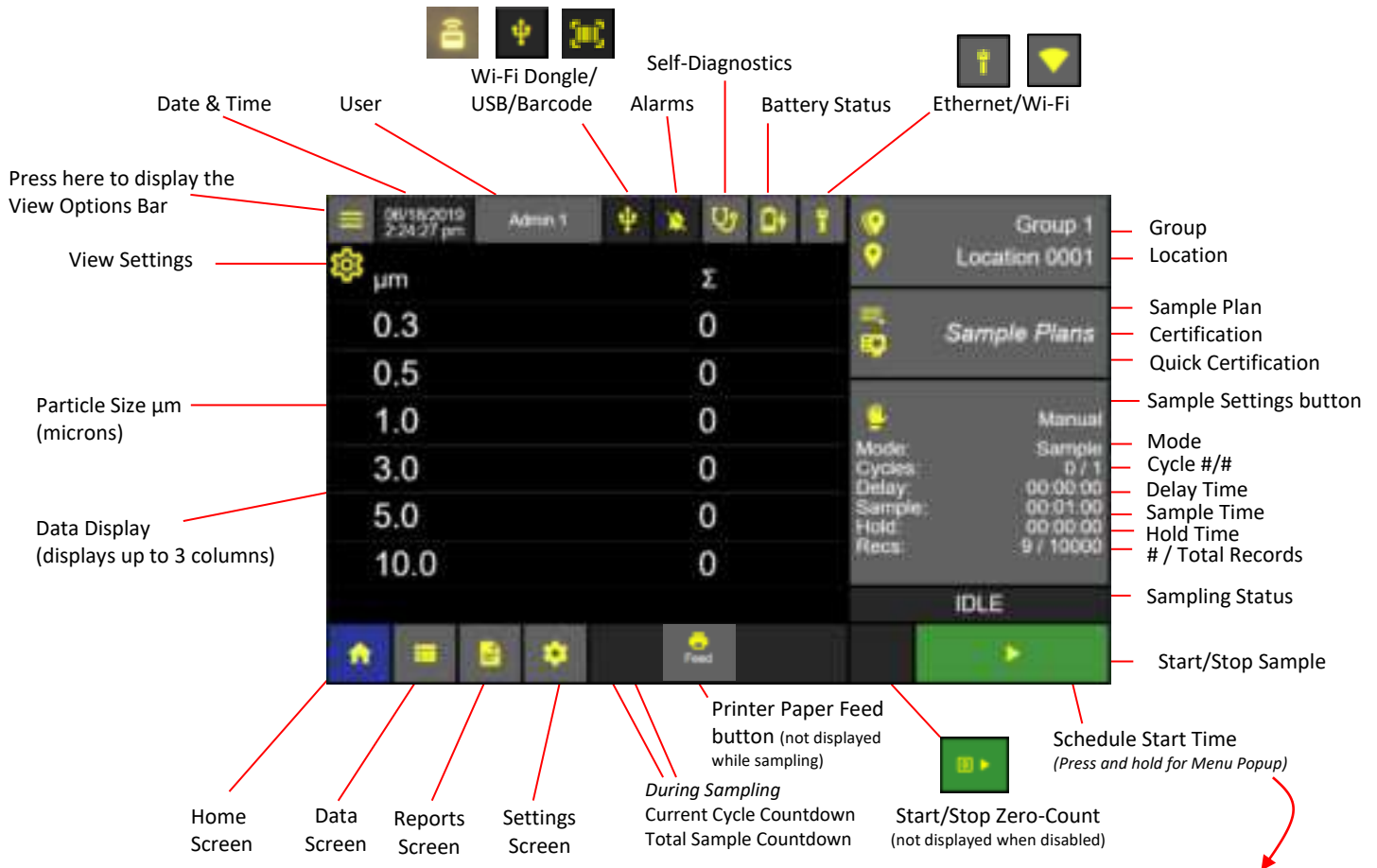


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Operating ApexZ

This is the Home Screen on the ApexZ airborne particle counter. Create manual or preset sample plans and certifications for up to 2500 unique locations.

Home Screen



Sample Settings Dashboard

- Press the Group/Location button to display the Sample Settings Dashboard.

NOTE: If no Groups have been created, none will show on the Main Screen



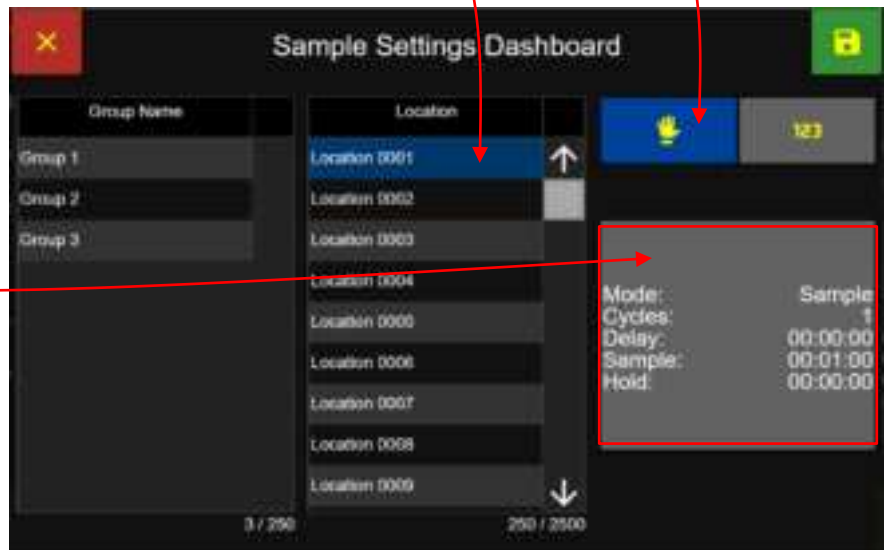
Home Screen

- Select the manual sample button.
- Select the location to be sampled.

Edit the Sample Settings

- Press the Manual Sample button to edit the sample mode, cycles, delay, sample time and hold time. The Manual Sample Setting screen will display.

NOTE: If no Groups have been created the Group Name column will not be shown. If no group is selected (no group name is highlighted blue) then all locations will display in the location column. The first location will be selected and highlighted blue.



Sample Settings Dashboard

Manual Sample

Sample Settings

- Press any sample setting button to edit:

Mode

Delay

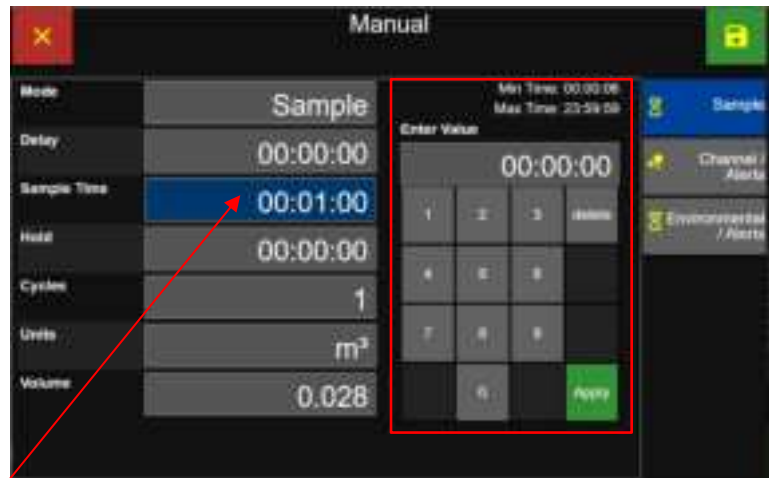
Sample Time

Hold Time

Cycles #/#

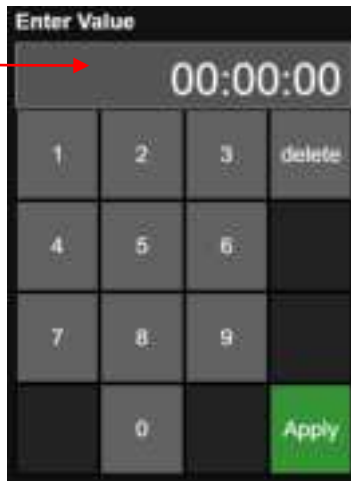
Units ft³/m³/liters

Volume



Manual Sample Settings

- Touch a manual sample setting and it will highlight blue meaning selected.
- The Enter Value keypad will display.



Enter Value keypad

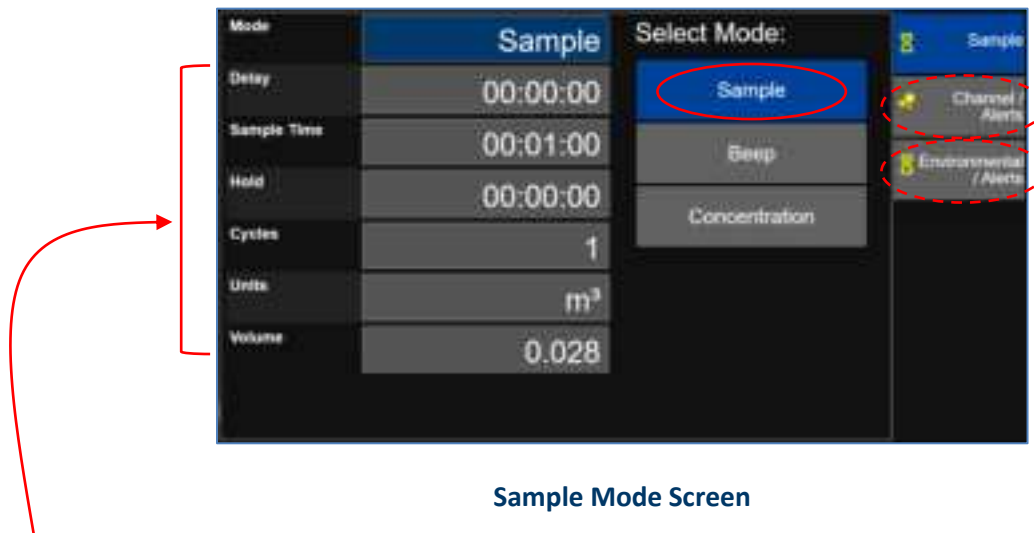
- Enter a value and press Apply.
- The entered value will be applied to the sample setting selected.

Mode: The mode button displays three different manual modes: Sample, Beep, and Concentration.

- **Sample** mode is preset to 1 cycle, 1 minute sample time and no alerts.
- **Beep** mode is preset to 1 cycle, 1 minute sample time and enabled Channel 1 Alert = 0.
- **Concentration** mode is preset to sample continuously, no sample time limit, no preset alerts.

Sample Mode

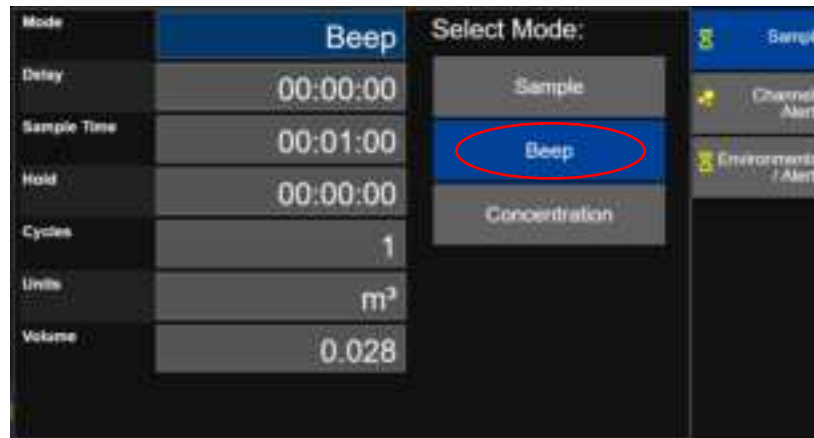
- Press the Sample button, it will highlight blue indicating selected.



Sample Mode Screen

- Enter the Sample mode settings for Delay, Sample Time, Hold, Cycles, Units and Volume.
- Select the Channels/Alerts button to enable and set channel alerts.
- Select the Environmental/Alerts button to enable environmental sensor alerts.

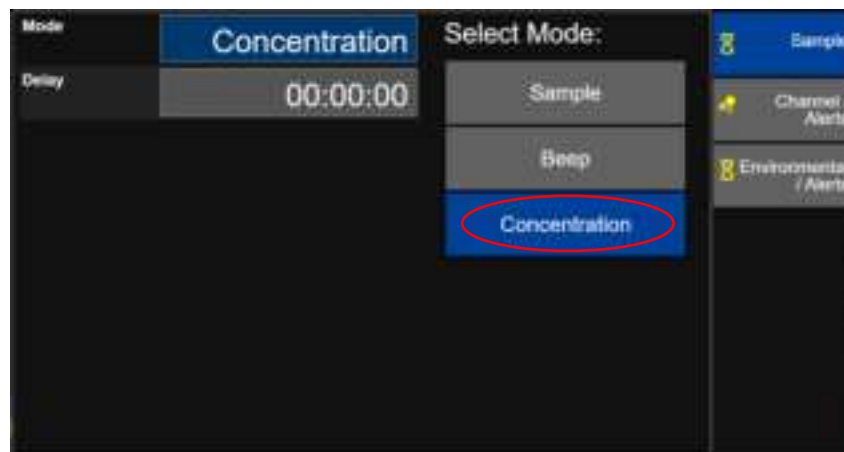
Beep Mode



Beep Mode Screen

- To select Beep mode, click on the Beep button.
- Beep mode is preset to 1 cycle, 1 minute sample time and enabled Channel 1 Alert = 0.
- Beep Mode settings may be changed for Delay, Sample Time, Hold, Cycles, Units and Volume.

Concentration Mode



Concentration Mode Screen

- To select Concentration Mode, press the Concentration button.
- Concentration mode is preset to sample continuously, no sample time limit, no preset alerts.
- Select a Delay time if desired.

Channel Alert Settings

- Press the Channel/Alerts button to display the Manual Sample Channel Alert settings.

- Press any green channel size button to disable that channel and it will highlight grey and strike through indicating it has been disabled.

- Press again to enable that channel.

NOTE: If Global Channels are locked (Settings-Instrument-Options-Channel) then channels cannot be disabled in manual sampling.



Manual Sample - Channel/Alerts

- Press any Channel Warning or Alarm button to set thresholds.
- Select Enable or Disable alarm limit.
- Enter Channel/Alert threshold limits for Warning (orange) or Alarm (red) alerts.
- Press Apply.



Warning Limit



Alarm Limit

Environmental Alerts

- Press the Environmental/Alerts button to display the environmental sensor settings and alerts.
- Select Units °C or °F.



Environmental Alerts Screen

- Select the button for Alarm High, Warning High, Warning Low, Alarm Low to set an alarm/warning.
- The Enter Alarm value window will pop up.



Enter Value Screen

- Select Enable or Disable the Alarm setting.
- Enter the Alarm value and press Apply.

Save Manual Sample

- Press the green Save button to display the Home screen with the manual sample settings.



Manual Sample - Channel/Alerts

Start Manual Sample

- Press the green Start button to start manual sampling at the selected location.



Home Screen – Manual Sample Loaded

Preset Samples

- Press the Group/Location button to display the Sample Settings Dashboard.
- Press the Preset button and it will highlight blue indicating that it has been selected.

All saved preset names will be displayed on the preset name list.

- Select a group name and only those locations assigned to that group will display on the location list. If no groups are selected, then all locations will be displayed.

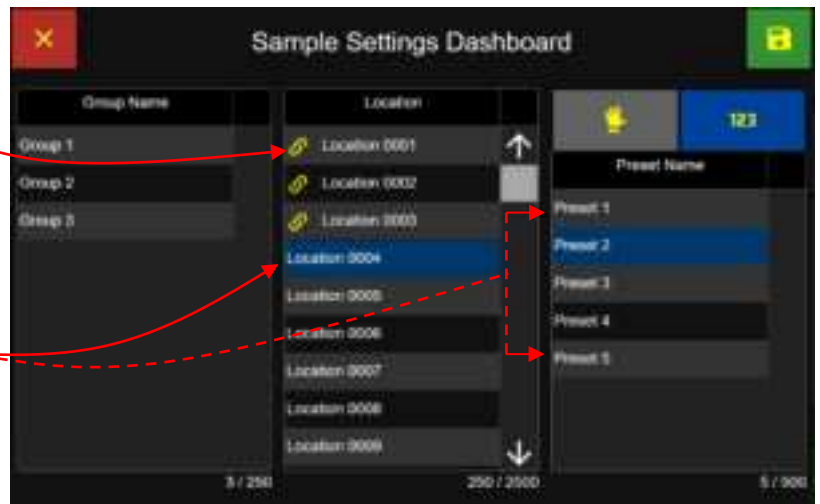


Sample Settings Dashboard with Presets selected

Locations assigned to a preset will appear with the link icon indicating that a preset is currently assigned to that location.

Saved presets will display in the Preset Name column.

- Select a location with no linked preset and all presets will be displayed.



Selecting Locations

Assign Preset to Location

- Select a Preset button and it will highlight blue indicating it has been selected.

Save Preset to Location

- Press the green Save button to assign the highlighted preset to the highlighted location.



Start Preset Sampling

The selected Preset Sample Settings will be loaded on the Home screen for the selected location.

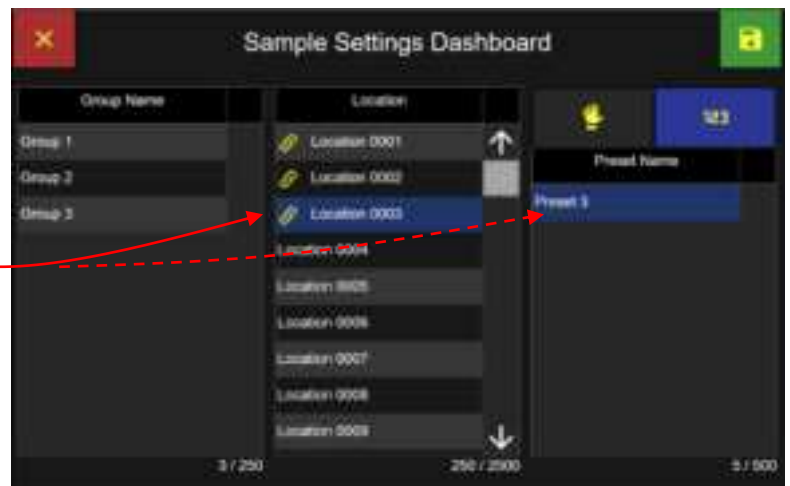
- Press the Start button to start the sampling preset at the selected location.



Home Screen Ready to Sample

Linked Preset

If a location linked to a preset is selected, then only that preset name will be displayed on the preset name list. A location with a linked preset cannot be modified from the Sample Settings Dashboard.



Location linked to Preset

Unlink a preset to a location

To unlink a preset from a location, return to the Settings then Location screen and edit the Preset selection.

Sample Plans

To run a Sample Plan from the Home screen:

- Press the Sample Plans/Certifications button to display the Sample Plan/Certification Dashboard.



Home Screen

- Press the Sample Plan button and it will highlight blue indicating that it has been selected.

The Sample Plan Name list will display all saved sample plans. →

When no Sample Plan is selected then all locations will be displayed and selectable.

After a Sample Plan is selected then only those locations assigned to that Sample Plan will be displayed and selectable.



Sample Plan Dashboard

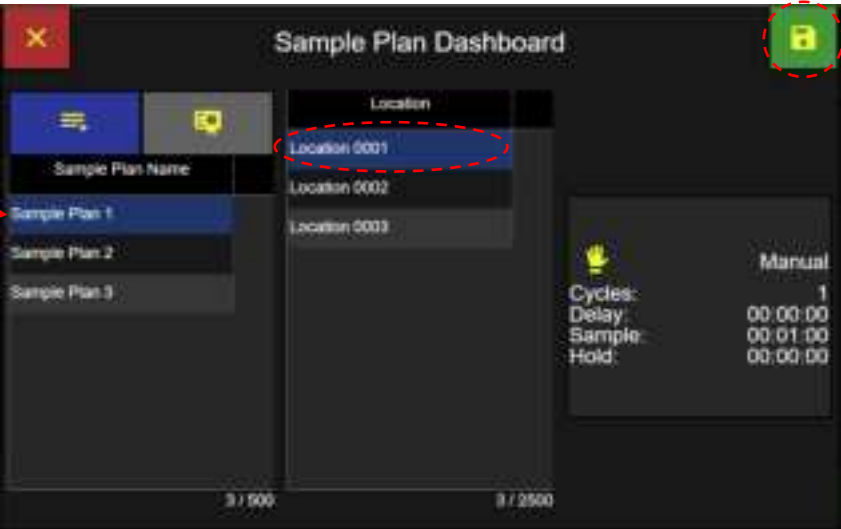
Select a Sample Plan

- Select a Sample Plan and it will highlight blue indicating that Sample Plan has been selected.

Locations assigned to that Sample Plan name will display on the Location list.

Select a Location

- Select the desired location to be sampled from the Location list and that location will highlight blue indicating it has been selected.



Selecting a Sample Plan and Location

Save Sample Plan

- Press the Save button to load the selected Sample Plan and current Location and return to the Home screen ready to start the Sample Plan.



Sample Plan 1 loaded on the Home Screen

Certification Sample

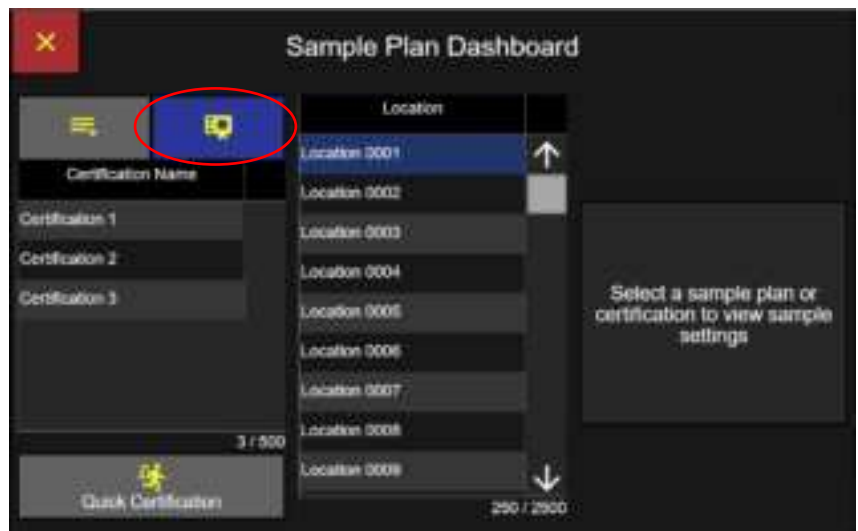
To run a Certification Sample from the Home screen.

- Press Sample Plans/Certifications button to display the Sample Plan/Certification Dashboard.



Home Screen

- Press the Certification button and it will highlight blue indicating it has been selected.

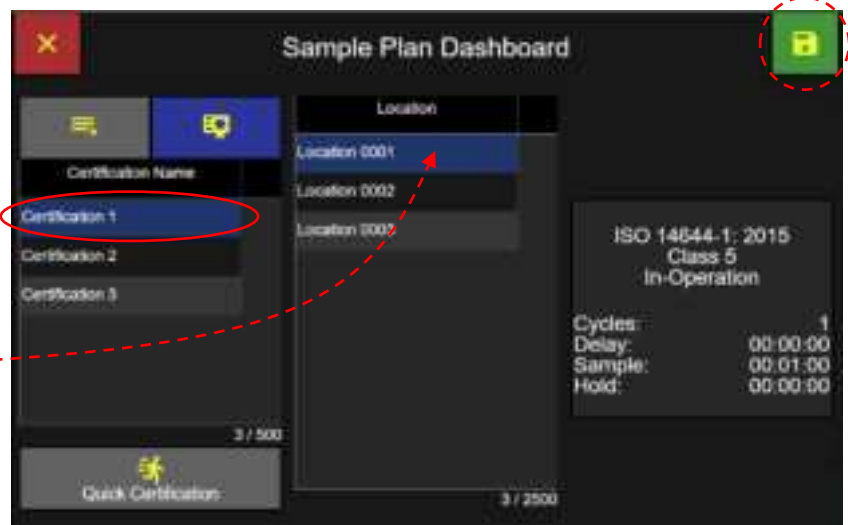


Certification Dashboard

The Certification Name list will display all saved certifications. When no certification is selected all locations will be displayed and selectable. After a certification is selected then only those locations assigned to that certification name will be displayed and selectable.

Select a Certification

- Select a Certification Name and it will highlight blue indicating that it has been selected. Locations assigned to that certification name will display on the Locations List.



Select a Location

- Select the current location to be sampled from the locations list and that location will highlight blue indicating that it has been selected.

Selecting a Certification and Location

- Press the green Save button to load the selected certification and location and return to the Home screen ready to start the certification sample.

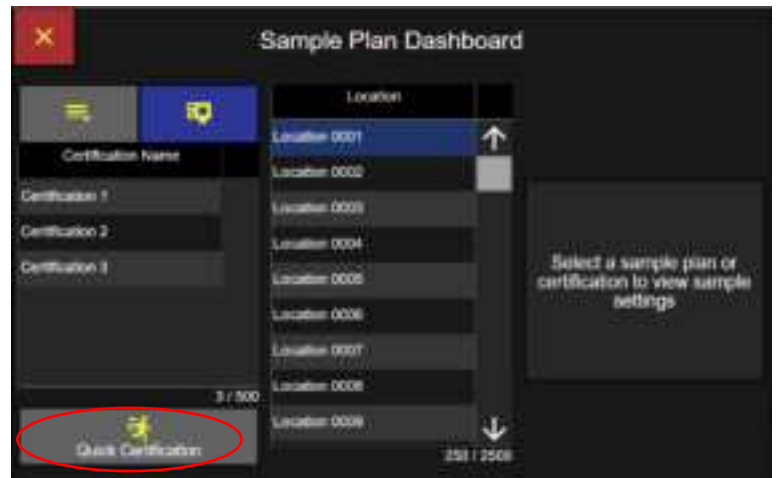


Certification Loaded on Home Screen

Quick Certification

Quick Certification is a single input screen for selecting all the required sample parameters for a certification report.

- Press the Quick Certification button to display the Quick Cert input screen.



Sample Plan Dashboard

- Press any input button to edit.

Certification Type
Area
Class/Room Status
Channels
Cycles/Zones
Delay
Sample Time

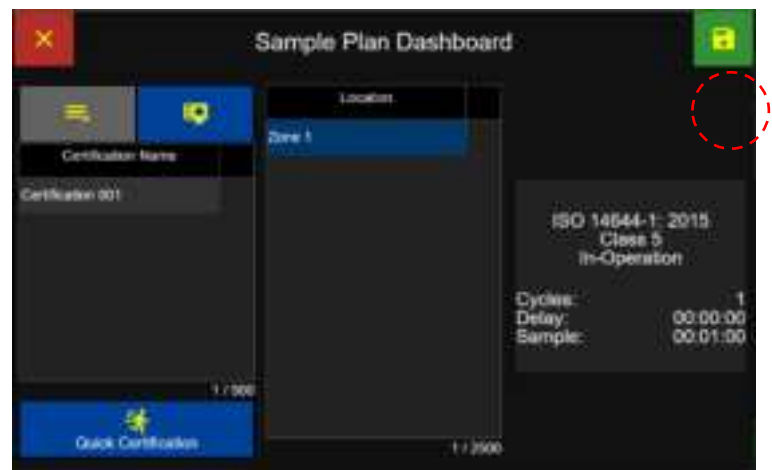


Quick Certification Input Screen

- Press the green Save button to Save the Quick Certification and return to the Sample Plan Dashboard.



- Press the green Save button to Save the Quick Certification Sample Plan and return to the Home screen.



Sample Plan Dashboard

View Options

While sampling, particle count data may be viewed through multiple view options: Data Table View, Sample Grid View, Histogram View, Graph View and Environmental View. From the Home screen press the View Options button to display the View Options Menu.



Select View Option

- Data Table View
- Sample Grid View
- Histogram View
- Graph View
- Environmental View

- Press a view option button and the home screen will change to that view option and settings.

µm	Σ
0.3	0
0.5	0
1.0	0
3.0	0
5.0	0
10.0	0

Group 1
Location 0001

Sample Plans

Manual

Mode: Sample
Cycles: 0 / 1
Delay: 00:00:00
Sample: 00:01:00
Hold: 00:00:00
Recs: 0 / 10000

IDLE

Home Screen: View Options Bar Displayed

Data Table View

- Press the view options gear icon to select data table view.

The data table view settings can provide up to three columns of data that can be displayed while sampling.



µm	Σ
0.3	480
0.5	420
1.0	360
3.0	300
5.0	240
10.0	180

Group 1
Location 0001

Sample Plans

Manual

Mode: Sample
Cycles: 1 / 1
Delay: 00:00:00
Sample: 00:01:00
Hold: 00:00:00
Recs: 1 / 10000

IDLE

Home Screen: Data Table View

Data Table View Settings

Enable Column

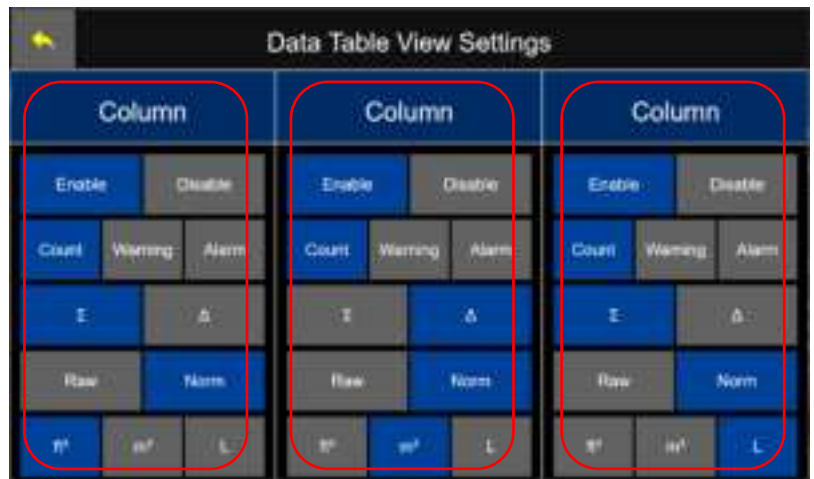
- Select Enable to display that column in the data table view. Select Disable to not to display that column.

Display Counts, Warning or Alarm

- Select Count to display the particle counts or Select Warning or Alarm to display the threshold values set by the user.

Cumulative or Differential

- Select Cumulative or Differential to display either cumulative or differential data counts.



Data Table View Settings

Raw or Normalize Units

- Select Raw or Norm to display data counts either Raw or Normalized
- Select units of volume for Normalized particle counts.

Save Data Table View Settings

- Press the return icon to save the data table view settings.



The ApexZ Home screen Data View Option will display the data specified in 3 columns.

Size (µm)	Σ / ft³	Δ / m³	Σ / L
0.3	480.0	2,118.9	17.0
0.5	420.0	2,118.9	14.8
1.0	360.0	2,118.9	12.7
3.0	300.0	2,118.9	10.6
5.0	240.0	2,118.9	8.5
10.0	180.0	6,356.8	6.4

Home Screen, Data Table View with 3 columns enabled

Sample Grid View

- Select the Sample Grid View options icon from the view options drop down list.

Sample Grid View display's locations assigned to a Sample Plan or a certification with a colored background indicating the sampling status for that location.

There will be no gear icon displayed on the Sample Grid View screen.



Select View Options Sample Grid View

Sample Grid View Location Button

Each location button will display two lines of text:

Location name
Number of samples taken / total number of sample cycles



Sample Grid View allows the user to easily select the current sampling location by pressing the matching location name button on the Sample Grid View screen.

When selected, the location button will highlight with a yellow border color indicating it is the current location to be sampled.



Sample Grid View Screen

Identify your monitoring point location and select that location on the Sample Grid View screen by pressing that location name button. The selected location button will highlight with a yellow border indicating the ApexZ instrument is ready to sample at the current location. Make sure your sample tube and sample probe are in place at the selected location point.

- Press the green start button to start sampling at the current selected location.



Home Screen – Sample Grid View

After sampling completes then move the ApexZ to the next monitoring point. Make sure your sample tube and probe are in place at the new location and then select the matching current location on the Sample Grid View screen.

- Press the green start button to start sampling at the new location.

Location Color Status

Yellow border = current location

Green background = sample completed with no alarms exceeded.

Blue background = currently sampling.

Note if a sample has multiple cycles, then the background color will change after the first cycle is completed if the particle count exceeds the alarm thresholds or the sensor goes into fault.

Grey background = location not sampled



Home Screen – Sample Grid View

Red background = sample complete and the alarm threshold particle count was exceeded at that location. Note a red background color will also display if the instrument was in fault for its laser, flow, or calibration due date.

Sample Grid View Sample Data Display

- To view data counts while sampling from Sample Grid View, press the location button that is currently sampling and highlighted blue.

Data counts (from the first two columns of the Data View Settings) will display in a pop-up window with white text against a blue background.



Home Screen – Sample Grid View

When a Sample Plan is running the user will be prompted to start each sample at each location. The user may select any of the available locations from that Sample Plan to be the next location. When the desired next location has been selected and the sample probe is at the matching location, the user may press Start to begin sampling at that location.

Adding Locations to Sample Grid View



If no Sample Plan or Certification is loaded, the Main Screen will display the Add Location icon which will open the Sample Plan Setup Dashboard.

- Select the desired Location and either Manual or Preset settings then press the green Save button to add the Location to the Home Screen.
- Repeat to add all desired Locations to the Main Screen.



Sample Plan Setup Dashboard

To run the impromptu Sample Plan, after entering all the sample locations needed:

- Press the green Run button.

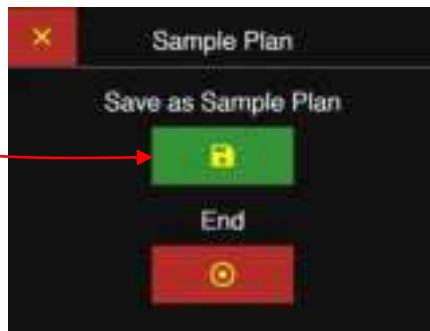


Home Screen – Grid View

To Save the Sample Plan:



- Press the Save Sample Plan button
- Select “Save as Sample Plan” in the window that pops up or select “End” to end the sample plan.



Sample Plan Popup Window

- Reselecting the Sample Plan button will pop up a window to re-sample or end the sample plan.



Re-Sample or End Sample

Histogram View

- From the Home Screen press the View Options button.
- Press the Histogram View button.



Histogram View

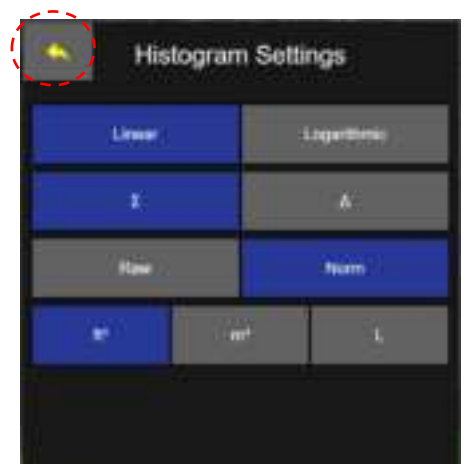
- Press the gear icon to display the Histogram View Settings.



Histogram View

Histogram View Settings

- Select Linear or Logarithmic.
- Select Cumulative (Σ) or the Differential (Δ).
- Select Raw or Normalized with units of volume.
- If Normalized is selected then select units, cubic feet, cubic meters, or liters.
- Press the back arrow button to apply the settings and return to the Histogram View.



Histogram View Settings

Note: Histogram View displays real time particle count data as a Histogram.

Graph View

- Press the View Options button.
- Then press the Graph View button.



Graph View displays sampled data points continuously in real time on a line graph. A new line graph will begin when sampling is stopped and restarted.



Graph View

- Press the gear icon to display the Graph View Settings.



Graph View Screen

Graph View Settings

- Select Linear or Logarithmic
- Select Channel size
- Select Format Raw or Normalized with units ft³, m³, L.
- Press the back button to return to the Graph View screen.



Graph View Settings

Environmental View

ApexZ can sample and collect temperature and humidity data readings while counting particles during a sample session.

Connect an ApexZ Temperature / Humidity probe and view temperature and humidity data while sampling in real time from the Environmental View Option screen.

- From the Home Screen press the View Options button. Then press the Environmental View button.



Environmental View



- Press the gear button to display the Environmental View Settings



Environmental View

Environmental View Settings

- Press the Enable button and it will highlight blue indicating the sensor type has been enabled.
- Press Value to enable selection of °F or °C. Select any of the four Alarm or Warning buttons to enable display of those values.

Relative Humidity will be displayed as %.



Environmental View Settings Screen

- Press the Back button to return to the Home page Environmental View.



Sampling with Data Tags

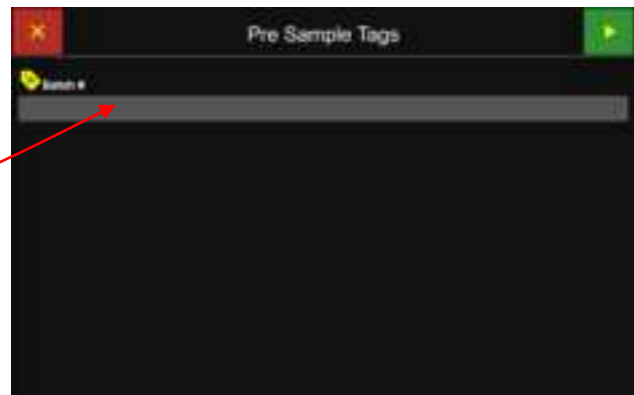
- See Settings-Instrument-Options-Data Tags to create and enable data tag prompts pre-sample or post-sample.
- When Data Tags are enabled, **after starting a sample**, a window will pop up and request Pre-Sample-Tags like Batch # etc.



Main Screen

Pre-Sample Data Tag Input will display on the ApexZ screen immediately after pressing START.

- Select, Enter or Scan the data tag name.



Data Tag Screen

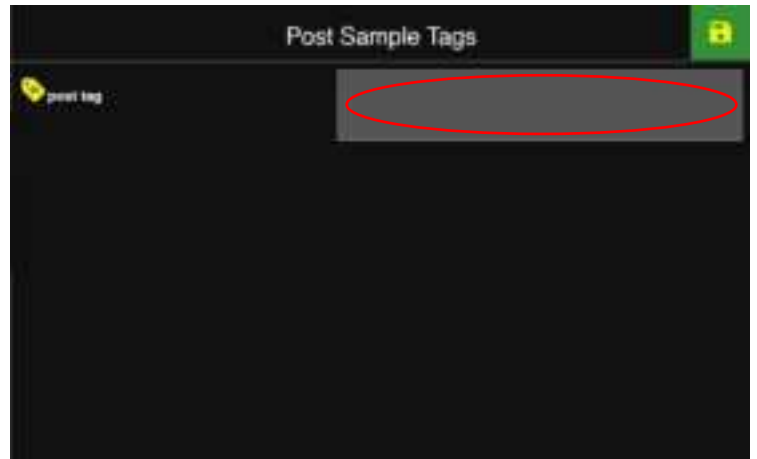
No Scanner: If the user selects a Saved Data Tag Annotation (created when setting up the Data Tag) ApexZ will display the Annotation text in the display area. Alternately, the user can touch the input button to enter the display the input keyboard screen and the user can input the data tag value manually and press the green Apply button to apply the data tag value.



- Once scanned or manually input, press the Save button then the green Start button to begin the Sample.

Post-Sample Data Tag Input (*created and enabled from the Instrument-Options-Data Tags screen*) will be included with the recorded data. During creation of the Post Sample Tags the user can opt to have a popup display on the screen immediately after sampling is complete. Otherwise, the user will have to go to the data screen and input the value there.

- Scan or touch to input the data tag.



Post Sample Data Tag Input Screen

No Scanner:

If the user selects a Saved Data Tag Annotation (created when setting up the Data Tag) the ApexZ will display the Annotation text in the display area.

- Alternately, the user can touch the input button to enter the Enter Value input screen and the user can input the data tag value manually and press the green Apply button to apply the data tag value.



- Once scanned or manually input, select the green Save button to save the record and return to the Main screen.

Data Records Screen

View Data Records

The ApexZ can store up to 10,000 sample data records and display them on the data screen. The user can scroll up and down, left, and right and view all saved data records. Individual or multiple data records can be selected, and a Data Tag can be entered and saved in the data record. The columns displayed in the Data Records screen can be chosen from 30 options, and the display order can be re-organized by the user.

Data Records screen columns displayable

- Date and Time stamp (always shown)
- Sample Name (3 hidden columns)
- Sample Time
- Group
- Location
- Channels (up to 6 hidden columns displaying particle counts by Channel Size)
- Environmental (Analog Temp and RH)
- Alerts (Alarm and Warning conditions)
- Faults (Flow, Laser, and Service)
- User
- Data Tag(s)



Data Records Screen


Note: Hidden columns can be viewed by clicking on the column expansion arrow buttons to the right of each column heading.

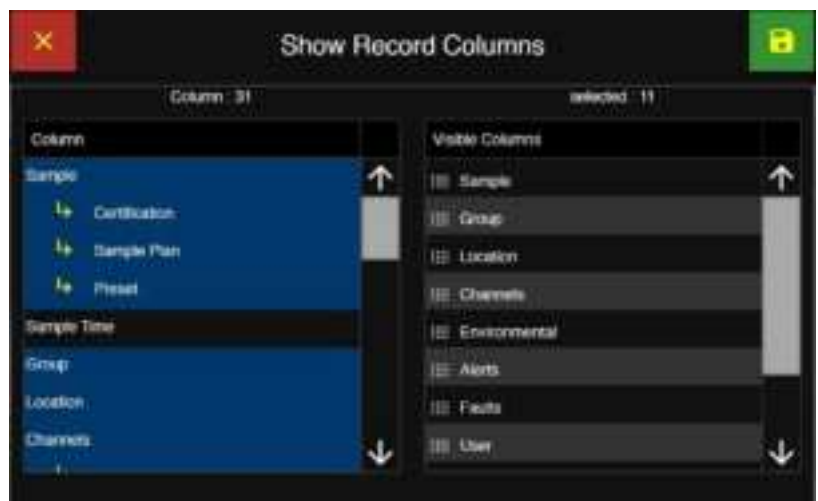
Note: Data records with a strikethrough present across the entire record indicate that the unit had a fault (Flow, Laser, or Service) or the instrument was out of calibration when the sample was taken.

