



PCE-PQC Series
Remote Particle Counters
User's Manual

Version 1.0

PCE Deutschland GmbH, 2019 Telif Hakkı, Tüm Hakları Saklıdır. Bu yayının hiçbir kısmı, PCE Deutschland GmbH şirketinin önceden yazılı izni olmadan çoğaltılamaz, bir geri alma sisteminde saklanamaz veya herhangi bir yolla, elektronik, mekanik, fotokopi, kayıt veya başka şekillerde iletilemez. Belge PCE Deutschland GmbH şirketinin ticari sırlarını oluşturmaktadırPCE Deutschland GmbH tarafından yazılı olarak izin verilmedikçe bu bilgilerin ifşa edilmesine veya açıklanmasına izin verilmez. Burada yer alan bilgilerin kullanımı ile ilgili olarak hiçbir patent sorumluluğu kabul edilmez. Bu kılavuzun hazırlanmasında her türlü önlem alınmasına rağmen, PCE Deutschland GmbH hatalardan veya eksikliklerden sorumlu değildir. Burada yer alan bilgilerin kullanımından kaynaklanan zararlar için hiçbir sorumluluk kabul edilmez.

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Bu ürünün kazası, kötüye kullanılması veya kötüye kullanılması veya yetkisiz kullanılması, bu üründe tadilat, tamir veya değişiklik yapılması veya PCE Deutschland GmbH işletme ve bakım talimatlarına kesinlikle uymama vb.

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PCE Instruments, PCE Deutschland GmbH şirketinin tescilli ticari markasıdır.

MODBUS, Schneider Automation şirketinin tescilli ticari markasıdır.

Microsoft™, Windows™ ve Excel™, Microsoft Corporation şirketinin ticari markalarıdır.

DİKKAT: Bu kılavuzun içeriği, önceden bildirilmeksizin değiştirilebilir.

Ürün Adı: PCE Deutschland GmbH PCE-PQC Serisi Uzak Partikül Sayaçları

Model Numaraları: PCE-PQC 30, PCE-PQC 31, PCE-PQC 32 ve PCE-PQC 33

Aşağıdaki standartlar sadece etiketli olan partikül sayaçlarına uygulanır. EMC, PCE Instruments güç kaynakları kullanılarak test edilir.

Kuzey Amerika: EMI: FCC / ICES -003 Sınıf A

Amerikan Kullanıcılar için FCC Uyumluluk Beyanı

Bu ekipman test edildi ve FCC Kurallarının A Sınıfı bir dijital cihazın sınırlarına uygun olduğu tespit edildi. Bu sınırlar, ekipman ticari bir ortamda çalıştırıldığında zararlı parazitlere karşı makul koruma sağlamak için tasarlanmıştır. Bu ekipman, radyo frekansı enerjisi üretir, kullanır ve yayabilir ve kullanım kılavuzuna uygun şekilde kurulup kullanılmazsa, radyo iletişimde zararlı girişime neden olabilir. Bu ekipmanın bir yerleşim bölgesinde çalıştırılması zararlı parazitlere neden olabilir.

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Önemli Güvenlik Bilgileri

Bu bölüm, bu ürünün güvenli ve verimli kullanılmasını sağlamaya yönelik önemli bilgiler sunar. Lütfen bu bölümü dikkatlice okuyun ve erişilebilir bir yerde saklayın.

- Patlayıcı, yanıcı veya reaktif gazların yakınında kullanmayın
- Doğrudan basınçlı gazlara veya sıvılara bağlamayın
- Elektronik aletleri uygun olmayan şekilde atmayın, yalnızca yerel yasal gerekliliklere uygun şekilde imha edin veya takas seçeneği için PCE Instruments ile iletişime geçin.
- Arızalı veya çalışmayan Lityum-İyon piller geri dönüştürülmeli, çöpe atılmamalıdır
- Bu cihaz normal çalışma sırasında erişilemeyen bir Sınıf I lazer ürünü içerir, bu cihazı parçalara ayırmayın, zararlı lazer radyasyonuna maruz kalabilir
- Cihazı sökmek tüm garantileri geçersiz kılar
- Bu cihazı, ortamdaki parçacıkların ölçülmesinden başka bir amaç için kullanmayın.
- Aleti giriş kapağı kapalı veya tıkalı iken çalıştırmayınız, çünkü bu vakum pompasına zarar verebilir
- Su veya başka bir sıvının partikül sayacının girişine girmesine izin vermeyin; bu üniteye zarar verir

PCE Instruments ekipmanında açıkça PCE Instruments tarafından açıkça onaylanmayan her türlü değişiklik, kullanıcının ekipmanı çalıştırma iznini geçersiz kılabilir, ciddi yaralanma riskine neden olabilir ve tüm garantileri geçersiz kılabilir

Bu kılavuzdaki semboller, aşağıda tanımlandığı şekilde önem derecelerine göre tanımlanmıştır. Ürünü kullanmadan önce aşağıdakileri dikkatlice okuyun.



DİKKAT:

Ciddi bedensel yaralanmayı önlemek için uyarılara dikkatle uyulmalıdır.



UYARI:

Kendinize küçük yaralanmalar veya ekipmanınızın zarar görmemesi için dikkatli olunmalıdır.

NOT: Bu ürünlerdeki lazer, kullanıcı tarafından servis edilebilecek parçaları olmayan bir sensöre tamamen yerleştirilmiştir. Ek olarak, emisyon seviyesi tüm işletme, bakım, servis ve arıza koşulları altında Sınıf 1'in AEL (Erişilebilir Emisyon Sınırı) seviyesini aşmamaktadır.

2 Ergonomik Öneriler



UYARI: Ergonomik yaralanma riskini önlemek veya azaltmak için aşağıdaki önerileri izleyin. Çalışanların yaralanmasını önlemek için şirketinizin güvenlik programlarına uyduğunuzdan emin olmak için yerel Sağlık ve Güvenlik Yöneticinize danışın.

- Tekrarlayan hareketi azaltmak veya ortadan kaldırmak
- Aleti tutarken doğal pozisyonu koruyun
- Aşırı kuvveti azaltmak veya ortadan kaldırmak
- Sık kullanılan nesnelere kolayca erişilebilecek bir yerde tutun
- Görevleri doğru yüksekliklerde gerçekleştirin
- Bağımsız bir modda cihazla bir tripod veya dahili stand kullanın

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1-3 Warnings for Use of Wireless Devices



Lütfen isteğe bağlı Wi-Fi haberleşme modülünün kurulu olduğu PCE Instruments partikül sayaçlarının kullanımıyla ilgili tüm uyarı bildirimlerine uyun.

Hastanelerde Güvenlik

Kablosuz cihazlar, radyo frekansı enerjisi iletir ve elektrikli tıbbi ekipmanı etkileyebilir. Hastanelerde, kliniklerde veya sağlık tesislerinde, istendiğinde, kablosuz cihazlar kapatılmalıdır. Bu istekler hassas tıbbi cihazlarla parazit olasılığını önlemek için tasarlanmıştır.

Kalp Pilleri

Kalp pili üreticileri, kalp pili ile olası bir girişimi önlemek için bir kablosuz cihaz ile bir kalp pili arasında en az 15 cm (6 inç) tutulmasını tavsiye eder. Bu öneriler, bağımsız araştırma ve Kablosuz Teknoloji Araştırması önerileri ile tutarlıdır. Bu öneriler

Kalp pili olan kişiler:

- HER ZAMAN cihazı kalp pilinden en az 6 cm (15 cm) uzakta tutmalıysa
- Cihazı göğsünüzde taşımamalıdır
- Parazit olasılığını en aza indirmek için kalp pilinin en uzağındaki kolu kullanmalı

Girişim olduğundan şüphelenmek için herhangi bir nedeniniz varsa, cihazınızı **KAPATIN Diğer Medikal Cihazlar**

Please consult your physician or the manufacturer of the medical device to determine if the operation of your wireless product may interfere with the medical device.

4 Genel Bakış

Thank you for purchasing a PCE Instruments particle counter, the most advanced battery powered, remote instrument available.

This user manual will provide the detailed explanation and instructions for the proper use and operation of this feature-rich particle counter.

The PCE Instruments particle counters have a large dynamic range measuring from 0.3 µm to 25.0 µm, with true variable binning for channel size adjustment settings to 0.01 µm. This instrument utilizes 7 or more processors to maintain and manage the various functions of operation. The advanced processing also allows for many operations to take place simultaneously, even while the unit is sampling. This includes adding annotations to the current sample in progress, or adding annotations to previously recorded data while sampling is in progress.

The Real-Time Meter function is unique in its ability to fine-tune the instrument's sensitivity in order to locate particulate sources with visual and audible indications. This versatile particle counter's ability to count higher than typical particle concentrations allows the Real-Time Meter to find point source contamination in cleanrooms as well as locating higher particle concentrations being generated in many industrial environments.

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This instrument also has a mass concentration mode, providing for particle mass monitoring of an environment for industrial health and safety regulatory purposes. The unit can measure all (6) adjustable particle size channels and capture PM levels indicated in $\mu\text{g}/\text{m}^3$ with values corrected for particle density and refractive index correction.

The technology designed into these particle counters includes advanced power management functions, which includes the industry's first sleep mode. This permits the instrument to take intermittent samples over the course of a few months, minimizing power consumption and increasing system life.

The PCE Instruments particle counters have versatile communication methods and protocols including: Modbus TCP, USB Host, USB Client and (optional) Wi-Fi, (optional) MODBUS RTU and ASCII.

The remote web server hosting feature allows for monitoring and control of the particle counter from any PC, smartphone or tablet simply by inputting the IP address of the particle counter on the local area network and entering it into any browser. The main processors allow for multiple connections, all with simultaneous access to review, monitor and control the operation of the instrument.