Data Record Screen Column Display

The user can select which data fields to display on the Records screen and what order the columns are displayed on the screen. Press the gear icon in the upper left corner of the Data screen to open the Show Record Columns screen.

- Select the desired columns to display on the left side to add them to the “selected” list. Active columns will be highlighted in blue.

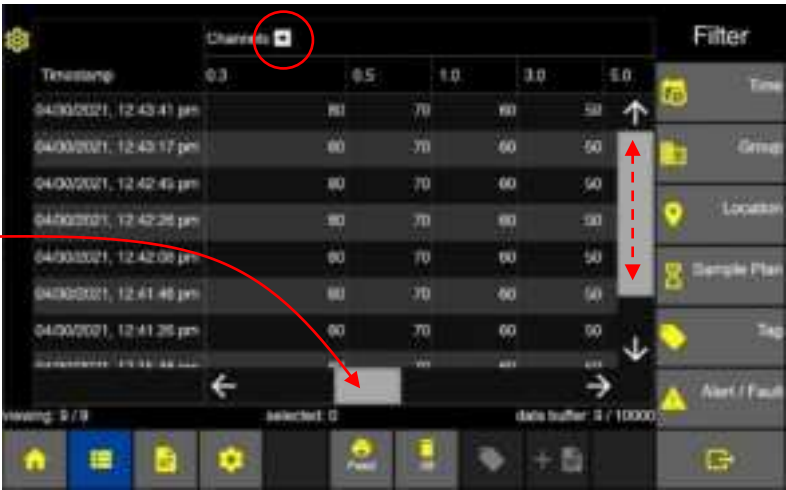
Once columns are added to the “selected” list, the user can adjust the display order by doing a “press-and-hold” on the  at the beginning of the line, then dragging the column into the desired placement. Once all columns in the list are ordered properly, press the green Save button to save and return to the Data Records screen.



Show Record Columns

Channels column expanded

- Press the right arrow button to expand and the left arrow button to collapse the channel columns.
- Slide the horizontal scroll bar or press the right and left arrows to view additional data columns.
- Slide the vertical scroll bar or click on the arrows up and down to scroll through data records saved on the ApexZ.



Data screen displaying channel columns expanded

Environmental, Alerts, and Faults Columns expanded

- Press the right arrow button to expand and the left arrow button to collapse the data columns.

Environmental Columns

Environmental	
TEMP	RH
22.6 °C	42.0 %
22.6 °C	42.0 %
22.6 °C	42.0 %
23.1 °C	42.0 %
23.1 °C	42.0 %
23.1 °C	42.0 %
23.1 °C	42.0 %

Alerts Columns

Alerts			
Alarm	Warning	Environmental Alarm	Environmental Warning
None	None	None	None
None	None	None	None
None	None	None	None
None	None	None	None
None	None	None	None
None	None	None	None
None	None	None	None

Faults Columns

Faults		
Flow	Laser	Service
None	None	None
None	None	None
None	None	None
None	None	None
None	None	None
None	None	None
None	None	None

Use the horizontal scroll bar to view additional data columns to the right or swipe your finger on screen to scroll up or across and display additional rows and columns.

Note: Swipe the screen or slide the Elevator Bars to view additional columns to the right or left.

Status Bar

Viewing: #/#

Filtered data records / total data records.

Selected:

This represents total data records currently selected / highlighted blue.

Data buffer: #/10,000

This represents total # of saved data records / total capacity (10,000 records).



Data Screen

Select Data Records

- Press anywhere on a data record row and that data record will highlight blue indicating it is currently selected. Select additional rows and they will highlight blue indicating they are also selected now as a group.
- To unselect press again and the data record will return to grey/dark grey indicating the data record is no longer selected.



Data Screen

Data Tags

Data Tags can be used to add process references to your sample data record. For example, data tags “Batch #” and “Lot #” can be created and prompted for either Pre-Sample or Post-Sample. Data Tags can be entered by a standard USB barcode reader, input via the use of Annotations, or input from the ApexZ touch screen keyboard. Data Tag input is saved with the data record and displayed in columns on the ApexZ Data Records Screen (if the individual Data Tag column(s) are selected to be shown). Data Tags can also be added to records in the Data Records screen.

Select Data Records

- Select a single data record or a group of data records and they will highlight blue indicating these records are currently selected.
- Press the Tag button to display the Data Tags screen. Note Tag Button will be inactive if no Data Tags have been defined.



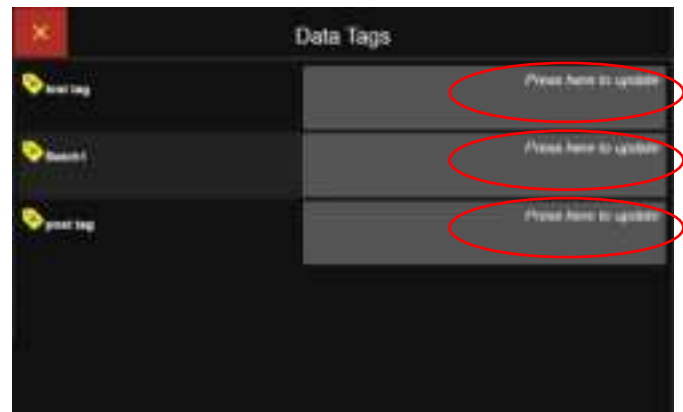
Data Records Screen



Add Data Tags to Data Records

- Select the data tag to input.
- Scan or touch to input the data tag.

No Scanner: If the user selects a Saved Data Tag Annotation (created when setting up the Data Tag) the ApexZ will display the Annotation text in the display area. Alternately, the user can touch the input button for the Enter Value input screen and the user can input the data tag value manually and press the green Apply button to apply the data tag value.



Data Records Screen



- Once the values are input, press the green Save button to add the Data Tags to the record(s)

Export Data Records

Data records on the ApexZ can be output to the onboard printer (on units with the optional embedded printer), a network-connected printer, a USB key or a CIFS (Common Internet File System). Data exported to a USB or CIFS can be saved as a .csv, .xlsx, .lsdx, or .pdf file, dependent on the settings in the Settings-Instrument → Output screens.

Select Data Records

- Select a single data record or a group of data records.
- To export All Data Records just press the export button without selecting any record(s).



Data Records Screen

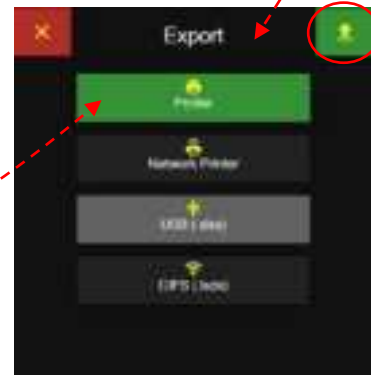
- Press the Export button to display the Export Screen.



Select Export Type

- Select the Export Type: Printer, Network Printer, USB, or CIFS. Formatting for all output types is set up in the Settings → Instrument → Output screens.

The selected output type button will highlight green.

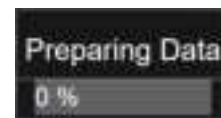


Export Screen



- Press the export button to start the Export.
- The Preparing Data window will display while exporting.

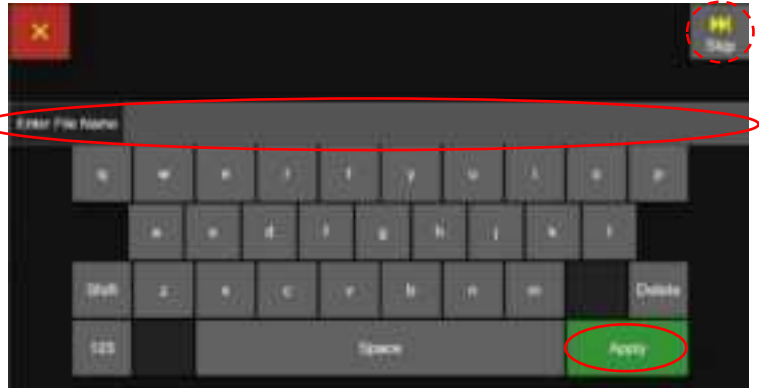
Note: 100 records are the maximum export to the Printer/Network Printer at a time. Output buttons will be non-interactable for any output types not available.



Name Export File

When exporting data files to a USB or to CIFS, the user has the option to give the file a name. For those output destinations, after pressing the export button the Enter File Name screen will appear.

- Use this screen to enter a desired file name for the data to be exported then press the Apply button.
- Alternatively, press the Skip button to title the file with the default system name.



Enter File Name Screen

Make Report from Data Records

Reports may be created from selecting a continuous set of data records from the Data Screen and then pressing the + Report button.

After the + Report has been pressed, the user will be asked to set report sample parameters and create a new Report based on the selected data record samples collected. Follow these steps to select the data records, report type, channels, enter a new report name, and save the report.

Select Data Records for Report

- Press and highlight the desired data records to make a Report.
- Press the **+ Report** button to display the New Report screen.



Data Screen

Note: Selecting data records from a filtered display of data records will not filter the data set included in the generated report. All data records from the oldest to the newest data record set selected will be included in the generated report.

Report Type

- Press the Type button.



Select the Report Type:

ISO 14644-1: 2015
 EU GMP: 2022
 EU GMP: 2008
 ISO 14644-1: 1999
 FED 209E (Federal Standard 209E)

New Report Type

Report Channels

- Press the Channel button to display the Report Channels Screen.

ApexZ will enable the required channels and will set the target limits for the chosen report type standard.

Enabled channels will display with a green check box.

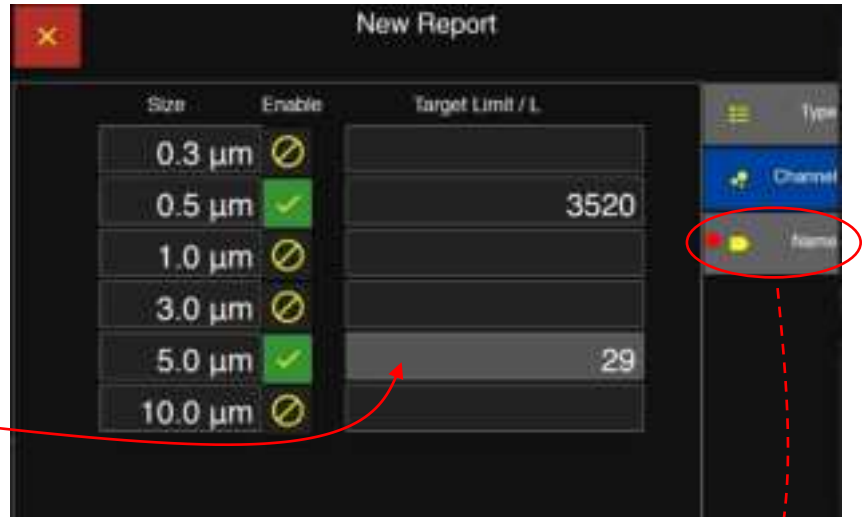
Disabled channels will be displayed with the null symbol, a circle with a line through it. These particle channel sizes are not within the certification standard and may not be enabled.

Size	Enable	Target Limit / L
0.3 µm	⊘	
0.5 µm	✓	3520
1.0 µm	⊘	
3.0 µm	⊘	
5.0 µm	✓	20
10.0 µm	⊘	

New Report Channels

The EU GMP:2022 standard allows the user to choose whether to include the 5.0 μ m channel, and what Target Limit that channel will have, when set up for Grade A (in-operation and at-rest) and Grade B (at-rest only).

Editable lines are shown with a light gray background.



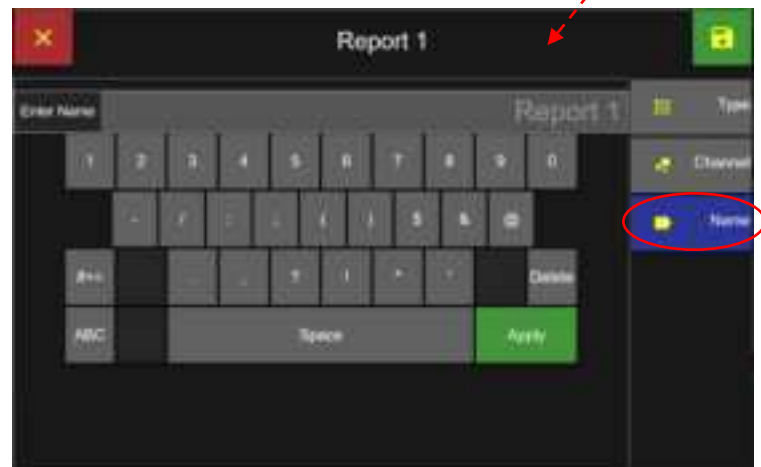
Report Channels Screen

Report Name

- Press the Name button to display the Report Name Screen.
- Enter the Report Name from the keyboard.
- Press the green Apply button to apply report name.



- Press the green Save button to save the report and return to the Data Screen.



Report Name Screen

The new report will be saved on the Report screen.

Filter Data Records

From the Data Screen:

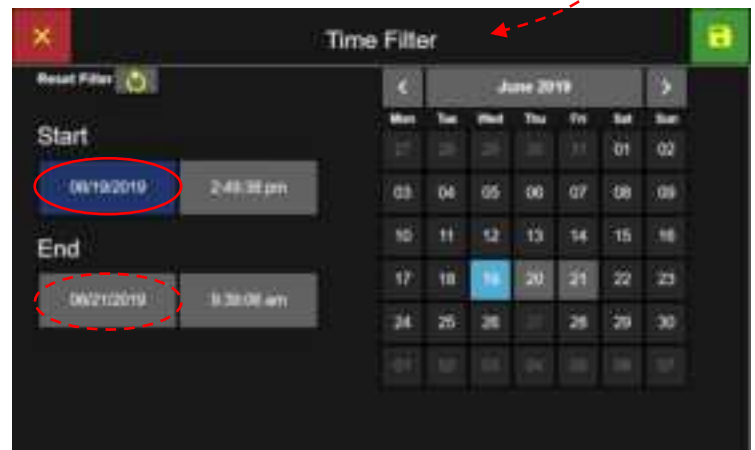
- Press the Time button to display the Date & Time Screen Filter



Data Screen

Filter Start and End Date

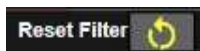
- Press the Start Date button and select the starting day, month and year for the filter period using the keypad.
- Press the End Date button and enter the end date on the keypad.



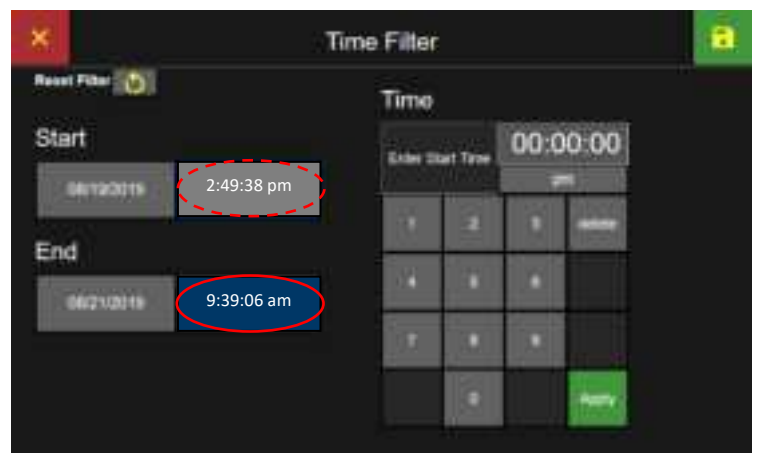
Filter Data – Date Keypad

Filter Start and End Time

- Press the Start Time button and enter the start time on the keypad.
- Press the End Time button and enter the end time on the keypad. If the End Time is prior to the Start Time, the "Invalid Start Time" error will display.
- Pressing the Reset Filter button will reset the dates and times to encompass all available records.



- Press the green Apply button and press the green Save button to apply the Date and Time filter to the data records on the Data Screen.



Filter Data – Time Keypad

Filter Groups

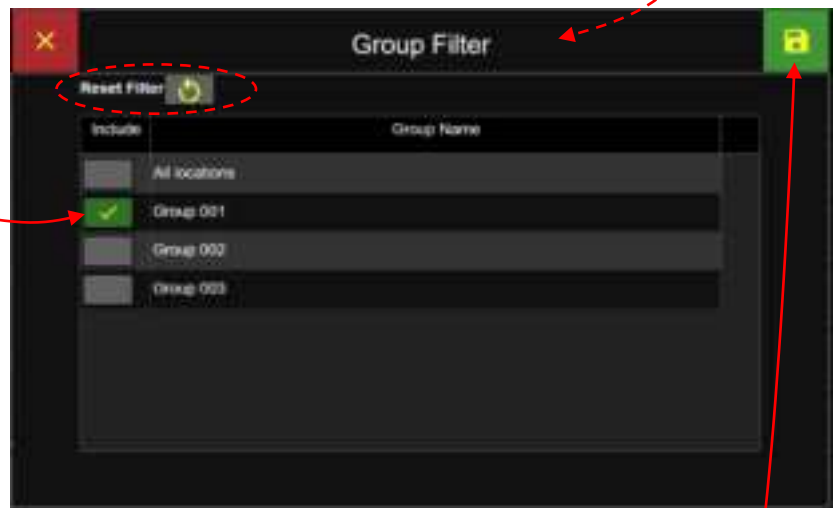
- Press the Group button to display the Filter Group Screen.



Data Screen

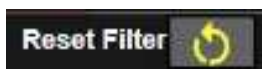
Select Group to Filter

- Select the Group name(s) to be included in the data records filter and press the adjacent include button. The button will highlight green with a check mark indicating the group name has been included in the filter.
- Press the include button a second time to remove selection. A grey background color indicates no filter on this parameter.



Group Filter

- Press the Reset Filter button to deselect all options on the screen.



- Press the green Save button to save the filter settings and return to the Data Screen.



Filter Locations

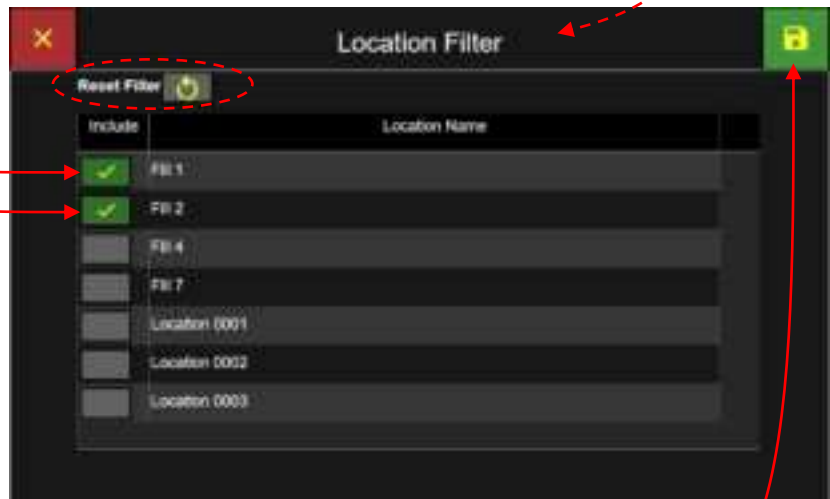
- Press the Location button to display the Filter Location Screen.



Data Screen

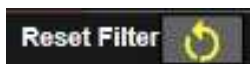
- Select the Include button next to the Location name(s) to be included in the data records filter.

The button will highlight green with a check mark indicating it will be included in the data record filter.



Location Filter Screen

- Press the Reset Filter button to deselect all options on the screen.



- Press the green Save button to save the Location filter and return to the Data Screen.



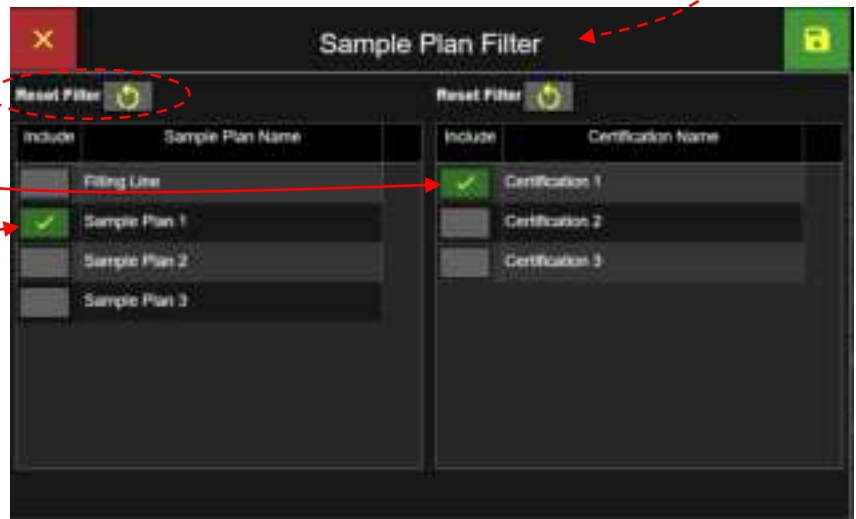
Filter Sample Plans and Certifications

- Press the Sample Plan button to display the Filter Sample Plans screen.



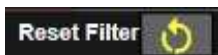
Data Screen

- Press the Include button next to the Sample Plan/Certifications to be included in the data records filter.



The button will highlight green with a check mark indicating it will be included in the data record filter.

- Press the Reset Filter button to deselect all options on the screen.



- Press the green Save button to activate the filter settings and return to the Data Screen.



Sample Plan Filter and Certifications

Filter Tags

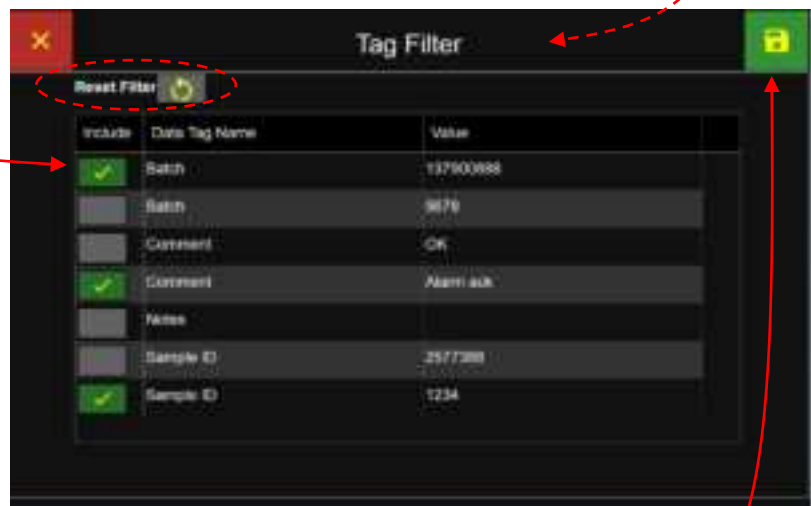
- Press the Tag button to display the Tag Filter screen.



Data Screen

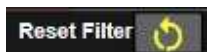
- Select the Include button next to the Tag name(s) to be included in the data records filter.

The button will highlight green with a check mark indicating it will be included in the data record filter.



Tag Filter Screen

- Press the Reset Filter button to deselect all options on the screen.



- Press the green Save button to activate the filter settings and return to the Data Screen.



Filter Alert/Fault

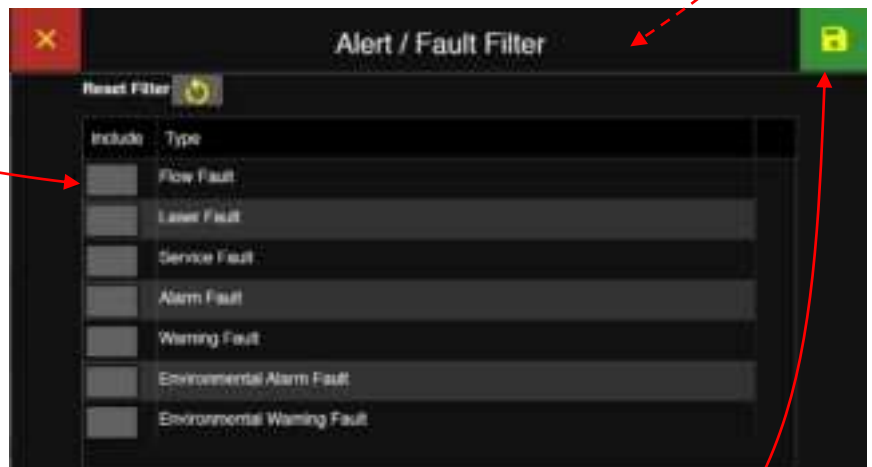
- Press the Alert/Fault button to display the Alert/Fault Screen.



Data Screen

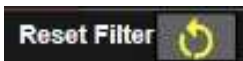
- Select the Include button next to the Alert/Fault(s) to be included in the data records filter.

The button will highlight green with a check mark indicating it will be included in the data record filter.



Filter Alert / Fault

- Press the Reset Filter button to deselect all options on the screen.



- Press the green Save button to activate the filter settings and return to the Data Screen.



Delete all data records

ApexZ will store up to 10,000 sample data records and after the database is full then the newest data records will copy over the oldest data records, wrapping the database.

Data records may not be deleted individually.

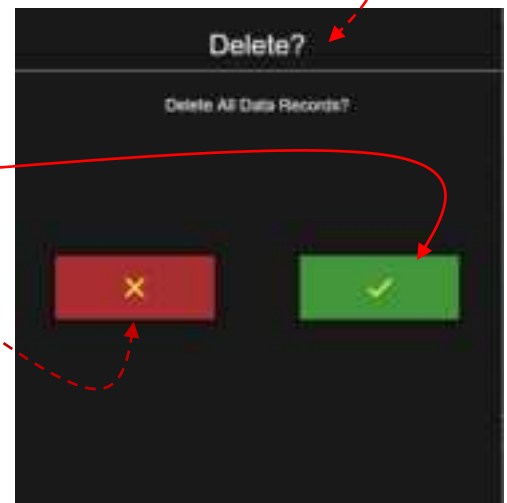
- To delete All data records, press the trash can button to display the Data Records Delete Screen.



Data Screen

- Press green check mark button to delete ALL data records.
- Or press the red x button to cancel and data records will NOT be deleted.

Note: ApexZ can only delete all records. There is no option to delete individual records.



Confirm Data Records Delete

Blank Page

Reports

Report Screen

The Reports screen displays a list of all saved certification reports.

Reports that have Passed their certification conditions will be highlighted green and display “PASS” in the Results column. Reports that have failed their certification conditions will be highlighted red and display “FAIL”, indicating they have failed.

- From the Home Screen select the Report icon button to display the Report screen.



Reports Screen

Expand Result Columns

- Press the arrow button to expand the Result columns.
- Use the horizontal slider button or arrow buttons to display more columns to the right or left.



Result Columns Expanded

Report data columns displayed include date created, report name, and fault results for over limit data counts, minimum sample volume not met, minimum samples not taken, minimum sample time not sampled, and instrument fault.

Report Result Column Expanded

Over Limit, Minimum Volume, Minimum Locations, Minimum Samples, Min. Sample Time, Instrument Fault



Created	Overlimit Fault	Min Volume Fault	Min Loc Fault	Min Samples Fault	Min Sample Time Fault	Instrument Fault
06/28/2019, 1:07:55 pm	Fault	None	None	None	None	None
06/28/2019, 1:00:06 pm	Fault	None	None	None	None	None
06/27/2019, 2-24:20 pm	None	None	None	None	None	None

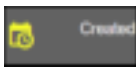
Result Columns Expanded

Filter Report List

The list of reports displayed on the Reports screen can be filtered by the date the report was created, the report type or the report pass/fail status.

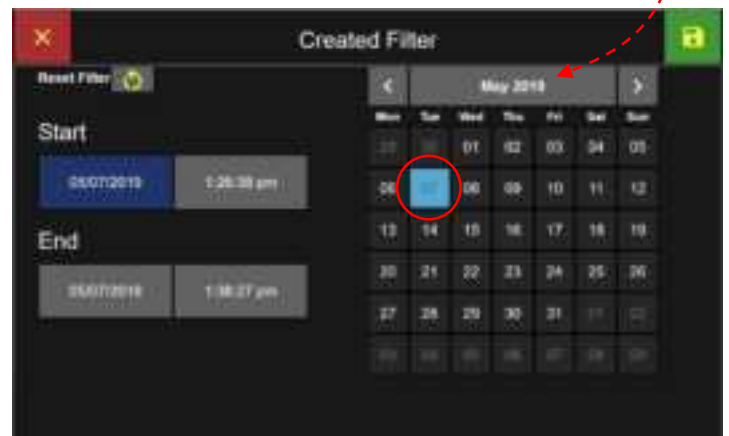
Filter report date and time

- From the Reports Screen press the Created button to go to the Filter Created Screen



Reports Screen

- Select the Start/End date button and the date keypad will be available to enter the start/end dates for the desired data records filter.



Select date, month, and year.

- Select the Start time and End time buttons and use the Time keypad to enter the report filter start and end times.
- Select am/pm.
- Press the Apply button.
- Press the Save button to return to the Reports screen.



Note: If the End Time is prior to the Start Time, an "Invalid Start Time" error will display.

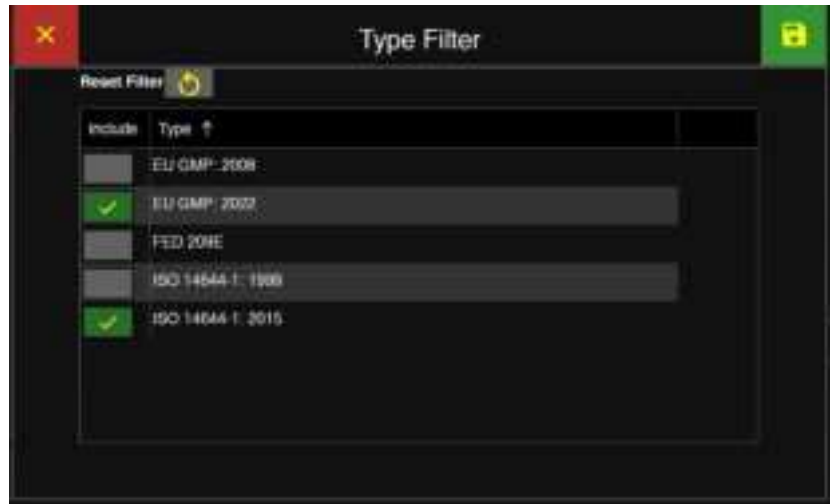


Select Time

Filter Certification Type

Click to Enable the certification type(s) to be included in the filter. The button will highlight green with a yellow check mark indicating that certification Type is included in the data records filter.

- Press the Save button to apply the filter and return to the Reports screen.



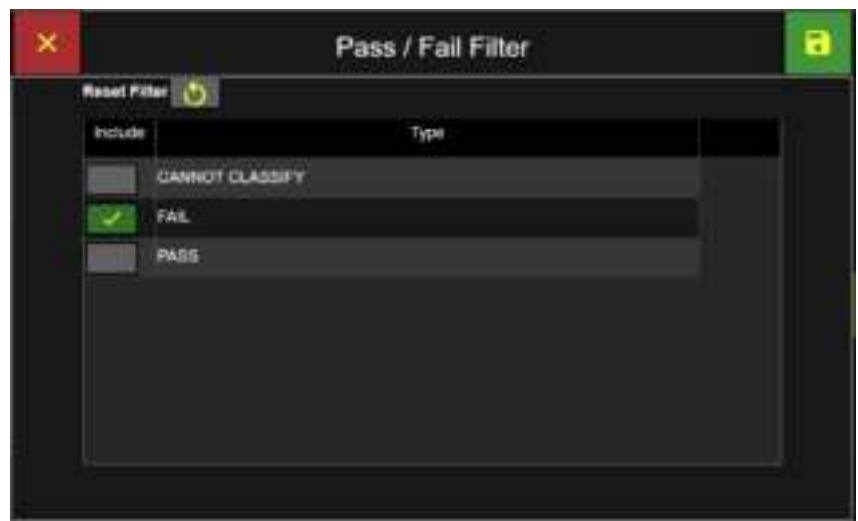
Select Certification Type Filter

Filter Pass/Fail

- Click to Enable the Pass/Fail Type(s) to be included in the filter; Cannot Classify, Fail or Pass.

The button will highlight green with a yellow check mark indicating that type is included in the Report list filter.

- Press the button a second time and the button will change to a grey color indicating it is not included in the data records filter.
- Press the green Save button to apply the filters and return to the Reports Screen.



Select Pass/Fail Filter

- If you do not press the Save button, then no new filters will be applied.
- If you press the red x button to cancel, then no filters will be applied.
- If no Types are Included, then no Filters will be applied, and all Reports will be displayed on the Reports screen.



- To disable all included filters, Press the Reset Filter button.

Export Report

- Select a report to export and it will highlight blue indicating it has been selected.

- Press the Export Report button.



(Only 1 report can be selected for export at a time.)



Select Report to Export

- Select the Export Type: Printer, Network Printer, USB, or CIFS.
(File format and setup for the USB and CIFS options are set in Settings -> Instrument → Output screens)
- Press the Confirm Export button to start the export.



Export Output

Name Export File

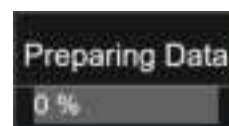
When exporting data files to a USB or to CIFS, the user has the option to give the file a name. For those output destinations, after pressing the export button the Enter File Name screen will appear.

- Use this screen to enter a desired file name for the data to be exported then press the Apply button. Alternatively, press the Skip button to title the file with the default system name.



Enter File Name Screen


- Preparing Data popup screen will count from 0 to 100%
- USB Export will count from 0 to 100%



Preparing Data and USB Export

Delete a Report

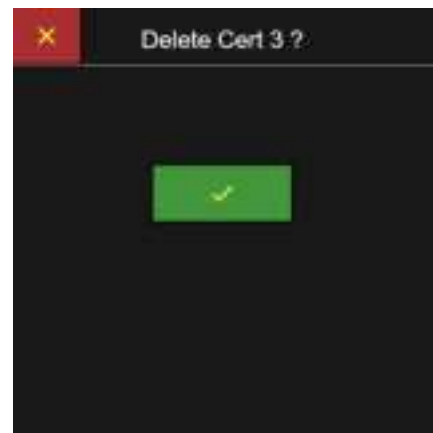
Reports can either be deleted one at a time using the Delete Report button, or all at once using the Delete All button. If no reports are selected, then the delete report button will be disabled.

- Select a report to delete and it will highlight blue indicating the Report has been selected. 
- Press the Delete Report button and the Delete report confirmation screen will display.



Select Report to Delete

- Press the green check box to delete the selected Report or press the red x box to cancel with no report deleted.

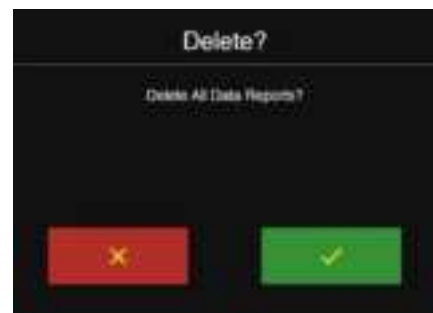


Delete Selected Report

- Press the Delete All button to delete all Reports listed in the Reports screen.



- Press the green check box to delete all reports or the red x button to cancel delete all.



Delete All reports

Audit Trail

The Audit Trail Screen creates a timestamp and message for every user action and data record recorded on the ApexZ instrument. Every time a sample is recorded, or a user changes a current setting or modifies a configuration parameter; a timestamped message will be recorded in the Audit Trail. After 20,000 records have been recorded in the audit trail the next record will replace the oldest record.

The user can add comments to audit trail messages, filter the displayed messages based on Time parameters, and output the displayed Audit Trail to a USB or CIFS.

Press the Reports Screen Button

- From the Home screen press the Reports button and then press the Audit Trail button to display the Audit Trail Screen.



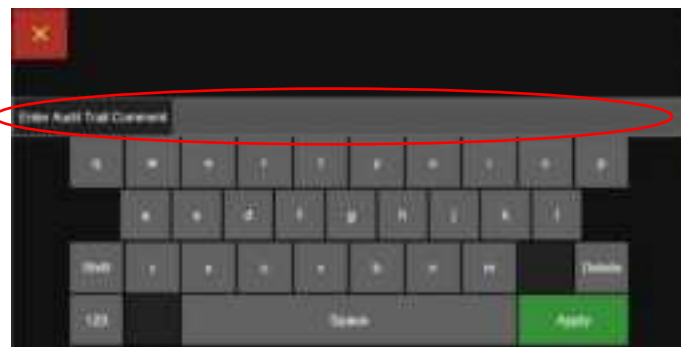
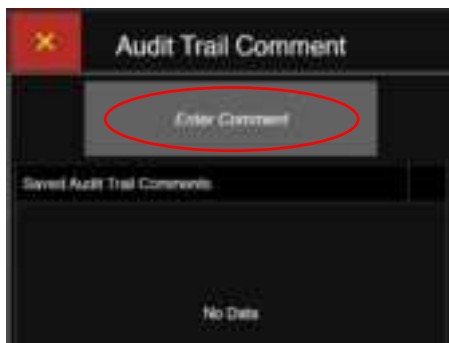
- Press the side arrows or slide the scroll bar up and down to view the audit trail history and use the bottom arrows or slide bar to completely view the Audit Trail Comment column.



Audit Trail Screen

Adding Comments to Audit Trail messages

- Highlight a message in the Audit Trail by selecting it.
- Press the Comment button to bring up the Audit Trail Comment box.
- Press the Enter Comment button to bring up the Enter Audit Trail Comment keyboard or select a pre-saved comment.



Enter the text desired for the Comment, then press Apply to add the Comment to the Audit message. Adding Comments to Audit Trail messages also generates another entry in the Audit Trail, which indicates timestamp of the Commented message, the text of the Comment, and the user who created the Comment.

Export Audit Trail to USB or CIFS.

- Press the Export button to export the Audit Trail. All messages currently listed in the Audit Trail are exported each time (See Audit Trail Time filtering on next page).

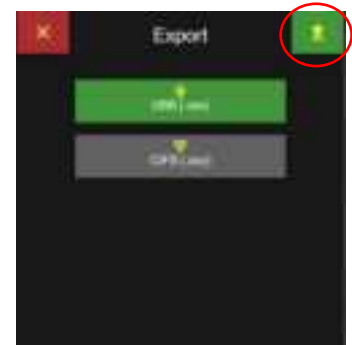


Audit Trail Screen

- Select export to USB or CIFS.

The format of the exported file will depend on the file format options as set in the Settings → Instrument → Output screens.

- Press the Export button.

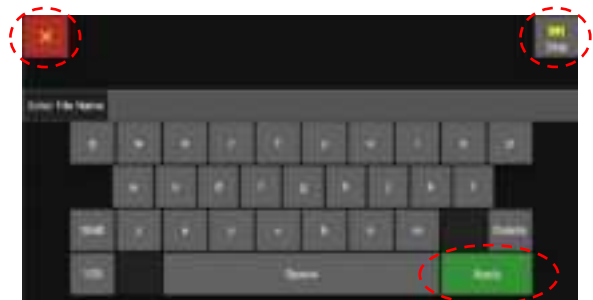


Export Audit Trail

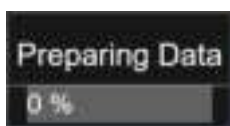
Name Export File

After pressing the export button, the Enter File Name screen will appear.

- Use this screen to enter a desired file name for the data to be exported.
- Then press the Apply button. Alternatively, press the Skip button to title the file with the default system name or press the red x button to cancel.
- If a USB key is inserted, then a pop-up message will display saying “Preparing Data” and “USB Export” each will count from 0 to 100%.



Enter File Name Screen



Preparing Data and USB Export

Audit Trail Time Filtering

The user can filter the messages displayed in the Audit Trail screen regarding time.

- Press the Time button in the Audit Trail screen.

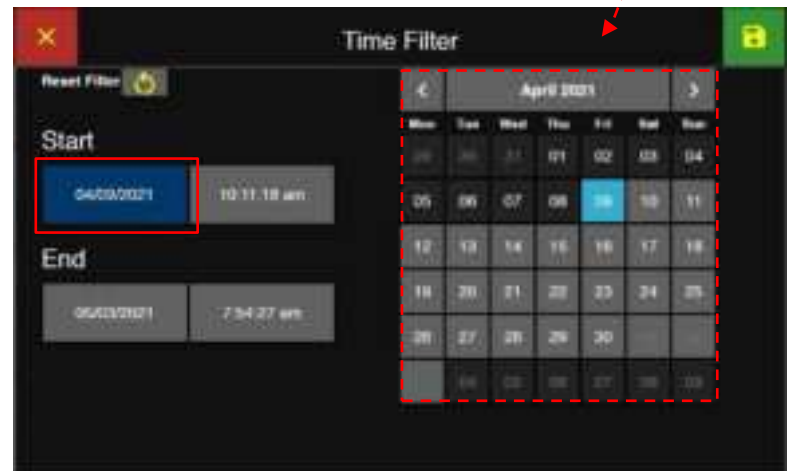
The Time Filter screen will appear.



Audit Trail Screen

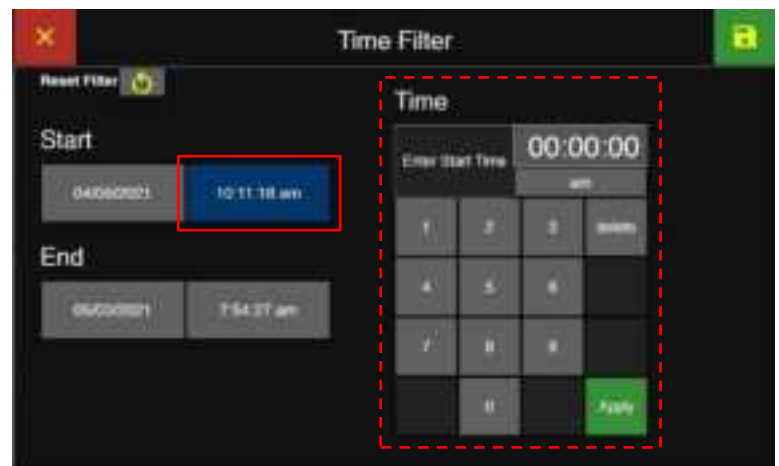
Here the user can select Start and End values for Date and Time.

- With the Date button selected the user can use the calendar shown to select a date.
- Select both Start and End Dates.



Date Filter Audit Trail

- With the Time button selected the user can use the keypad to enter a particular time and toggle the am/pm button to indicate the part of day desired. If the unit Time Format is set to 24 HR, the am/pm button will not appear and instead the user should input time using a 24 HR format.
- Select both Start and End Times
- Press the green Save button to save selected Date and Time ranges.



Time Filter Audit Trail

The Audit Trail screen will then display only messages generated during that Date and Time range.

The screen will show the Time filter button with a yellow highlighted to indicate it is in effect.



The screen will display the number of records being shown along with the total number of records contained in the Audit Trail.

Audit Trail records cannot be deleted.



Settings

Settings are used to create locations, groups, presets, sample plans and certifications. In addition, instrument settings, connectivity, and users are managed from the Settings screens.

When Users are enabled, the Settings gear button is only available to “Admin” and “Power User” level User logins by default, while default “Operator” level users will not have access. Access settings can be changed in the User Permission Level settings. If Users are disabled, then the Settings button and screens will be active and accessible to any user.

- From the Home screen press the Settings gear icon to display the settings screen button list for Location, Preset, Sample Plans, Certifications, Users, Connectivity, Instrument, and Service.



- Select the Location settings button from the right column and the Locations and Groups Settings screen will highlight blue to indicate it has been selected and is being displayed.
- In the example below the Location button is highlighted blue and the Location screen is displayed.



Locations and Groups Screen

Instrument Settings

The Instrument Settings screen allows the user to view and edit options and settings for date/time, audio/visual, global channels, warning/alarm data count format and units, sample and Zero-Count settings, data output and formatting, and saving and loading configurations files.

Access the Settings Screen

- From the Home screen press the gear icon to display the settings screen.



Home Screen

Access Instrument Settings

- From the Settings screen press the Instrument button to display the Instrument Settings screen.

Note: The Settings Screen defaults to the Location button selected and the Groups and Locations screen displayed.



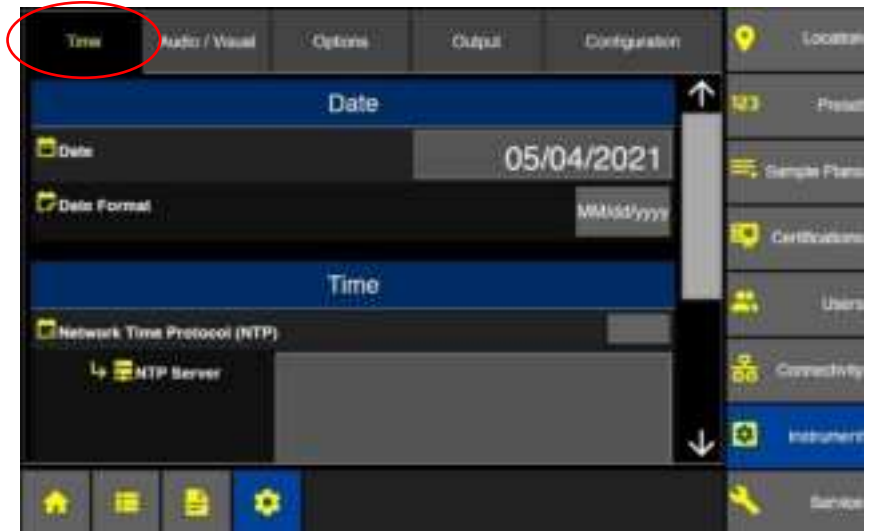
Settings: Groups and Locations

Time and Date

- Press the Time button to edit the date, date format, time zone, time, and time format, and to establish NTP (Network Time Protocol).

Network Time Protocol

The ApexZ supports a network protocol for clock synchronization called NTP, Network Time Protocol. This service can synchronize the time subsystem in the unit based off a NTP server input by the user. When a network connection to that server is available? the ApexZ will then query that server for the correct date and time and maintain itself accordingly.



Instrument Settings Screen

- Enable the use of NTP (Network Time Protocol) by checking the checkbox in the Time tab.
- Press in the empty box to bring up the Enter NTP Server keyboard. Enter a viable NTP server name and press Apply.
- Set the NTP Poll interval to a value between 64 and 9999. This will be how often in seconds that the unit will query the input NTP server to maintain proper timekeeping.
- After entering the NTP information, cycle power to the instrument to completely engage the feature.

If the NTP option is checked, the Date and Time fields in the Time screen will be non-interactable. The user will still be able to change the Date Format, Time Zone, and Time Format. If the checkbox on the Network Time Protocol line is checked, the user will be unable to select the Date button.

Set Current Date

- Press the Date button to display the Pick Date screen.
- Select today's day, month, and year.
- Select the green Save button to save the date settings. Or press the red X button to cancel.



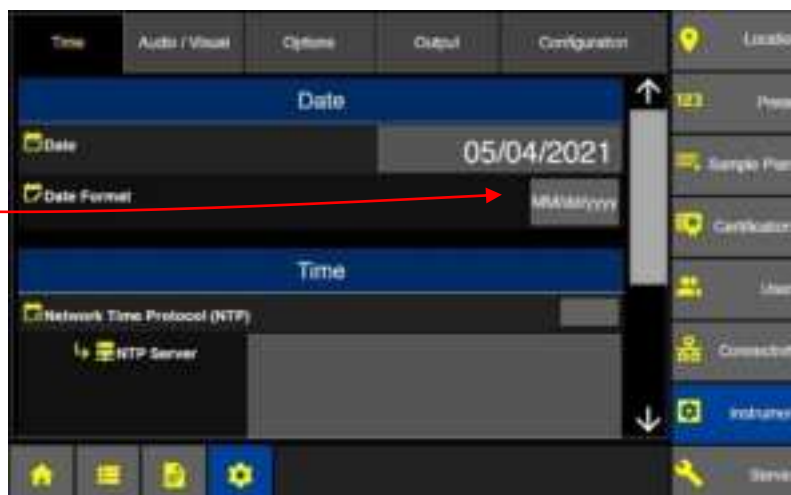
Pick Date (year/month)



Pick Date (month/day)

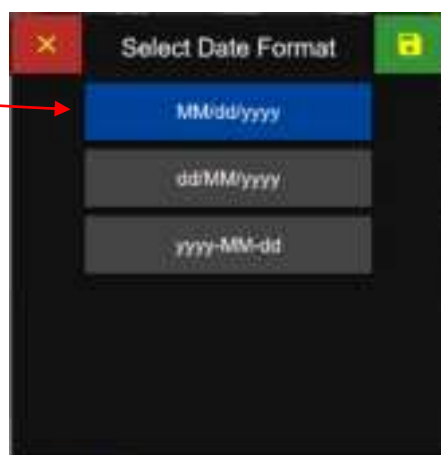
Set Date Format

- Select the Date Format button to display the Select Date Format screen.



- Select Date Format

MM/dd/yyyy
DD/MM/yyyy
yyyy-MM-dd

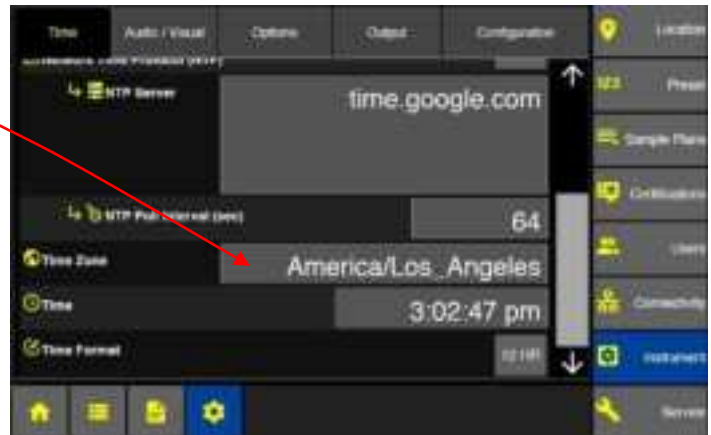


- Press the green save button to save the date format setting.



Set Time Zone

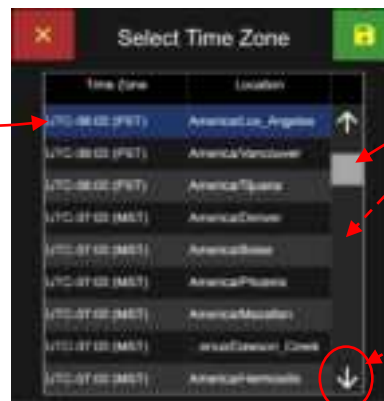
- Scroll down in the Time screen and press the Time Zone button to display the Select Time Zone screen.



Instrument Settings: Time Screen

- Press and select your UTC-Time Zone.

- Press the green save button to save the UTC-Time Zone.



Click and drag the scroll bar to scroll up and down the Time Zone List.

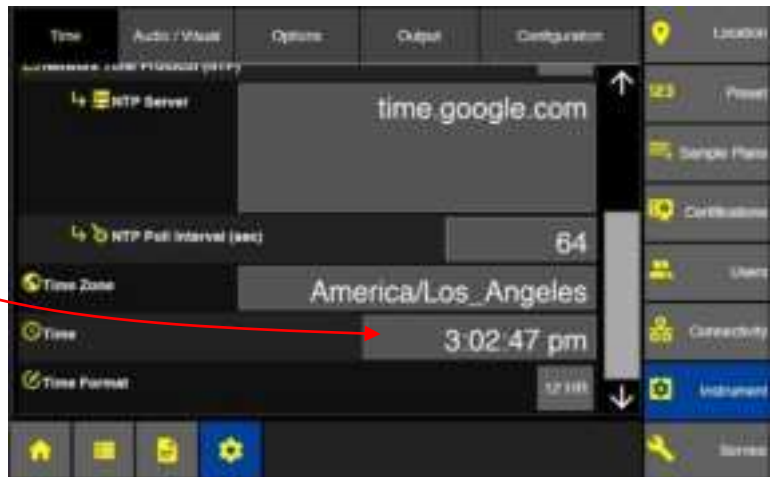
Or click on the arrow to scroll.

Select Time Zone screen

Set Current Time

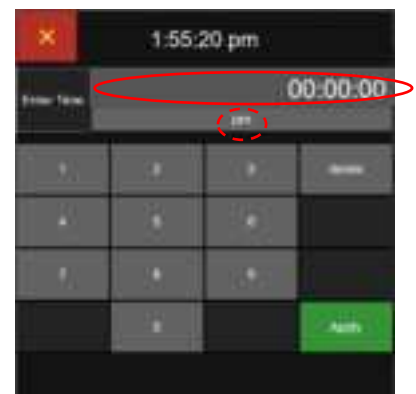
Note: If the checkbox on the Network Time Protocol line is checked, the user will be unable to select the Time button.

- Press the Time input button to display the Enter Time keypad.



Instrument Settings: Date and Time Screen

- Enter the current time from the numeric keypad as HH:MM:SS
- Select am or pm from the toggle button.
- Press the green Apply button to save the current time entered.



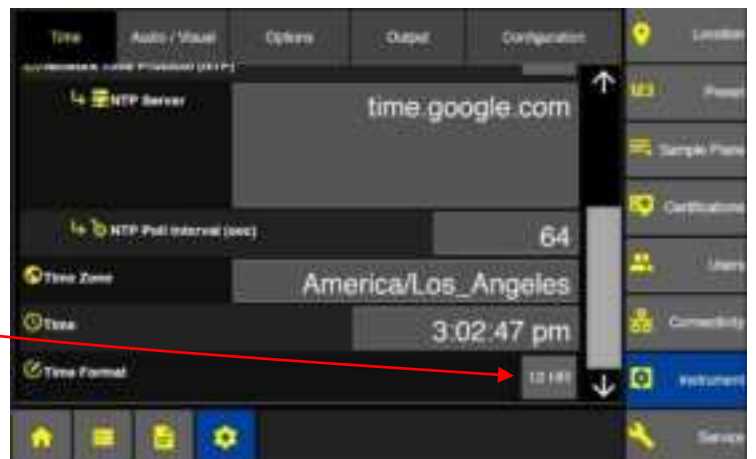
Enter Time keypad

Set Time Format

- Press the Time Format button to toggle between 12-hour or 24-hour time format.



Note: If 24 HR time format is selected then no am/pm will be displayed.



Instrument Settings: Time Format

Audio/Visual

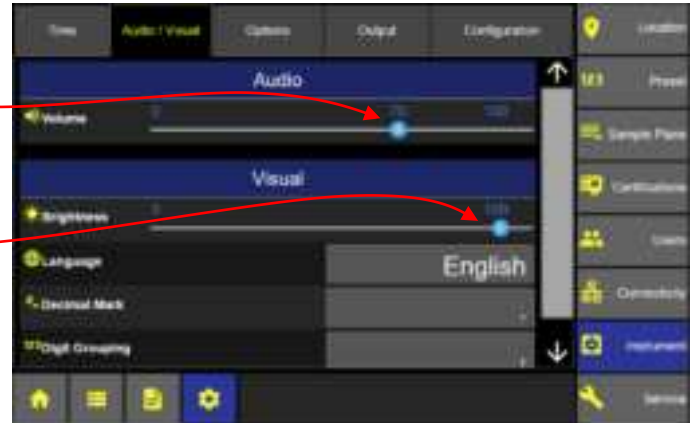
Volume

- Touch and slide the volume button from 0 – 100%.

Brightness

- Touch and slide the brightness button 0 – 100%.

Note: Enabled Alarms will always sound at 100%.



Instrument Audio/Visual Screen

Language

- Press the Language button to display the Select Language screen. Select the desired language.
- Press the green save button.



Warning: Changing the instrument language will update the instrument firmware and the printer. It will take 1-2 minutes for the update to complete. During this time make sure the ApexZ instrument has at least 50% battery life remaining or connected to the AC adapter and do not turn off the instrument while updating. Failure to follow these instructions could cause the printer to become damaged and unusable.



Select Language Screen

Decimal Mark

- Press the Decimal Mark button to display the Select Decimal Mark screen.
- Select period or comma. Then press the green save button.



Select Decimal Mark

Digit Grouping

- Press the Digit Grouping button to display the Select Digit Separator screen.
- Select none, space, comma, or period.
- Press the green save button.



Select Digital Grouping

Changes to the Decimal Mark or Digit Grouping will require and prompt a unit restart.

Options

Channel Options

Lock Global Channels

ApexZ can lock specific particle size channels globally for all manual samples, preset samples, and sample plans. For example, the user can lock channels globally for the 0.5µm and 5.0µm channels and then for all new samples (manual, sample plan, or presets) only 0.5µm and 5.0µm channels will be sampled and those particle size channels counted. Certification Samples are not affected by Locked Global Channels being enabled. Certifications will always use the channel sizes required from the certification standard.

How to Lock Global Channels

- From Instrument Options click on a Global Channels button to display the edit Global Channels screen.



Instrument Options



Global Channels Screen

Global channels highlighted in green are ENABLED. Global channels highlighted in grey with ~~strike-through~~ text are DISABLED. Press any green channel button and it will highlight grey with ~~strike-through~~ text to indicate this channel has been disabled. Press any grey button and it will highlight green indicating it has been enabled.



- Press the green save button to save the Global Setting



Note: If Lock Global Channels is disabled then all particle channels will be counted, recorded, and displayed.

If Lock Global Channels is enabled, only enabled channels will be useable for Manual samples and Presets. Each available channel will be shown as either enabled (green) or disabled (gray).

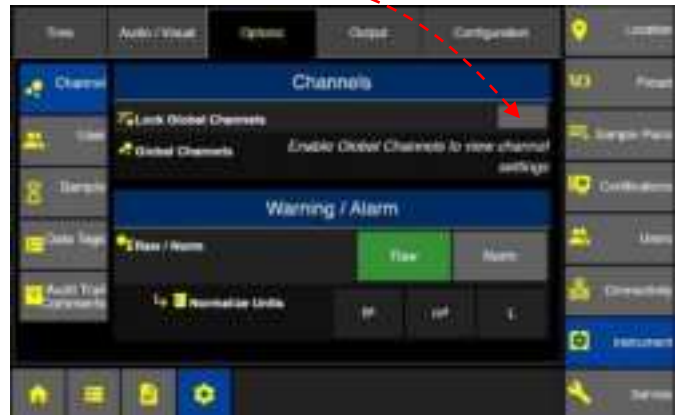


- Select any of the channel sizes to bring up the Global Channels window, then select each size to either enable or disable it.

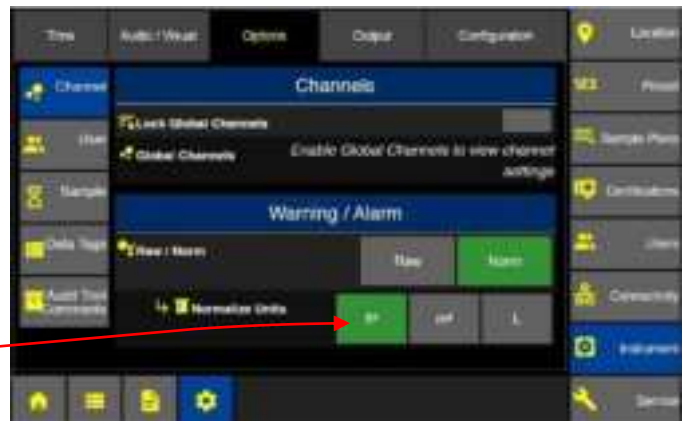


Warning/Alarm

- Select either Raw or Norm (Normalized) particle counts for the Warning and Alarm limits. Raw displays total particles counted over time, while Norm displays normalized counts per unit of measure.
- If normalized is selected, then select either normalized unit: ft³/m³/L. Warning and Alarm values will be extrapolated into the selected volume.



Global Channels



Global Channels

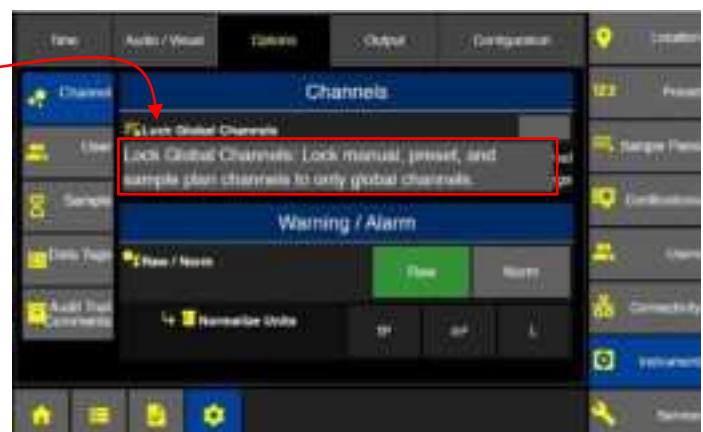
Tool Tips

- Click on the icon/label “Lock Global Channels” and a brief description of that feature will appear.

Tool Tips are present for icon/labels included in:

Instrument: Options, Output, Configuration

Connectivity: AD/LDAP, CIFS input screens



Tool Tips: Lock Global Channels

User Options

Enable Users (enable/disable)

- Press the Enable Users button and go directly to the Login Screen and require a User Login. Note to login to ApexZ at least one “local” Administrator level user must have been created prior.

AD Groups (enable/disable)

- Enable AD Groups to assign active directory groups to an ApexZ permission levels.

Local Password Cache (enable/disable)

- Enable local password cache to save passwords locally on ApexZ when Active Directory Server is unavailable.

Enable Guest Account (enable/disable)

- Press to enable guest account and then a guest user will be permitted to login without a password and will be assigned the default “Operator” level read only access. Only an Admin level user can enable the guest account feature.

Auto Lock (enable/disable)

- Press to enable Auto Lock and automatically lock the screen after the timeout period.

Timeout

- Enter the timeout period to lock the screen when auto lock is enabled.

Include Sample Time (enable/disable)

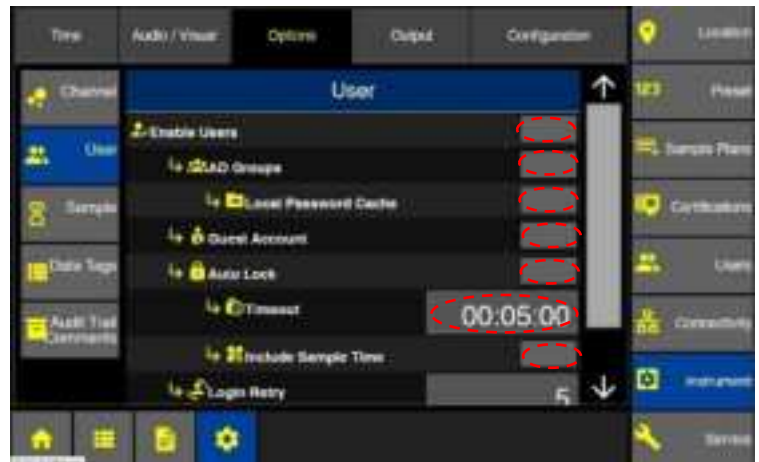
- If Include Sample Time is enabled, then the timeout timer will countdown during idle screen time or while sampling. If “Include Sample Time” is disabled, then the timeout timer will not count down during a sampling session.

Login Retry (enter login retry limit)

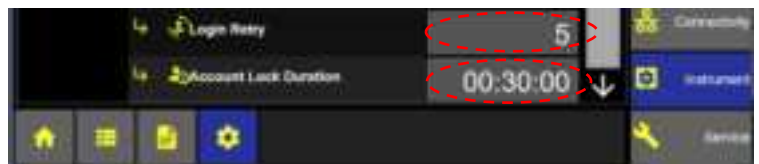
- Set the number of times ApexZ will allow a user to retry failed login attempts. After the login retry limit has been exceeded ApexZ will lock out further login attempts and start the Account Lock Duration countdown time. During the Account Lock Duration time-period ApexZ will not allow user login. After the Account Lock Duration time-period has been exceeded then ApexZ will allow user login again.

Account Lock Duration (enter account lock time duration period)

- After login retry is exceeded, ApexZ user login will be locked for the Account Lock Duration time period set here.



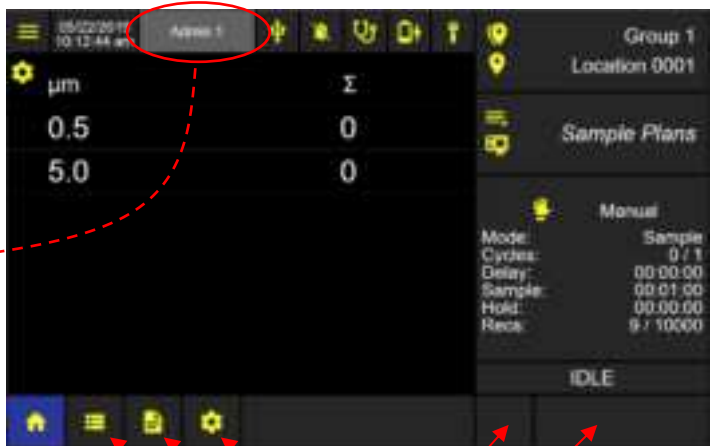
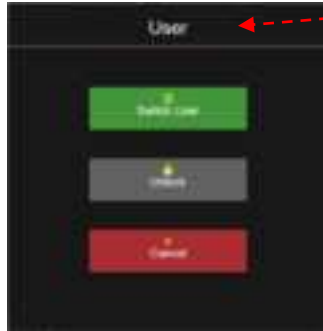
Instrument Options Enable Users



Instrument Options Enable Users

Unlock screen from Auto Lock

- Press the User Button to unlock user screen.
- Then select
 - Switch User (new login required)
 - Unlock (password required)
 - Cancel (remain locked)

**Home Screen Auto Locked**

All buttons disabled during auto lock.

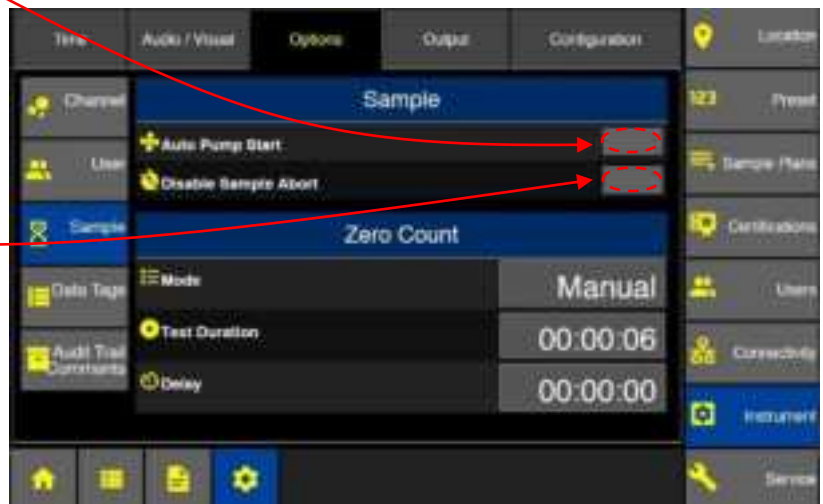
Sample Options**Auto Pump Start**

With Pump Startup Disabled: The ApexZ pump will turn off if the Delay or Hold time is greater than 1 minute

With Pump Startup Enabled: The ApexZ pump will start immediately after pressing the sample Start button.

Disable Sample Abort

When Enabled, "Disable Sample Abort" will not allow a sample that has been started to be stopped. When Disabled, any sample may be stopped at any time.

**Instrument - Options - Sample**

Zero-Count Modes

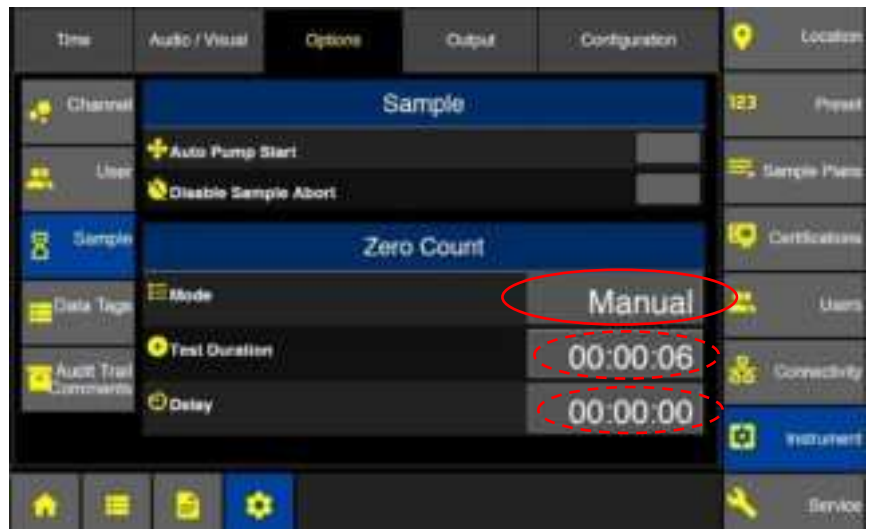
The Zero-Count Test is useful in providing confidence that counts in one sampling environment are not carried over into another environment.

The Zero-Count Mode button displays 3 Zero-Count mode options.

Disabled: The Zero-Count button will not display on the Home screen.

Manual: Zero-Count button will display and run for the sample time when pressed.

Auto: In Auto mode, Zero-Counting will be successful after sustaining a full sample period with no counts. During the test, the timer progress bar will reset to 0 if a count is detected.



Instrument - Options – Sample – Zero Count Mode

- Select desired Zero-Count mode.
- Then press the green save button.



Select Zero-Count Mode

Test Duration

- Press the Test Duration button to enter your desired Zero-Count sample time with the pop-up numeric keypad.

Delay Time

- Press the Delay button to enter the desired delay time. Delay Time will start after pressing the zero-count start button on the Home screen. The Zero-Count Sample time will start immediately after the delay time is completed.

Zero-Count on the Home Screen

When the Zero-Count Mode is set to Manual or Auto, the Zero-Count button will be available on the Main Screen next to the normal Sample Start/Stop button.

In **Manual mode**, pressing the Zero-Count Start button will cause the unit to run one sample with the Duration and Delay time as set in the Zero-Count settings screen.



Start/Stop Zero-Count
(not displayed when disabled)

Home Screen



Manual Mode Zero-Count running.
Total time elapsed



Auto Mode Zero-Count Running
Sample time remaining



In **Auto Mode**, pressing the Zero-Count Start button will cause the unit to run with the Duration and Delay time as set in the Zero-Count settings screen. However, upon registering particle counts, the Sample Time (top timer line) will reset. The sample will only finish after completing the set Test Duration without particle counts. The total accumulated time the test ran will be shown on the second line of the timer, as shown above.

Data Tag Options

Data Tags are set up in the Instrument Settings → Options → Data Tags screen. ApexZ supports up to 5 unique Data Tags. Adding a new Data Tag will require clearing all data records.

Data Tag Name

Any Data Tags that are set up will be listed here by the name given during setup.

Prompt

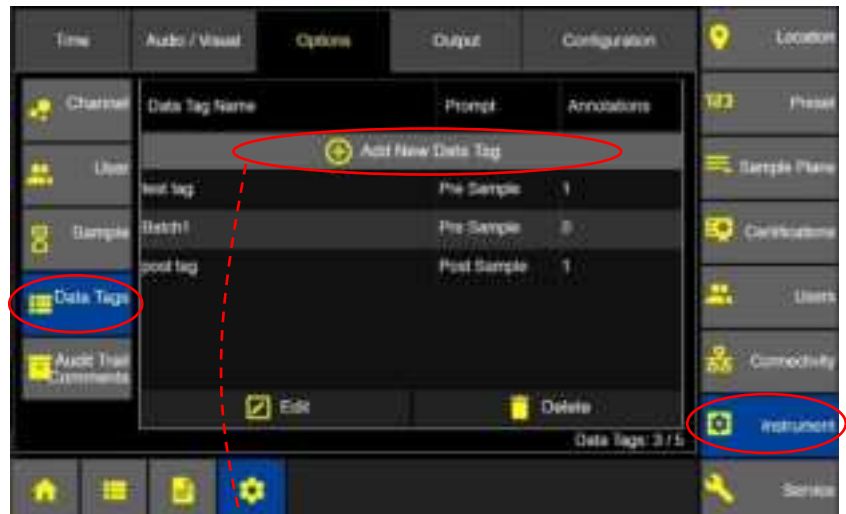
Each listed Data Tag will also display whether it is set to trigger Pre- or Post-sample.

Annotations

Each listed Data Tag will show how many Annotations are set up for that Data Tag.

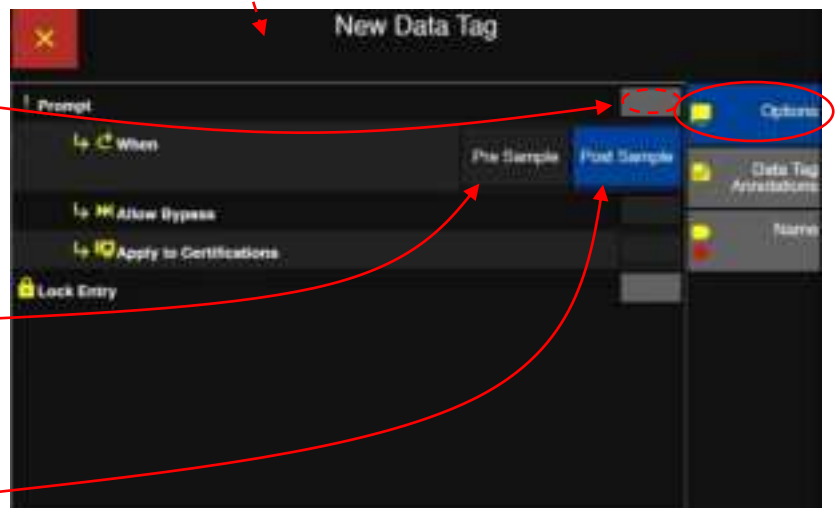
Add New Data Tag

- Press the Add New Data Tag button and the New Data Tag screen will display.



Data Tags

- Prompt:** Enable the Prompt feature to force a prompt to appear and request to enter a data tag value.
- When:** Select Either Pre-Sample or Post-Sample.
- Select **“Pre-Sample”** and the data tag prompt will appear when the start button is pressed before a sample starts.
- Select **“Post-Sample”** and the data tag prompt will appear after the sample has completed and stopped.



Data Tag Settings Input Screen

- Allow Bypass:** Enable this feature to allow the user to bypass entering the data tag prompt when it appears. User will be allowed to enter the data tag value later in the data record screen.
Note: Bypassing a data tag prompt will be noted in the Audit Trail.
- Apply to Certifications:** Enable Apply to Certifications to prompt for data tag entry when running certifications.

Lock Entry: Enable Lock Entry to lock the data tag entry on the data record the first time it is set. With Lock Entry enabled no data tags may be modified once they have been set.

Note: If a data tag has been bypassed, user can still set the data tag value in the data record screen. Once the data tag has been set, then the value is locked and cannot be modified.

Barcode Scanner

ApexZ supports data tag input through a standard USB barcode reader connected through the ApexZ USB port. Once the USB scanner is connected, a barcode icon will appear on the home screen header.

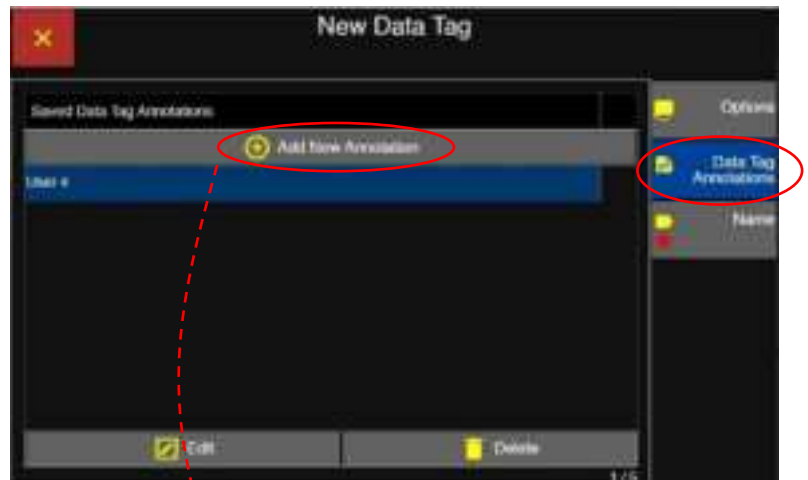


Data Tag Bar Code Icon

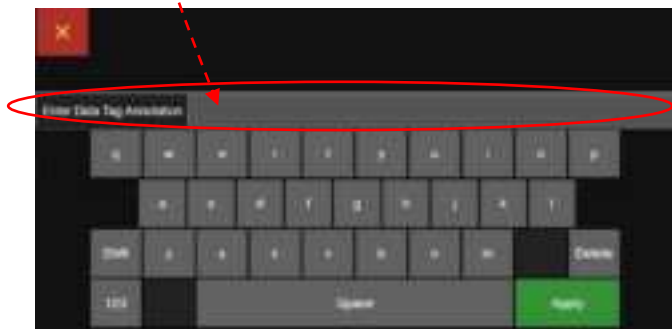
Data Tag Annotations

Up to five unique Data Tag Annotations can be set and used with each Data Tags.

- Press the Data Tag Annotations button to create new Data Tag Annotations.
- Press the Add New Annotation button to bring up the Enter Data Tag Annotation keyboard and name the Annotation.
- Enter a data tag annotation.
- Press Apply to save the Data Tag Annotation.



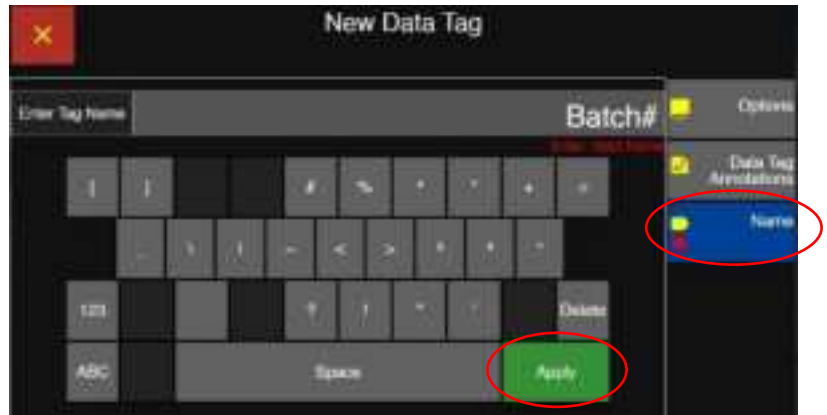
Data Tag Settings Input Screen



Data Tag Settings Input Screen

Data Tag Name

- Press the Name tab and enter the new Data Tag name using the keypad
- Then press the green Apply button.

**Enter New Data Tag Name Screen**

The screen will change to the New Data Tag confirmation screen.

- Press the green Save button to save the new data tag name.

NOTE: Adding a new Data Tag will require the user to delete all records currently on the unit.

**Save New Data Tag Name Screen**

Edit Data Tag

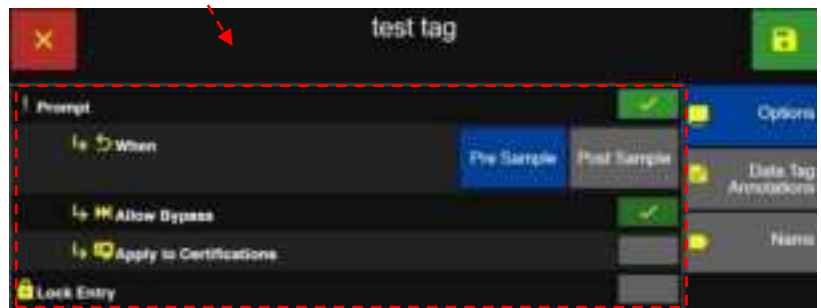
- Select a Data Tag name and it will highlight blue indicating it has been selected.



Instrument Options Data Tags Screen

- Edit any of the data tag parameters:

Prompt & When
Allow Bypass
Apply to Certifications
Lock Entry



- Press the Data Tag Annotations button to make changes to existing annotations or to add new ones.

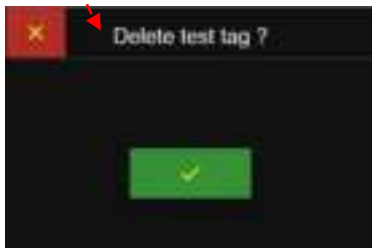


- Press the Name tab to edit the Data Tag name.
- Edit the name of the Data Tag using the keypad.
- Press the green Apply button.



Delete Data Tag

- Select a Data Tag name and it will highlight blue indicating it has been selected.
- Press the Delete button to display the Delete data tag confirmation screen.



Instrument Options Data Tag Screen

Warning: Data records will be cleared when any data tag is added, data tag name is edited, or deleted while there are data records in the data buffer.

- Press the red X button to cancel and not delete any data or
- Press the green check button to confirm, and data records will be cleared to continue.

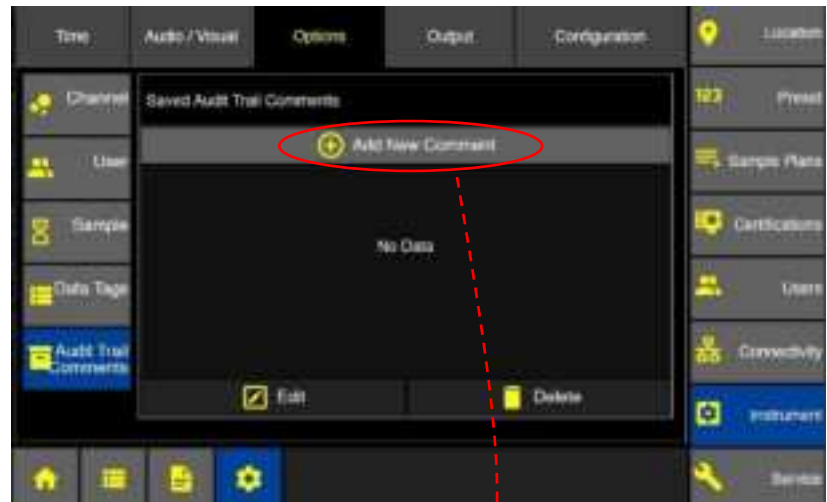


Audit Trail Comment Options

The Audit Trail Comments screen allows the user to pre-define comments for use in the Audit Trail. Comments set up here will be listed in the “Saved Audit Trail Comments” list when adding a comment to a message in the Audit Trail. The user will be able to select these saved comments in lieu of typing in the comment every time.

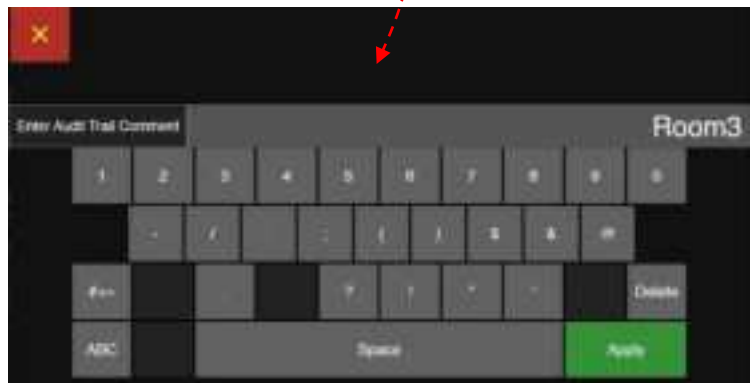
Add a New Comment

- Press the Add New Comment button to bring up the Enter Audit Trail Comment screen.



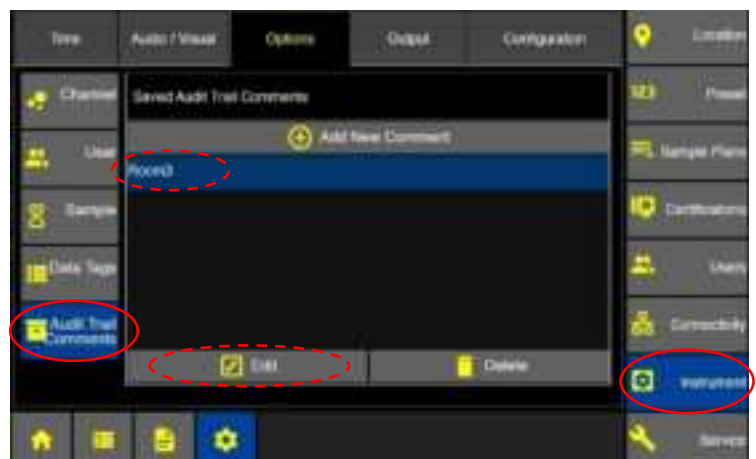
Instrument Options Data Tag Screen

- Enter the text desired for the comment and press the green Apply button to save the comment.