Thank you,



5 Specifications

Size Channels (Model PCE-PQC 30 & 32)	Factory calibrated at 0.3, 0.5, 1.0, 2.5, 5.0, 10.0 μm variable binning
Size Range (Model PCE-PQC 30 & 32)	0.3 to 25 μm
Counting Efficiency (Model PCE-PQC 30 & 32)	50% @ 0.3 μm ; 100% for particles >0.45 μm per JIS
Size Channels (Model PCE-PQC 31 & 33)	Factory calibrated at 0.5, 0.7, 1.0, 3.0, 5.0, 10.0 μm variable binning
Size Range (Model PCE-PQC 31 & 33)	0.5 to 25 μm
Counting Efficiency (Model PCE-PQC 31 & 33)	50% @ 0.5 μm ; 100% for particles >0.75 μm per JIS
Flow rates	0.1 CFM (2.83 LPM) (Models PCE-PQC 30 & 31 use an internal pump)
Light Source	Long life laser diode
Zero Count	<1 count / 5 minutes (<2 particles / ft^3) (per ISO 21501-4 & JIS)
Count Modes	Cumulative/differential, mass concentration, count or concentration

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Count Alarms	1 to 9,999,999 counts
Calibration	NIST traceable
Display	4.3" (10.9 cm) WQVGA (480×272) color touch screen
Printer (Optional)	External thermal printer
Vacuum Requirements (Models PCE-PQC 32 & 33)	External vacuum >15" (38.1 cm) of Hg
Vacuum Source (Models PCE-PQC 30 & 31)	Internal 0.1 CFM pump assembly (Part Number: UM-27100A)
Filtered Exhaust (Models PCE-PQC 30 & 31)	Internal HEPA filter
Number of Channels	6
Custom Size Channels	Calibration for custom size channels available
Audible Alarm	Adjustable built-in alarm
Reports	ISO 14644-1, EU GMP Annex 1, FS 209E
Recipes	50 user-configurable recipes
Communication Modes	Ethernet and USB
Optional Communication Modes	Wireless 802.11 b/g, RS485 or RS232
Environmental Sensor	Optional temperature and relative humidity probe 32° to 122°F (0° to 50°C) ±1°F (0.5°C), 15-90% ±2% relative humidity (optional)
Alarm	Alarms on counts for all particle sizes, low battery, sensor failure, environmental sensors and flow
Standards	ISO 21501-4 and JIS B9921

Calibration	Recommended minimum once per year
External Surface	Stainless Steel
Dimensions (L x W x H)	5.2" x 2.3" x 8.9" (13.3 cm x 5.8 cm x 22.6 cm) includes barb fittings
Weight	2.6 lb (1.18 kg)
Accessories	Operating manual on USB flash drive, isokinetic probe, IMS software, & power supply
Optional Accessories	Printed manual, external printer, wall mount bracket, purge filter assembly, USB cable, barbed inlet fittings and isokinetic probes
Buffer Memory	45,000 sample records (rotating buffer) including particle count data, environmental data, locations and times. Scrollable on screen or printout.
Sample Locations	Up to 1,000 locations 20 characters long
Sample Time	1 second to 99 hours
Power	110 to 240 VAC 50/60 Hz universal in-line power supply
Operating Conditions	41° to 104°F (5° to 40°C) / 20% to 95% non-condensing
Storage Conditions	32° to 122°F (0° to 50°C) / Up to 98% non-condensing
Warranty	1 Year. Extended warranties available.

Please note that specifications are subject to change without notice.

1-6 Product Views



Front View



Optional Temp & RH Probe

4.3" Color Touch Screen Display

Side View

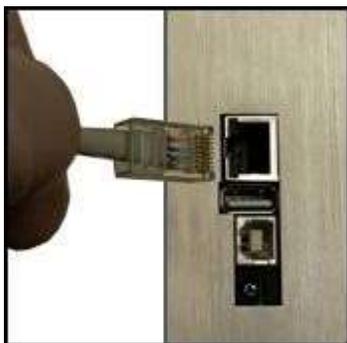


External Vacuum Connection Port
(not present for internal pump models)

1/8" Barbed Fitting

External Power Connection
USB-B Client Connection
USB-A Host Connection
Ethernet RJ45 Connection

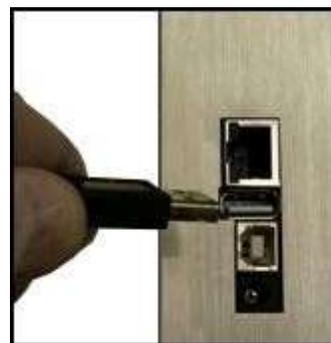
Connecting Ethernet Cable



Connecting USB - B Client



Connecting USB - A Host



Universal Sensor Port Isokinetic Probe

2-1 Unpacking and Inspecting the Instrument

Careful consideration was given to our packing material to ensure that the PCE Instruments remote particle counter will reach you in perfect condition. If the instrument has been subject to excessive handling during shipping, there may be visible damage to the shipping carton. In the event of damage, keep the shipping container and packing material for the carrier's inspection. Carefully unpack the instrument from its shipping container and inspect the contents for damaged or missing items. If the instrument appears damaged or something is missing, contact the carrier and PCE Instruments immediately. Please save the container and packing material in case you have to return the instrument.

2-2 Registering Your Product

All PCE Instruments particle counters are automatically registered upon sale for the warranty period, and tracked by Serial number.

2-3 Contacting PCE Instruments

To order accessories, receive technical assistance, report damaged or missing items from your shipment, or get contact information for your nearest PCE Instruments authorized reseller, call - Germany: +49 2903 976990 / USA: +1 (561) 320-9162

2-4 Storing and Shipping the Instrument

If the instrument needs to be packed and shipped for annual calibration or service, it is recommended to use the original packing materials. If they are not available, please insure that the instrument is packaged in a box that is sturdy and that the instrument is well protected with proper packing materials to cushion and protect it from harm during transit.

To store the instrument, place it in its optional case or in a box, under cover, in an environment as stated in the Specifications in Section 1-5.

2-5 Power Considerations and Connecting to AC Power

The PCE Instruments instrument comes with a power adapter line cord for AC powered operation. The power adapter is designed to operate with line voltage from around the world. The correct plug adapter must be used to match your local AC power adapter standard. If the instrument power adapter does not have the proper plug configuration, please contact PCE Instruments or an authorized reseller for service.

To install the country specific plug adapter, simply slide the adapter into the power supply as shown.



2-6 Turning the Unit On

The PCE-PQC Series instruments are designed to operate as fixed installed instruments, and automatically power on when power is applied to the external power connector. The instrument can be powered down from the Power Management Screen (see section 7.1) but will only power back up if the power connection is removed and reconnected.

3-1 Control and Menu Icons (ALL MODELS)



Function Name	Location/Screen	Description of Function
PCE Logo Icon	Home Screen	Press the logo and the product information screen will appear displaying your model number, serial number, manufacture date, last calibration date, next calibration due date, and number of channels activated on the unit. Press the Back Arrow icon on bottom left corner of the display to return to Home screen.
Speaker Icon	Home Screen	Press the speaker icon to adjust volume using a pop-up slider bar. Press the cross bar on slider and move up and down for volume control. Icon will have red prohibited symbol when sound is turned off or muted.

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12:30:01 PM



Temperature & RH Indicator	Home Screen	Press the temperature and RH value indicator, to open a larger screen that displays Temperature, Relative Humidity, and the current Barometric Pressure. Press the Back Arrow icon on bottom left corner of the display to return to Home screen.
Time and Date Indicator	Home Screen	Press the time and date to change the current time and date.
Power Management Icon	Home Screen	Press the power adapter indicator to display the power management screen.
USB Icon	Home Screen	If a USB drive is connected, the USB Icon will appear. Press the USB Icon to save the current record to the USB drive.
Printer Indicator	Home Screen	If the PCE Instruments Printer is connected to USB Port, press the Printer Icon to print the current record.
System Warning Indicator	Home Screen	When the System Warning Indication Icon appears, press to display additional information. Please contact PCE Instruments technical service for assistance should the Icon remain visible.



Function Name	Location/Screen	Description of Function
Alarm Indicator	Home Screen	Visual indication that the instrument has exceeded the user-defined thresholds. Press icon to silence the alarm.
Run Icon	Home Screen	Press the Run icon to start sampling. Once pressed the Run icon will be replaced by the Stop icon.
Stop Icon	Home Screen	Press the Stop icon to stop the instrument from sampling.



Location 2 ▾

Display Mode Icon	Home Screen	Press the Display Mode icon to switch between the Main Screen, Real-Time Meter, Graphing, and PM screen (must enable Mass Mode by going to Settings, then Channel Management for PM Screen).
Recorded Data Icon	Home Screen	Press the Recorded Data icon to display the saved data records page. All saved records can be accessed from this screen.
Reports Icon	Home Screen	Press the Reports icon to display ISO 14644-1, EU-GMP Annex 1, or Federal Standard 209E.
Particle Icon	Home Screen	Press the Particle icon to change the indicated values from particle count to count per cubic meter, count per cubic foot, or particle mass concentration (must enable Mass Mode by going to Settings, then Channel Management to display particle mass concentration).
Differential Mode Icon	Home Screen	Press the Differential Mode icon to toggle the differential data values on and off.
Cumulative Mode Icon	Home Screen	Press the Cumulative Mode icon to toggle the differential data values on and off.
Location Menu Icon	Home Screen	Press the Location Menu icon to display the Location and Recipe set-up page. This feature allows for the input of up to 1,000 locations and up to 50 unique user-defined recipes.

Mode: Automatic

Sample: 00:01:00

Hold: 00:02:00

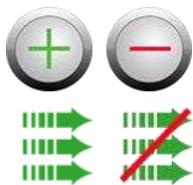
Function Name	Location/Screen	Description of Function
Mode Indicator	Home Screen	The Mode Indicator displays the current mode of operation for the instrument. Modes include automatic, manual, and continuous.
Sample Indicator	Home Screen	The Sample Time indicator displays the current sample time duration (Hours:Minutes:Seconds). This value will count down from the set value for the sample time, displaying the amount of time left in the current sample (go to Settings, then Sampling Setup to change Sample Timing).