Each saved comment will display on the page.

- To Edit or Delete a comment, first select the comment then press the Edit or Delete button.



Instrument Options Audit Trail Comments Screen

Output

The Output screen allows the user to adjust output settings and data formatting for USB, Print, and CIFS.

USB

- Press the **USB** button to display the Data Output and Format options for USB.

Data Record File Format

- Set the file format to .csv, .xlsx, .lsdx, or .pdf. Data and records output to USB will be saved in the selected format.

On Sample (.csv format only)

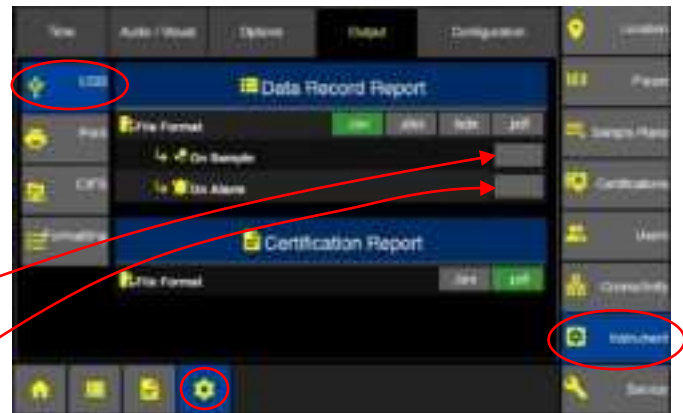
- Enable Output “**On Sample**” and output will initiate after every sample.

On Alarm (.csv format only)

- Enable Output “**On Alarm**” and output will initiate after every alarm is exceeded.

Certification Report File Format

- Set the file format to .lsrx or .pdf. (The lsrx file format is a non-human readable format that can be imported into LMS XChange and contains both the Certification Report and the data records used to generate the report.)



Instrument Output USB

Print – On-Board Printer

The ApexZ can print to either the optional embedded front-panel printer or to a network printer. The first screen in the Print tab covers automatic print options for the optional on-board printer.

On Sample

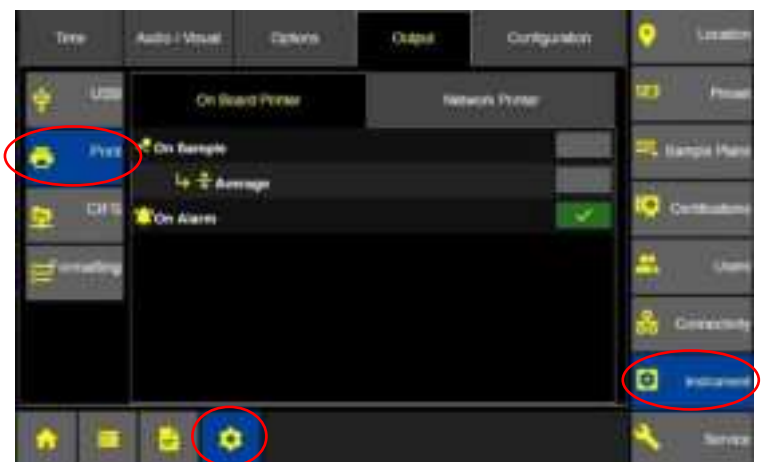
- Enable Output “**On Sample**” and output will print after every sample is completed. Post-Sample Data Tags will not be included on the Printout.

Average

- Enable Average to print the average counts of all cycles at a given location after all cycles have completed.

On Alarm

- Enable Output “**On Alarm**” and output will print after every sample taken where an alarm is triggered.



Instrument Output Print Settings

Print – Network Printer

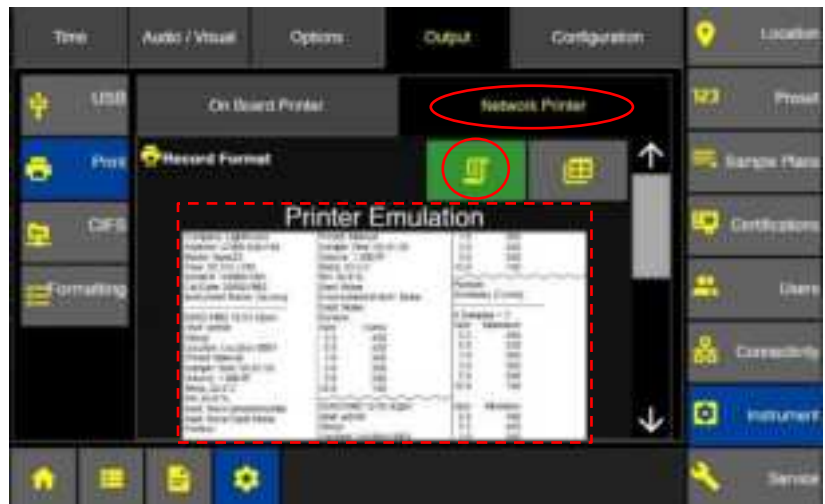
The ApexZ can send print data to a properly set up network printer.

- Select the Network Printer tab from the Print screen.

Record Format

The Network Printer output can be set to either Printer Emulation or Data Table.

Printer Emulation will display the data in three columns on each page, retaining the size and format of what would come out of the onboard printer.



Instrument Output Print – Network Print Emulation

Data Table will display the output information in a table format.



Instrument Output Print – Network Print Data Table

CIFS

Common Internet File System

- Select the CIFS button.

Data Record File Format

- Select the .csv, .xlsx, .lsdx (Lighthouse Secure Data Transfer), or .pdf file format.

Include Audit Trail

- Select Include Audit Trail and all audit trail records will be included in the output.



Instrument Output CIFS

Clear Data Buffer

- Select Clear Data Buffer (only valid when exporting ALL data) and after the data file is successfully copied to the CIFS share the ApexZ instrument database will be cleared. If the data exporting fails, then the ApexZ database will not be cleared.

Certification File Format

- Select .lsrx or .pdf and Certification outputs to CIFS will be saved in the highlighted format. The .lsrx file format is a non-human-readable format that can be imported into LMS XChange and contains both the Certification Report and the data records used to generate the report

Output Formatting - Print

Print Output Format

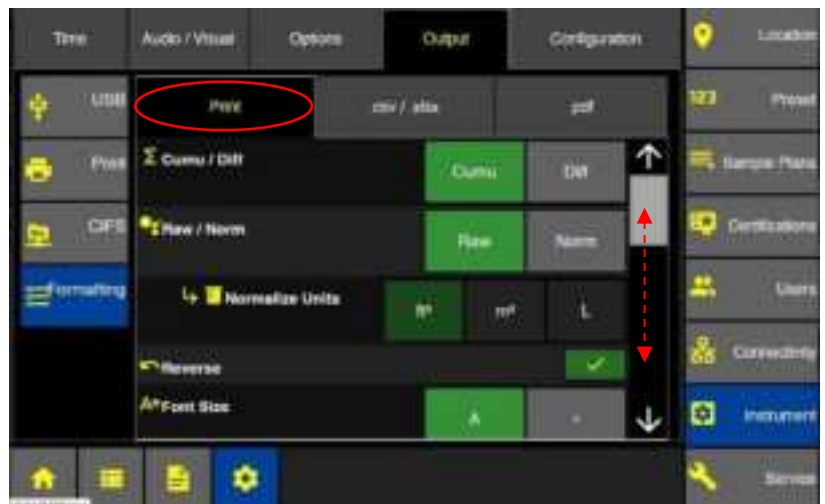
- Select the Formatting tab then:
- Press the Print Tab to edit formatting parameters for printed records and certifications.

Cumu/Diff

- Select to print data in either Cumulative, Differential, or both.

Raw/Norm

- Select to print Raw or Normalized data. When selecting Normalized also select the Normalized Units (cubic feet, cubic meters, or Liters).



Instrument Output Formatting Print

Reverse

- Select Reverse and printing will print from the bottom up.

Font Size

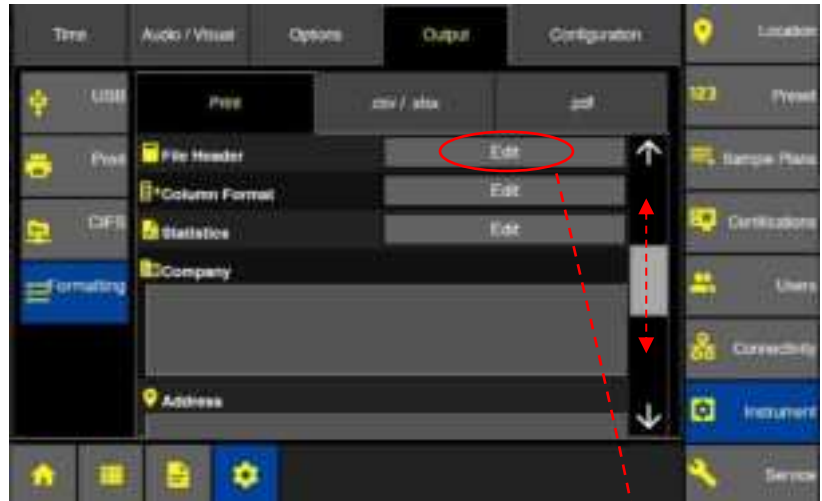
- Select Large or Small font size for print output.
- Use the scroll bar to view more formatting options.

File Header

- Press the File Header Edit button to enable/disable file headers.

By default, all File Header System Names will be listed on the left column and highlighted blue indicating they are all selected. A matching Name will appear on the right side of the screen.

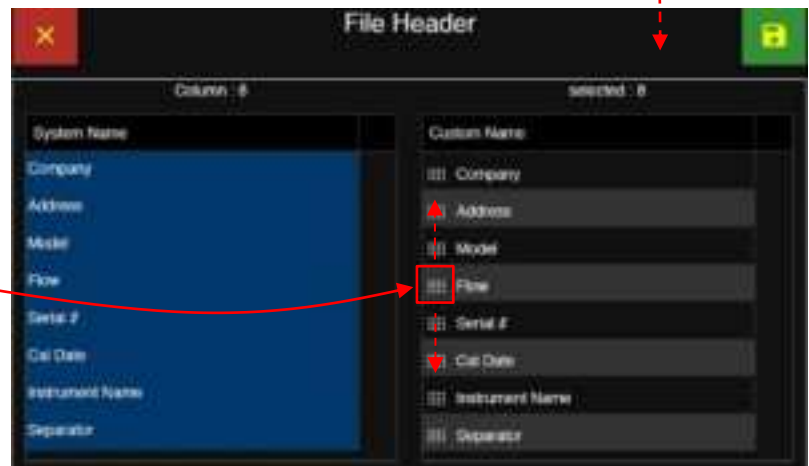
- Select a highlighted System Name and the highlight will disappear indicating that system name is inactive, and the matching Name will be removed and will not appear on the list of Names.
- Select the inactive System Name and it will highlight blue and a matching Name will appear on the Name list on the right side of the screen.



Instrument Output Formatting

Adjust Name order on the list

- To adjust the order of Names, press and hold the dotted box to the left of each name on the list. Drag the name up or down to change its position.
- Press the green Save button to save the changes made in the File Header screen.

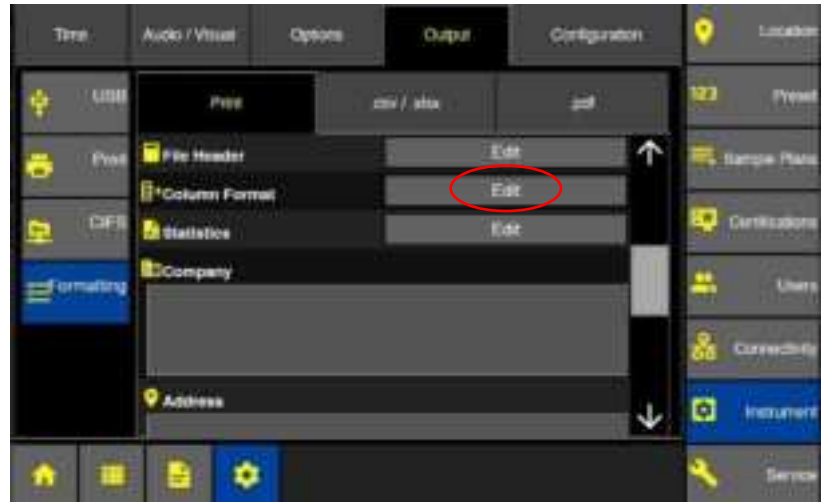


Instrument Output Format File Header

Column Format

- Press the Column Format Edit button to enable/disable the columns included in printed data.

By default, all System Names will be listed on the left column and highlighted blue indicating they are all selected (except for the Temp columns, of which only one will be selected). A matching Name will appear on the right side of the screen.



Instrument Output Formatting

- Select a highlighted System Name and the highlight will disappear indicating that system name is inactive, and the matching Name will be removed and will not appear on the list of Names. Select the inactive System Name and it will highlight blue and a matching Name will appear on the Name list on the right side of the screen.

Adjust Name order on the list

- To adjust the order of Names, press and hold the dotted box to the left of each Name on the right-hand list. Drag the Name either up or down to change its position.

Any Data Tags that have been created will be listed at the end of the System Name list. These can be included / excluded the same as any of the System Names and can also be re-ordered in the right-hand column the same as the other Names.



Instrument Output Column Format

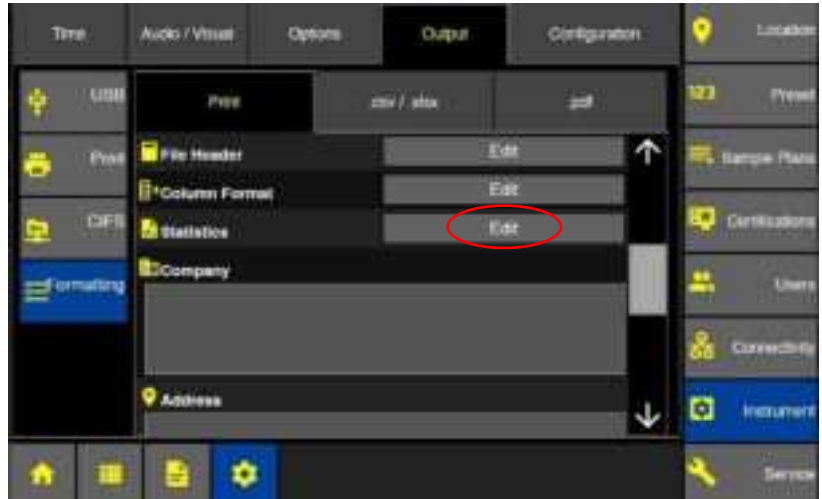
- Press the green Save button to save the changes made in the Column Format screen.



Statistics

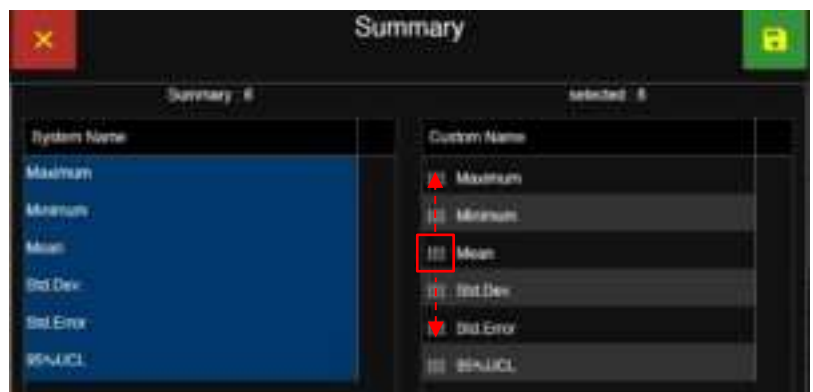
- Press the Statistics Edit button to enable/disable the columns included in summary Statistics.

By default, all System Names will be listed on the left column and highlighted blue indicating they are all selected. A matching Name will appear on the right side of the screen.



Instrument Output Formatting

- Select a highlighted System Name and the highlight will disappear indicating that system name is inactive, and the matching Name will be removed and will not appear on the list of Names.
- Select the inactive System Name and it will highlight blue and a matching Name will appear on the Name list on the right side of the screen.



Summary of Statistics Enabled

Adjust Name order on the list

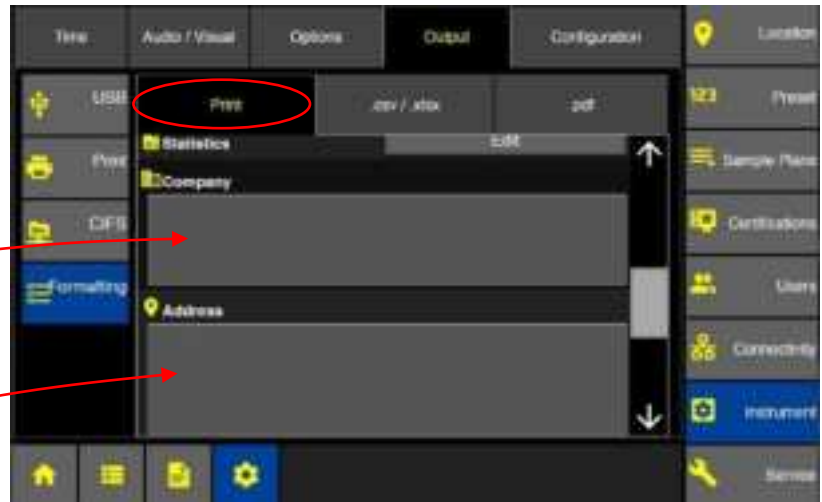
- To adjust the order of Names, press and hold the dotted box to the left of each Name on the right-hand list. Drag the Name either up or down to change its position.
- Press the green Save button to save the changes in the Summary screen.



Company Name

The user can input custom text for the Company Name column that can be included in the File Header.

- Select the Company Name box to bring up the Enter Company keyboard. Enter the desired Company Name and press the green Apply button.

**Address****Instrument Output Formatting Custom Text Inputs**

- The user can input custom text for the Address column that can be included in the File Header.
- Press in the box under Address to bring up the Enter Address keyboard.
- Enter the desired Address. (Up to 128 characters can be used in the Address field. Neither the Company Name nor Address support multiline entry.)
- Press the green Save button to save the Output Formatting.



Output Formatting - .csv/.xlsx

.csv / .xlsx Output Format

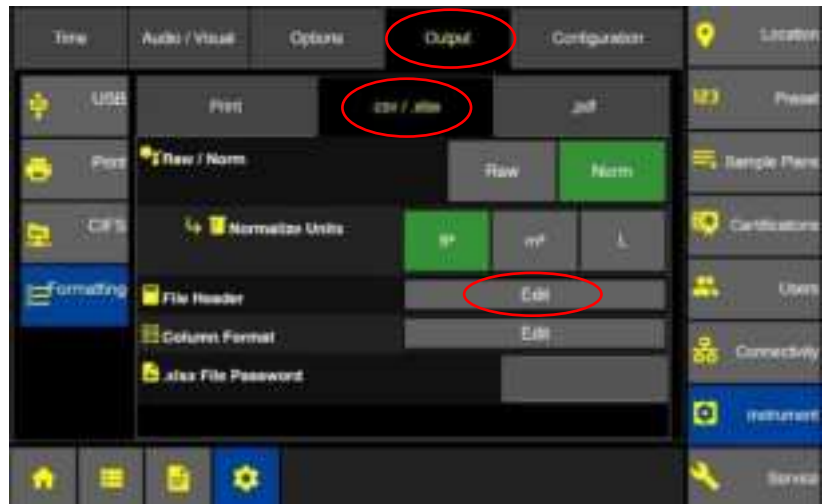
- Press the .csv/xlsx tab to edit formatting parameters for the .csv and .xlsx file types.

Raw/Norm

- Select to print Raw or Normalized data. When selecting Normalized also select the Normalized Units (cubic feet, cubic meters, or Liters).

File Header

- Press the File Header Edit button to enable/disable or edit custom name data for the file headers in data output to .csv and .xlsx files.



Instrument Output Formatting

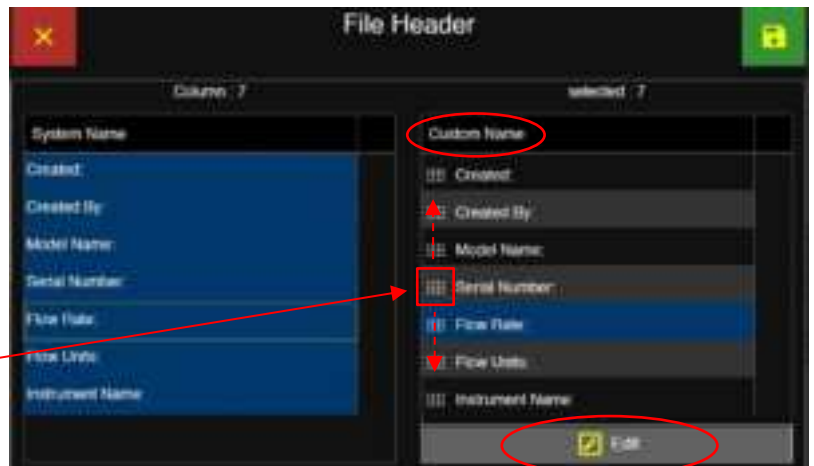
By default, File Header System Names will be listed on the left column with names highlighted blue indicating those are selected. A matching Custom Name will appear on the right side of the screen. Some System Names may be grey and not highlighted blue. This indicates they are available but not selected for output.

- Select a System name to enable (highlighted blue) or disable (grey no highlight).

Enabled System Names will appear on the Custom Name list on the right side of the screen. Disabled System Names will not appear on the Custom Name list.

Adjust Custom Name order on the list

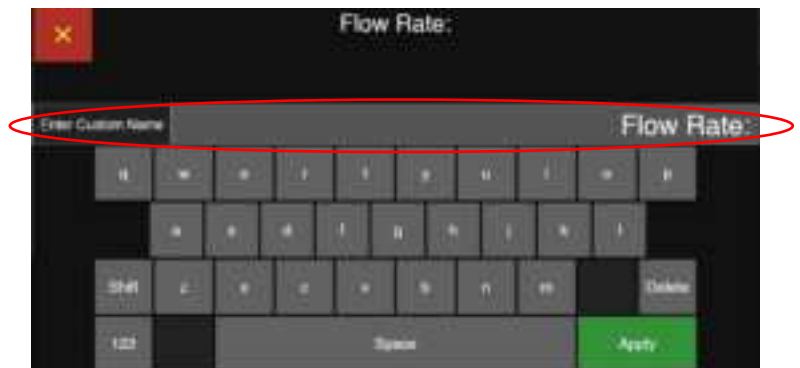
- To adjust the order of Column Format Custom Names, press and hold the dotted box to the left of each custom name on the list. Drag the custom name either up or down to change its position.



Instrument Output Formatting File Header

Edit Custom Name

- Press the Edit button to display the Enter Custom Name keypad.
- Enter a new custom name.
- Press the green Apply button to save the custom name to the Custom Name list.



Column Format

- Press the Column Format Edit button to enable/disable or edit custom name data columns output to .CSV and .xlsx files.

By default, all Column Format System Names will be listed on the left column with names highlighted blue indicating those are selected (except for the Temp columns, of which only one will be selected). A matching Custom Name will appear on the right side of the screen.

Some System Names may be grey and not highlighted blue. This indicates they are available but not selected for output.

- Select a System Name to enable (highlighted blue) or disable (grey no highlight). Enabled System Names will appear on the Custom Name list on the right side of the screen. Disabled System Names will not appear on the Custom Name list.

Adjust Custom Name order on the list

- To adjust the order of Column Format Custom Names, press and hold the dotted box to the left of each custom name on the list. Drag the custom name either up or down to change its position.

Edit Custom Name

- Press the Edit button to display the Enter Custom Name keypad. Enter a new column format custom name and press the green Apply button to save the custom name to the column format settings.



Instrument Output Formatting .CSV, .xlsx



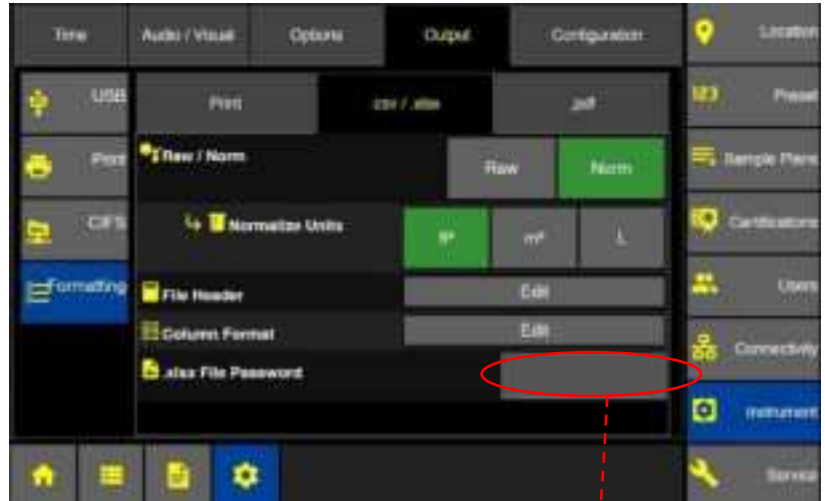
Instrument Output .CSV/.XLS Column Format



.xlsx File Password

The ApexZ enables greater security for .xlsx (Excel) files via the addition of an optional file password. This function will add a password to all Excel files created, prompting any user to enter that password before attempting to edit the file.

- Press the gray box on the File Password line to bring up the File Password screen.



Instrument Output Formatting .csv,.xlsx

- Use the keyboard to enter the desired password and verify the password by entering it a second time. A maximum of 16 characters can be entered.
- Press the green Apply button to verify the entries.



Instrument Output .CSV/.XLS File Password

Output Formatting - .pdf

- Press the .pdf tab to configure the parameters for data output as a PDF.

There are two layout options:
Printer Emulation and Data Table.

Printer Emulation will lay out the included data in columns emulating what would come out of the optional on-board printer, based on formatting set in the Print Format tab. An example is shown on the screen.



Instrument Output .pdf Printer Emulation

Data Table lays out the data in a table format. An example is shown on the screen.

- Use the scroll bar to view formatting options below. Regardless of the layout chosen, the formatting options remain the same and will affect both Printer Emulation and Data Table layouts.



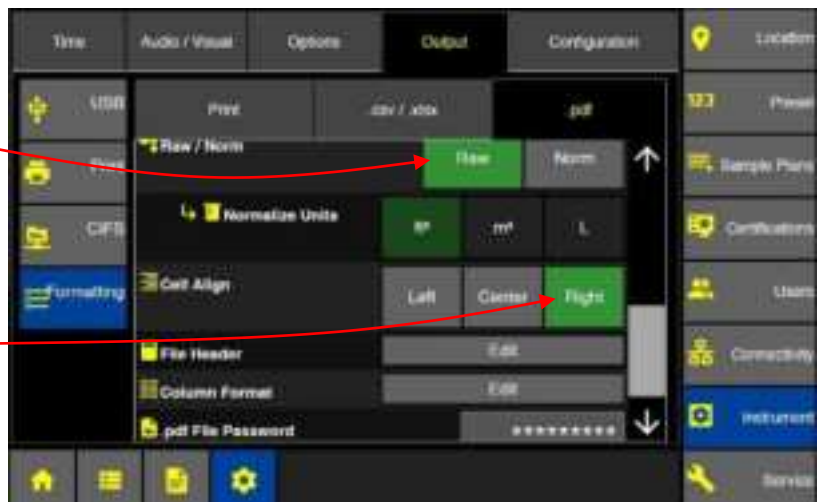
Instrument Output .pdf Data Table

Raw/Norm

- Select to output Raw or Normalized data. When selecting Normalized also select the Normalized Units (cubic feet, cubic meters, or Liters).

Cell Align

- Choose whether to align the text in the cells to the Left, Center, or Right.



File Header

- Press the File Header Edit button to enable/disable or edit custom name data for the file headers in data output to .pdf files.

By default, File Header System Names will be listed on the left column with names highlighted blue indicating those are selected. A matching Custom Name will appear on the right side of the screen.

Some System Names may be grey and not highlighted blue. This indicates they are available but not selected for output.

- Select a System name to enable (highlighted blue) or disable (grey no highlight). Enabled System Names will appear on the Custom Name list on the right side of the screen. Disabled System Names will not appear on the Custom Name list.

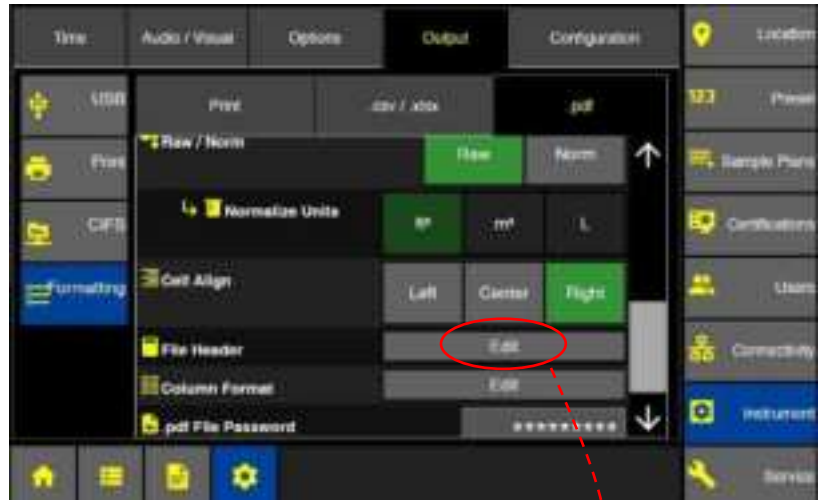
Adjust Custom Name order on the list

- To adjust the order of File Header Custom Names, press and hold the dotted box to the left of each custom name on the list. Drag the custom name either up or down to change its position.

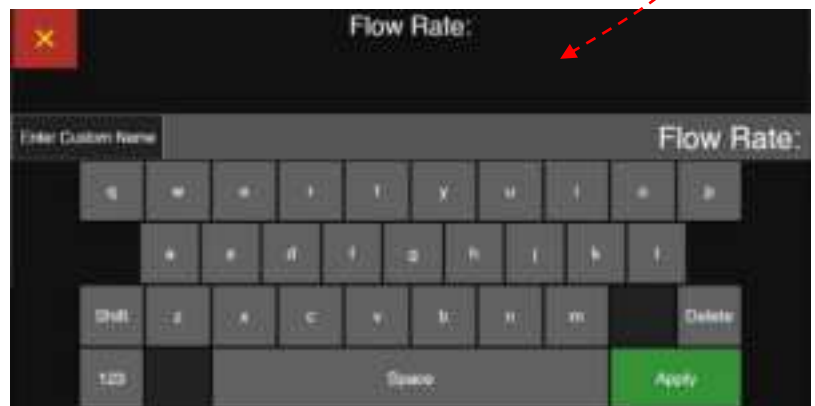
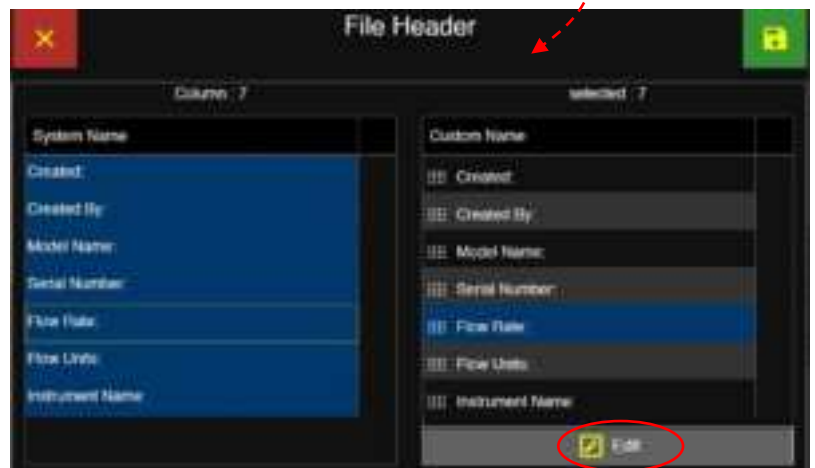
Edit Custom Name

- Press the Edit button to display the Enter Custom Name keypad.
- Enter a custom name.
- Press the green Apply button to save the custom name to the Custom Name list.

These Custom Names will only affect data in the Data Table Format, not Printer Emulation format.



Instrument Output .CSV/.XLS File Password



Column Format

- Press the Edit Column Format button to enable/disable or edit custom name data columns output to PDF files.

By default, Column Format System Names will be listed on the left column with names highlighted blue indicating those are selected. A matching Custom Name will appear on the right side of the screen.

Some System Names may be grey and not highlighted blue. This indicates they are available but not selected for output.

- Select a System name to enable (highlighted blue) or disable (grey no highlight). Enabled System Names will appear on the Custom Name list on the right side of the screen. Disabled System Names will not appear on the Custom Name list.

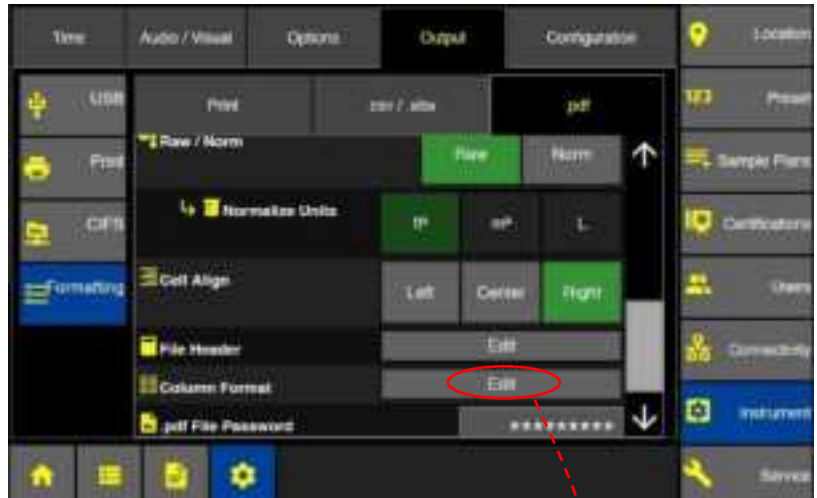
Adjust Custom Name order on the list

- To adjust the order of Column Format Custom Names, press and hold the dotted box to the left of each custom name on the list. Drag the custom name either up or down to change its position.

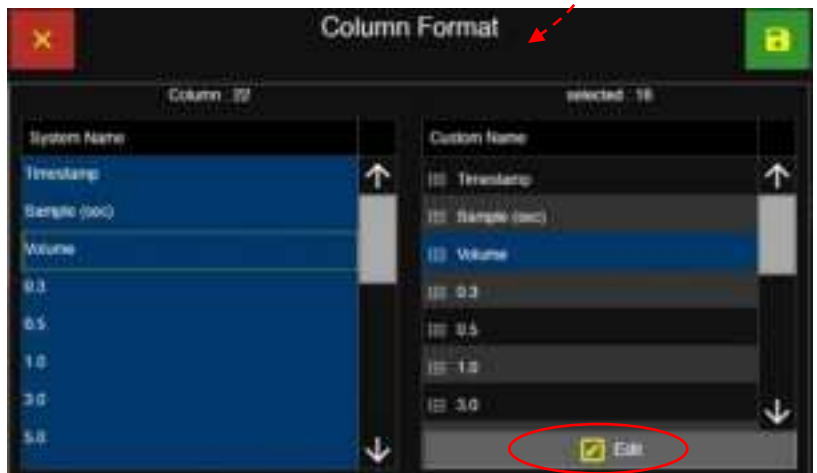
Edit Custom Name

- Press the Edit button to display the Enter Custom Name keypad.
- Enter a custom name.
- Press the green Apply button to save the custom name to the column format settings.

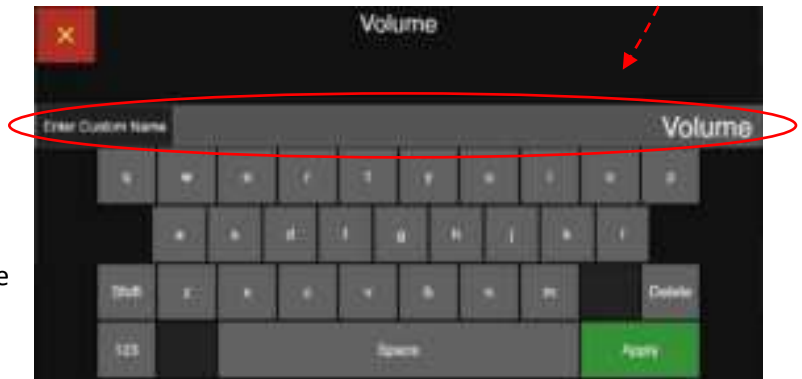
These Custom Names will only affect data in the Data Table Format, not Printer Emulation format.



Instrument Output .PDF



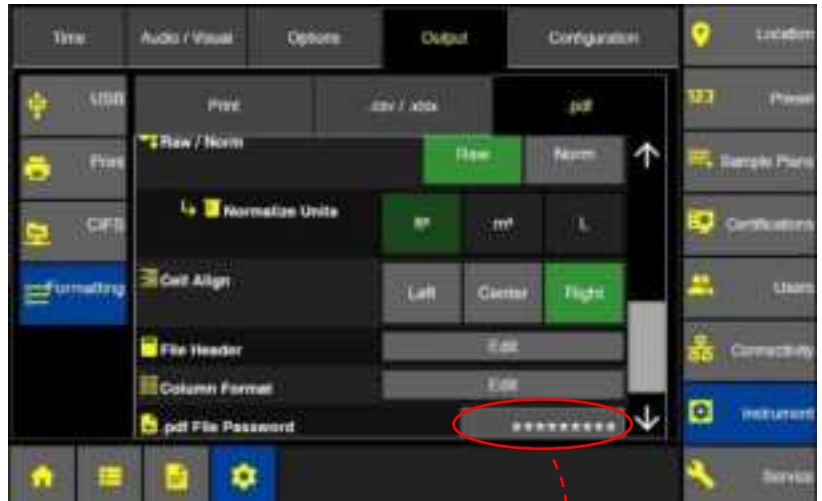
Instrument Output .PDF Column Format



PDF File Password

The ApexZ enables greater security for PDF files via the addition of an optional file password. This function will add a password to all PDF files created, prompting any user to enter that password when trying to open the file in a PDF editor.

- Press the gray box on the .pdf File Password line to bring up the File Password screen.



Instrument Output .PDF

- Use the keyboard to enter the desired password and verify the password by entering it a second time. A maximum of 16 characters can be entered.
- Press the green Apply button to verify the entries, then the green Save button to save them.
- The PDF File Password can be removed by leaving the New Password fields blank, pressing Apply, then pressing the Save button.

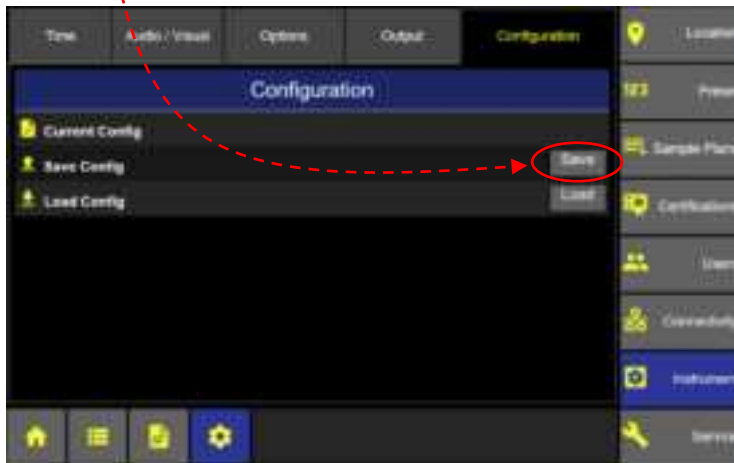


Configuration

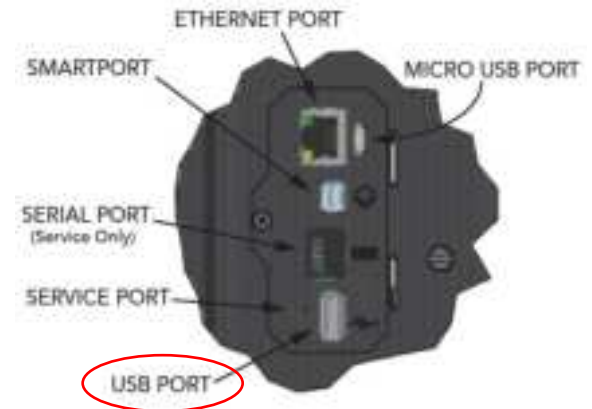
All the ApexZ settings are saved in the ApexZ configuration file and can be exported onto a USB key or to LMS XChange. The exported configuration file can then be loaded onto another ApexZ instrument or edited using the LMS XChange software.

Save ApexZ configuration file to USB key

- Place a USB key in the ApexZ USB PORT.
- Press the Save button to display the Save Confirmation screen.



Instrument: Configuration



- Press the green check mark button to confirm exporting the configuration to the USB key.
- Or press the red X button to cancel.

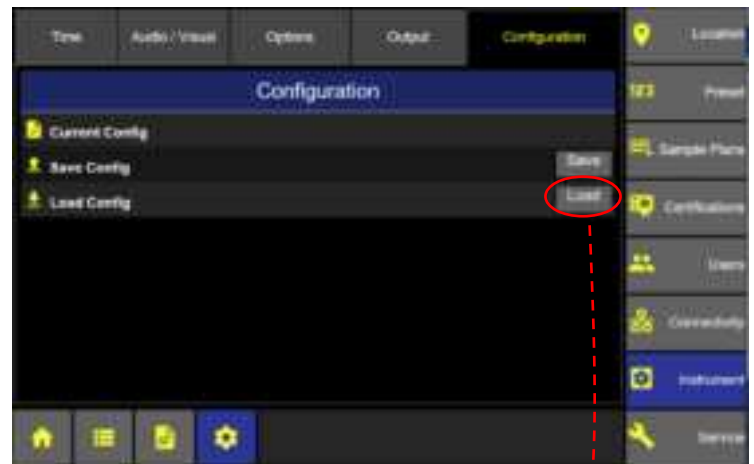


Save Configuration File

Load ApexZ configuration file from a USB key

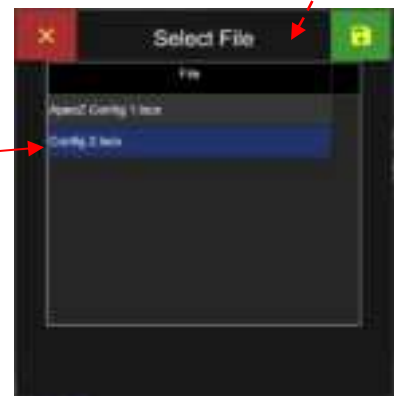
- Place a USB key with the desired configuration file in the ApexZ USB drive and press the Load button.