Cycle: 1 / 3

Record: 1 / 45000



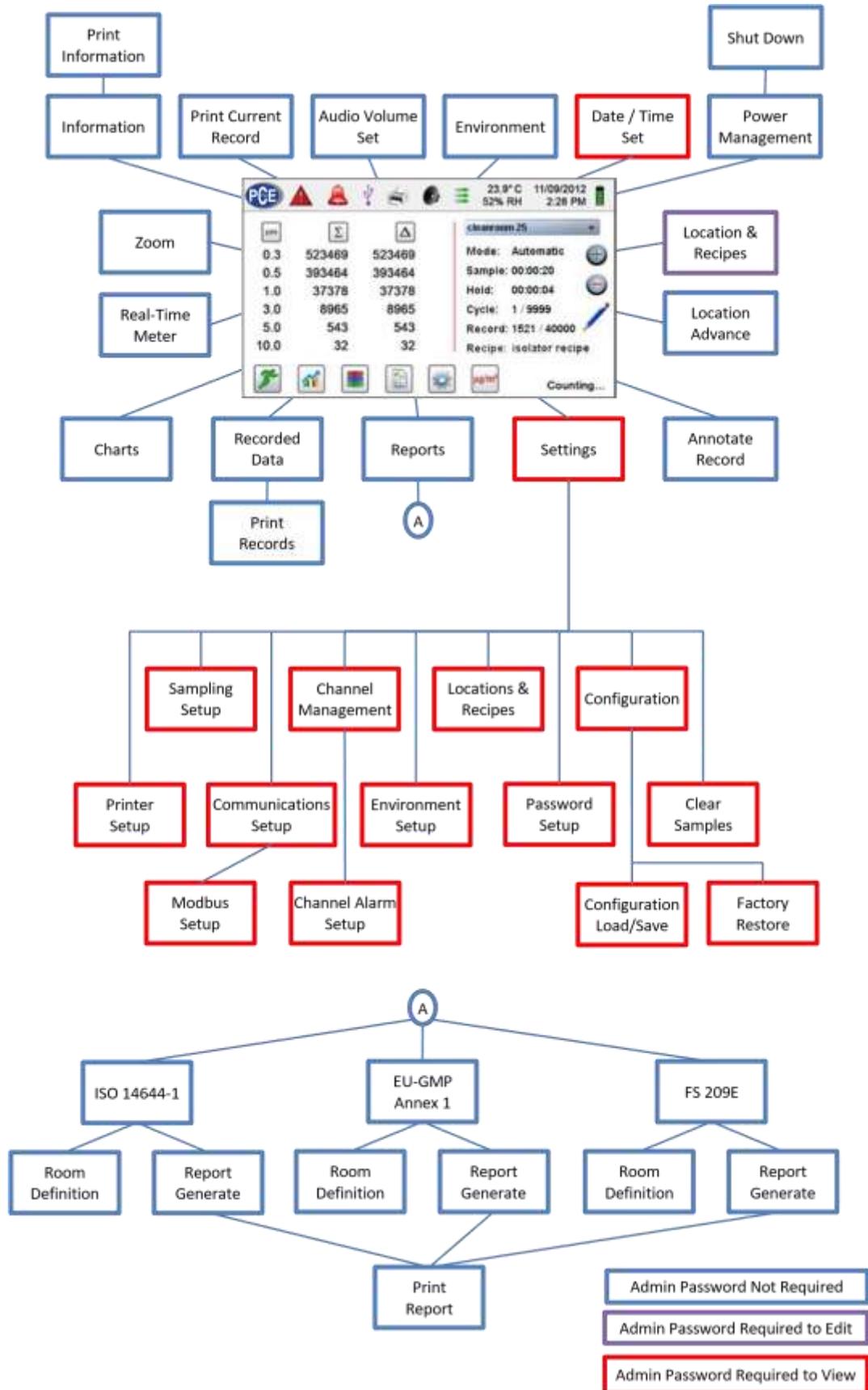
Hold Indicator	Home Screen	The Hold Time indicator displays the current hold time as an interval between samples. The maximum hold time is 99 hours, 59 minutes and 59 seconds (go to Settings, then Sampling Setup to change Hold Time).
Cycle Indicator	Home Screen	The Cycle indicator displays the number of count samples that will be taken at a location in automatic mode. The maximum number of possible cycles is 9,999. The value is displayed as the sample number vs. the total number of samples to be completed in this cycle (go to Settings, then Sampling Setup to change Cycles).
Record Indicator	Home Screen	The Record indicator displays the total number of sampling records saved in the instrument. The instrument is capable of storing 45,000 records in a rotating buffer.
Settings Menu Icon	Home Screen	Press the Settings Menu icon to open the Settings Screen. All aspects of the instrument's set-up can be managed from the icon driven submenus.
Annotation Icon	Home Screen	Press the Annotation icon to notate up to 32 characters for each record. This action can be performed during sampling or after a sample has been taken. The green pencil indicates an annotation exists for any record (go to Settings, then Configuration to enable Annotations).



Function Name	Location/Screen	Description of Function
Plus and Minus Buttons	Home Screen	Press the Plus or Minus icons to scroll through 1,000 possible locations that can be saved and uniquely identified in the Locations setup screen. Locations can have set recipes assigned to them in advance for ease-of-use during sampling.
Flow & No Flow Indicator	Home Screen	The three horizontal arrows indicate that the pump is working and that the internal flow sensor is detecting the correct flow rate through the instrument. If a red line appears diagonally through the arrows, it is an indication of a flow error.

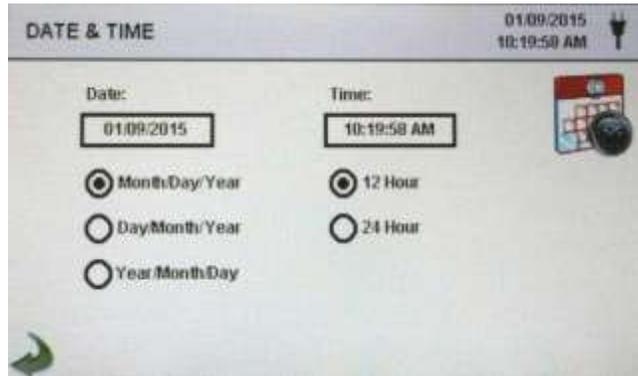
Back Arrow Icon	Various Screens	Press Back Arrow icon to return to the previous screen.
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4-1 Operational Flow Chart – Menu Map



5-1 Operation – Initial Power Up – First Time Use

After the Particle Counter turns on for the first time, a window will appear stating “Time of Day Clock Not Set”. Press OK to Set Clock.



Date Format Select Button Choose format for Month/Day/Year, Day/Month/Year, or Year/Month/Day by selecting the corresponding button on the screen.

Numeric Keypad Press Date within the window and a numeric keypad will appear to change the date. To change the values, use the < or > to move cursor. When complete press OK button.

Time Format Select Button Choose 12 hour or 24 hour clock indication by selecting the corresponding button on the touchscreen.

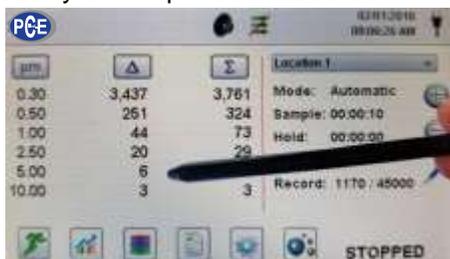
Numeric Keypad Press Time within the window and a numeric keypad will appear to change time. Use 24 hour clock format for time entry to properly indicate AM or PM. To change the values, use the < or > to move cursor. When complete press OK button. Time will display AM or PM or 24 hour format based on the selection.



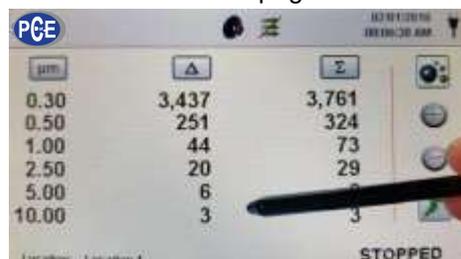
Back Arrow Icon Press Back Arrow icon to return to the previous screen.

5-2 Display

Press any blank space on the screen to zoom in or out on the Home page.



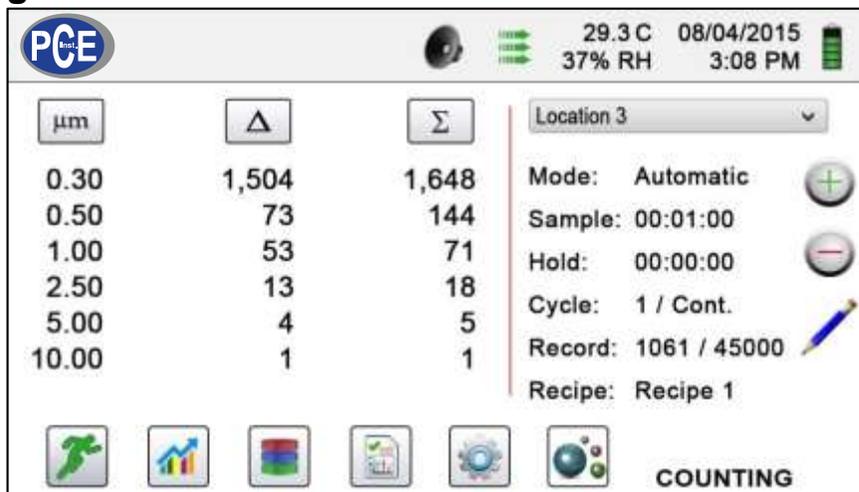
Standard View



Zoomed View

5-3 Taking a Sample

Main Sampling Home Screen



Taking a Sample begins the sample

Using the Run icon on the display

To take a sample, press the Run icon on the screen. This will begin the sample according to the sampling setup parameters displayed on the right side of the Home screen (go to Settings, then Sampling Setup to change Sample Timing).



Stopping the display stops Sample the sample

Using the Stop icon To stop a sample, press the Stop icon on the screen.



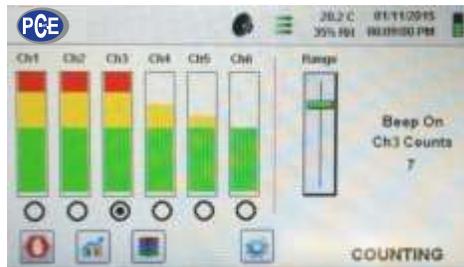
Data Unit of Measure Selection

Press the Particle icon to change the indicated values from particle count to count per cubic meter, count per cubic foot, or particle mass concentration (must enable Mass Mode by going to Settings, then Channel Management to display particle mass concentration).

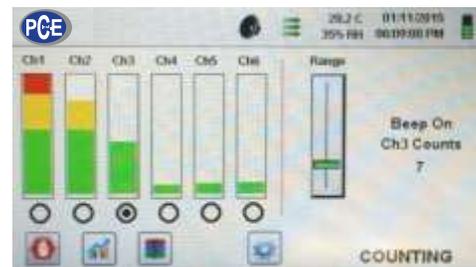
5-4 Real-Time Meter, Graphing, and Environmental Screens



The instrument will display a bar graph visualization that rises and falls with the increase of pulses counted per second, per channel. This can be used to pinpoint the source of particles within an area. The closer the instrument is to the source, the higher the indication appears on the bar graph.



Channel 3 selected and signal at maximum value



Range slider lowered to reduce Channel 3 value

Real-Time Meter Operation



Screen

Start/Stop Sampling

The Sampling can be started or stopped from these screens **while on Real-Time** using the Run or Stop icons or by using the one touch **Meter or Graphing** button.

Channel Select – Radio Button

Select the channel size that is the focus of the particles being investigated by clicking on the radio select button



the data being displayed in pulses per second on the Graphing screen.

Range – Sensitivity Adjustment Slider

Press and slide the Range slider bar up towards the top of the slider to increase sensitivity and down towards the bottom of the slider to decrease sensitivity. As the instrument gets closer to the particle source the visual signal can increase and hit 100% of the indicated scale long before the actual source of the contamination is found. By moving the Range slider bar down, the sensitivity is reduced, and the indication is scaled down. This action can be repeated until the source is identified.



Switching between Main Screen, Real-Time Meter, Graphing, and Environmental Screens

Press the Real-Time Meter icon to switch between the Main screen, Real-Time Meter, Graphing, and Environmental screens (must enable Mass Mode by going to Settings, then Channel Management to display Environmental screen). **NOTE:** Go to Settings, then to Screens to select which screens will be available.



Real-Time Graph Operation

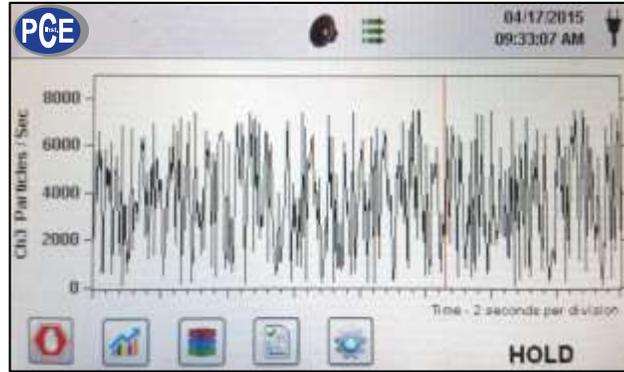
$\mu\text{g}/\text{m}^3$ is displayed in the first column for that particle size up to the next size as a value

PM is the sum of all previous channels not including that channel size value



If the Graph function is chosen, this feature graphically displays the pulses per second, making the graph's historical information useful in point source detection.

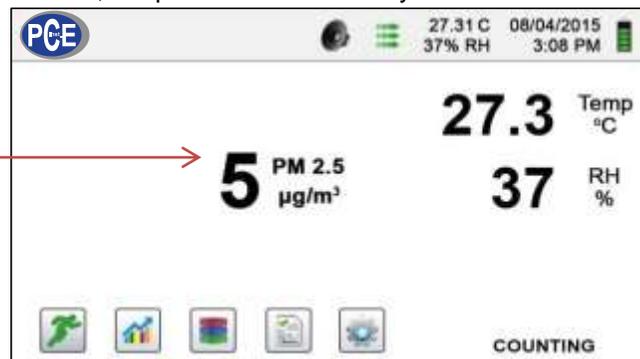
Real-Time Graph



Environmental Screen

This screen displays specific PM size, temperature and humidity.

Pressing the PM value accesses the Select PM To Display screen (shown below)



Home Screen Mass Concentration

5-5 Recorded Data

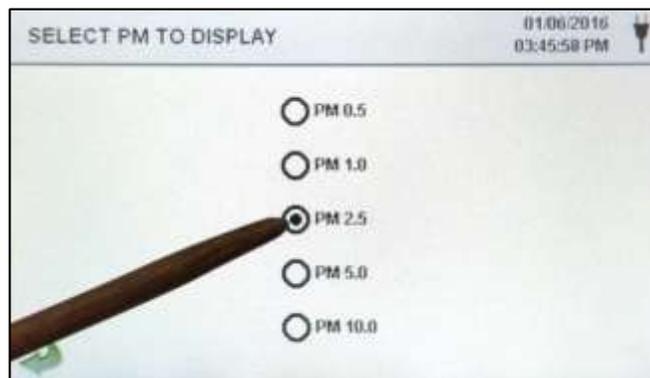


The instrument stores up to 45,000 records that can be accessed by selecting the recorded data icon. The Recorded data page uses a horizontal slider bar for scrolling left and right through all records. Press white arrows for fine control in locating a specific record. Press the slider button with the stylus and drag left or right to navigate through large amounts of records quickly.

Environmental Screen Size Select

Select the PM size channel to be displayed

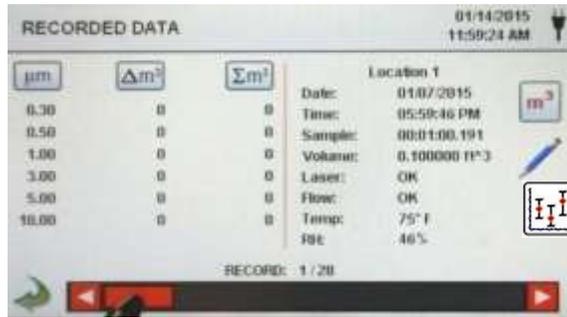
Press Back Arrow to return to the previous screen



NOTE: After the 45,000th sample is recorded, the software deletes one block of 250 records. After the block is deleted the next record number will become 44,751. The

instrument will then store data to record 45,000 before repeating this process. Each block removed is from the oldest record first, following a first in / first out method.

Recorded Data Screen



Print or Save the Current Record If a Printer or USB thumb drive is attached to the instrument, the current record on the Recorded Data Screen can be **being displayed** downloaded or printed by pressing the corresponding Printer or USB icon.



Turn off Cumulative or Differential columns All displayed channel values can be turned off or back on from the recorded sample record by toggling the mode icons.

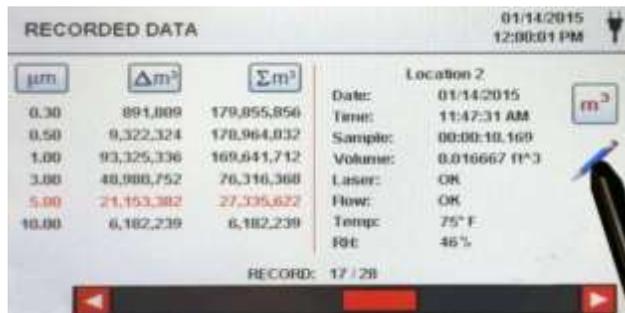


Data Units

Data Units can be changed to the corresponding calculated values by pressing the Particle icon. Press the icon to change between particle count, count per cubic meter, count per cubic foot, or µg/m³ (if enabled).

Adding Annotations to Recorded Data

Press the Annotation icon to notate up to 32 characters for each record. This action can be performed during sampling or after a sample has been taken. The green pencil indicates an annotation exists for any record (go to Settings, then Configuration to enable Annotations).



Annotations Keyboard



Caps Lock, ?123, and Delete Keys

Pressing the Shift Key will activate or deactivate the Caps Lock function. Pressing the ?123 Key will toggle the use of numbers and symbols. Pressing the Backspace Key will delete all text entered on the text line.

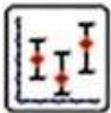
Saved

Annotation The pencil over a document icon denotes that an

green

Icon

annotation exists on that record. The annotation can be accessed, edited or deleted.



Statistics

Pressing the Statistics icon will provide an onscreen display of the minimum, maximum, and average values for the records selected. This function is disabled if a printer or USB stick is connected to the instrument.

5-6 Reports



Report Functions

ISO 14644-1

Press the ISO 14644-1 icon to generate a report based on the parameters and guidelines of the ISO standard.

EU-GMP Annex-1

Press the EU-GMP ANNEX 1 icon to generate a report based on the parameters and guidelines of the EU-GMP standard.

FS 209E

Press the FS 209E icon to generate a report based on the parameters and guidelines of the US Federal standard 209E.

Room parameters can be defined by pressing the Room Definition button. To generate a report, select the Generate button. This creates a report document that can be saved to an external thumb drive, or printed to a connected printer.

Press the Create Report button for 5 seconds to display a sample report with the current test records. These records will be added to the recorded data so the values and information can be reviewed prior to completing the report and saving to an external source.