The Select File screen will display next.



Instrument: Configuration

- Select your configuration file to load and it will highlight blue.
- Press the Save button to load the selected configuration.



Select Configuration File to Load

- Press the green check button to import configuration.
- Or press the red X button to cancel with no import.



Confirm to load configuration

WARNING: Importing a configuration will remove the current configuration, and you will be taken back to the home screen.

Connectivity

Special Note:

LMS XChange Software 2.x

The LMS XChange 2.x software was designed for use with ApexZ particle counters and is downloadable from the www.golighthouse.com website. LMS XChange 2.x allows users to import data collected on ApexZ3 and ApexZ50 portable particle counters and display the data in a table that the user can view and/or save to an Excel, .CSV, or PDF file. Additionally, Administrator users can manage configurations for ApexZ instruments using LMS XChange. LMS XChange has the following main features:

- Import data manually from Lighthouse ApexZ3 and ApexZ50 particle counters.
- Import .lsdx (Lighthouse secure data transfer) files created by ApexZ3 and ApexZ50 instruments.
- Display the imported data in a table, allowing the user to also export the data to an Excel, .CSV or PDF file.
- Three levels of user accounts – Operators, Power Users, and Administrative users.
- LMS XChange Administrator users can create, edit, save and load ApexZ3 and ApexZ50 configurations.
- Record logins, updates, delete, import, configuration changes, etc. in the LMS XChange Audit Log.

From the Settings screen:

- Press the Connectivity button to view Ethernet, Wi-Fi, AD/LDAP, CIFS, Network Printer, and 3rd Party API settings.



Connectivity - Network - Ethernet

Network - Ethernet

When Ethernet is enabled, the IP Address, Subnet, and Gateway will be locked out from editing.

Ethernet is enabled:

IP, Subnet, Gateway are LOCKED.

DHCP is enabled:



Connectivity: Ethernet Enabled

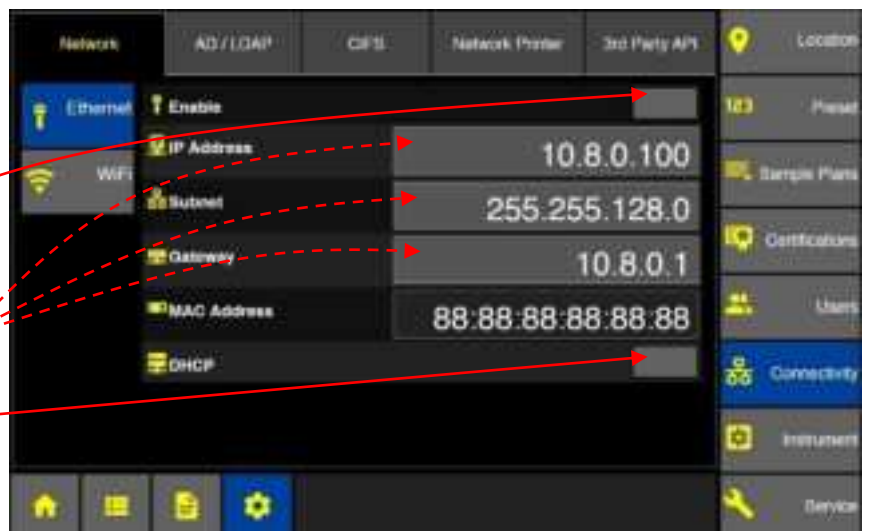
Ethernet Disabled

- Disable the Ethernet and disable DHCP to allow editing of the IP Address, Subnet and Gateway.

Ethernet and DHCP disabled.

IP Address, Subnet, Gateway are open to edit.

DHCP is disabled.

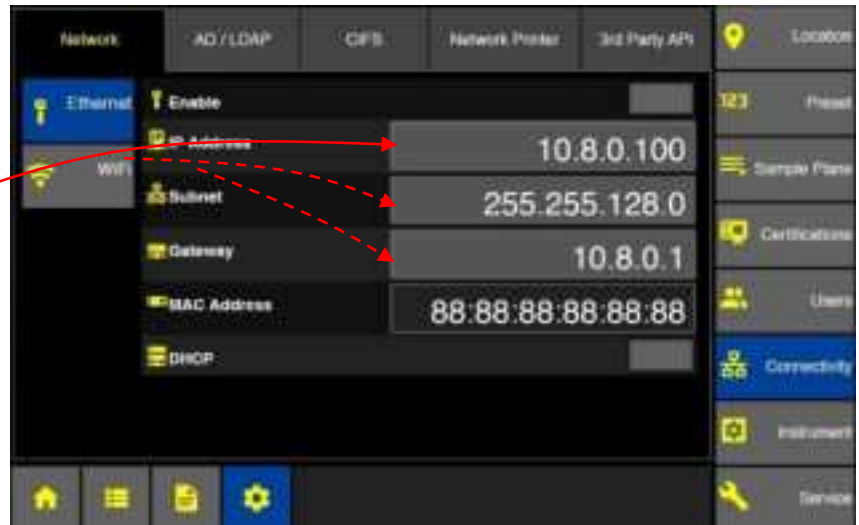


Connectivity: Ethernet Disabled

Edit Ethernet Address

- Press the IP address, subnet, or gateway input buttons to display the input keypad and edit these values.

Note: MAC Address is fixed and unique to the ApexZ instrument and cannot be changed.



Connectivity: Ethernet



IP Address



Subnet Address



Gateway Address

- Enter the valid Address and press the Apply button.
- When IP, Subnet and Gateway are entered then press the Enable button to enable the Ethernet connection

DHCP

(Dynamic Host Configuration Protocol)

When DHCP is enabled the IP Address, Subnet, and Gateway will be dynamically assigned from the HOST network connection. User editing will be locked.

To enable DHCP:

- Disable the Ethernet connection first.
- After the DHCP has been enabled, then press the Enable Ethernet button to complete the DHCP connection.

**Connectivity: DHCP enabled****Network - Wi-Fi**

In the Wi-Fi tab, the Wi-Fi, IP Address, Subnet, and Gateway can be either manually entered (BEFORE enabling Wi-Fi) or assigned via the DHCP.

Edit Wi-Fi Address

With the Wi-Fi and DHCP checkboxes disabled:

- Press the IP address, subnet, or gateway input buttons to display the input keypad and edit these values.

**Connectivity: Wi-Fi Screen****IP Address****Subnet Address****Gateway Address**

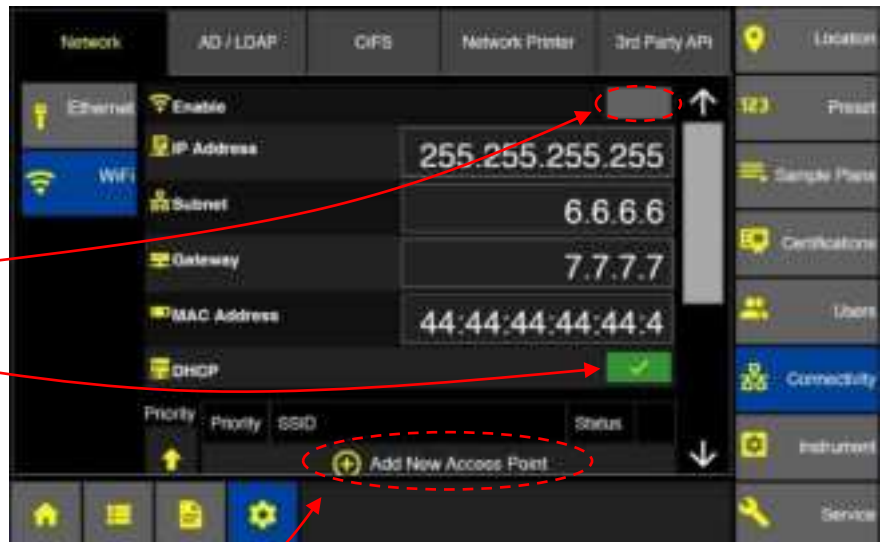
- Enter the valid Address and press the Apply button.
- After IP, Subnet, and Gateway are entered then press the Enable button to enable the Wi-fi connection.

DHCP

(Dynamic Host Configuration Protocol)

When DHCP is enabled the IP Address, Subnet, and Gateway will be dynamically assigned. User editing will be locked.

- To enable DHCP, disable the Wi-Fi connection first.
- Click to enable DHCP
- After the DHCP has been enabled, press the Enable Wi-fi button to complete the DHCP setup.



Connectivity: DHCP enabled

Add New Wi-Fi Access Point

Up to 5 Wi-Fi access points can be saved on the ApexZ unit. Wi-Fi must be enabled to all the user to add new Wi-Fi networks to the connection list. Enable Wi-Fi for the “Add New Access Point” button to be enabled.

- Press the Add New Access Point button to bring up the Configure Wi-Fi screen.
- Press the Scan button to search for available Wi-Fi networks or routers in the area.



- Press and select a Wi-Fi network for your ApexZ communication.

Connectivity: DHCP enabled

After a Wi-Fi has been selected, the ApexZ will mark with a red dot the remaining required tabs to complete the configuration.

Open Wi-Fi configurations:

Security will be preset to “None”.

Local Network Wi-Fi:

Security will be preset to WPA-PSK (also supports WPA2). Password input is required.

Enterprise Wi-Fi configurations:

Security will be preset to WPA-EAP (also supports WPA2). Username and password inputs are required.

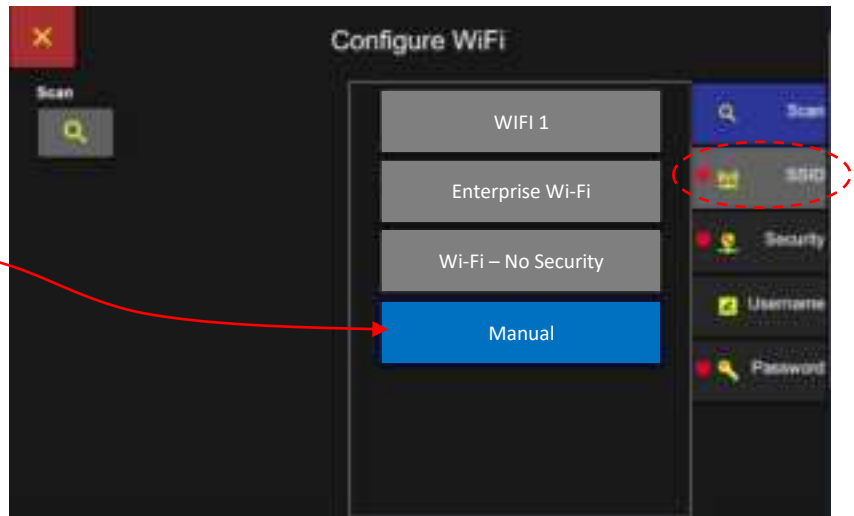
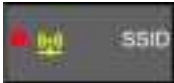
Manual Wi-Fi Configuration

Select Wi-Fi

- Select Manual Wi-Fi Configuration



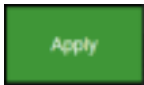
- Press the SSID button next.



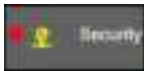
Connectivity: Wi-Fi Scan Screen

- Enter the SSID with the keypad

- Press Apply



- Press the Security button next.



Connectivity: Wi-Fi SSID

Select Wi-Fi Security

- Security will be selectable only for Manual Wi-Fi configurations.
- Security will be preselected according to the Wi-Fi type detected.

WPA-PSK (also supports WPA2)

Wi-Fi Protected Access – Pre-Shared Key
Password required only.

WPA-EAP (also supports WPA2)

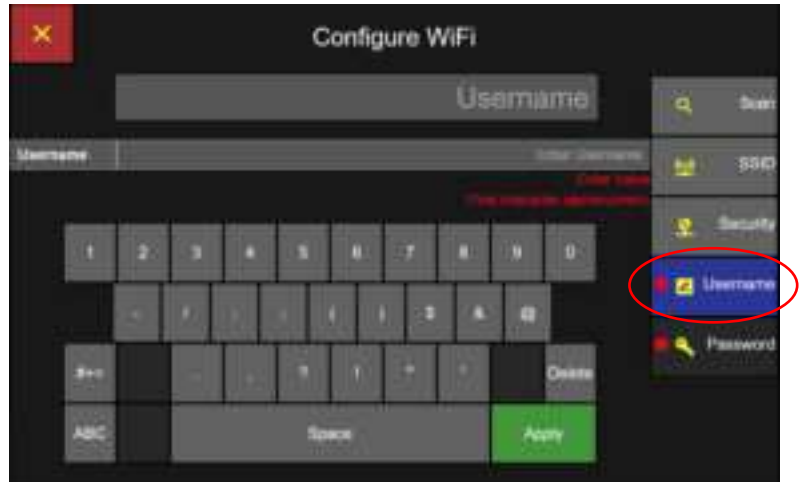
Wi-Fi Protected Access – Enterprise
Certificate accepted, not required.
Username required.
Password required.



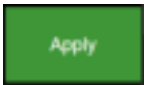
Connectivity: Wi-Fi Security

Enter Username

- Select the Username tab.
- Enter Username with the keypad.
- Then press Apply.

**Connectivity: Wi-Fi Username****Enter Password**

- Select the Password Button.
- Enter password with the keypad.
- Then press Apply.

**Connectivity: Wi-Fi Password**

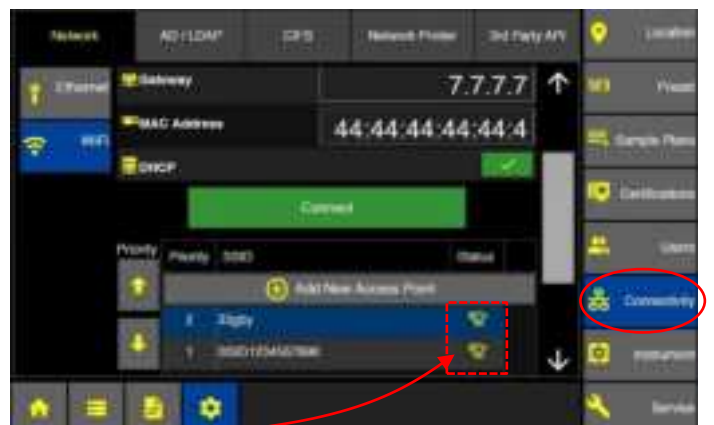
- Press the Save button to save settings and connect to the selected Wi-Fi.



- When the ApexZ successfully connects to the Wi-Fi network, a “Connection Successful” message will appear.

All configured Wi-Fi networks will be listed in the Network → Wi-Fi screen, and when selected a Connect box will be shown. This allows users to connect to previously configured Wi-Fi networks without setting them up again.

- Use the arrows to adjust priority of listed networks.
- A Wi-Fi network to which the unit is connected will display in the Status column.

**Connectivity: Wi-Fi Password**

Active Directory AD/LDAP

Validate Users through your network Active Directory

ApexZ allows user login authentication to happen through your Active Directory network connection. Usernames and passwords logging into the ApexZ instrument will be verified against Active Directory usernames and passwords.

User Permission Levels can be assigned to AD Groups on your network. Users logging in from AD Groups will be given that AD Groups' assigned permission Level on the ApexZ instrument.

Contact your IT department to obtain the URL and Domain for your Active Directory.

Active Directory URL (optional)

- Press the URL button and use the keypad to enter the Active Directory URL.

Note: If URL is entered, the unit only attempts to authenticate to the Active Directory server at that IP.

Active Directory Domain (required)

- Press the Domain button and use the keypad to enter the Domain name.

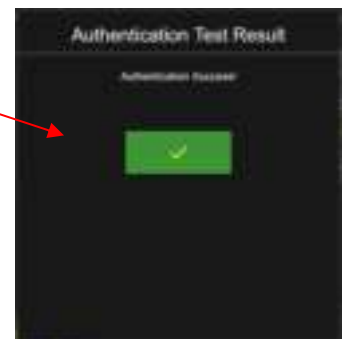
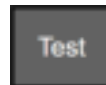


Connectivity: Active Directory

Note: If Domain is entered and IP is left blank, then the unit will pull all valid IP addresses of the domain and attempt to validate credentials until one succeeds.

Secure

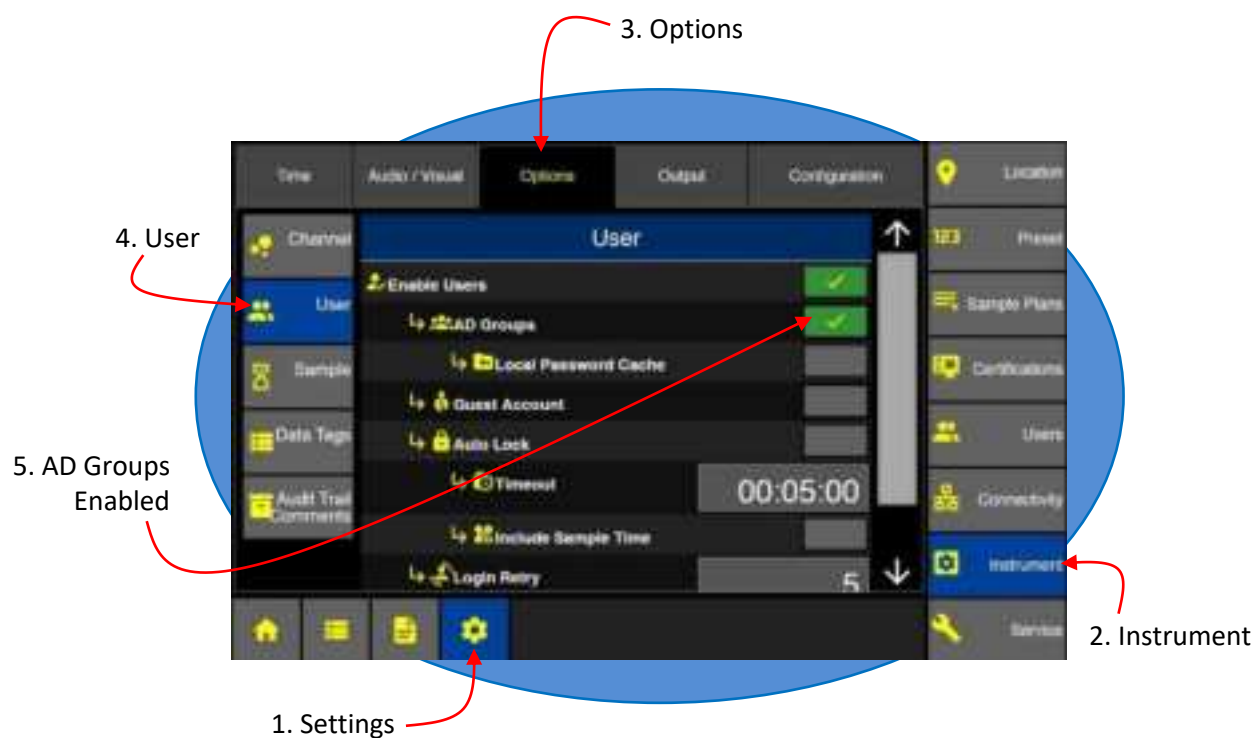
- Press to enable the Secure button to use LDAP over SSL protocol.
- Press the Test button to test login to the Active Directory.



Note: Active Directory Domain must be set up and a Test Login performed before logging in with AD user accounts. ApexZ FW 2.3 and earlier require that each AD User be in at least 3 AD Groups on their network. Only one of those groups needs to be selected on the instrument. ApexZ FW 2.4 and later only require the AD User to be in one AD Group on their network.

To activate AD Groups, go to:

Settings -> Instrument -> Options -> User -> AD Groups

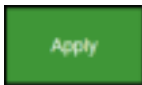


CIFS - Common Internet File System

The CIFS “Common Internet File System” is used to connect and export data to connected shared network drives. CIFS operates on SMB 2.1 and uses port 445. Contact your IT Department for the URL, Path, and Folder settings for your CIFS.

CIFS URL

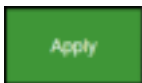
- Press the URL button and enter the IP address using the keypad.
- Press the green apply button.



Path

Connectivity: CIFS

- Press the Path button and enter the CIFS Path using the keypad. The Path is the network location to which Exported data will be saved.
- Press the green apply button.



Connectivity: CIFS URL



Connectivity: CIFS path

Folders 1-2-3-4

Folder 1, Folder 2, Folder 3, and Folder 4 are designed to allow the user to organize data into sub-folders according to the instruments they were downloaded from.

- Press each **Folder** button and select the desired sub folder name from the pop-up list:

Serial #
Date/Time
Model
Instrument Name
None



Connectivity: CIFS Folders



- After selection, press the Save button and the entry will be listed for that Folder. The buttons for subsequent Folders will only be available once the previous Folder has a selection saved.



The Instrument Name folder will be named after what is entered on the Settings->Service->About screen, in the Instrument Name field. If this field is empty, selecting Instrument Name for a CIFS Folder will show an orange folder icon in the field after saving, indicating that the Instrument Name has not yet been set on the Apex unit.



Auto Authenticate

- Press the enable Auto Authenticate button and ApexZ will use the currently logged-in user's credentials to authenticate with the network drive when exporting data. Disabling Auto Authenticate will require every user to enter their username and password prior to exporting data to the network drive.



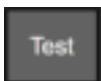
Enabled



Disabled

Test Authentication

- Press the Test button to test Authentication.

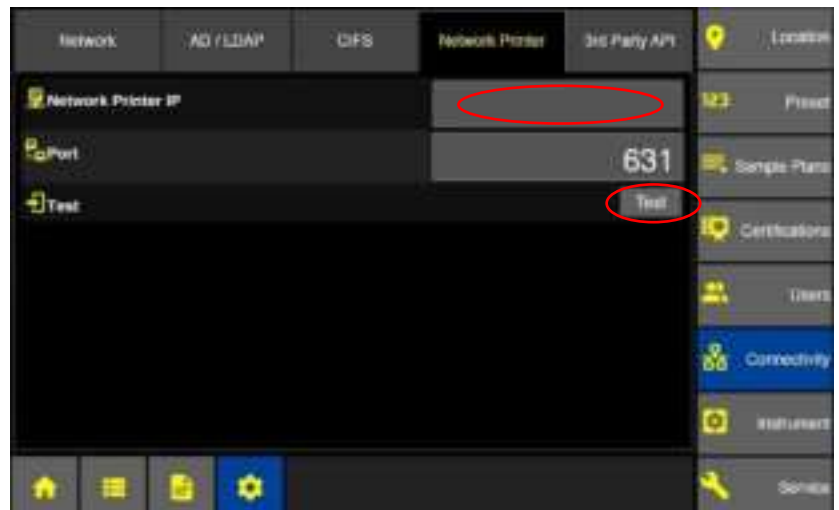


Network Printer

The Network Printer function allows the user to export data to a Printer on a connected network.

Network Printer IP

- Press the Network Printer IP button to enter the IP address of a Network Printer available for the ApexZ to connect to. To be able to export to the printer, the ApexZ must be connected to the same network as the printer.



Connectivity: Network Printer IP

Port Number

- Press the Port button to enter a port number with a minimum value of 1 and a maximum value of 9999.



Enter Printer IP



Enter Port

Test

- Press the Test button to test the connection to the Network Printer.

Once connected, the user will be able to Export data to the Network Printer, with the format being determined by the settings at Settings -> Instrument -> Output -> Print -> Network Printer.

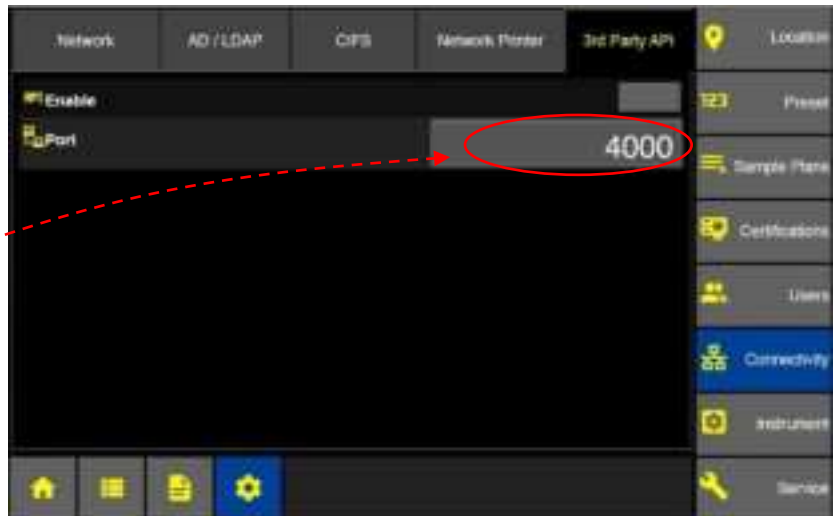
3rd Party API - Application Programing Interface

Port Number

- Press the Port button to enter a port number with a minimum of 4000 and a maximum of 8000.
- Then press Apply.



Enter Port

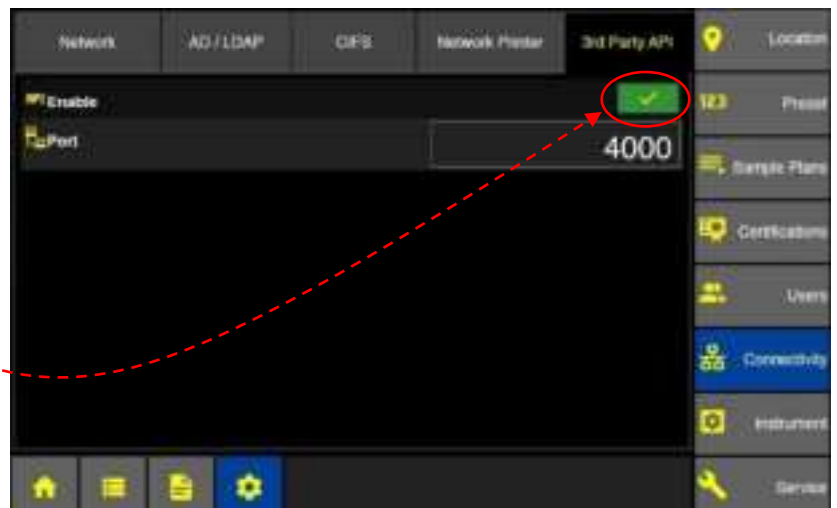


Settings: API Port Number

Enable API

- After selecting the port number then press the Enable API button.

After the API has been enabled the port number may not be modified. To change the port number, you must disable the API enable button first to allow editing of the port number.



Settings: Enable 3rd Party API

Note: Contact Lighthouse for documentation about API commands to integrate software with the ApexZ

Locations and Groups

The ApexZ instrument has the capacity to store up to 2500 location names. The first 250 location names have been named as “Location 0001”, “Location 0002” and up to “Location 0250”. Additional Location names can be added, and the location name will default to the next sequential location # for example “Location 0251”. Location names can be easily edited/renamed or deleted.

Groups may also be created, and Locations may be assigned to Group names. Up to 250 Groups can be created and Locations can be assigned to these groups.

View Locations

- From the Home Screen press the Settings button to display the Settings screen.



Home Screen


- From the Settings screen press the Location button and it will highlight blue and display the Locations and Groups Screen
- Scroll to view all Locations.


ApexZ is shipped with 250 named locations “Location 0001, Location 0002, ...”. These location names can be renamed or deleted, and additional locations can be created up to a total of 2,500 location names.

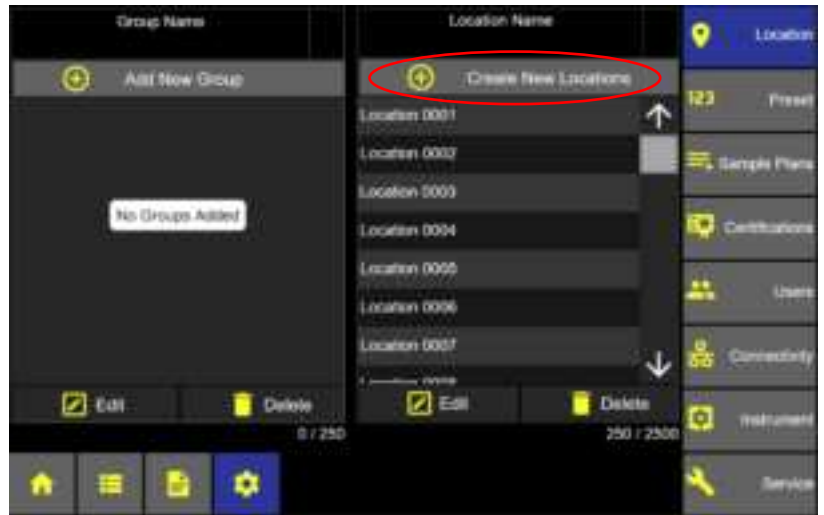


Settings: Locations and Groups Screen

Create New Locations


- Press the  button to Create a New Location.

After pressing the  button the next location number will be created and named "Location 0251".



Settings: Locations and Groups Screen

Add additional locations before saving

- Press the  button to add one more location to the list of new locations.

Each new location will be named sequentially "Location 0251, Location 0252, Location 0253... etc."

- Press the Delete button to delete a highlighted location from the list.
- Press the Edit button to change the name of the highlighted location.
- Press the green Save button to add the list of new locations to the ApexZ database.

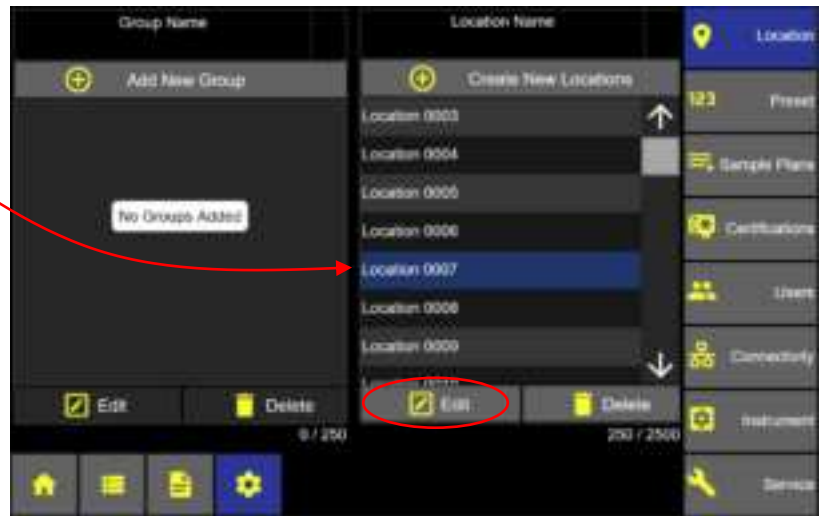


Add Locations Screen



Edit a Location

- Select a location name and it will highlight in blue indicating that it has been selected.
- Press the Edit button to edit the selected location name or to assign the location to a Preset.



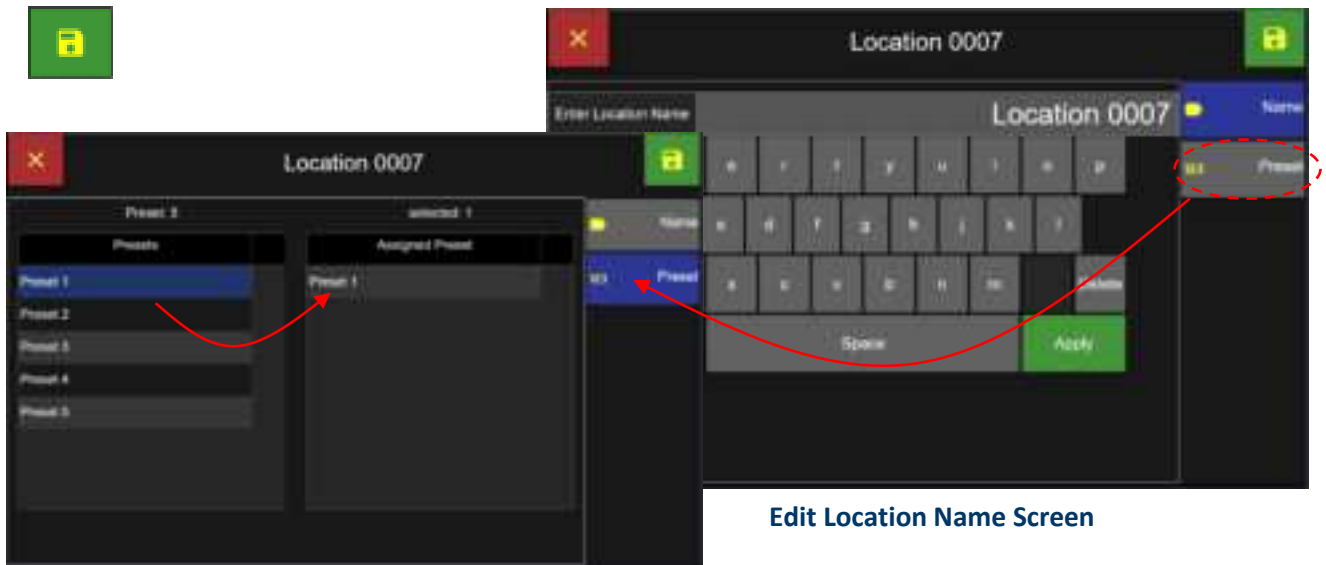
Locations Screen

Edit Location Name

- Delete and type in a new location name and then press the green Apply button. The Name can have a max of 64 characters.

Edit Location Preset

- Press the Preset button to display the Assign Preset to Location screen.
- Select the desired preset to apply to this location. The selected Preset will display in the Assigned Preset box. Note that a preset setting may be assigned to multiple locations, but a single location may only have one Preset assigned to it.
- Press the green Save button to save the location edits.

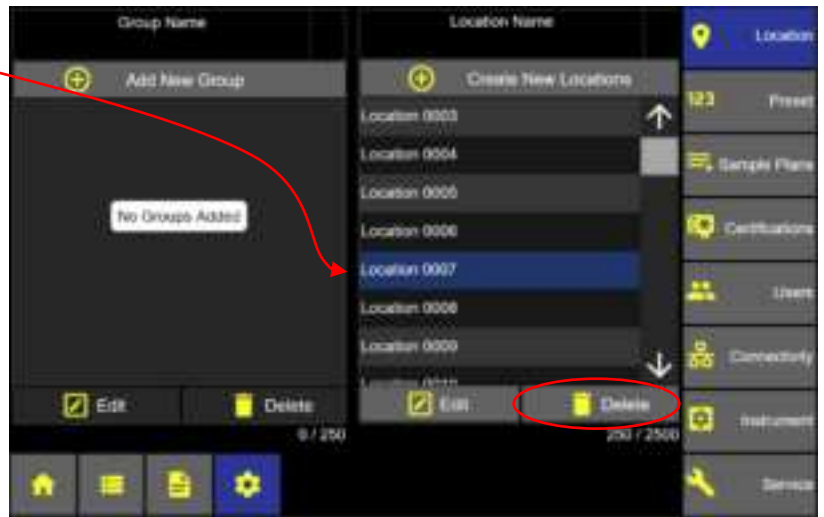


Edit Location Name Screen

Assign Preset to Location Screen

Delete a Location

- Select a location and it will highlight in blue indicating it has been selected.
- Press the Delete button to delete the selected location.



Settings: Location Screen


- Press the green check box to confirm deleting the location from the ApexZ database.
- Or press the red X box to cancel.

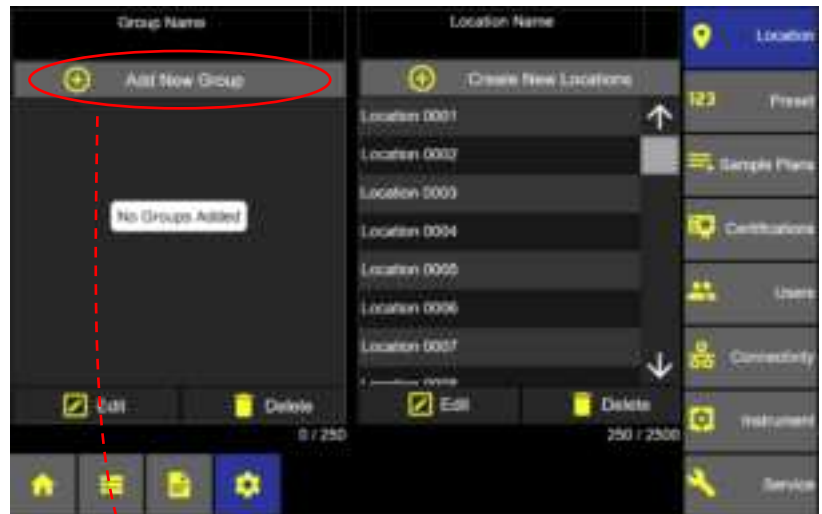


Confirm Location Delete

Add a New Group

Groups may be created, and locations may be assigned to groups. Multiple locations may be assigned to a group, but a single location may only be assigned to one group. Group names can be customized.

- Press the  Add New Group button to add a new group.

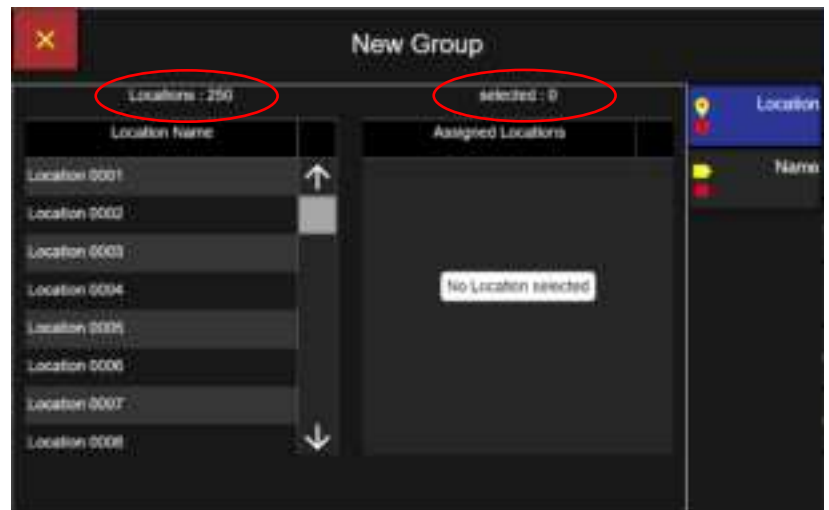


Groups and Locations

The New Group screen displays a list of all locations available to be assigned to the new group.

- Total locations available.
- Total locations selected.

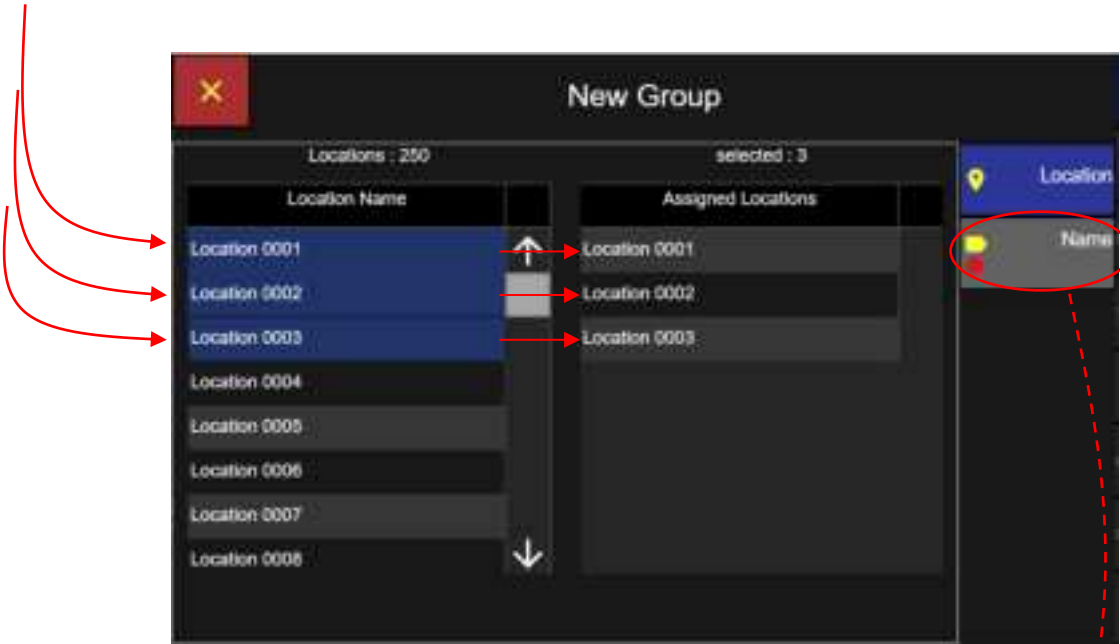
Note: ApexZ can store up to 250 group names. At least 1 Location must be assigned to a Group and each location may only be assigned to 1 group.



Adding a New Group

Assign Locations to a new Group

- Select each location to be included in the group. Selected locations will highlight blue indicating they have been assigned to the new group and they will display on the Assigned Locations list to the right.



Selecting and Assigning Locations to the New Group

- Select the Name button to display the Enter Group Name screen.

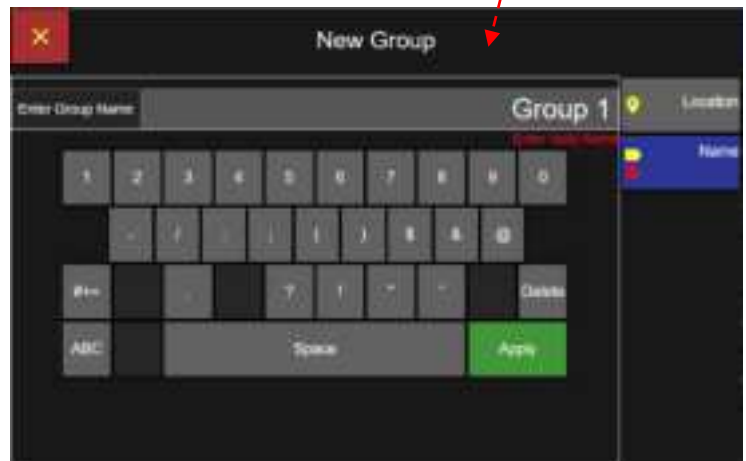
Group Name

Use the keypad to enter the Group name. The Name can have a maximum of 64 characters.

- Press the green Apply button to apply the Group name.



- Press the green Save button to save and return to the Location/Group List. The green save button only appears after a name has been entered and the Apply button has been pressed.

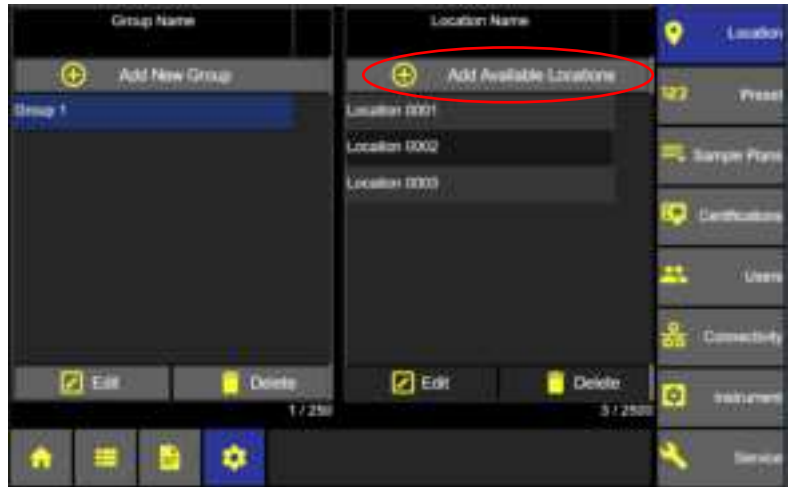


Group Name Screen

Group Selected

When a Group name is selected it will highlight blue and the locations assigned to that group will be displayed in the Location Name list.

- The Add Available Locations button will be available to add more locations to the Group.

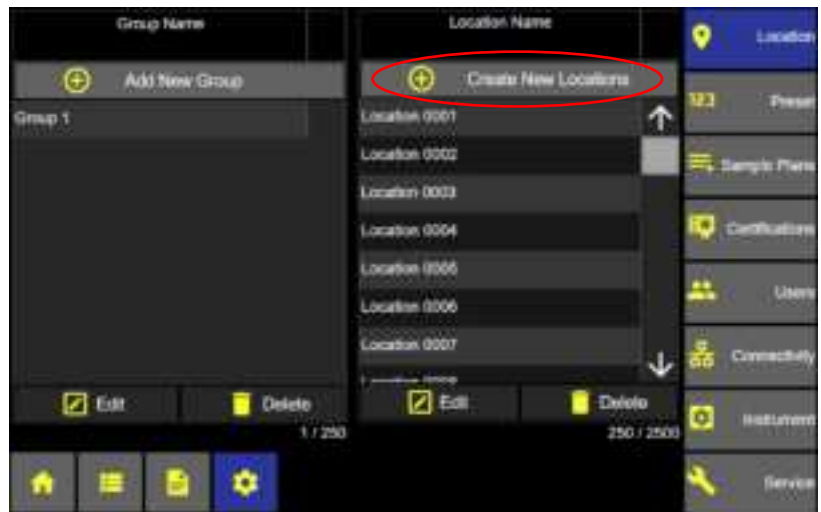


Group Selected – Assigned Locations Displayed

No Group Selected

When no Group Name is selected then all Locations will be displayed and available to Edit or Delete.

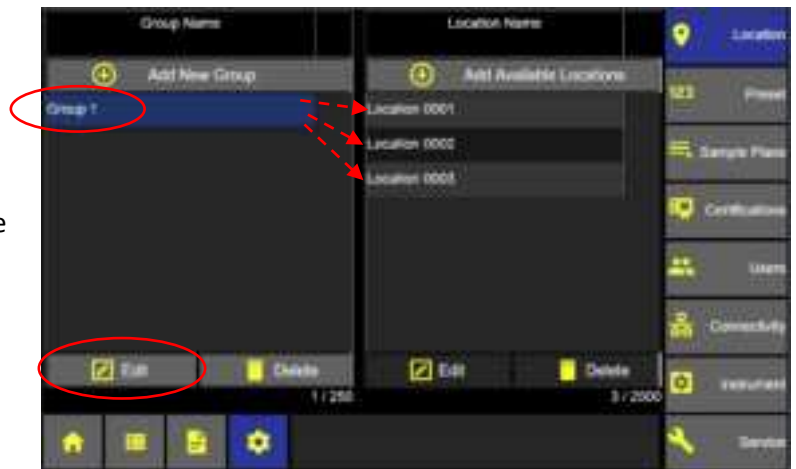
- The “Add Available Locations” button will change to a “Create New Locations” button and allow the user to create new locations in addition to Edit or Delete locations.



No Group Selected – All Locations Displayed

Edit a Group

- Select a Group name and it will highlight blue and display all assigned locations.
- Press the Edit button below the group name list and the Edit Group screen will display.

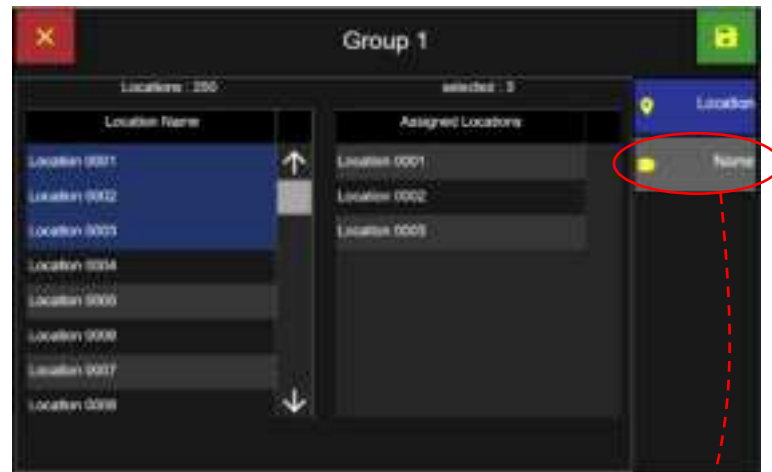


Locations and Groups Screen

- Select additional locations to add to the Group or select locations to remove. Selected location names appear highlighted in blue.

Highlighted location names appear included in the Assigned Locations list for this group.

- Remove a location from the group by deselecting the highlighted location from the location name list and it will be removed from the Assigned Locations list for this group.



Edit Group Locations

- Select the Name tab and Edit the Group Name.
- Edit the Group name with the keypad and press the Apply button.



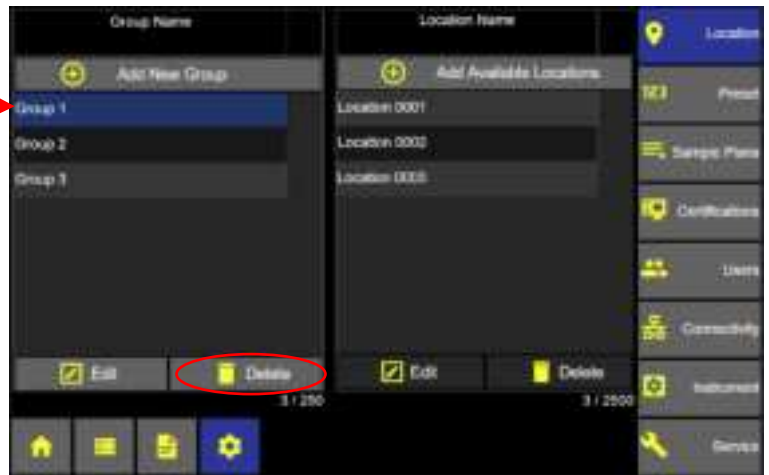
- Press the green save button to save the edit.



Edit Group Name

Delete a Group

- Select a group name and it will highlight blue and display all assigned locations.
- Press the Delete button below the group name list and a delete confirmation pop up window will appear.



Locations and Groups Screen

- Press the green check button to delete the selected group.
- Or press the red X button to cancel and not delete.

When a Group is deleted, the Locations that were associated with it become available to be used in other Groups.



Delete Group Name Confirmation

Blank Page

Presets

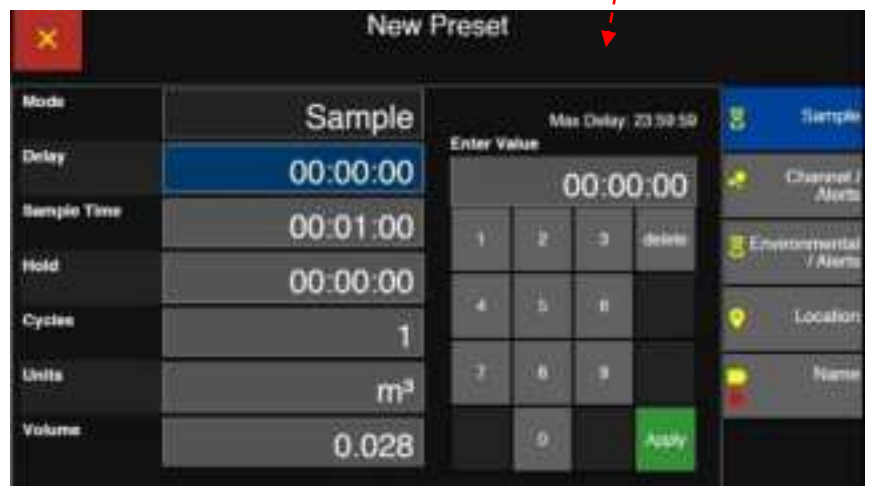
Sample setting parameters can be saved and named as Presets. Presets can then be assigned to locations. Locations linked to Presets will be bound by the sample parameters saved in the Preset. Up to 500 Presets can be added, edited, or deleted.

Add a Preset

- From the Home screen press the Settings button.
- From the Settings screen press the Preset button.
- From the Preset screen press the Add New Preset button.



Preset Screen



Preset Sample Settings

Enter Preset Sample Settings.

Delay Time

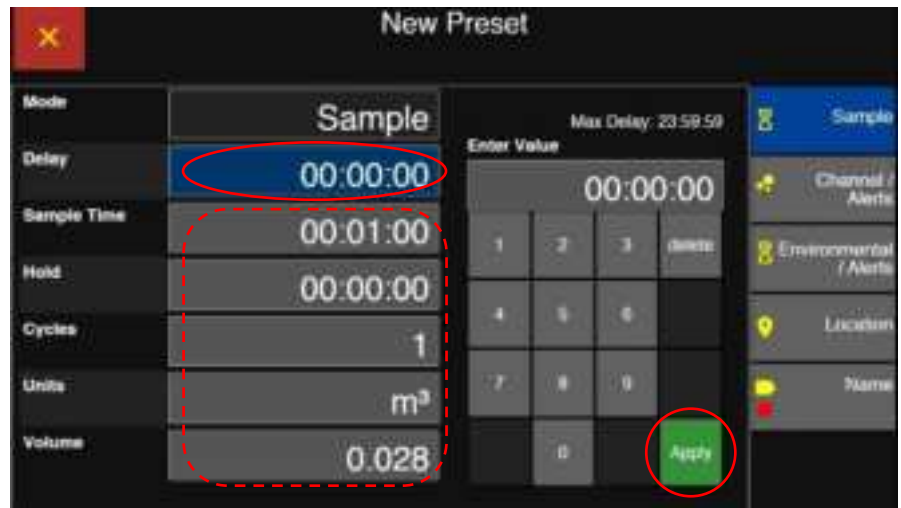
- Select the Delay button and enter the delay time using the keypad and press the green Apply button.

Sample Time

- Select the Sample Time button and enter the sample time using the keypad and press the green Apply button.

Hold Time

- Select the Hold button and enter the hold time using the keypad and press the green Apply button.



Preset Sample Settings

Cycles

- Select the Cycles button and enter the number of Cycles using the keypad (min 1, max 999) and press the green Apply button.

Units

- Select the Units button and select the units ft³ (cubic feet), m³ (cubic meters), or L (liters).

Volume

- Select the Volume button and enter the sample volume with the keypad and press the green Apply button. Note that changing the sample volume will adjust the sample time accordingly. Vice-versa, changing the Sample time will change the sample volume accordingly.
- Next Press the Channel/Alerts button to enable channels, warnings, and alarms.

Edit Channel

Disable a Channel

- Press the Channel/Alerts button to enable channels, warnings, and alarms.
- Press one of the green colored channel size buttons to disable that channel and that channel will turn a grey color and strike-out the channel size. This channel will not be included in this preset sample setting.

NOTE: If Global Channels are enabled then channel enabled/disabled status may not be edited here. See Settings-Instrument-Options-Channel.



Preset Channel/Alerts Screen

Enter Warning and Alarm settings

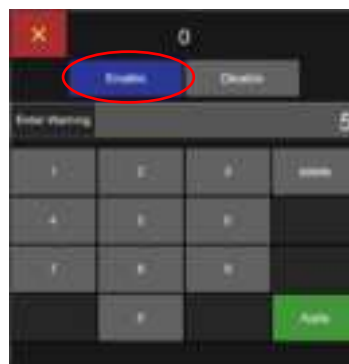
- Press a warning button for any channel size and it will display the Enable and Enter Warning Screen.
- Press an alarm button for any channel size and it will display the Enable and Enter Alarm Screen.



Preset Warning and Alarm settings

- Press the Enable button and it will highlight blue indicating the Warning or Alarm has been enabled.
- Enter a particle count value with the keypad and press the green Apply button to save that warning or alarm level to this Preset.

The preset warning button will display orange, and the Alarm preset button will display red when enabled.



Enable & Enter Warning



Enable & Enter Alarm

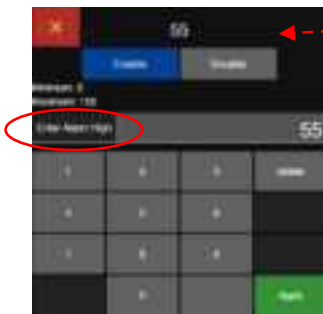
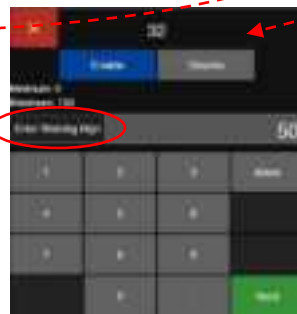
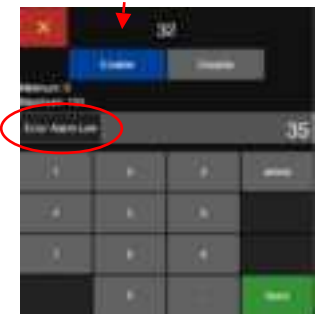
Environmental Alerts

Choose Temperature Units

- Press to select either Celsius (°C) or Fahrenheit (°F). The ApexZ will automatically convert the values within the Alert boxes.

Set Temperature Alert Values

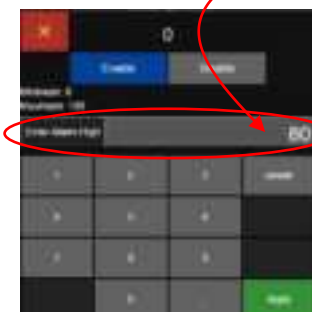
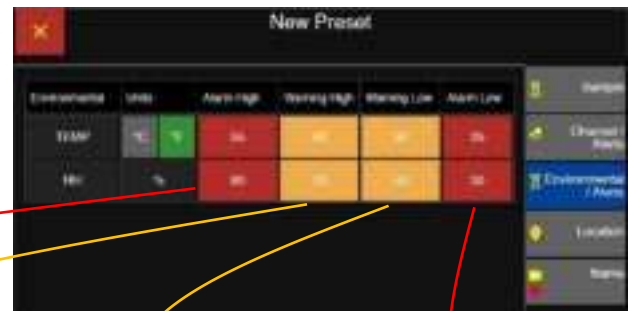
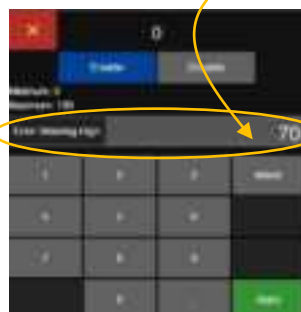
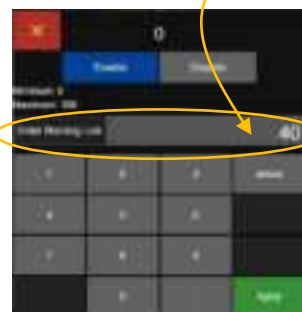
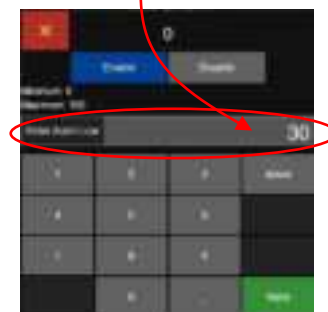
- Press each Alarm/Warning button to bring up the input keyboard. Choose Enable or Disable for the Alert, enter a value (within the range indicated, negative values if Celsius is set) and press the Apply button.

Environmental Alert Settings**Enter Alarm High****Enter Warning High****Enter Warning Low****Enter Alarm Low**

- Repeat the action for the Warning High, Warning Low, and Alarm Low values.

Environmental Alert Settings**Set Relative Humidity Alert Values**

- Press the value for the Alarm High to bring up the input keyboard. Choose to Enable or Disable.
- Enter a value (between 0 and 100 percent) and press the Apply button.
- Repeat the action for the Warning High, Warning Low, and Alarm Low values.

**Enter Alarm High****Enter Warning High****Enter Warning Low****Enter Alarm Low**

Assign Locations to the New Preset

A preset can be assigned to multiple locations.

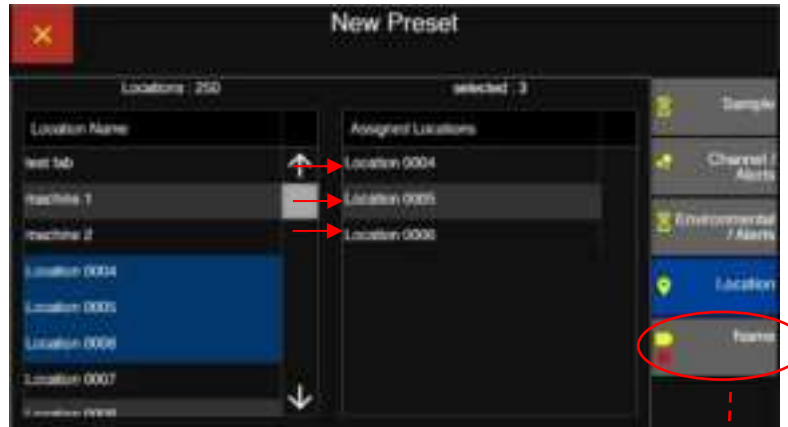
Select location

- Select location name(s) from the Location Name list and they will highlight blue and display on the Assigned Locations list.

Multiple locations may be selected and assigned to the same preset at the same time. The Preset can also be created with no Locations selected.

- To remove a location from the assigned locations list, press the location name again and it will un-highlight and be removed from the assigned locations for that Preset.
- Press the Name button to display the Preset Name Screen.

Assign Locations to New Preset



Preset Name

Use the keypad to enter the preset name.

- Press the green Apply button.



You can press any one of the Sample, Channel/Alerts, Environmental Alerts, Location, or Name buttons and review any of your Preset settings.

- Press the green Save button to save the Preset.



Preset Name Screen



Locations linked to Presets

When a Preset has been assigned to a location then a linked icon will appear before the location name on the Home screen. The link icon indicates the location is linked to a Preset sample setting. When linked to a Preset, the user is not able to set that Location to Manual Sample from the Sample Settings Dashboard.

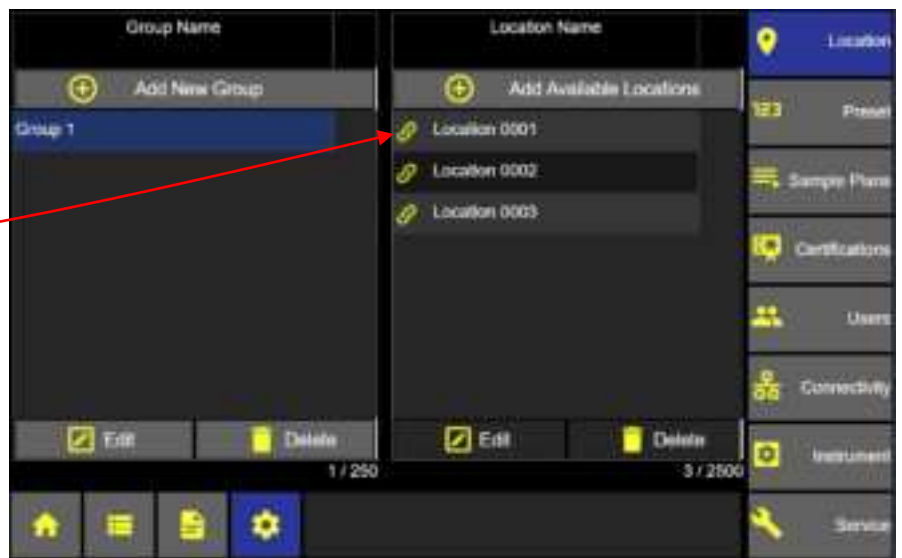
The preset sample setting will be displayed and locked below.



Home Screen

Linked Icon

Presets assigned to locations will display the linked icon on the Groups and Locations configuration screen.



Groups and Locations Screen

Sample Plans

Sample Plans are a collection of Locations with custom sample settings assigned to each location. Recipes (supported in previous versions of ApexZ instruments) were a collection of locations with the same sample settings used at each location. Sample Plans can act as Recipes did, but they can also, in addition, assign different sample settings to each location, either via a Preset or manually.

- From the Home screen press the Settings button to display the Settings Screen.

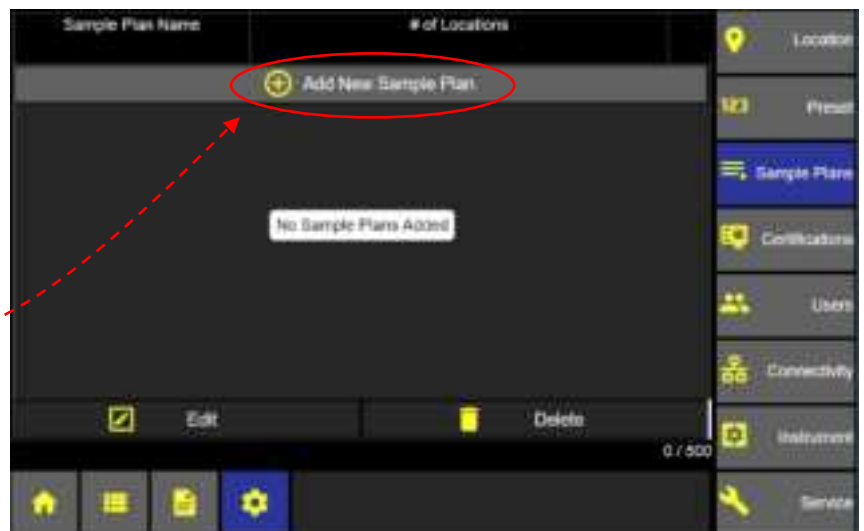


Home Screen

- Press the Sample Plans button to display the Sample Plan Screen.

Add New Sample Plan

- Press the Add New Sample Plan button to display the New Sample Plan Screen.

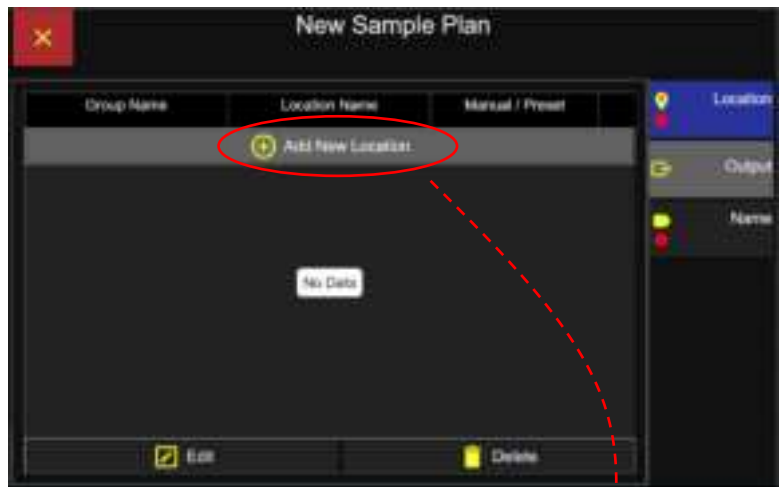


Settings: Sample Plans Screen

A maximum of 500 Sample Plans can be created.

Add New Location to a Sample Plan

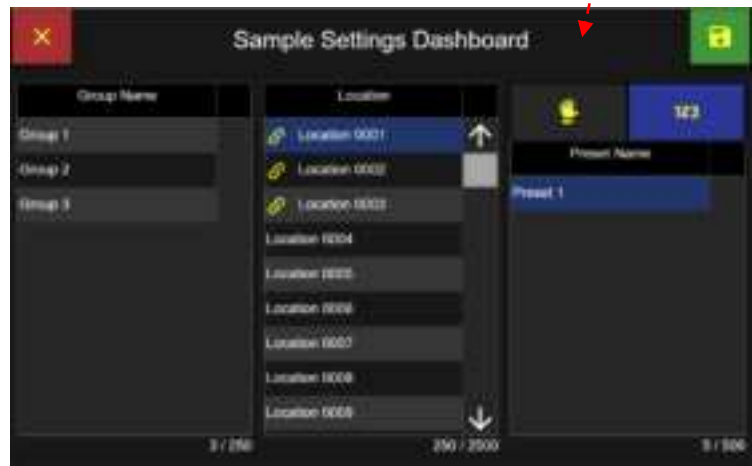
- Press the Add New Location button to display the Sample Plan Setup Dashboard.



New Sample Plan Screen

If no group is selected (note the Group Name in this example has a dark grey background color) then all locations will display and be selectable.

If a selected location is linked to a preset then the Preset button will highlight blue, and the manual sample settings button will become disabled. Only the preset linked to the location will appear in the Preset Name list.



Sample Plan Setup Dashboard – No group selected

- Select a Group name** and only those locations assigned to that group will display.



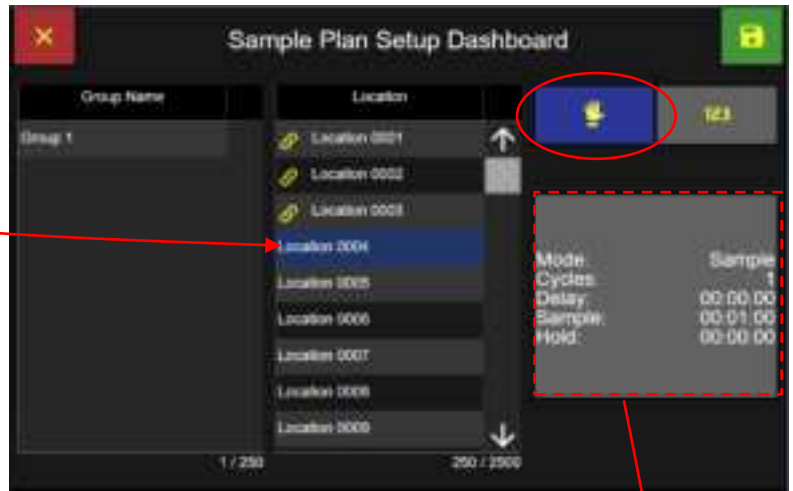
Sample Plan Set Up Dashboard - Group name selected

Select Locations for Sample Plan

- Select a Location from the list and it will highlight blue indicating it has been selected.

Manual - Sample Settings

- Click on the Manual button and it will highlight blue indicating it has been selected.
- Select the Manual Sample Settings button to display the Manual Sample Settings screen.

**Sample Plan Setup Dashboard****Delay Time**

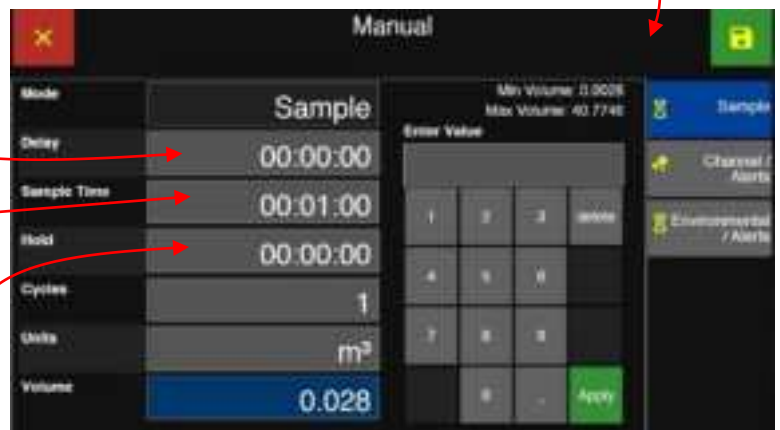
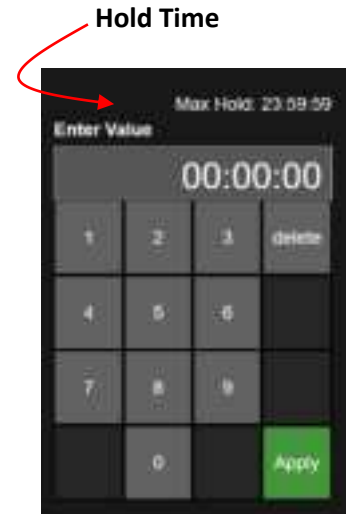
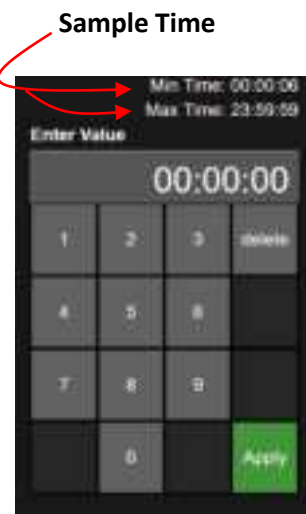
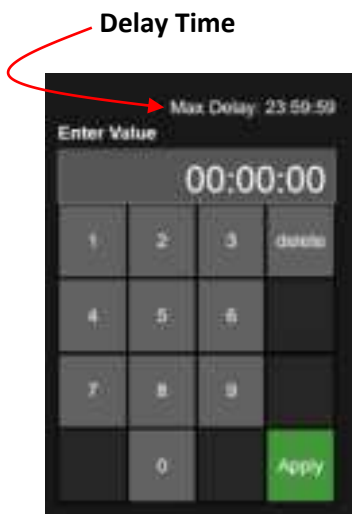
- Select the Delay button and enter the delay time using the keypad and press the green Apply button.

Sample Time

- Select the Sample Time button and enter the sample time using the keypad and press the green Apply button.

Hold Time

- Select the Hold button and enter the hold time using the keypad and press the green Apply button.

**Sample Plan Manual Sample Settings**

Cycles

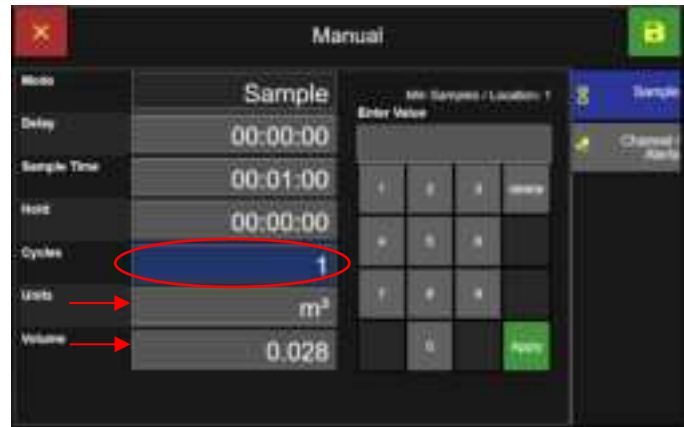
- Select the Cycles button and enter the number of Cycles using the keypad and press the green Apply button.

Units

- Select the Units button and select the units, ft3 (cubic feet), m3 (cubic meters), or L (liters).

Volume

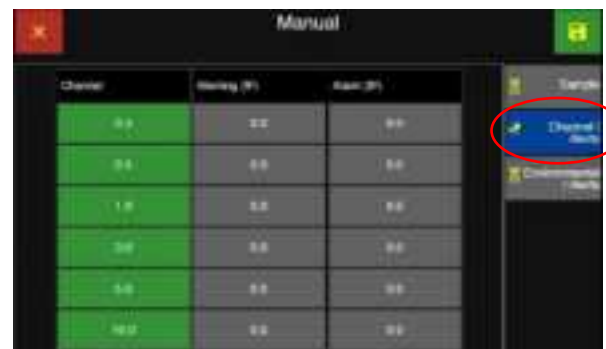
- Select the Volume button and enter the sample volume with the keypad and press the green Apply button.

**Sample Plan Manual Sample Settings****Number of Cycles****Units of volume****Volume**

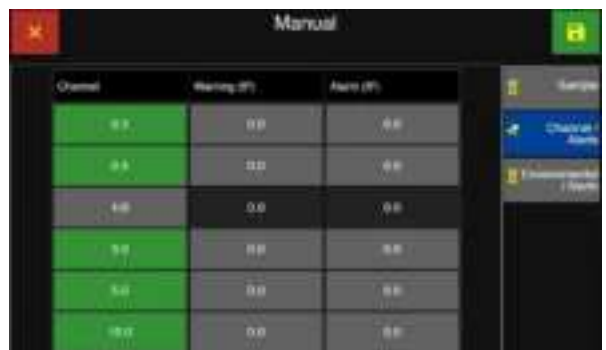
- Press the Channel/Alerts buttons to display the Channel Warning and Alarm input screen.

Enable or Disable Channel Sizes

- Each particle size channel can be enabled (green) or disabled (grey). If a particle size channel is disabled, then no data will be reported on that particle size channel.

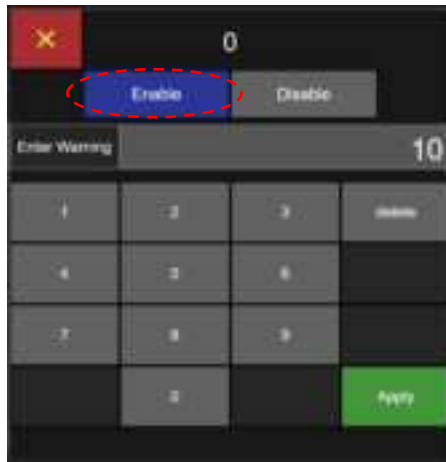


Note: If Lock Global Channels is enabled then all channels are locked. Additional channels may not be enabled or disabled. See the Settings-Instrument-Options-Channel screen to change Global Channels settings.



Enter Warning and Alarm Thresholds

- Press a Warning or Alarm threshold button to enter particle count threshold values for that particle channel size.
- Press the Enable button to enable the threshold setting. Or press the Disable button to disable the threshold.



Warning Threshold



Alarm Threshold

- Enter the Warning or Alarm threshold particle count values.
- Press the green Apply button.



Red button color indicates the channel Alarm threshold is enabled.

Orange button color indicates the channel Warning threshold is enabled.

Dark Grey button indicates channel disabled.

Light Grey button indicates threshold disabled.



Manual Sample Plan: Channel, Warning and Alarms

- Press the green save button to save the Manual Sample settings to the highlighted location and redisplay the Sample Plan Setup Dashboard.



Set Environmental Alerts

- Select the Environmental Alerts tab to set up Alarms and Warnings for Environmental Alerts.

Choose Temperature Units

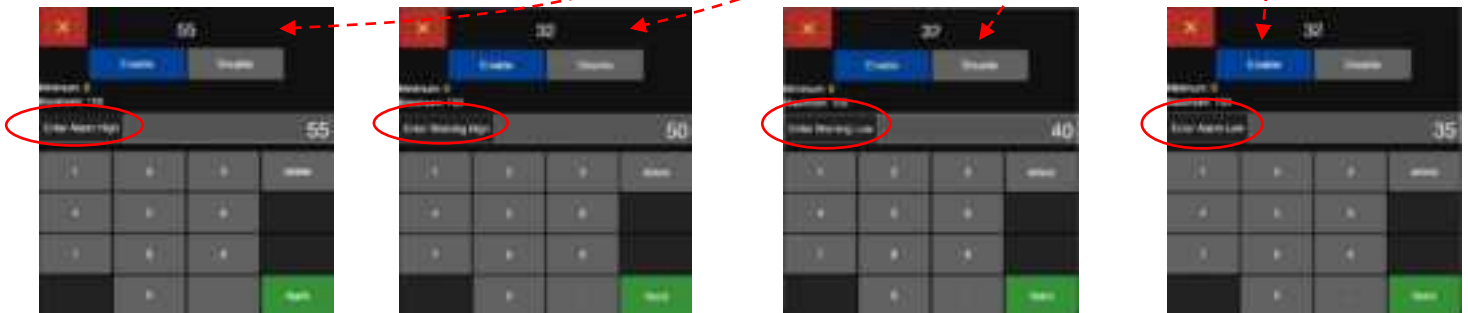
- Press to select either Celsius or Fahrenheit. The ApexZ will automatically convert the values within the Alert boxes.

Environmental Alert Settings



Set Temperature Alert Values

- Press the value for the Alarm High to bring up the input keyboard. Choose Enable or Disable for the Alert, enter a value (within the range indicated) and press the Apply button.



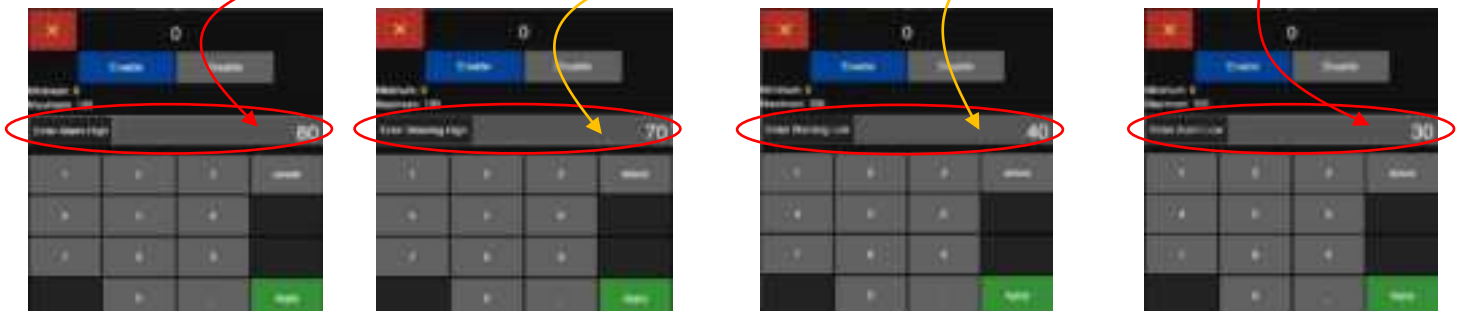
Temperature Alert Settings

- Repeat the action for the Warning High, Warning Low, and Alarm Low values.

Set Relative Humidity Alert Values

- Press the value for the Alarm High to bring up the input keyboard. Choose to enable or Disable, enter a value (between 0 and 100 percent) and press the Apply button.
- Repeat the action for the Warning High, Warning Low, and Alarm Low values.

Environmental Alerts Set



Relative Humidity Alert Settings

Add location with settings to the Sample Plan

- Press the green Save button to save the highlighted location with settings to the Sample Plan.



Manual Sample Plan Dashboard

In this example “Location 0004” has been added to the new sample plan.

- Repeat the above process to add additional locations with Manual or Preset sample settings.

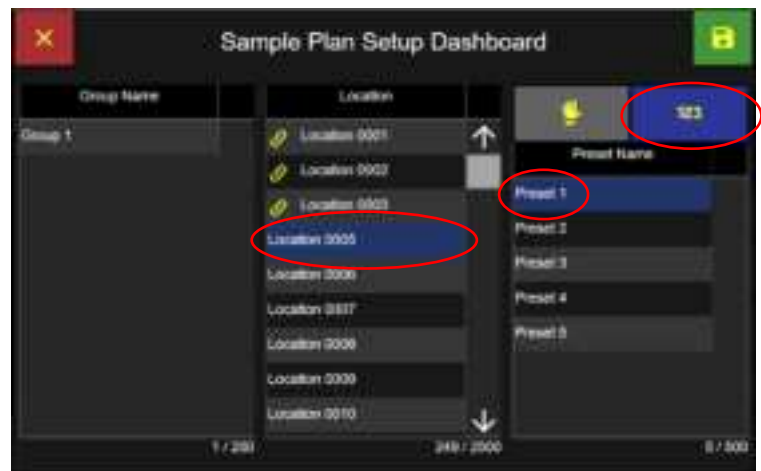
Preset - Sample Settings

Preset sample settings can be assigned to locations in a sample plan.



Sample Plan with the first location added

- Press the Preset button and it will highlight blue indicating it has been selected.
- Select a Location and it will highlight blue indicating that it has been selected.
- Select a Preset Name and it will highlight blue indicating it has been selected.
- Press the green Save button to save the selected location with the selected preset sample settings to the new sample plan.