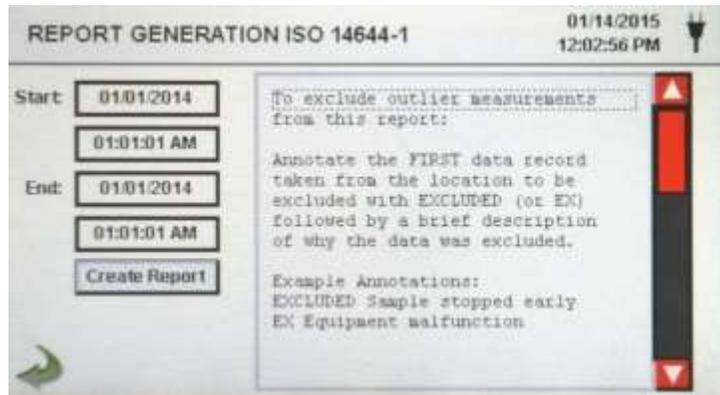


Generate

Create Report

Press the Generate button to display the Report

Generation screen

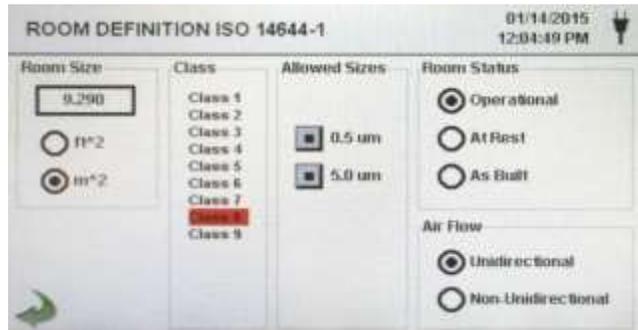


Create Report

Press the Start and End Windows to enter the Start and End dates and times. Press the Create Report button to generate the report. If the values of the count or sampling set-up are incorrect, the report will indicate the errors prior to the report being generated.

To exclude an outlier measurement from the report, go to Recorded Data, find the specific recorded data to be excluded and annotate the record by writing "EXCLUDED" or "EX". A brief description must be added after the "EXCLUDED" or "EX" explaining why the data is being excluded. Example Annotations: "EXCLUDED Sample Stopped Early" or "EX Equipment Failure".

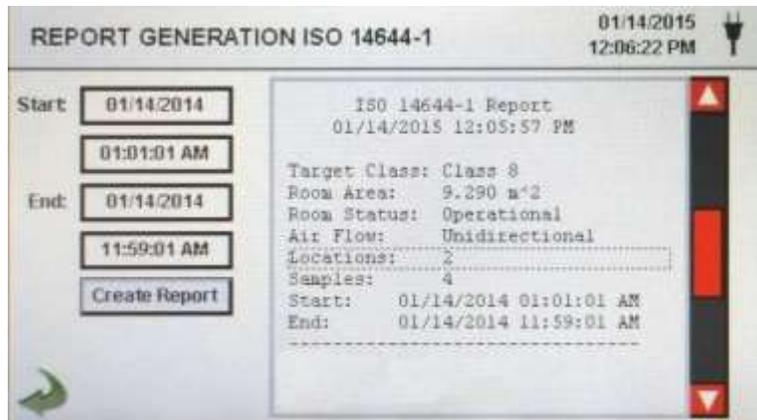
Room Definition



Each Report has a Room Definition page to input data that defines the output of the report. The inputs include Room Size, Class, Allowed (Channel) Sizes, Room Status and Air Flow.

Sample Report Screen

**Sample Report
(Printed)**



Printing or With a thumb drive or printer connected, press the Printer icon **Saving a Report** to print a report, or press the USB icon to save a report.

NOTE: A thumb drive or printer must be connected to the

```

ISO 14644-1 Report
01/16/2015 06:54:08 AM

Target Class: Class 5
Room Area: 80.000 m^2
Room Status: Operational
Air Flow: Unidirectional
Locations: 9
Samples: 11
Start: 01/16/2015 06:53:01 AM
End: 01/16/2015 06:53:09 AM
-----
Class Class 5 (at 0.3) PASS

Class Limit: 10,200.00 P/m^3
Min Sample Vol: 0.00283 m^3

Grand Mean: 6,349.21
Std Dev: 2,154.42
Std Error: 718.14
95% UCL: 7,684.94

Location Avg P/m^3
14644 Test Loc 1 8,750.0
14644 Test Loc 2 6,607.1
14644 Test Loc 3 2,107.1
14644 Test Loc 4 3,785.7
14644 Test Loc 5 5,857.1
-----
Class Class 5 (at 0.5) PASS

Class Limit: 3,520.00 P/m^3
Min Sample Vol: 0.00568 m^3

Grand Mean: 706.35
Std Dev: 381.65
Std Error: 127.22
95% UCL: 942.97

Location Avg P/m^3
14644 Test Loc 1 750.0
14644 Test Loc 2 857.1
14644 Test Loc 3 0.0
14644 Test Loc 4 250.0
14644 Test Loc 5 785.7
-----
Unit Serial #: 1000
Last Cal: 05/15/2014
    
```

instrument to display these icons.

6-1 Settings



Settings Screen

Press the Settings Menu icon to open the Settings Screen. All aspects of the instrument's set-up can be managed from the icon driven sub-menus. When the administrator password is in use, this screen is not available and may only be accessed and settings modified by the administrator.

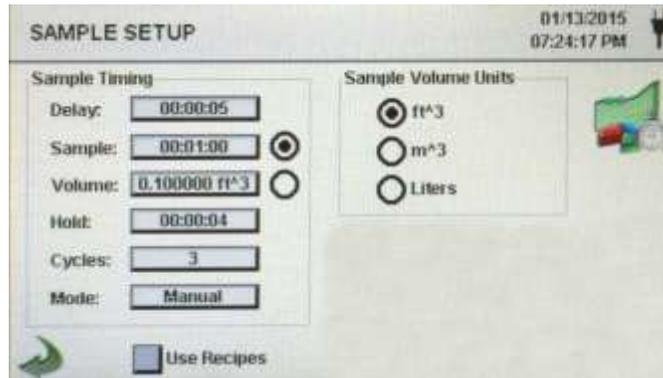


6-2 Sampling Setup



Sampling Setup Screen

Press the Sampling icon to display the Sample Setup screen.



Delay

Press the Delay window to open the Enter Time screen. To select the value to change, use the < or > to move cursor. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum Delay time is 99

When complete press OK button.

NOTE: This allows the operator to leave an area before sampling begins.

**Sample**

Press the Sample window to open the Enter Time screen. To select the value to change, use the < or > to move cursor. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum Sample time is 99 hours, 59 minutes and 59 seconds. When complete press OK button.

Volume

Press the Volume window to open the Enter Sample Volume screen. To select the value to change, use the < or > to move cursor. The volume value entered will control the length of time per sample to achieve the desired sample volume.

Sample or Volume Selection Buttons

Selecting the Sample button will cause the sample to be time based. Selecting the Volume button will cause the sample to be based on the volume of air to be measured.

Hold

Press the Hold window to open the Enter Time screen. This controls the amount of time the instrument will hold between samples in automatic mode. To select the value to change, use the < or > to move cursor. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum Hold time is 99 hours, 59 minutes and 59 seconds. When complete press OK button.

Cycles

Press the Cycles window to open the Enter Cycles screen. This controls the number of sampling cycles to be taken at a specific location when the unit is in automatic mode. To select the value to change, use the < or > to move cursor. When complete press OK button.

Mode

NOTE: Enter (0000) to activate Continuous Sampling Mode. Press the Mode window to open the Select Sample Mode screen. Select Automatic or Manual. When complete press OK button.

Sample Volume Units

Select Cubic Feet (ft³), Cubic Meters (m³) or Liters.

Use Recipes Button

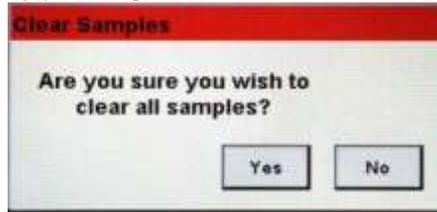
The Use Recipes button activates Recipes on the Select Location & Recipe screen. Recipes associated with locations will be utilized in place of the general settings from the Sample Setup screen.

hours, 59 minutes and 59 seconds.

Clear All Samples

Press Clear Samples icon to open the Clear Samples window. All records on the instrument can be cleared with this function.

NOTE: This action is not reversible and all data will be cleared by pressing the Yes button.



Back Arrow

Press the Back Arrow icon to return to the previous screen. **Icon**



6-3 Channel Management



Channel

This screen provides control of many rich features such as enabling or disabling channels, setting custom channel sizes, enabling or disabling alarms by channel, and the setting of the alarm thresholds. The mass concentration mode may also be activated to allow entry of particle density and refractive index values by channel.

ManagementScreen

Enable Channel	Size µm	Enable Alarm	Alarm Threshold	Density g/ml	Refractive Index
<input type="checkbox"/> Ch 1	0.30	<input type="checkbox"/>	5000000		
<input type="checkbox"/> Ch 2	0.50	<input type="checkbox"/>	2570000		
<input type="checkbox"/> Ch 3	1.00	<input type="checkbox"/>	832000		
<input type="checkbox"/> Ch 4	3.00	<input type="checkbox"/>	3000		
<input type="checkbox"/> Ch 5	5.00	<input type="checkbox"/>	29300		
<input type="checkbox"/> Ch 6	10.00	<input type="checkbox"/>	350		

Use Recipes Alarm On Σft^3 Mass Mode



Enable Channel

Each channel can be turned on or off by pressing the corresponding radio button. When the channel is turned off all values related to that channel are ignored and will not be displayed or recorded.

Size µm

Press the Size µm window to open the Enter Channel Size screen. This controls the particle size measured and recorded for the selected channel. This feature is also known as variable binning, and is ideal for focusing on specific particle sizes. To select the value to change, use the < or > to move cursor. When complete press OK button.

Enable Alarms

Each channel can have an alarm enabled or disabled by pressing if the User Recipes button is not selected. If enabled, Press the Alarm Threshold window to open the Enter Alarm Threshold screen. To select the value to change, use the < or > to move cursor. When complete press OK button.