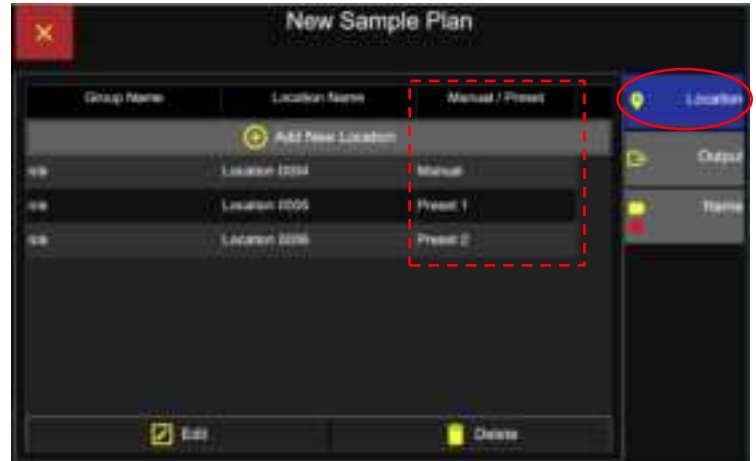


Sample Plan Assigning a Preset to a Location

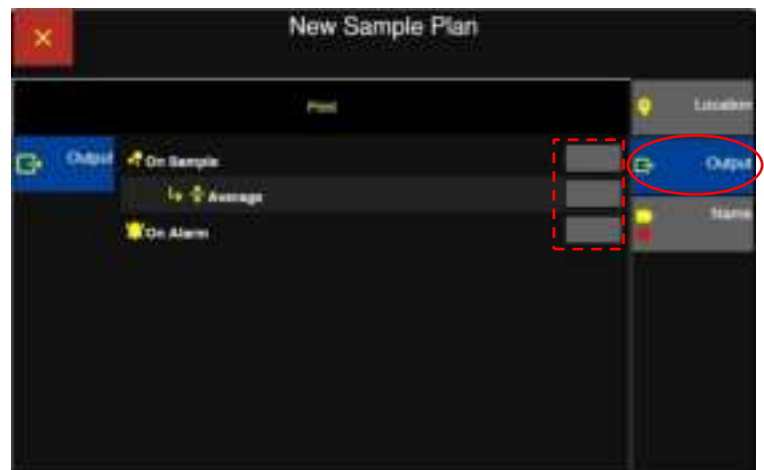
Note: If a location is linked to a preset, then the user will only be able to use that preset sample settings at that location. If a location is not linked to a preset, then the user can choose any preset or set up manual sample settings. If the location selected already has a Preset assigned to it then only that preset name will be listed on the preset name list. This is because a location may be assigned only 1 preset setting.

Example: 3 locations assigned to a Sample Plan.

In the example shown the first location has Manual Sample Settings and the next two locations have Preset Sample Settings.

**Sample Plan with 3 locations added****Output**

- Press the Output button to display the Print Output options:
- Enable On Sample to print after every sample has been completed.
- Enable Average to print the Average counts after every sample is completed.
- Enable On Alarm to print after every alarm.
- Press the Name button to display the Sample Plan Name screen.

**Sample Plan Output Print Options****Sample Plan Name**

- Enter Sample Plan Name using the keypad. The name can have a maximum of 64 characters.
- Press the green Apply button to apply the New Sample Plan Name.

**Sample Plan Name Screen**

Save the Sample Plan Name

- Press the green Save button to save the new sample plan.



Save Sample Plan

- The new sample plan name is now listed on the Sample Plans screen.
- The total number of locations included in the sample plan are listed in the # of Locations column.



Settings Screen: Sample Plans

Edit Sample Plan

- Select a Sample Plan to edit and it will highlight blue indicating it has been selected.
- Press the Edit button to edit the sample plan.



Sample Plans Screen

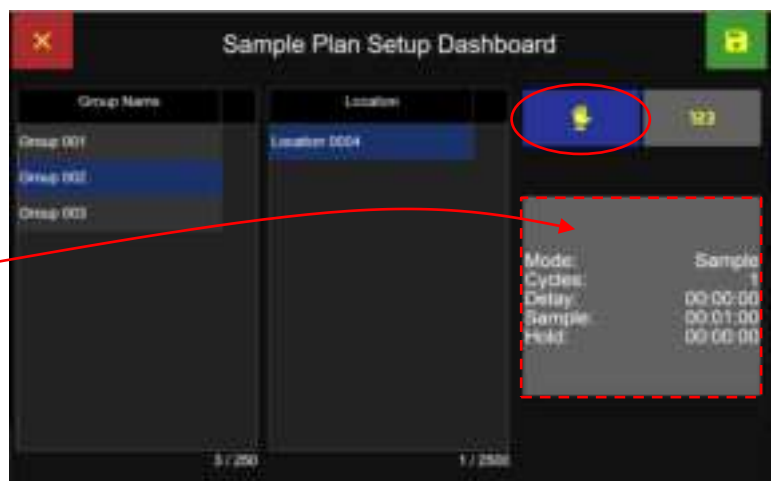
- Press the Location button to edit the locations assigned to the sample plan.
- Select a Location to Edit.
- Press the green Save button to save the selected locations to the Sample Plan.



Edit Sample Plan Locations Screen

Edit the Manual or Preset Sample Settings

- Press the Manual Settings button to select Manual Sample Settings.
- Then press the sample setting button to edit the manual sample settings.



Edit Sample Plan Locations Screen

Manual Sample settings

- Edit Manual Sample Settings.

Manual Sample Settings

Manual Channel/Alert settings

- Edit Warning and Alarm Settings.

Manual Warning/Alarm Settings

Warning Threshold

Alarm Threshold

Environmental Alerts

- Edit Temperature Alerts for Alarm / Warning, High/Low.

Manual								
Environmental	Units		Alarm High	Warning High	Warning Low	Alarm Low	Sample	
TEMP	°C	°F	55	60	40	35	Channel / Alerts	
RH	%		80	70	40	30	Environmental / Alerts	

55

Enable Disable

Enter Alarm High

55

0 1 2 3 4 5 6 7 8 9

Back

60

Enable Disable

Enter Warning High

60

0 1 2 3 4 5 6 7 8 9

Back

40

Enable Disable

Enter Warning Low

40

0 1 2 3 4 5 6 7 8 9

Back

35

Enable Disable

Enter Alarm Low

35

0 1 2 3 4 5 6 7 8 9

Back

Temperature Alert Settings

- Edit Relative Humidity Alerts for Alarm/Warning, High/Low.

Manual								
Environmental	Units		Alarm High	Warning High	Warning Low	Alarm Low	Sample	
TEMP	°C	°F	55	60	40	35	Channel / Alerts	
RH	%		80	70	40	30	Environmental / Alerts	

80

Enable Disable

Enter Alarm High

80

0 1 2 3 4 5 6 7 8 9

Back

70

Enable Disable

Enter Warning High

70

0 1 2 3 4 5 6 7 8 9

Back

40

Enable Disable

Enter Warning Low

40

0 1 2 3 4 5 6 7 8 9

Back

30

Enable Disable

Enter Alarm Low

30

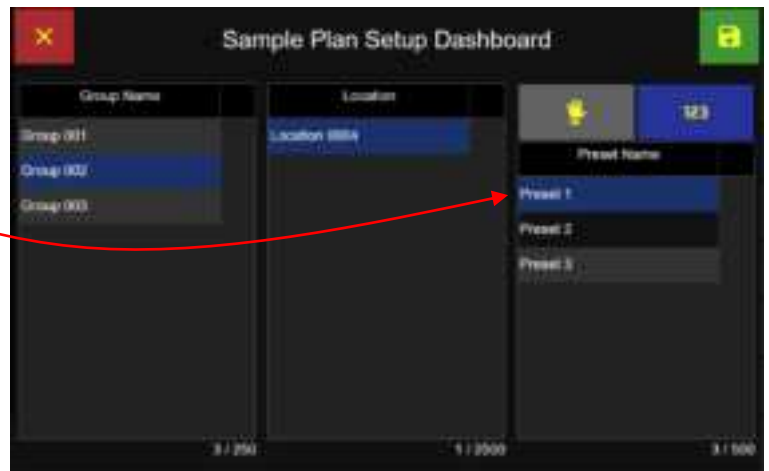
0 1 2 3 4 5 6 7 8 9

Back

Relative Humidity Alert Settings

Preset Sample Settings

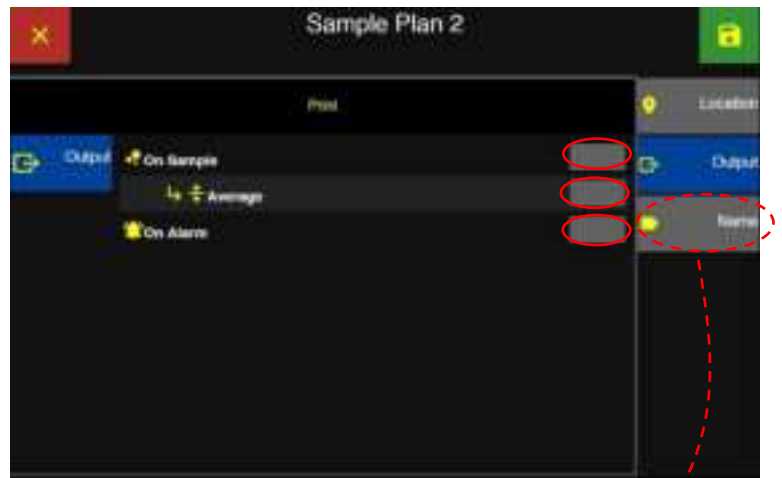
- Select Preset for this location.
- Press the green Save button to save the Preset sample setting at the selected location.



Select Preset for Location

Edit Sample Plan Output

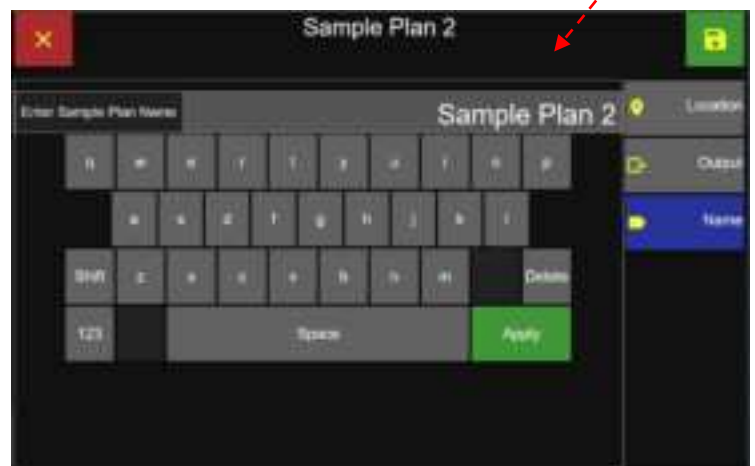
- Press the On Sample button to enable output to the printer after every sample completes.
- Press Average to print the average count of the total cycles in a sample.
- Press On Alarm to output to the printer after every Alarm threshold is exceeded.



Select Output on Sample or on Alarm

Edit Sample Plan Name

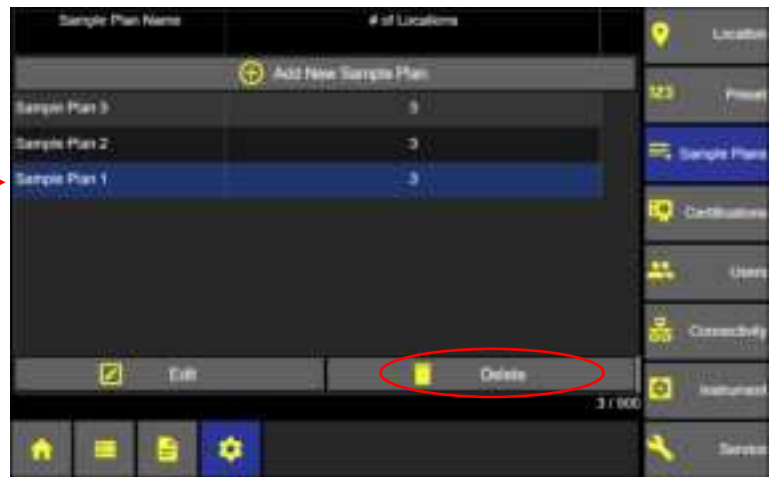
- Press the Name button to edit the Sample Plan name.
- Edit the Name using the keypad.
- Press the green Apply button to apply the edited Sample Plan Name.
- Press the green Save button to save the edited Sample Plan settings.



Sample Plan Name Screen

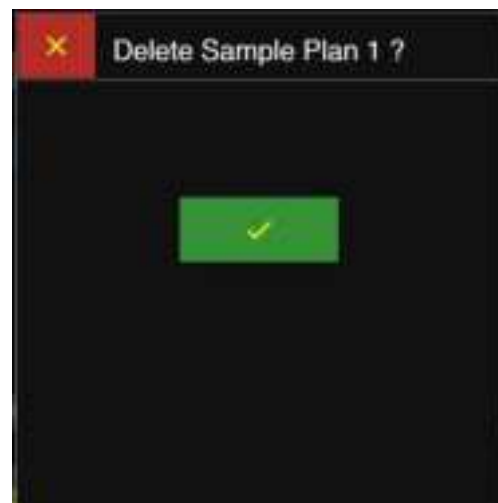
Delete Sample Plan

- Select the Sample Plan to be deleted and it will highlight blue indicating it has been selected.
- Press the Delete button.



Sample Plan Screen

- Press the green check box to confirm deleting the selected Sample Plan.
- Or press the red X button to cancel.

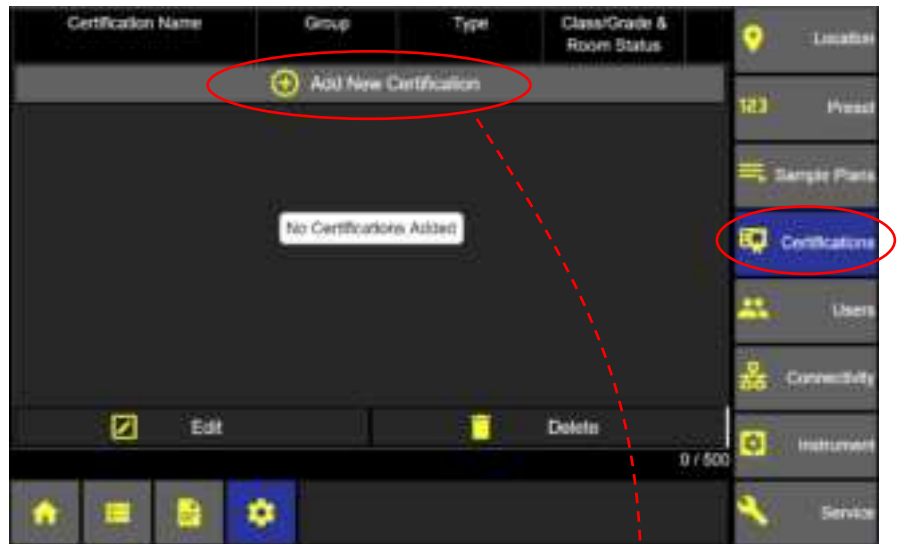


Confirm Deleting Sample Plan

Certifications

Add a Certification

- From the Settings screen press the Certifications button to display the Certifications screen.
- Select the + Add New Certification button to display the New Certification input screen.



Settings: Certifications Screen

Certification Types

- Select the certification type.

ISO 14644-1: 2015
EU GMP: 2022
EU GMP: 2008
ISO 14644-1: 1999
FED 209E

The screenshot shows the 'New Certification' input screen. It has a red 'X' button at the top left. The form contains the following fields:

- Type:** A dropdown menu with 'ISO 14644-1: 2015' selected (highlighted with a red circle and a red arrow).
- Class:** A text input field with the value '5'.
- Room Status:** A text input field with the value 'in-operation'.
- Area Units:** A text input field with the value 'ft²'.
- Area:** A text input field with the value '10.000'.

On the right side, there's a vertical menu with icons and labels: 'Type', 'Channel', 'Sample', 'Location', and 'Name'. A red dashed arrow points from the 'Add New Certification' button in the previous screen to this screen.

New Certification Input Screen

Class

- Select the cleanroom Class from the classes available for the certification type selected.

ISO 14644-1: 2015 (available classes: 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9)

NOTE:

2.0 and 2.5 are only available on the ApexZ3

Type	ISO 14644-1: 2015			
Class	2	2.5	↑	
	3	3.5		
Room Status	in-operation			
Area Units	4	4.5		
Area	5	5.5		
	6	6.5		
	7	7.5		
				↓

Cleanroom Class

Certification Classes & Grades

The available classes/grades will change according to the certification type selected above.

Certification TypesAvailable Classes & Grades**EU GMP: 2008 AND EU GMP: 2022**

(Available Grades: A, B, C, D)

A	B
C	D

ISO 14644-1: 1999

(Available Classes: 2, 3, 4, 5, 6, 7, 8, 9)

2	3
4	5
6	7
8	9

NOTE: Class 2 is only available for the ApexZ3.

Federal Standard 209E

(Available Classes: 10, 100, 1000, 10,000, 100,000)

10	100
1000	10000
100000	

Room Status

Certifications will require Room Status to be selected.

- Select in-operation, at-rest, or as-built and the selected room status will highlight blue indicating it has been selected.

New Certification			
Type	ISO 14644-1: 2015	in-operation	12
Class	5	at-rest	12
Room Status	in-operation	as-built	12
Area Units	ft²		
Area	10,000		

ISO 14644-1: 2015

New Certification			
Type	ISO 14644-1: 1999	in-operation	12
Class	5	at-rest	12
Room Status	in-operation	as-built	12
Area Units	ft²		
Area	10,000		

ISO 14644-1: 1999

New Certification			
Type	FED 209E	in-operation	12
Class	100	at-rest	12
Airflow	non-unidirectional	as-built	12
Room Status	in-operation		
Area Units	ft²		
Area	10,000		

Federal Standard 209E

New Certification			
Type	EU GMP: 2022	in-operation	12
Class	A	at-rest	12
Room Status	in-operation		
Area Units	ft²		
Area	10,000		

EU GMP: 2008 AND EU GMP: 2022

EU GMP certifications will be limited to Room Status of In-Operation or At-Rest only.

Airflow

- For Federal Standard 209E Certifications, airflow will be required to select either "non-unidirectional" or "unidirectional".

New Certification			
Type	FED 209E	non-unidirectional	12
Class	100	unidirectional	12
Airflow	non-unidirectional		
Room Status	in-operation		
Area Units	ft²		
Area	10,000		

Area Units

- Press the Area Units button.

The screenshot shows the 'New Certification' screen with the following fields: Type (ISO 14644-1: 2015), Class (5), Room Status (in-operation), Area Units (ft²), and Area (10.000). The 'Area Units' button is highlighted with a red dashed circle, and a red arrow points to it from the instruction text.

- Select the ft² or m² area units.

Area Units

Area

- Click on the Area button and the numeric keypad will popup.

The screenshot shows the 'New Certification' screen with the following fields: Type (ISO 14644-1: 2015), Class (5), Room Status (in-operation), Area Units (ft²), and Area (10.000). The 'Area' button is highlighted with a red dashed circle, and a red arrow points to it from the instruction text. A numeric keypad is also visible on the right side of the screen.

- Enter the Area Value.
- Press the green Apply button.
- Press the Channel button to display the New Certification Channels screen next.

Area

Channels

Certification channel sizes are limited and locked according to the certification type.



Enabled channels will appear with a green check box.



Disabled channels appear with a red x box.

- Press the green check box to disable a channel and it will change to a red X box and vice-versa.

Size	Enable	Target Limit / m ³
0.3 µm		
0.5 µm		3520
1.0 µm		832
3.0 µm		
5.0 µm		
10.0 µm		

Some allowed channels are not enabled

Certification Channels

Note the on-screen message “Some allowed channels are not enabled”. In this example the 0.3 µm size particle channel is an allowed channel, but it was disabled. Target Limits are not shown for disabled channels.

The dark grey null set button indicates this channel size is not included in the certification.



The EU GMP: 2022 standard allows users to modify the Target Limit for the 5.0µm channel for Class A (in-operation and at-rest) and Class B (at-rest only), shown by the Target Limit value having a light gray background. The 0.5µm channel cannot be disabled.

When the 5.0 µm channel is disabled, the Target Limit box indicates that the channel must be enabled before the Target Limit can be set.

Size	Enable	Target Limit / m ³
0.3 µm		
0.5 µm		3520
1.0 µm		
3.0 µm		
5.0 µm		29
10.0 µm		

Size	Enable	Target Limit / m ³
0.3 µm		
0.5 µm		3520
1.0 µm		
3.0 µm		
5.0 µm		Enable Channel
10.0 µm		

Some allowed channels are not enabled

Sample settings for new Certification.

- Press the Sample button to display the new certification sample settings

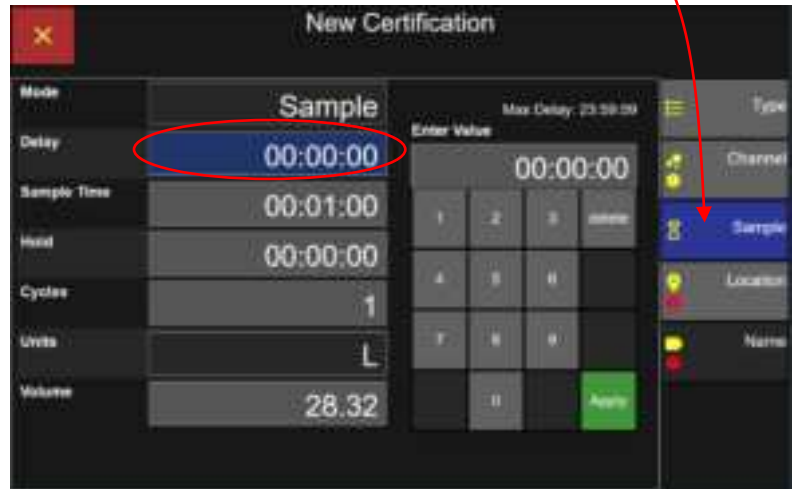
Delay Time

- Select the Delay button and enter the delay time using the keypad and press the green Apply button.

Sample Time

Minimum Sample Time is automatically set based on the Certification Type and Channels selected. User can input a longer Sample Time.

- Select the Sample Time button. The unit will display the minimum time allowed based on the Certification Type and Channels. To enter a larger Sample Time, use the keypad and press the green Apply button. The unit will automatically calculate and input the Volume required for the Sample Time.

**Hold Time**

Select the Hold button and enter the hold time using the keypad and press the green Apply button.



Cycles

Select the Cycles button and enter the number of Cycles using the keypad and press the green Apply button.

Volume

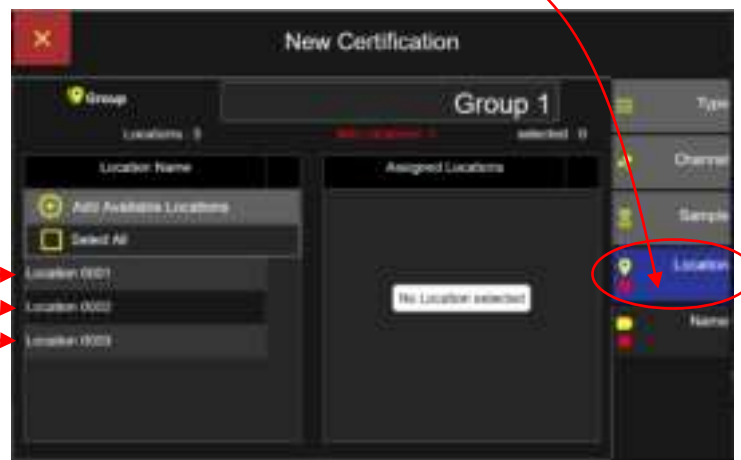
Once the Sample Time is input, the Volume will be calculated and displayed. If a different Volume value is input, then the Sample Time will be automatically recalculated for the new input Volume. If needed, select the Volume button, and enter the sample volume with the keypad and press the green Apply button.



- Select the Location button to display the Location Selection screen.

Locations

If a Group Name is selected, then only those locations assigned to that group will display in the Location List.



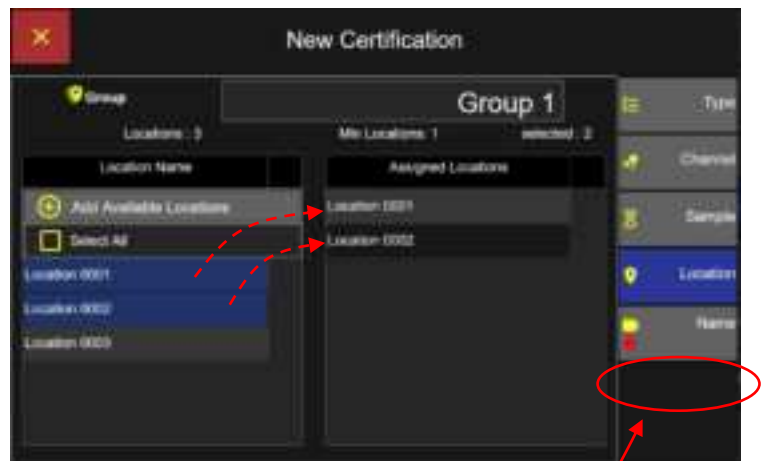
Locations Selection

If no Group Name is selected, then all locations will be available to be assigned to the new certification.



Certification: Locations

- Select one or more location names and each will highlight blue indicating it has been selected. Each location selected will be displayed under the Assigned Locations column.
- To undo a selected location from the assigned list simply press the location name to de-select and it will highlight grey, and that location will be removed from the assigned locations list.



Certification Locations

- Press the Name button to display the Enter Certification Name screen next.

- Enter the New Certification Name using the keypad.

- Press the green Apply button to apply the new certification name. Or press the red x button to cancel.



Enter Certification Name

- Press the green Save button to save the new certification.



Certification Name

The new certification will display on the Settings Certification Screen.



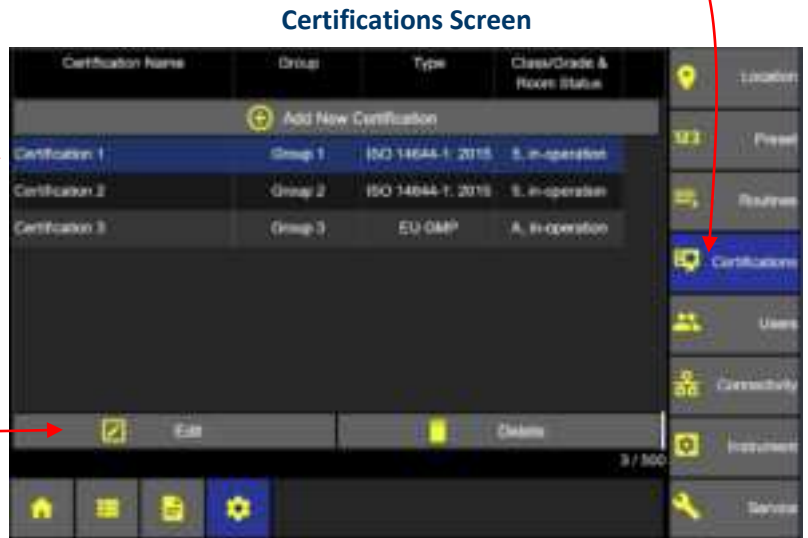
Settings: Certifications Screen

Edit a Certification

From the Home screen press the Settings button and then press the Certifications button.

Select Certification to Edit

- Select a Certification name to edit and it will highlight blue indicating it has been selected.
- Press the Edit button to edit the highlighted certification.



Edit certification settings

- Select a certification setting button to edit for type, channel, sample, location, and name:



- Press the green Save button to save the edits to the certification.

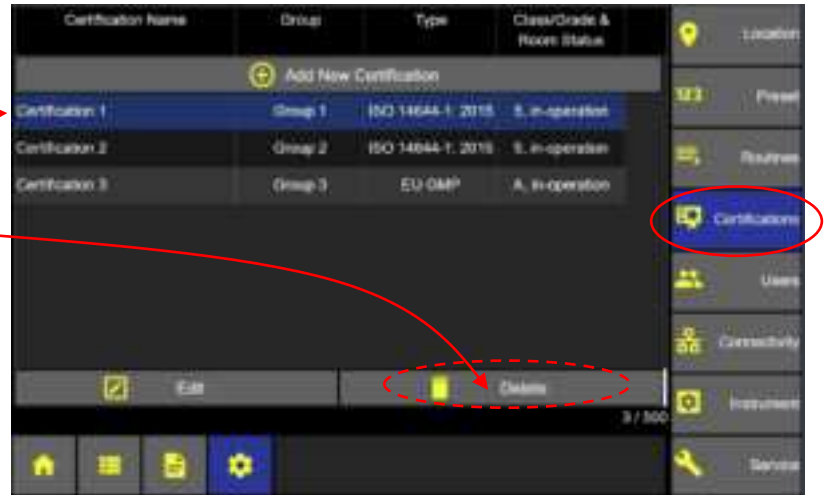
The edited certification will be saved to the certification names list on the certifications screen.

Delete a Certification

From the Home screen press the Settings button and then press the Certifications button.

Select Certification to Delete

- Select the Certification Name to delete and it will highlight blue indicating it has been selected.
- Press the Delete button to display the delete confirmation pop up screen.



Certifications Screen

Confirm Delete Certification

- Press the green check box to confirm deleting the highlighted certification.
- Or
- Press the red X box to cancel and no delete.



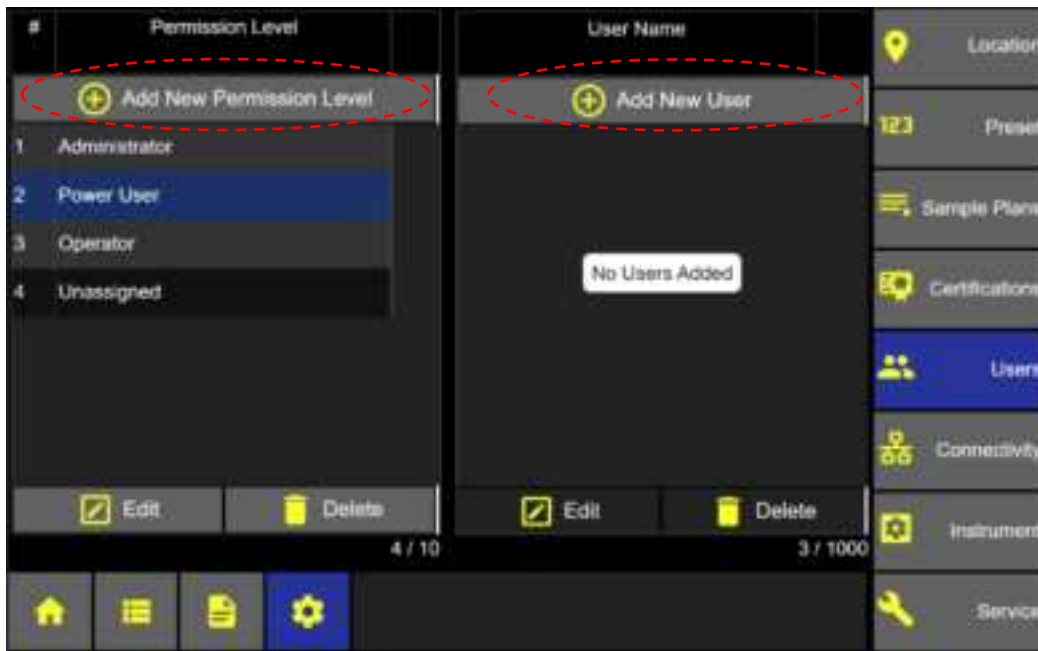
Confirm Delete Certification

Users & Permission Levels

Users

ApexZ supports up to 1,000 users and 10 user Permission Levels. Username and Password can be kept locally on the ApexZ unit or verified through Active Directory on your company network. ApexZ supports assigning Permission Levels to individual Active Directory Groups. In addition, ApexZ can prioritize AD Groups and their respective permission levels.

- Add New Permission Levels
- Add New Users



Settings – Users - Username and Permission Levels Screen

WARNING:

Keep administrator-level username and password secure and retrievable. If the Administrator account login information is lost, functionality can only be restored by having the instruments firmware re-loaded. While a service technician can retrieve the instruments configuration before doing so, all data records WILL be lost.

ApexZ supports up to 10 Permission Levels:

- Administrator
- Power User
- Operator
- Unassigned (only for unassigned users)

... up to 10 total permission levels.

- User permissions can be enabled or disabled for each permission level created except Administrator.
- Operator and Power User Permission Levels can be edited or deleted.
- The “Administrator” and “Unassigned” permission levels may not be edited or deleted.



Username and Permission Levels Screen

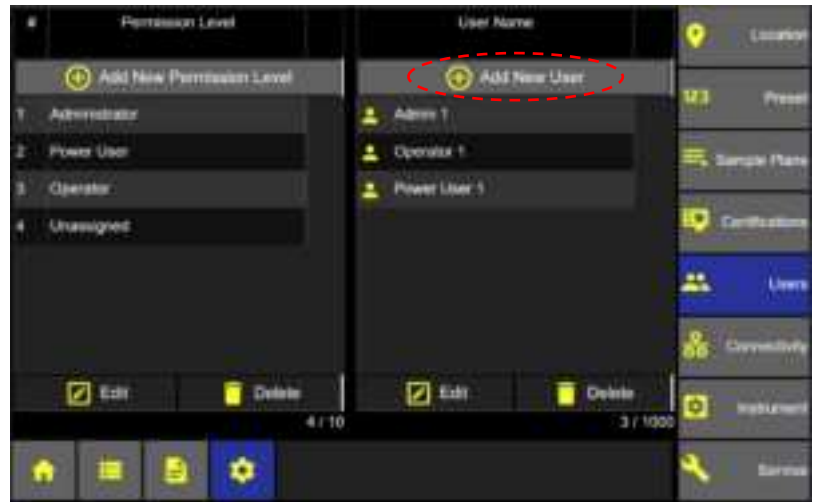


Permission Levels Settings

Add a New User

- Press **+** button to Add a New User.

Note: In order to add new users, Login as an Administrator level user or disable Users in the Settings -> Instrument -> Options -> User screen.

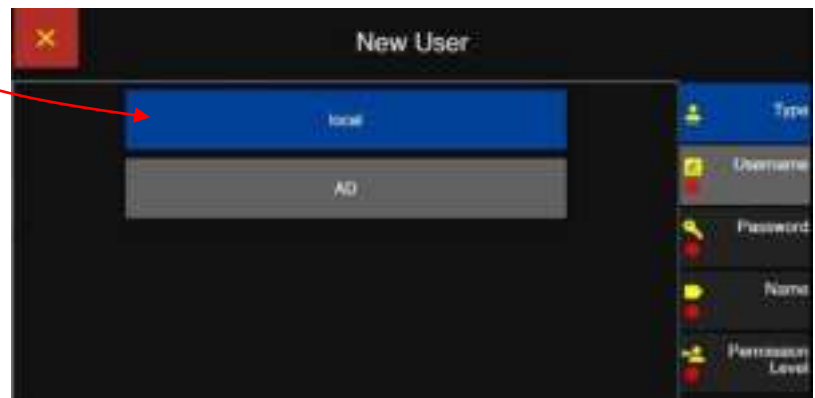


User Screen

User Type

- Select User type local will verify Username and Password saved locally on the ApexZ instrument.

Note: AD button is not available if AD Groups is enabled in Settings -> Instrument -> Options -> User screen.



User Type

- Next press the Username button.



Note: When creating an Active Directory User, no password is required. The password resides on the Network Active Directory.

Note: To enable Users, at least one Admin level user must be created first.

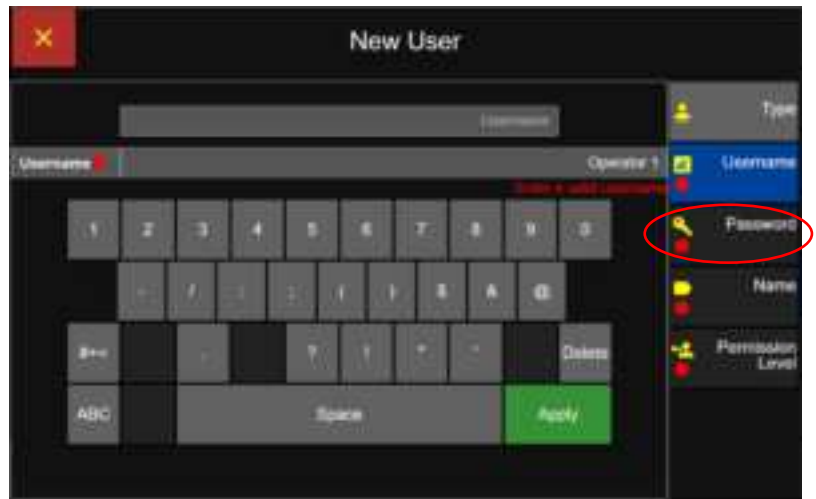
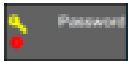
WARNING: Keep administrator-level username and password secure and retrievable. If the Administrator account login information is lost, functionality can only be restored by having the instruments firmware re-loaded. While a service technician can retrieve the instruments configuration before doing so, all data records WILL be lost.

Username

- Enter username on keyboard.
- Press the green apply button and the new username will display in the username box.



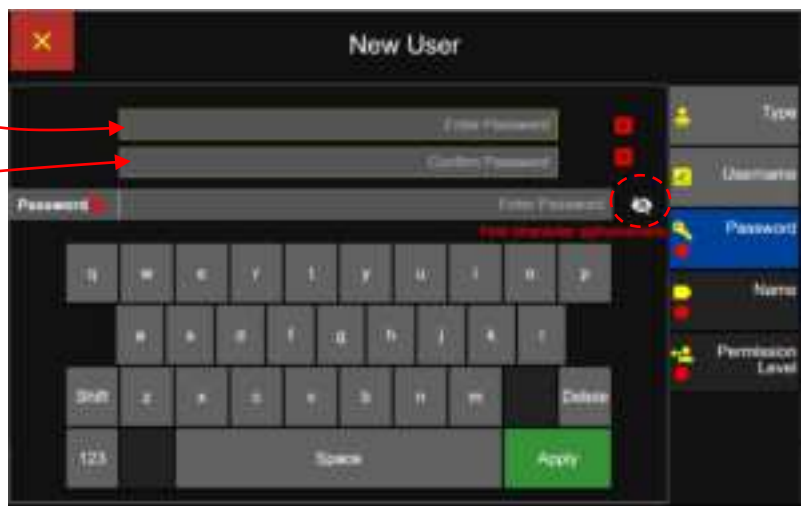
- Next Press the Password button.



Username Screen

Password

- Enter Password on the keyboard.
- Press the green apply button to confirm password entered.
- Re-enter the same Password to confirm password then press the green apply button again to confirm.

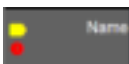


Password Screen

- Click here to toggle view/hide password.



- Next Press the Name button.



First and Last Name

- Press the Name tab below the Password button to advance to the First and Last Name screen.

AD users will have the First and Last names entered automatically.

- Enter First Name from the keyboard.
- Press Apply and the first name will be displayed above.
- Enter the Last Name from the keyboard.

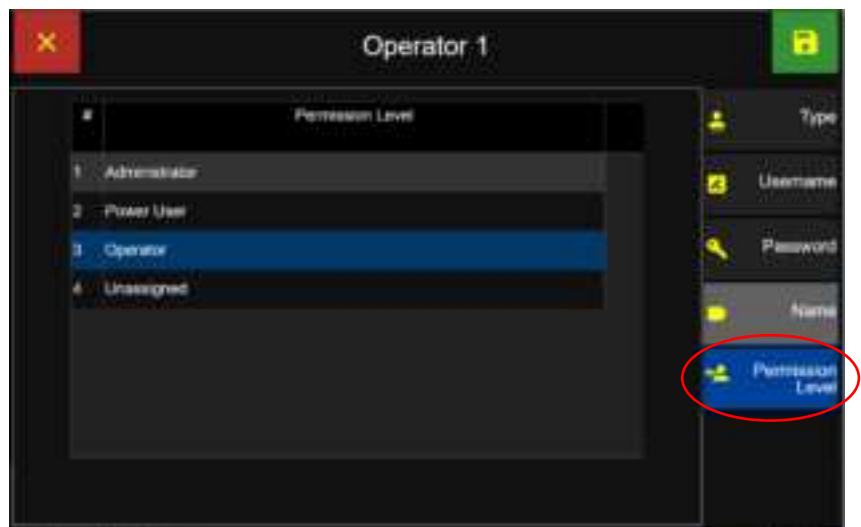


First and Last Name Screen

- Press Apply and the last name entered will be displayed in the last name box.
- After successfully applying the first and last name; Press the Permission Level button to select the permission level.

Permission Level

- Select a Permission Level, Administrator, Power User or Operator. The Permission Level will highlight blue indicating it has been selected.
- Press the green Save button to save the Permission Level and display the new user included on the user screen.

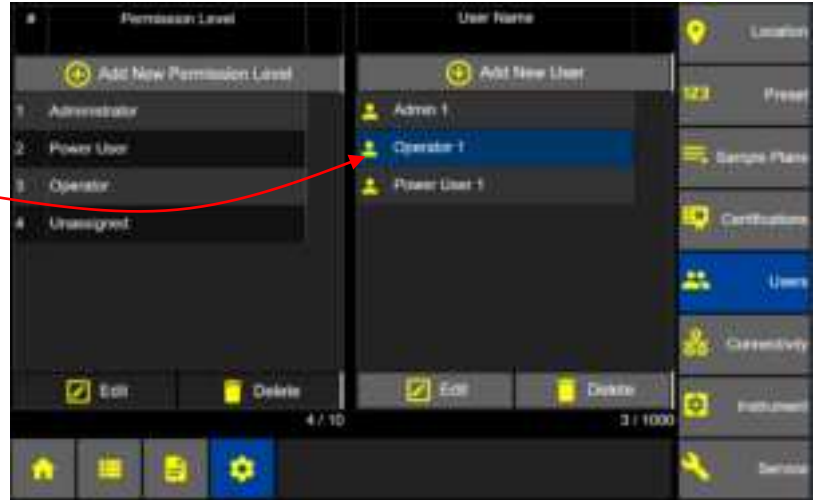


Select Permission Level Screen

Edit User

To edit users, an Administrator level user must be logged in. With Users disabled, only the Name and Permission Level for Users can be edited.

- From the User screen select a User to edit from the list and the username will highlight blue to indicate it has been selected.
- Press the Edit button to display the User setting tabs.



Users Screen



Enter User First Last Name

Note that the first three tabs Type, Username, Password are not available to edit. The tabs for Name and Group are available to edit.

- Press the Name button to edit the First and Last name.
- Press the Permission Level button to edit the user Permission Level.
- Press the green Save button to save the first and last name edits.