Alarm On

Press the Alarm On button to open the Channel Alarm Setup screen. Select Δ (Differential Count), Δft^3

(Differential Cubic Feet), Δm^3 (Differential Cubic Meter), Σ (Cumulative Count), Σft^3 (Cumulative Cubic Feet Count), Σm^3 (Cumulative Cubic Meter Count), PM ($\mu g/m^3$).

Mass Mode Settings

Enable Channel	Size μm	Enable Alarm	Alarm Threshold	Density g/ml	Refractive Index
<input checked="" type="checkbox"/> Ch 1	0.30	<input type="checkbox"/>	5000000	2.50	1.000
<input checked="" type="checkbox"/> Ch 2	0.50	<input type="checkbox"/>	3520000	2.50	1.000
<input checked="" type="checkbox"/> Ch 3	1.00	<input type="checkbox"/>	832000	2.50	1.000
<input checked="" type="checkbox"/> Ch 4	3.00	<input type="checkbox"/>	3000	2.50	1.000
<input checked="" type="checkbox"/> Ch 5	5.00	<input type="checkbox"/>	29300	2.50	1.000
<input checked="" type="checkbox"/> Ch 6	10.00	<input type="checkbox"/>	350	2.50	1.000

Use Recipes: Alarm On: Σft^3 Mass Mode



Mass Mode

Mass Mode
the Mass Mode

to enable Mass Mode. The

Enable

instrument will now display particle count data as calculated particle mass concentration in weight/volume units. The international SI unit for mass is (kg/m^3), which can be translated to micro grams per milliliter ($\mu g/ml$).

Density g/ml

Press the Density g/ml window to open the Enter Density Factor screen. To select the value to change, use the < or > to move cursor. When complete press OK button.

Refractive Index

Press the Refractive Index window to open the Enter Refractive Index screen. To select the value to change, use the < or > to move cursor. When complete press OK button.

Calculation of displayed Values on Main Screen for Mass Concentration Mode

**$\mu g/m^3$
Indicated
Values**

When Mass Mode is selected and $\mu g/m^3$ is selected on the Main screen, the instrument is measuring in Mass Concentration Mode. The mass value for a channel size is the particle count between that channel and the next larger channel, calculated using the average particle size of the two channels. For example, the value in the 0.50 μm data field represents the mass of all particles counted between this channel and the next highest channel, calculated as the mass of a particle that is 0.75 μm .

**Particle Mass
Indicated
Values**

When Mass Concentration Mode is selected, $\mu g/m^3$ is the measured value in the first column. The column labeled PM shows the total particle mass of particles that are less than the displayed channel size. For example, the value displayed in the PM column for the 2.5 μm channel is the particle mass ($\mu g/m^3$ column) of all particles with a size less than 2.5 μm , generally referred to as PM2.5.

Press
button

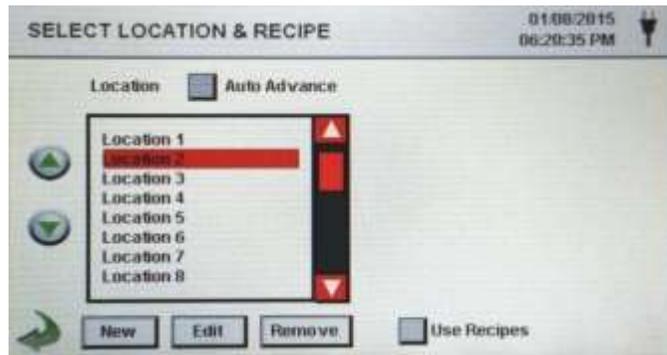
6-4 Locations & Recipes



Press the Locations & Recipes icon to open the Select Location & Recipe screen. Up to 1,000 unique location names can be created. Pressing the User Recipes button allows the creation of location specific recipes which utilize preset sample Delay, Sample or Volume, Hold, Cycles, Mode and Channel Alarm. 50 unique recipes can be

created and assigned to any number of locations. **NOTE:** This feature is only useful if your device is portable, and not fixedmounted.

Select Location & Recipe Screen



Auto Advance

Location Auto Advance

Select the Location Auto Advance button to auto advance to the next location.



Slider

The Select Location & Recipe screen uses a vertical slider bar for scrolling through all locations. Press white arrows for fine control. Press the slider button with the stylus and drag to navigate through large amounts of locations quickly.

Change Sequence of Locations

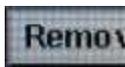
Press the silver and green up and down arrow buttons on the left side of the locations list to change the sequence of locations.

New Location Entry

Press the New button to open the Enter Name For New Location screen. Use the keyboard to enter the name of the new location. Press OK to save the new location name or ESC to return to the previous screen.

Edit Location

Press the Edit button to open the Enter Name For New Location screen. Use the keyboard to edit the name of the location. Press OK to save the new location name or ESC to return to the previous screen.



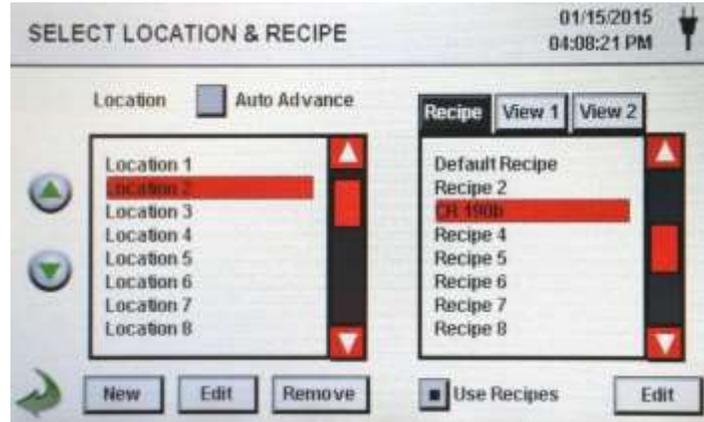
Remove Location

Press the Remove button to delete the currently highlighted location.



Use Recipes

Press the Use Recipes button to display the recipes settings. Select the Location in the Location box and the recipe in the Recipe box to assign the recipe to that location. The location can have one of 50 possible recipes assigned to it.



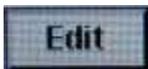
Edit Recipe for Selected Location

Press the Edit button on lower righthand side of the screen to open the Edit Recipes screen.



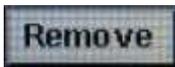
New Recipe Entry

Press the New button to create a new recipe. The Enter Name for New Recipe screen will appear. Use the touchscreen keyboard to enter the name of the new recipe. Press OK to return to the previous screen.



Edit Recipe

Press the Edit button to modify the existing recipe highlighted on the Location list. Pressing this button will display the Enter New Name for Recipe screen. Use the touchscreen keyboard to modify the name of the existing recipe. Press OK to return to the previous screen.



Remove Recipe

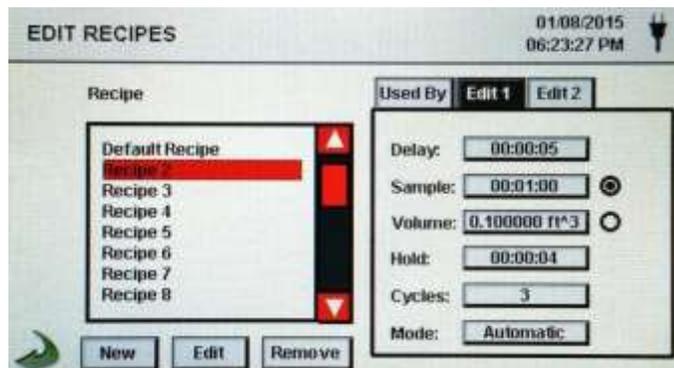
Press the Remove button to delete the recipe that is highlighted on the Location list.

Used By Tab

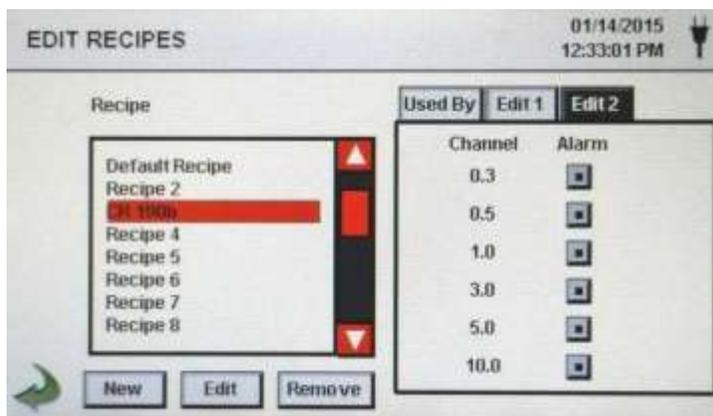
The Used By window displays all locations currently set for the current recipe.

Edit 1 Tab

Press the Edit 1 tab to adjust the settings for Delay, Sample, Volume, Hold, Cycles, and Mode for the selected recipe.



Edit 1 Delay	<p>Press the Delay window to open the Enter Time screen. To select the value to change, use the < or > to move cursor. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum Delay time is 99 hours, 59 minutes and 59 seconds. When complete press OK button.</p> <p>NOTE: This allows the operator to leave an area before sampling begins.</p>
Edit 1 Sample	<p>Press the Sample window to open the Enter Time screen. To select the value to change, use the < or > to move cursor. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum Sample time is 99 hours, 59 minutes and 59 seconds. When complete press OK button.</p>
Edit 1 Volume	<p>Press the Volume window to open the Enter Sample Volume screen. To select the value to change, use the < or > to move cursor. The volume value entered will control the length of time per sample to achieve the desired sample volume. Selecting the Sample button will cause the sample to be time based. Selecting the Volume button will cause the sample to be based on the volume of air to be measured.</p>
Sample or Volume Selection Buttons	
Hold Edit	<p>Press the Hold window to open the Enter Time screen. This controls the amount of time the instrument will hold between samples in automatic mode. To select the value to change, use the < or > to move cursor. The entry is made in Hours:Minutes:Seconds (HH:MM:SS). The maximum Hold time is 99 hours, 59 minutes and 59 seconds. When complete press OK button.</p>
Edit 1 Cycles	<p>Press the Cycles window to open the Enter Cycles screen. This controls the number of sampling cycles to be taken at a specific location when the unit is in automatic mode. To select the value to change, use the < or > to move cursor. When complete press OK button.</p>
Edit 1 Mode	<p>NOTE: Enter (0000) to activate Continuous Sampling Mode.</p> <p>Press the Mode window to open the Select Sample Mode screen. Select Automatic or Manual. When complete press OK button.</p>
Edit 2 Tab	<p>Press the Edit 2 tab to enable alarms for each channel size.</p>



6-5



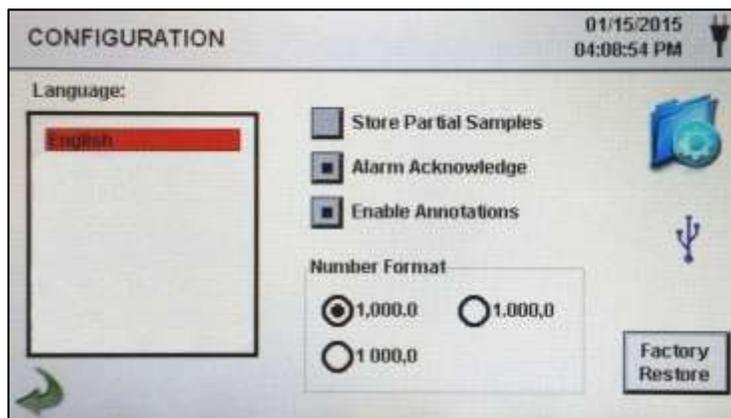
Back Arrow Icon Press the Back Arrow icon to return to the previous screen.

Configuration



Press the Configuration icon to select Language, Store Partial Samples, Alarm Acknowledgement, Enable Annotations, Number Format, Save Configuration to a USB thumb drive, and Factory Restore.

Configuration Screen



Language

Select and highlight the language to be used with your device.

Store Partial Samples

Select the Store Partial Samples button to save values from a prematurely ended sampling. If this option is left unchecked, the instrument will ignore partial sampling events.

Alarm Acknowledge

Select the Alarm Acknowledge button and the visual alarm bell and the audible sounder will continue to sound until the alarm bell icon is pressed on the Main screen.

Enable Annotations

Select the Enable Annotations button to allow annotations to be entered for each sample record. These annotations will be included in downloaded record data.

Number Format

Select between 1,000.0, 1.000,0 or 1 000,0

Factory Restore

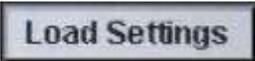
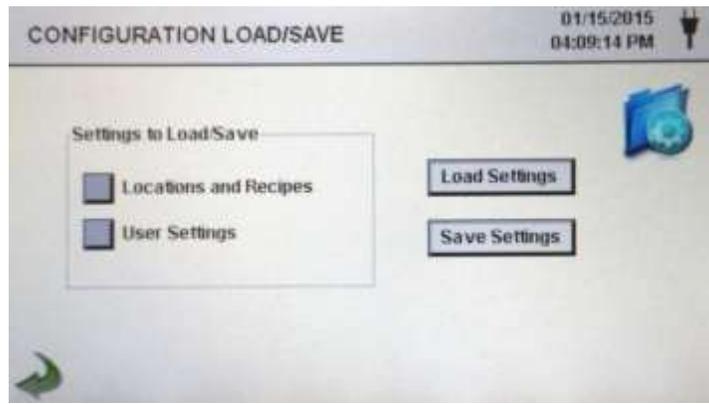
Press the Factory Restore button to open the Confirm Factory Restore screen. Select Settings to Restore and press the Confirm button.

USB Icon

When a USB thumb drive is plugged into the USB host port, the USB icon will appear on the Configuration screen. Press the USB icon to open the Configuration Load/Save screen. Select Settings to Load/Save and press Load Settings or Save Settings.

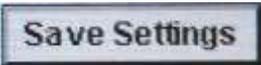
NOTE: This feature can be used to load the instrument's configuration to any other PCE Instruments Particle Counter.

Configuration Load/Save Screen



Settings to Load/Save Load Settings

Select the check boxes to choose Locations and Recipes and/or User Settings to load or save to a USB thumb drive. Press the Load Settings icon to initiate loading a previously saved settings configuration into the instrument.



Save Settings

Press the Save Settings icon to initiate saving the current configuration to a USB thumb drive.



Back Arrow Icon

Press the Back Arrow icon to return to the previous screen.

6-6 Printer Setup



Press the Printer Setup icon to open the Printer Setup screen.

Include in

Printout Select each item to be included in printed values and reports.

Automatic Printing Select Print Options Automatic button to enable automatic printing On Sample or On Alarm.

6-7 Communication



The instrument has multiple modes of communication for uploading or downloading data or configurations for operation. The modes of communication include Ethernet, RS485, RS232, USB Host or Client, and Optional Wi-Fi. Press the Communication icon to open the Communications screen.

Communications Screen

Ethernet Communication

Select the Ethernet radio button for Ethernet connection.

Use DHCP

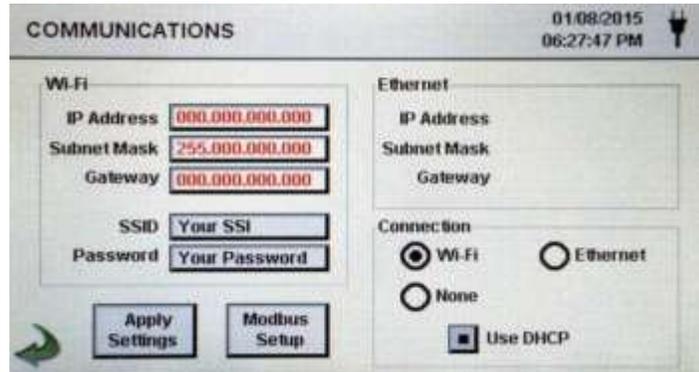
When the DHCP button is selected the instrument will obtain an IP address, subnet mask and gateway information from the router automatically.

IP Address, Subnet Mask, & Gateway

If the DHCP button is not selected Press the IP Address, Subnet Mask and Gateway windows to enter the desired values for your router. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.

Wi-Fi Communication

The instrument can support an optional Wi-Fi communication module. Select the Wi-Fi radio button for Wi-Fi connection.



Use DHCP

When the DHCP button is selected the instrument will obtain an IP address, subnet mask and gateway information from the router automatically.

Wi-Fi IP Address, Subnet Mask, & Gateway

If the DHCP button is not selected Press the IP Address, Subnet Mask and Gateway windows to enter the desired values for your router. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.

Wi-Fi SSID

Press the Wi-Fi SSID window to enter the Wi-Fi SSID and press OK.

NOTE: Case Sensitive

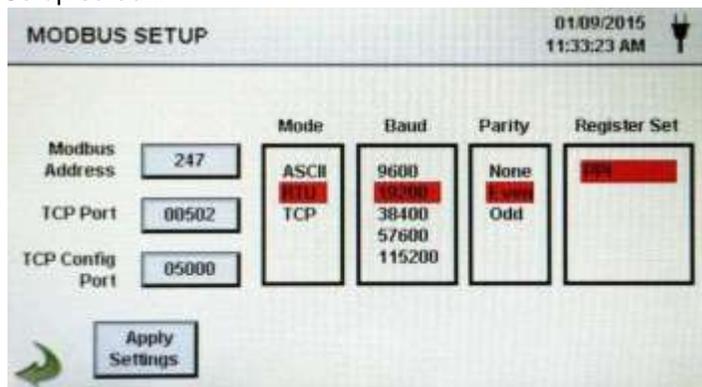
Wi-Fi Password

Press the Wi-Fi Password window to enter the Wi-Fi Password and press OK.

NOTE: Case Sensitive

Modbus Setup

Press the Modbus Setup icon to open the Modbus Setup screen.



Modbus Address

Press the Modbus Address window to open the Enter Modbus Address (0-247) screen. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.

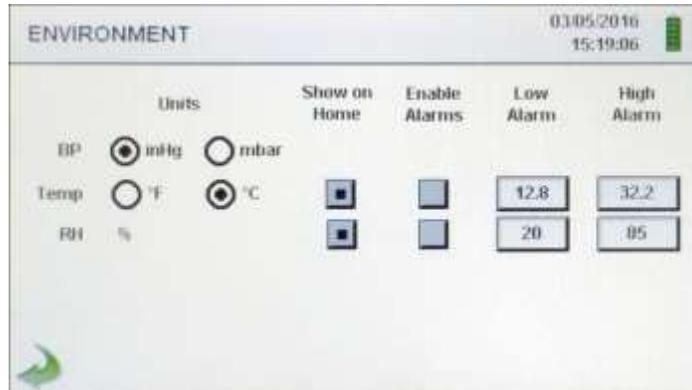
TCP Port	Press the TCP Port window to open the Enter Modbus TCP Port screen. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.
TCP Link Timeout	<p>The TCP Link Timeout is useful when a connection to a remote computer is absent for longer than the expected time (perhaps due to a router connection drop). This could allow the connection to be automatically reestablished.</p> <p>Press the TCP Link Timeout window to open the Enter Modbus TCP Link Timeout screen. A numeric keypad will be displayed for entering the number of timeout seconds. To select the value to change, use the < or > to move cursor. When complete press OK button.</p> <p>NOTE: Setting the TCP Link Timeout to 0 disables the timeout function.</p>
Mode	Select ASCII, RTU, or TCP.
Baud	Select 9600, 19200, 38400, 57,600, or 115200.
Parity	Select Parity, Odd, Even, or None.
Register Set	Select Register Set.
RS-232 or RS-485	Select RS-232 or RS-485 radio button.
	NOTE: The Baud, Parity, and RS-232 or RS-485 are not used if TCP is selected
Apply Settings	Press the Apply Settings icon to apply Modbus Setup settings.
 Back Arrow Icon	Press the Back Arrow icon to return to the previous screen.
MODBUS Register Map	The MODBUS register map can be found in the Appendix at the back of this manual.
Internet of Things (IOT)	The instrument can communicate to remote servers over a network or the Internet. The setup of this JSON protocol for IOT can be found in the IMS Manual.