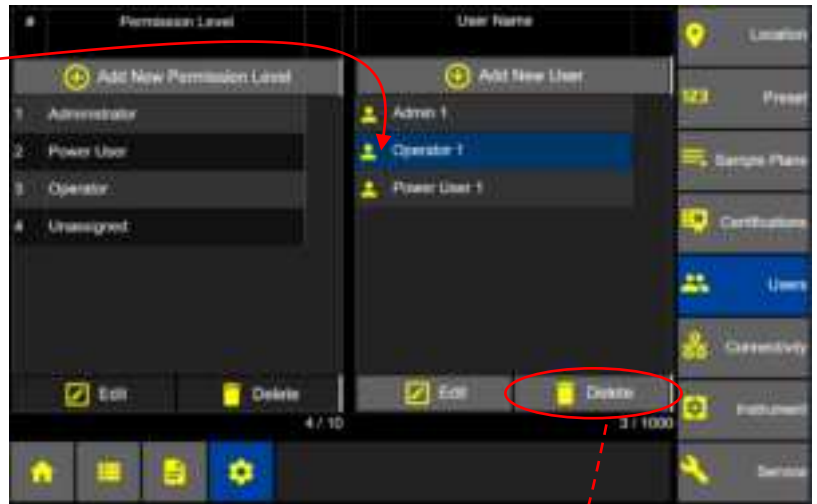


Note: Administrator level users can edit their own password but cannot edit other user passwords. If other users forget their password, then a logged in Administrator Permission Level User will need to recreate their account.

Delete User

- From the User Screen, select the username to delete. The selected username will highlight blue.
- Press the Delete button to delete the highlighted User.

The selected Username will pop up and require a confirmation to delete.



Users Screen

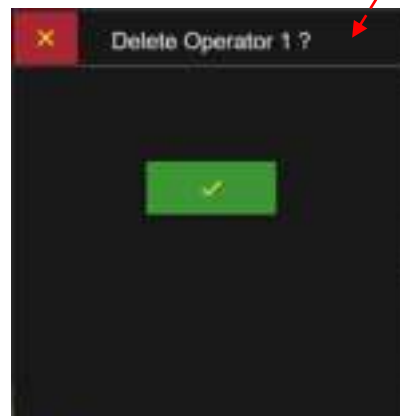
Delete User

- Press the green check box to delete User.



- Or press the red x button to cancel.

Cancel (Do not delete)



Confirm User Delete

User Login

When Users are enabled ApexZ will require a Username and Password login.

Enter Username and Password

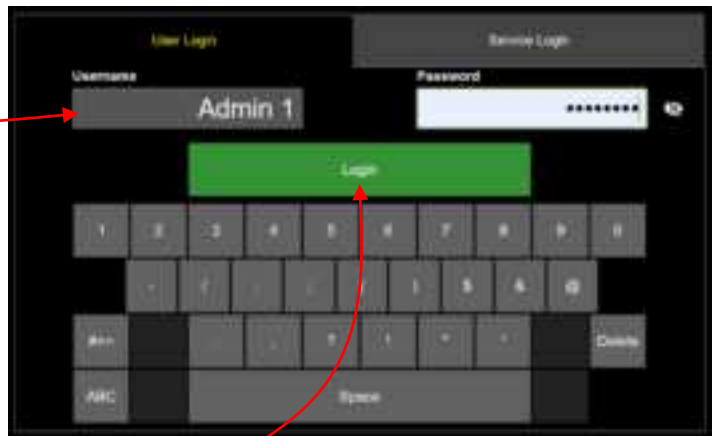
- Touch the Username box and the border will highlight yellow indicating it has been selected.
- **If Users are enabled**, then login with your local ApexZ Username and password.
- **If Active Directory is enabled**, then Users have the option to login with their network Active Directory username and password.



Login Screen

The username will display in the username box as you type.

- Touch the Password button and the border will highlight yellow indicating it has been selected.
- Enter your user password with the keypad.



Login Screen

The login button will illuminate green indicating it is ready to be selected.

- Press the green Login button to login to the ApexZ.

The logged in Username will be displayed on the Home page.



Home Screen

User Logout

- Press the Username button to display the Logout screen.

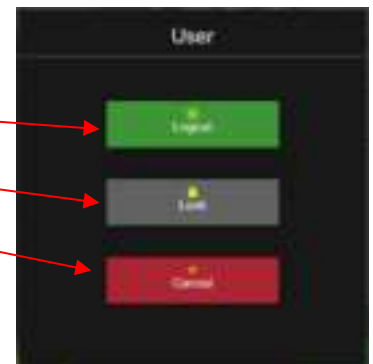
Note: If you press the Username button and it does not display the Logout screen check that Settings -> Instrument -> Options -> Users are "enabled".



Home Screen: User Enabled

Logout Screen when ApexZ is idle

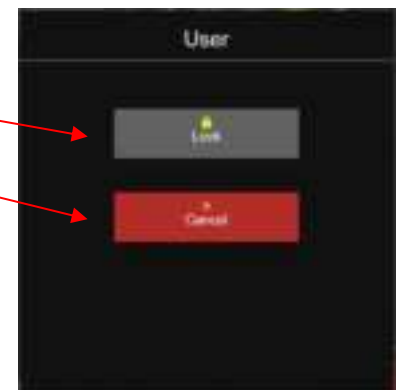
- Press:
Logout to logout.
Lock to lock the screen.
Cancel to remain logged in.



ApexZ Idle

Logout Screen when ApexZ is sampling

- Press:
Lock to lock the screen.
Cancel to remain logged in.



ApexZ Sampling

Administrator Permission Level

Administrator Permission level users have all ApexZ features enabled, and no features may be disabled. The default Administrator Permission level cannot be deleted.

Add new Permission Level

Three default Permission Levels are included with the ApexZ: Administrator, Power User, and Operator.

- Press the Add New Permission Level button to display the Add New Permission Level screen.

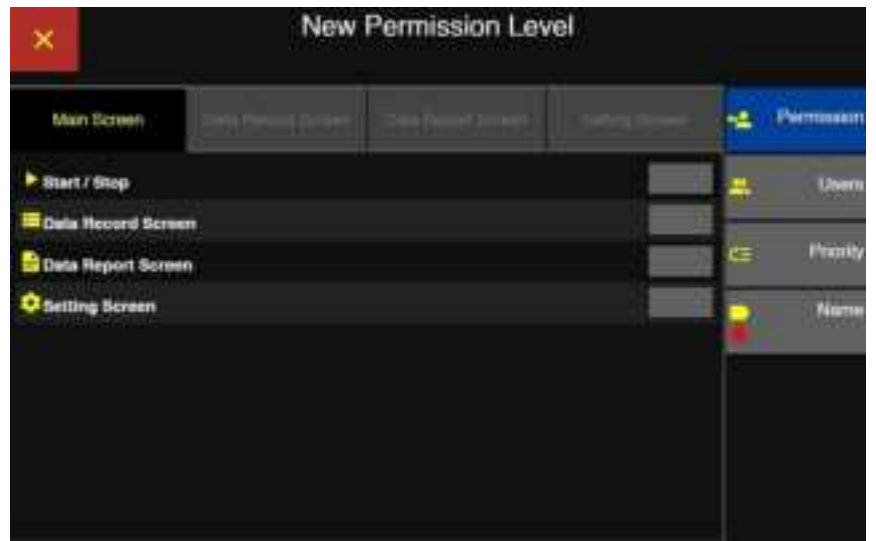


User Screen – Add New Permission Level

Permissions

Select to enable the screen tabs to edit permission levels.

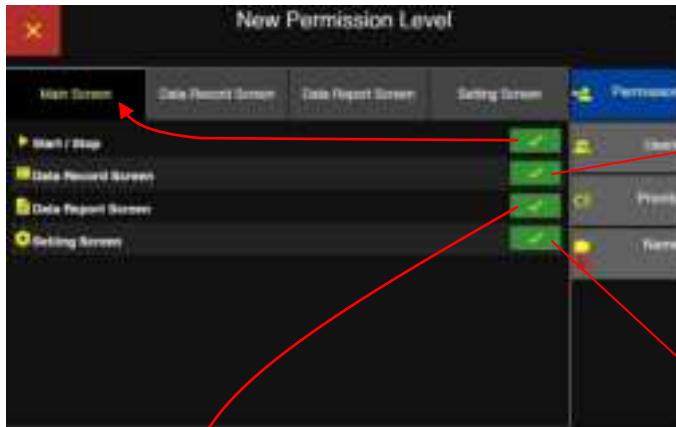
- Enable the Permission Level tabs by selecting the corresponding button to enable. Unavailable tabs will be grayed out.



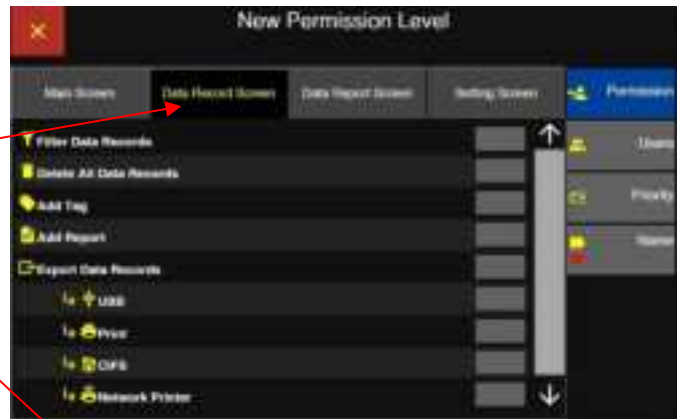
New Permission Level Screen

WARNING: Keep administrator-level username and password secure and retrievable. If the Administrator account login information is lost, functionality can only be restored by having the instruments firmware re-loaded. While a service technician can retrieve the instruments configuration before doing so, all data records WILL be lost.

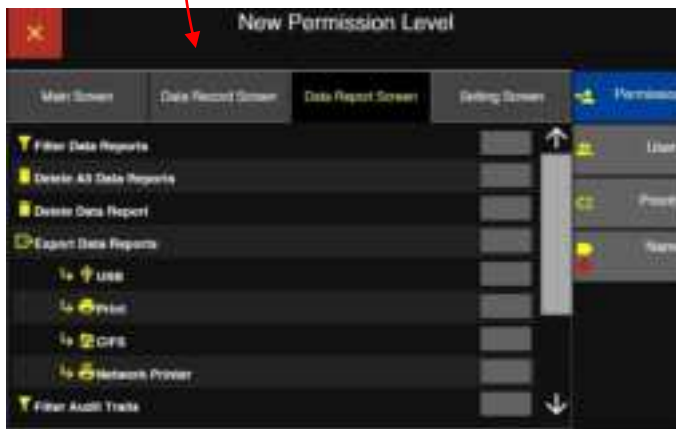
- Select the screen tab to edit permissions for that screen.
- Enable or disable any feature by pressing the button.
- The Main Screen options Data Record Screen, Data Report Screen, and Settings Screen control access to the tabs of the same names.



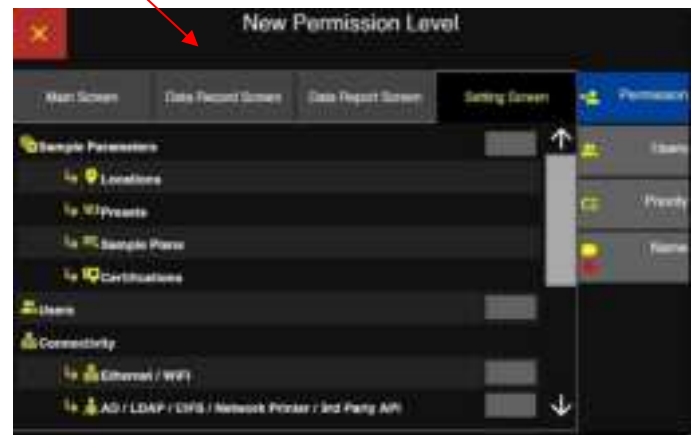
Permissions Main Screen



Data Record Screen



Data Report Screen



Setting Screen

Users

When creating a new Permission Level, this screen will not list any Users. After the Permission Level is created and saved, users can be added to the new Level by editing the User in the Users screen. Once added to a Permission Level, they will show up in the Permission Level User screen when editing the Permission Level.

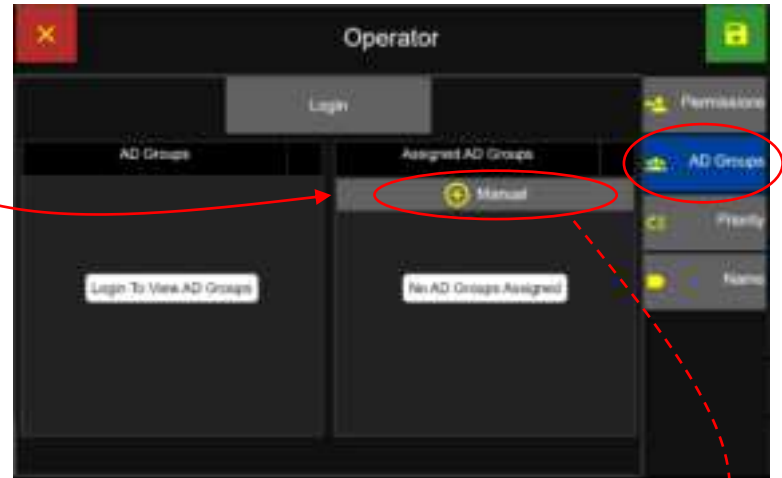
Assign AD Group to Permission Level

If AD Groups are enabled in the Settings->Instrument->Options screen, User tab, AD Groups will show instead of User in the Add New Permission Level screen.

Active Directory Group names can be manually assigned to a Permission Level or by logging into the network and selecting from a list of AD Groups.

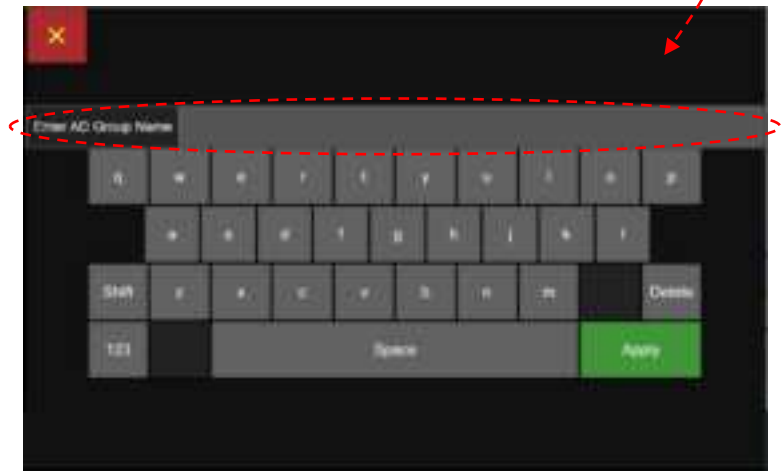
Manually Assign Permission Level

- Press the + Manual button to display the Enter AD Group Name screen.



Assign Active Directory Group to Permission Level

- Enter the AD Group Name to assign to the permission level.
- Press the green Apply button.

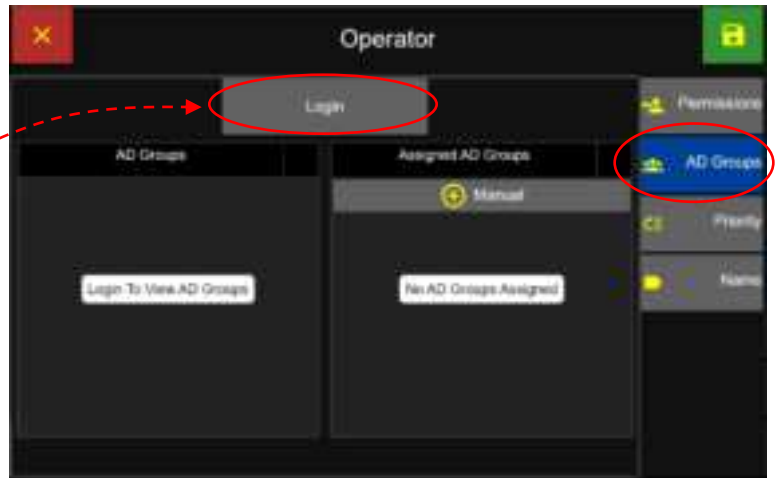


Enter Active Directory Group Name

Login to select AD Groups and assign Permission Levels

Note: To login and display network AD Groups the AD URL and Domain must be entered in the ApexZ Settings Connectivity AD/LDAP screen.

- With the ApexZ connected to the appropriate network, press the Login button to login to the Active Directory.

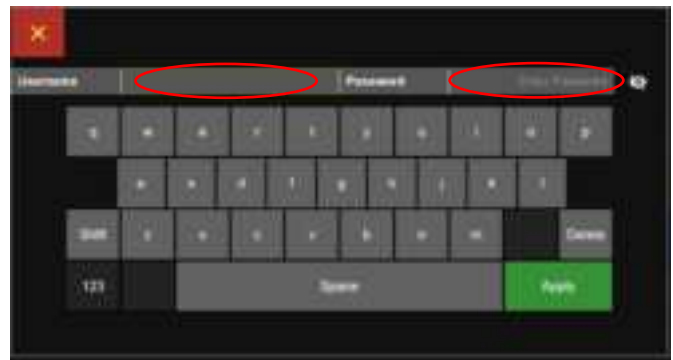


Assign Active Directory Group to Permission Level

- Enter the Active Directory Username and Password.
- Press the Apply button.



After a successful login AD Groups will display in the AD Groups list column.

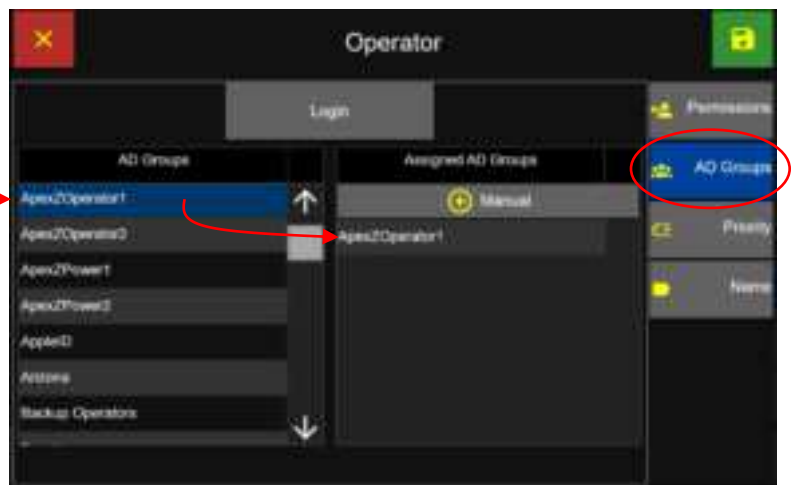


Active Directory: Username and Password

- Press an AD Group name and it will highlight blue and display in the Assigned AD Groups column.

This AD Group has now been assigned to this Permission Level.

- Press the green Save button to assign the AD Group to the Permission Level.



Assign AD Group to Permission Level

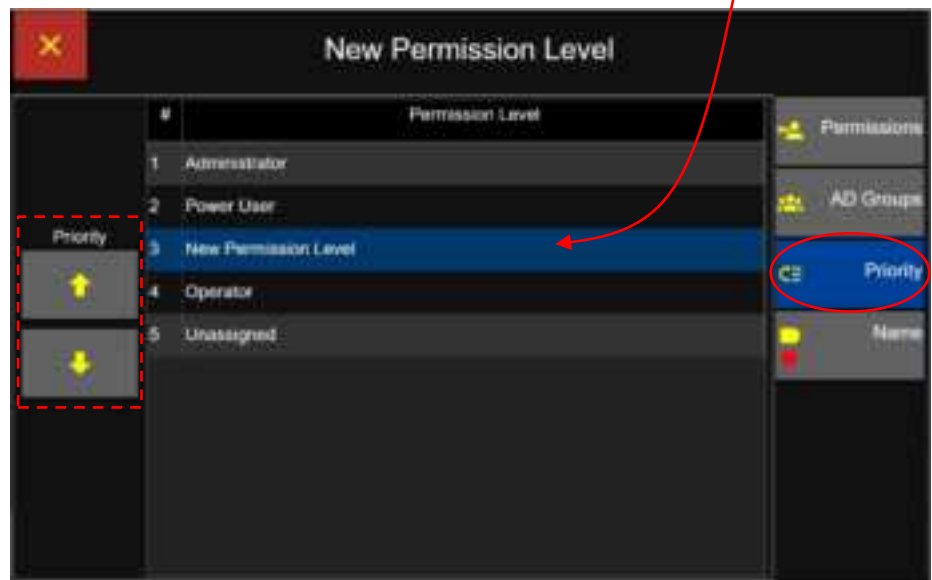
Prioritize Permission Levels

ApexZ can prioritize the permission levels created. This is because some users may appear in more than one Active Directory Group. If a user login appears in more than one Active Directory group (with different permission level settings) then the permission level assigned will be from the higher priority permission level setting on the Priority Screen.

- Select the Permission Level to adjust and it will highlight blue to indicate it has been selected.

- Press the up or down arrow buttons to move the selected permission level up or down the priority list.

The “Unassigned” Permission Level cannot be changed in Priority.

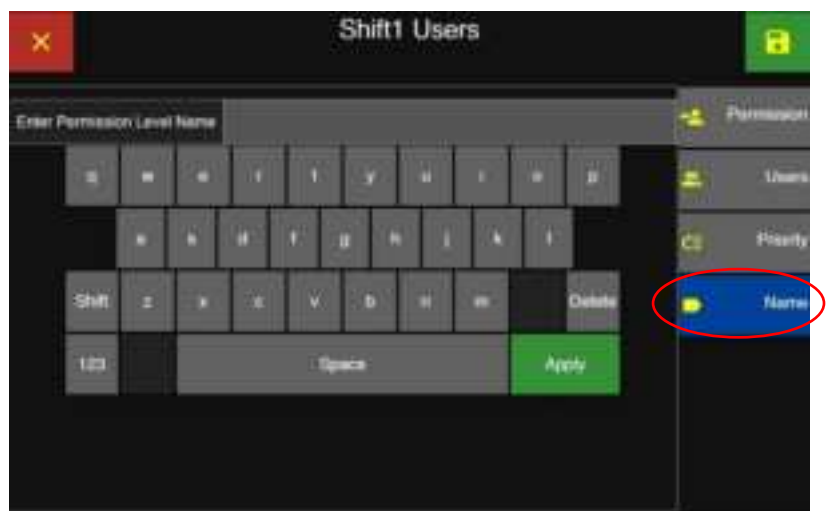


Priority - Permission Levels

Permission Level Name

Permission Level Names must be entered for any new Permission Level. Up to 64 characters can be entered. The new name cannot be the same as any currently existing Permission Level Name.

- Select the Name tab
- Enter Permission Level Name
- Press Apply
- Press Save



Permission Level Name

Edit Permission Level Settings

Editing Permission Level Settings is almost identical to the actions taken during creating a New Permission Level.

The settings for the default Administrator Level cannot be modified. If any Users have been assigned to the Administrator Level, all can be removed except for one. If the last User is then deleted, the ApexZ will be unable to activate Users in the Settings -> Instrument -> Options -> User screen until one user has been assigned to the Administrator Level.

- For all other Permission Levels, select the Permission Level to be edited then press the Edit button to bring up the options.



Settings – Users - Permission Levels

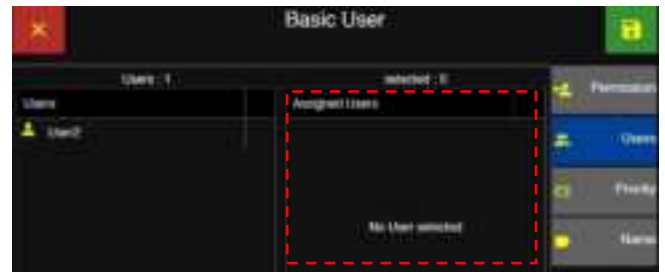
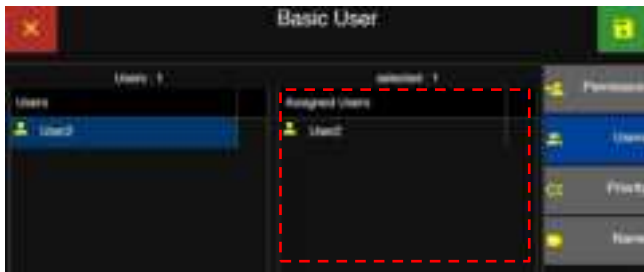
Options will be available to change which screens the Permission Level can access.

- The Data Record Screen, Data Report Screen, and Setting Screen options in the Main Screen tab must be enabled to allow accessibility to those tabs.



Enable Permission Level Access



In the Users screen, any Users assigned to the Permission Level will be listed in both the “Users” and “Assigned Users” columns. Selecting a User listed in the “Users” column will remove it from the “Assigned Users” column and pressing it again will replace it.



- Press the green Save button to save each new Permission Level settings.



Default Permission Levels

Permission levels:	Administrator (Enable Locked)	Power User (Enable/Disable)	Operator (Enable/Disable)	✓ Enabled
Main Screen				
Start & Stop	✓	✓	✓	
Data Screen	✓	✓	✓	
Report Screen	✓	✓	✓	
Settings Screen	✓	✓		
Data Screen	Administrator	Power User	Operator	☐ Disabled
Filter Data Records	✓	✓	✓	
Delete All Data Records	✓	✓		
Add Tag	✓	✓	✓	
Add Report	✓	✓	✓	
Export Data Records	✓	✓	✓	
Export – USB	✓	✓	✓	
Export – Print	✓	✓	✓	
Export – CIFS	✓	✓	✓	
Export – Network Printer	✓	✓	✓	
Data Report Screen	Administrator	Power User	Operator	
Filter Data Reports	✓	✓	✓	
Delete All Data Reports	✓	✓		
Delete Data Report	✓	✓		
Export Data Reports	✓	✓	✓	
Export Report – USB	✓	✓	✓	
Export Report – Print	✓	✓	✓	
Export Report – CIFS	✓	✓	✓	
Export Report – Network Printer	✓	✓	✓	
Filter Audit Trails	✓	✓	✓	
Export Audit Trails	✓	✓	✓	
Export Audit Trails – USB	✓	✓	✓	
Export Audit Trails – CIFS	✓	✓	✓	
Set Audit Trail Comments	✓	✓	✓	
Setting Screen	Administrator	Power User	Operator	
Sample Parameters	✓	✓		
Users	✓			
Ethernet / Wi-Fi	✓	✓		
AD/LDAP/CIFS/Network Printer/ 3 rd Party API	✓	✓		
Time	✓	✓		
Audio/Visual	✓	✓		
Options	✓	✓		
Output	✓	✓		
Configuration	✓	✓		
Service	✓	✓		

Service

- From the Settings screen press the Service button to view the Maintenance, About and Service Logon tabs.

Maintenance

- Press the Maintenance button to display the Firmware, Reset, and Calibration functions.

Firmware Update

- Insert a USB key with updated firmware into the ApexZ USB port.
- Press the Update Firmware button to display the Firmware Update confirmation screen.



Settings – Service - Maintenance – Firmware Screen

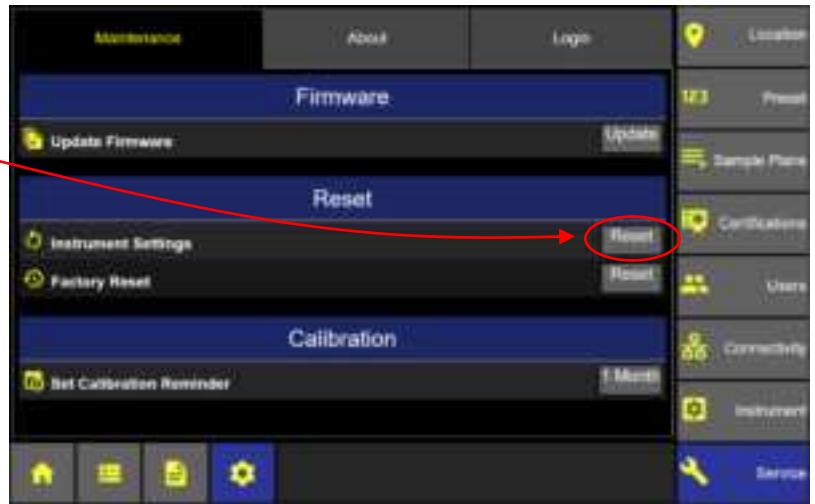
- Press the green check button to confirm and update the firmware on the ApexZ from the USB key. Leave the USB key in the unit until after the unit restarts and the Home Screen is displayed.
- Or press the red X button to cancel.



Firmware Update

Instrument Settings Reset

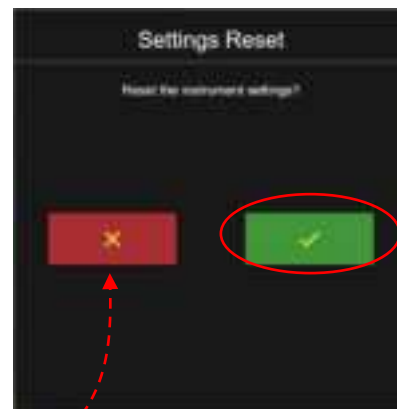
- Press the Settings, Service, Maintenance - Instrument Settings Reset button to reset all ApexZ Instrument Settings.



Settings – Service – Maintenance – Instrument Settings Reset

- Press the green check button to confirm and reset all the instrument settings.

Note: Instrument settings will be reset for Time and Date, Audio/Visual, Instrument Options including output options and data format. In addition, Connectivity settings for Ethernet, Wi-Fi, AD/LDAP and CIFS will be reset.



Settings Reset

- Or press the red X button to cancel.

Factory Reset

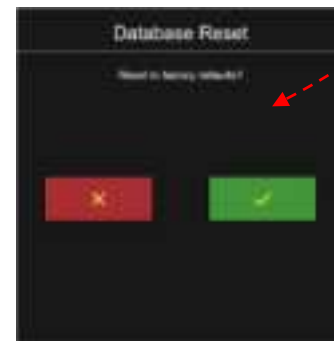
Pressing Factory Reset will DELETE all data on the ApexZ and return the instrument's configuration to its original factory default configuration. Users will be reset to the default "Administrator", "Power User" and "Operator" Permission Levels. There is no data recovery after a Factory Reset. All user created data will be deleted except for Audit Trail logs.

- Press the Factory Reset button and the Rest to factory defaults confirmation window will popup.



Settings – Service - Factory Reset

- Press the green check button to confirm factory reset
- Or press the red X button to cancel and NOT factory reset.



Factory Reset

Calibration Reminder

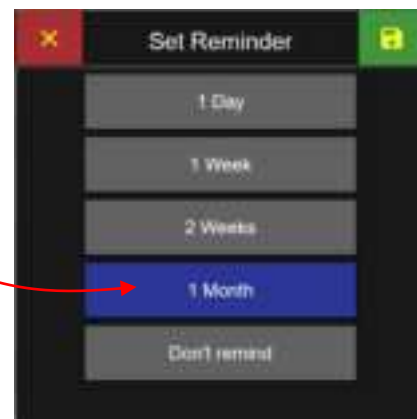
- Press the Calibration Reminder button to select the time period for a reminder status warning before the calibration due date. An orange warning will appear in the Self-Diagnostics Status display.

1 Day
1 Week
2 Weeks
1 Month
Don't remind

- Then press the green save button.



- Or press the red X button to cancel.



Calibration Due Reminder

About Screen

Instrument Name

- Press the Instrument Name button to enter a name for your ApexZ instrument.
- Use the elevator bar to scroll down and view the Instrument identification.

Model
Serial #
Sensor #
Calibration Due Date
Open-Source Libraries

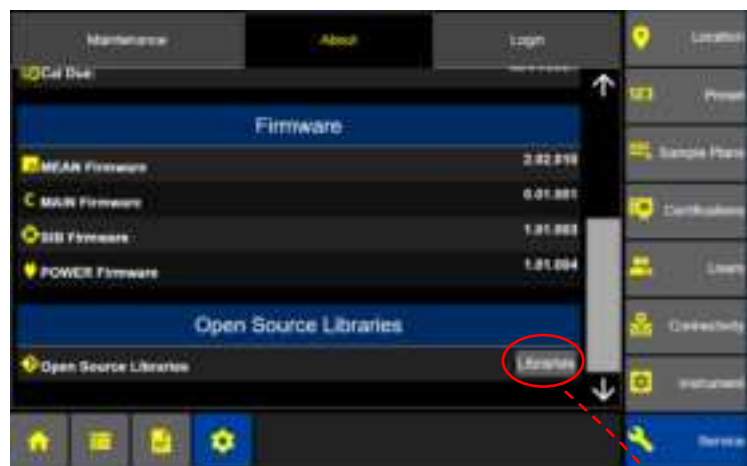


Settings – Service – About - Instrument

Firmware

- View the ApexZ firmware.

MEAN Firmware Version
MAIN Firmware Version
SIB Firmware Version
POWER Firmware Version



About – Open-Source Libraries

Open-Source Libraries

- Press on the Libraries button to view the open-source libraries used by ApexZ.

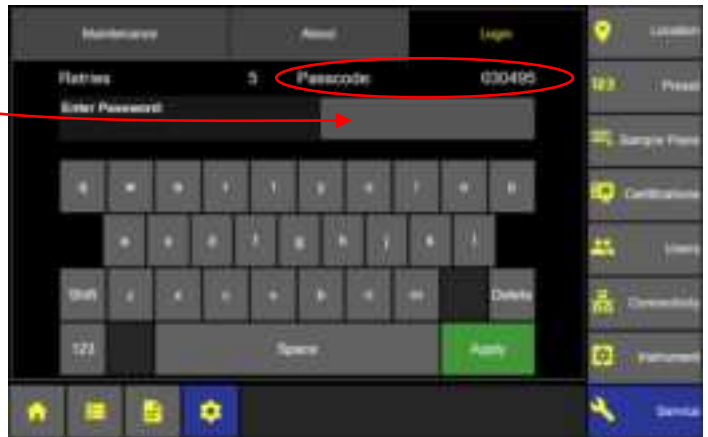


Open-Source Libraries

Service Login

- Press the Settings then Service button to display the Service Login screen.
- Note the ApexZ Passcode number and use this code to get a password from Lighthouse Worldwide Solutions Service Department calibration website.
- Use the keypad and enter the password from the LWS Service Department here.
- Press the green Apply button.

Follow ApexZ Service Manual for instructions on how to change ApexZ service parameters.



Settings – Service – Login

Calibration

Calibration – Contact Authorized Facility

ApexZ3 is factory calibrated to 1 CFM (1 cubic foot per minute).

ApexZ50 is factory calibrated to 100 LPM (100 liters per minute, 3.53 cubic feet per minute).

Contact a factory authorized facility to calibrate the ApexZ.

Calibration – Due Date

To display calibration due date, see the Settings-Service-About screen.

ApexZ calibration is valid for 1 year from date of calibration.

After the ApexZ calibration data has passed, all records will be shown with a strike-through on the data to indicate that the data is not valid.

Trouble Shooting

Sensor Cleanliness

When not in use, place a protective cap over the ApexZ Inlet Nozzle.

When using aerosol cleaning solutions:

- Ensure that the ApexZ unit is not sampling AND has its Inlet flow path capped. This will prevent the aerosol solution from entering and contaminating the sensor, which can lead to negative impacts on data accuracy and sizing.

Printer:

Printer paper not advancing while printing could be the printer door is not closed.

- If the printer door is not closed then the paper will not advance but the printer will continue to print. Quickly close the printer door and printing will advance the paper properly.

Printer printing but no ink is printing on the paper could be the printer paper is loaded backwards.

- If the printer paper is load backwards the paper may still advance forward but no report data will print on the paper. After printing has stopped, simply open the printer door, remove the paper roll and reverse so that the paper feeds up from the back side of the roll and out the top of the printer. (see section: Printer Paper Installation)

Printer paper looped back into the printer housing!

- If the advancing printer paper loops back into the printer housing it may cause a paper jam.
- If this happens it is recommended to stop the printing. Simply open the printer door at any time and printing will pause. You can adjust the printer paper and close the printer door.
- Printing will resume where it left off.

Printer paper not straight

- If the printer paper is not straight or misaligned simply open the printer door and printing will stop.
- Realign the printer paper so it is feeding straight and correctly.
- Line up the left and right edges with the printer door exit slot.
- Close the printer door. If printing was interrupted then it will resume.
- See Section: Printer Paper Installation

Clean and Disinfect

External Enclosure

The following cleaning agents are acceptable for cleaning ApexZ polycarbonate exterior surfaces.

Spor Klenz
Bleach
Hydrogen Peroxide
IPA

Warnings

To minimize the chance of electric shock, turn off and disconnect the power adapter during sterilization. Ensure the Inlet Nozzle is capped during any cleaning process.

Do not submerge ApexZ in any liquids.

Do not spray disinfectant solution directly into ApexZ enclosure.

Do not use gases to disinfect ApexZ.

Lighthouse will VOID the warranty if an unsuitable disinfectant solution damage the ApexZ instrument.

Zero-Counting

The Zero-Count Test is useful in providing confidence that counts in one sampling environment are not carried over into another environment.

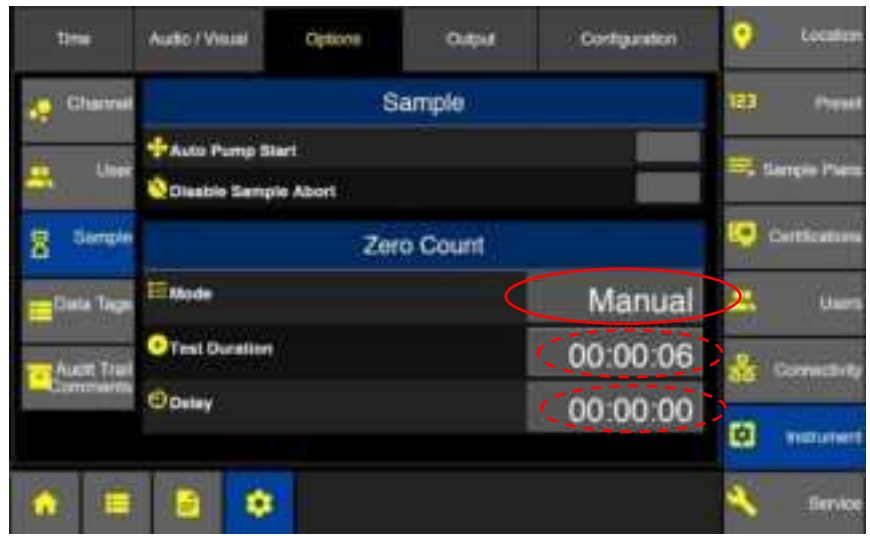
Zero-Count Modes

The Zero-Count Mode button is located at Instrument – Options – Sample and displays 3 Zero-Count mode options.

Disabled: The Zero-Count button will not display on the Home screen.

Manual: Zero-Count button will display and run for the sample time when pressed.

Auto: In Auto mode, Zero-Counting will be successful after sustaining a full sample period with no counts. During the test, the timer progress bar will reset to 0 if a count is detected.



Instrument - Options – Sample – Zero Count Mode

- Select desired Zero-Count mode.
- Then press the green save button.



Select Zero-Count Mode

Test Duration

- Press the Test Duration button to enter your desired Zero-Count sample time with the pop-up numeric keypad.

Delay Time

- Press the Delay button to enter the desired delay time. Delay Time will start after pressing the zero-count start button on the Home screen. The Zero-Count Sample time will start immediately after the delay time is completed.

Zero-Count on the Home Screen

When the Zero-Count Mode is set to Manual or Auto, the Zero-Count button will be available on the Main Screen next to the normal Sample Start/Stop button.

In **Manual mode**, pressing the Zero-Count Start button will cause the unit to run one sample with the Duration and Delay time as set in the Zero-Count settings screen.



Start/Stop Zero-Count
(not displayed when disabled)

Home Screen



Manual Mode Zero-Count running.
Total time elapsed



Auto Mode Zero-Count Running
Sample time remaining



In **Auto Mode**, pressing the Zero-Count Start button will cause the unit to run with the Duration and Delay time as set in the Zero-Count settings screen. However, upon registering particle counts, the Sample Time (top timer line) will reset. The sample will only finish after completing the set Test Duration without particle counts. The total accumulated time the test ran will be shown on the second line of the timer, as shown above.

Trouble Shooting

Sensor Cleanliness

When not in use, place a protective cap over the ApexZ Inlet Nozzle.

When using aerosol cleaning solutions:

- Ensure that the ApexZ unit is not sampling AND has its Inlet flow path capped. This will prevent the aerosol solution from entering and contaminating the sensor, which can lead to negative impacts on data accuracy and sizing.

Printer:

Printer paper not advancing while printing could be the printer door is not closed.

- If the printer door is not closed then the paper will not advance but the printer will continue to print. Quickly close the printer door and printing will advance the paper properly.

Printer printing but no ink is printing on the paper could be the printer paper is loaded backwards.

- If the printer paper is load backwards the paper may still advance forward but no report data will print on the paper. After printing has stopped, simply open the printer door, remove the paper roll and reverse so that the paper feeds up from the back side of the roll and out the top of the printer. (see section: Printer Paper Installation)

Printer paper looped back into the printer housing!

- If the advancing printer paper loops back into the printer housing it may cause a paper jam.
- If this happens it is recommended to stop the printing. Simply open the printer door at any time and printing will pause. You can adjust the printer paper and close the printer door.
- Printing will resume where it left off.

Printer paper not straight

- If the printer paper is not straight or misaligned simply open the printer door and printing will stop.
- Realign the printer paper so it is feeding straight and correctly.
- Line up the left and right edges with the printer door exit slot.
- Close the printer door. If printing was interrupted then it will resume.
- See Section: Printer Paper Installation

Clean and Disinfect

External Enclosure

The following cleaning agents are acceptable for cleaning ApexZ polycarbonate exterior surfaces.

Spor Klenz
Bleach
Hydrogen Peroxide
IPA

Warnings

To minimize the chance of electric shock, turn off and disconnect the power adapter during sterilization.
Ensure the Inlet Nozzle is capped during any cleaning process.
Do not submerge ApexZ in any liquids.
Do not spray disinfectant solution directly into ApexZ enclosure.
Do not use gases to disinfect ApexZ.
Lighthouse will VOID the warranty if an unsuitable disinfectant solution damage the ApexZ instrument.

Terminology

Button:	Area on the touch screen the user can press and ApexZ will accept input and commands.
Enable:	Green box with yellow check mark: this button indicates enabled.
Disable:	Light gray box: this button indicates disabled.
Enter with the keypad:	Touch the screen keypad with your finger and type the required input. You may need to press the green Apply button after entering text or numbers.
Inactive Button:	Button has a dark background color indicating the button is inactive and will not respond when pressed.
Press:	Touch the screen with your finger.
Select:	Touch the screen with your finger.
Toggle button:	This is a button that displays only 2 options, touch or slide to change between options.

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