6-8 Environment



Press the Environment icon to open the Environment screen to set Barometric Pressure (BP) Units, Temperature (Temp) Units, Enable Low and High Alarm, Setting Low and High Alarm and Show on Home.

Environment Setting Screen



Units

Select Barometric Pressure (BP) Units in Inches of Mercury (inHg) or Millibar (mbar).

Select Temperature (Temp) Units in Fahrenheit (°F) or Celsius (°C).

Show on Home

Select Show on Home Button to display the selected value on the Main screen.

Enable Alarms

Select the Enable Alarm button to Enable Alarms.

Low Alarm

Press the Low Alarm window to open the Enter Low Threshold screen. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.

High Alarm

Press the High Alarm window to open the Enter High Threshold screen. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.

6-9 Passwords



Press the Password Setup icon to open the Passwords screen.

Password Setup Screen

User Password

Select the User Password button to enable User Password, preventing any unauthorized use of the instrument. The User Password allows the use of the instrument in its current configuration and saving samples.

New Password

Press the New Password window to open the Enter New User Password (4-15 Chars) screen. Press the Confirm New Password window to open the Confirm New User Password (4-15 Chars) screen. Press Confirm Change Button to save changes.

Confirm

New Password

NOTE: The default User Password is **1234**.

Admin Password

Select the Admin Password button to enable Admin Password, preventing access to Settings screens, Time/Date, and configurations by Users.

New Password

Press the New Password window to open the Enter New Admin Password (4-15 Chars) screen. Press the Confirm Admin Password window to open the Confirm New Admin Password (4-15 Chars) screen.

Confirm

New Password

NOTE: The default Admin Password is **4321**.

Password Timeout

Press the Password Timeout window to enter the number of minutes (1-99) the instrument will timeout due to inactivity. A numeric keypad will be displayed for entering these values. To select the value to change, use the < or > to move cursor. When complete press OK button.

NOTE: The default is five (5) minutes.

Lock Now

Press the Lock Now icon to immediately lock the instrument.



LOST PASSWORD: Please call or email PCE Instruments for a temporary password that will be valid for the day the password is requested.

NOTE: This unique password will automatically expire at the end of the day it is issued.

6-10 Screens



Press the Screens icon to open the Config. Screens window. Select Particles, Realtime meter, Graph, and/or PM Environmentals to activate the screens shown when repeatedly pressing the Screens icon on the Main page.

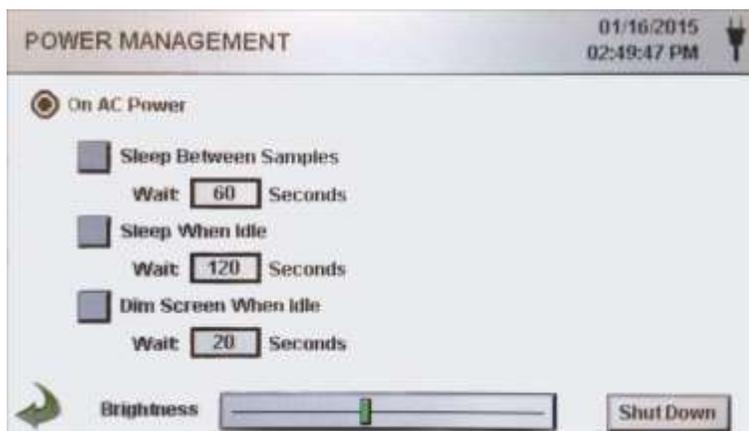
7-1 Power Management



Power

Management
Screen

Press the AC Adapter icon to open the Power Management screen.



Sleep Between Samples

Selecting the Sleep Between Samples button activates the feature for powering down the instrument between samples to conserve battery life. Press the Sleep Between Samples Wait window to open the Enter Wait Time screen. A numeric keypad will be displayed for entering the Wait Time in seconds from 0 to 65,535. To select the value to change, use the < or > to move cursor. When complete press OK button.

NOTE: A Hold Time has to be set for a minimum of 38 seconds in order to activate Sleep Between Samples.

Sleep When Idle

Selecting the Sleep When Idle button activates the feature for powering down the instrument when idle. Press the Sleep When Idle Wait window to open the Enter Wait Time screen. A numeric keypad will be displayed for entering the Wait Time in seconds from 10 to 65,535. To select the value to change, use the < or > to move cursor. When complete press OK button.

Dim Screen When Idle

Selecting the Dim Screen When Idle button activates the feature for dimming the instrument's screen when idle. Press the Dim Screen When Idle Wait window to open the Enter Wait Time screen. A numeric keypad will be displayed for entering the Wait Time in seconds. To select the value to change, use the < or > to move cursor. When complete press OK button.

NOTE: The minimum Dim Screen When Idle Wait Time is 10 seconds.

Brightness Slider

Press and slide the Brightness Slider to increase and decrease screen brightness.

Shutdown Icon

Press the Shutdown Icon to immediately Shut Down the instrument.



Back Arrow Icon

Press the Back Arrow icon to return to the previous screen.

8-1 Volume Controls

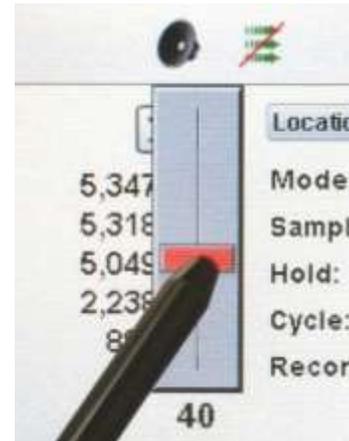


Volume

Press the Volume Control icon to enable the Volume Control

Control Icon

Slider. Slide the Volume Control Slider Bar to adjust the volume. A numeric value appears at the bottom of the slider to indicate relative volume. Moving the Volume Control Slider Bar to 0 mutes the instrument.



9-1 Instrument Management Software (IMS)

The instrument includes a PC based software utility for real-time graphing, downloading data from the instrument, field calibration of sensors, firmware updates, remote diagnostics direct to a service technician, and more.

NOTE: Detailed instructions for the use of the IMS software are contained in the IMS Software Manual on the included USB thumb drive.

Software Installation

Plug the provided thumb drive into your Windows PC and select the IMS Install web installer application file. Follow the installation prompts.



Start Software

Use the IMS Icon in the program folder or on the desktop to start the program.

No Connection

Connection Indication

Connect the instrument to a PC with the provided USB cable to establish a connection between IMS and the instrument. When a connection has been established the Green USB Connection indication will appear.

USB Connection

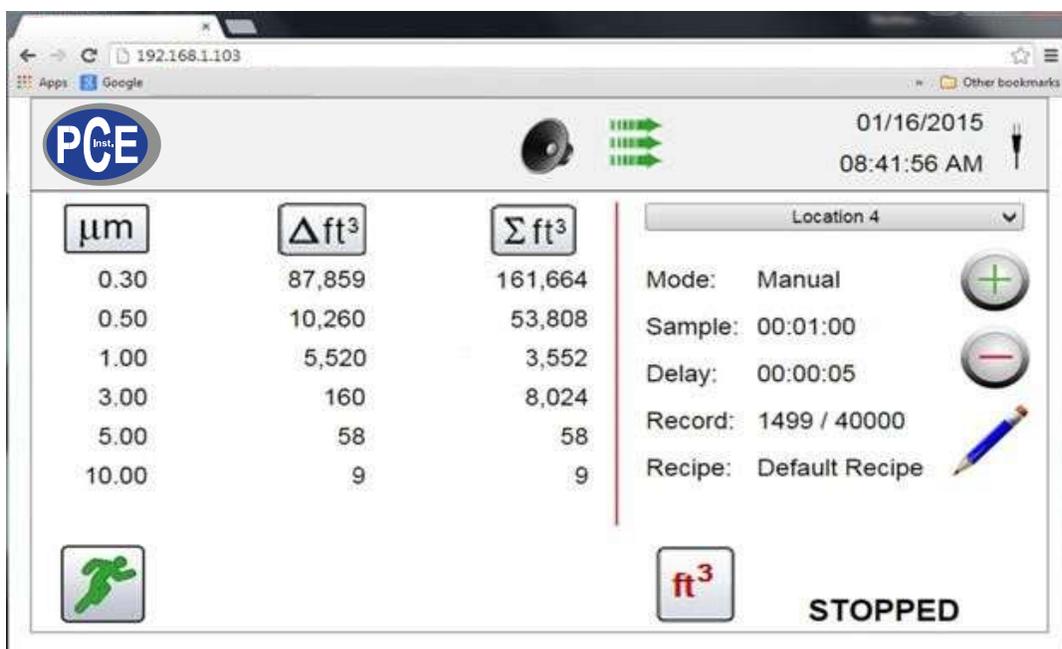
10-1 Remote Operation

The instrument may be accessed with a web browser via Ethernet (wired or Wi-Fi), using the instruments IP address found in the Communications screen. The following functions can be performed remotely: Start and Stop sampling, change Data Units, select Locations and turn on/off displayed channel values.

The Instrument must be placed in Ethernet or optional Wi-Fi mode and the unit must also be connected to a working router on the same network as the PC.

In the Communications screen, select the Use DHCP button and the unit will automatically display the router issued settings. Enter the displayed IP address into any device browser to access the remote screen.

NOTE: The URL address is the IP address that the DHCP Router assigned to the instrument. A static IP address can be provided for the device through the Communications screen by deselecting the Use DHCP button and entering the IP address.



Appendix– A Modbus Register Map

The MODBUS Register Map can be found on the USB thumb drive.

Appendix – B Environmental Sensor Data Logging

Environmental sensor data can be logged without running the pump or laser by deselecting all particle channels on the Channel Management screen. An All Channels Are Disabled screen will appear when the Back Arrow button is pressed. Press Yes to confirm and No to cancel.



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