AccuFIT 9000® PRO
Powered by KANOMAX

<div style="border:1px solid">

Operation Manual

</div>

Users are cautioned to read this manual carefully and understand the warnings
described in this manual before operating the product.
Please keep this manual handy for future reference.

AccuTec-IHS

01001
20.09

Component List

■ Standard

ITEM	MODEL	QTY
Main Unit	-	1
AC Adapter（100-240V、12V 2A）	AF90-ADP	1
Power Cord		1
Zero Filter		1
Alcohol Storage Container	AF90-AFC	1
Storage Cap	AF90-CAP	1
Alcohol Cartridge	AF90-ACR	1
Spare Felt/Wire Mesh	AF90-AWK	2
CD-ROM (Application Software/Instruction Manual)		1
Twin Tube (1m)		1
Carrying Case		1

■ Consumables

ITEM	MODEL	QTY
Zero Filter		1
Alcohol Cartridge		1
Spare Felt / Wire Mesh		2

For more details about the consumables, please contact your distributor.

Laser Classification

This device is classified as a Class 1 Laser Product in accordance with the following standards:

● **EN60825-1: 2014**

**CLASS 1 LASER PRODUCT
EN60825-1 : 2014**

Laser Safety Information

⚠ **Warning** – This device employs a laser inside the unit as the light source of the sensor. Do not open/close the case of unit or disassemble the optical sensor inside the unit.

Wave length	660nm
Maximum output	20mW
Beam emission angle	13-22° (Vertical direction)
	6-10° (horizontal direction)

⚠ **Caution** – Any attempt by user to control, adjust, or perform maintenance procedures other than those specified in this manual may result in hazardous exposure to laser radiation.

Important Safety Information

The symbols for the warnings used in this manual are defined below:

Classifications

Warning:
Warnings in this classification indicate risks that may result in serious injury or death if not observed.

Caution:
Warnings in this classification indicate risks that may result in damage to the product and which may void the product warranty if not observed.

Description of Symbols

△ symbol indicates a condition that requires caution (including warning).   The subject of each caution is illustrated inside the triangle. (e.g. the high temperature caution symbol is shown on the left.)

⊘ symbol indicates a prohibition.   Do not take the prohibited action shown inside or near this symbol.   (e.g. the disassembly prohibition symbol is shown on the left.)

● symbol indicates a mandatory action.   A specific action is given near the symbol.

Warning	
Do not modify or disassemble	O Do not disassemble, modify, or attempt to repair the device. ······ A 3B laser diode is used as the optical source inside the device. Never attempt to disassemble the device as it is potentially extremely dangerous. Also, disassembling the unit may result in a malfunction.
Handle properly	O Use the device properly by carefully following this operation manual. ······ As with any electric device misuse may result in electric shock, fire, damage to the instrument, etc.

○ If any abnormal noises, unusual odor or smoke is observed, or any liquid is permitted to enter into the instrument, turn the power off immediately, remove the battery or disconnect the power cable if connected.

⋯⋯ These conditions may result in electric shock, fire, or damage to the instrument.   Contact your distributor.

Prohibited installation

Do not use this instrument in ambient temperature of 35℃ (95℉) or greater.

⋯⋯ The performance may deteriorate significantly and component damage may result.

○ When the instrument is not in use, unplug the power cord.
⋯⋯ Failure to observe the above may result in electric shock, fire or damage to the internal circuit.

○ Install the instrument in a location where the power cord is accessible such that you can disconnect the power cord easily.

○ When using the power cord, make sure that the plug is clean and dry.

○ The AC outlet must be within the specified power requirement.
⋯⋯ Failure to observe the above may result in fire.

○ Use only the power cord and/or the AC adapter provided with this instrument.
⋯⋯ Other commercially available cords may have different voltage specifications and polarity, which may result in short circuit, fire or damage to the instrument.

○ While charging the battery with the instrument, do not remove the battery from the instrument.
⋯⋯ Failure to observe the above may result in battery leakage and damage to the circuitry.

Caution

Prohibition

○ Do not use or leave this instrument in an environment exceeding or falling below the specified temperature/RH levels for the instrument. The instrument should not be exposed to direct sunlight for a prolonged period of time.
⋯⋯ This instrument may not function properly beyond the specified operable environment.
(10 to 35℃, 20 to 85%RH, with no condensation)

Prohibition	○ Do not use volatile solvents to clean the instrument. ······ The case of the main unit may be damaged by organic solvents. Use a soft dry cloth to remove any dirt. If this is not effective, the user may soak the cloth in neutral detergent or water and wipe the instrument with the cloth. Never use volatile solvents such as thinner or benzene.
Prohibition	○ Do not subject the instrument to strong shocks. Do not place heavy objects on the instrument. ······ Failure to observe the above may cause malfunction or damage to the instrument.

|	
Prohibition	○ If the instrument has been stored in a cold environment, allow the instrument to come to temperature equilibrium with the environment in which it will be operated before turning it on. ······Even when the instrument is used in the specified operating temperature and humidity, a sudden temperature change may cause condensation. Condensation on the sensor may cause inaccurate measurements or in extreme situations, could damage the internal components.
	○ Do not allow static electrical discharge to the instrument. ······ Failure to observe the above may affect the measurement value and cause damage to the instrument circuitry.
Handle properly	○ Do not let the instrument draw in highly concentrated particles that exceed the specification level. (i.e., >100,000 particles/cc)
Prohibition	○ Do not dispose of the instrument as Non-electronic waste. ······ Please note that any disposal of the instrument should be in line with your local or national regulation. For details, please contact your local distributor.

Table of Contents

1. Part Names and Functions

1.1 Main Unit

・Front
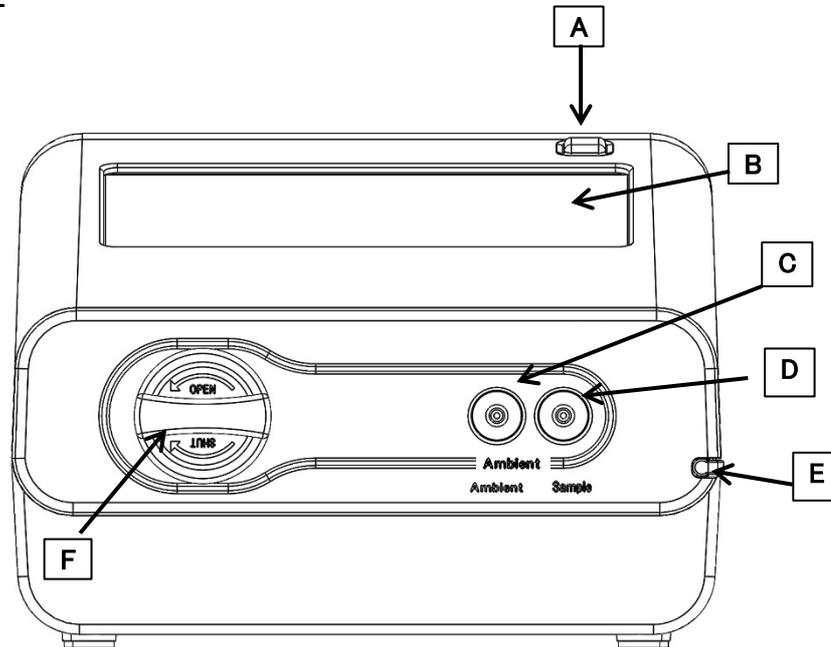
・Back
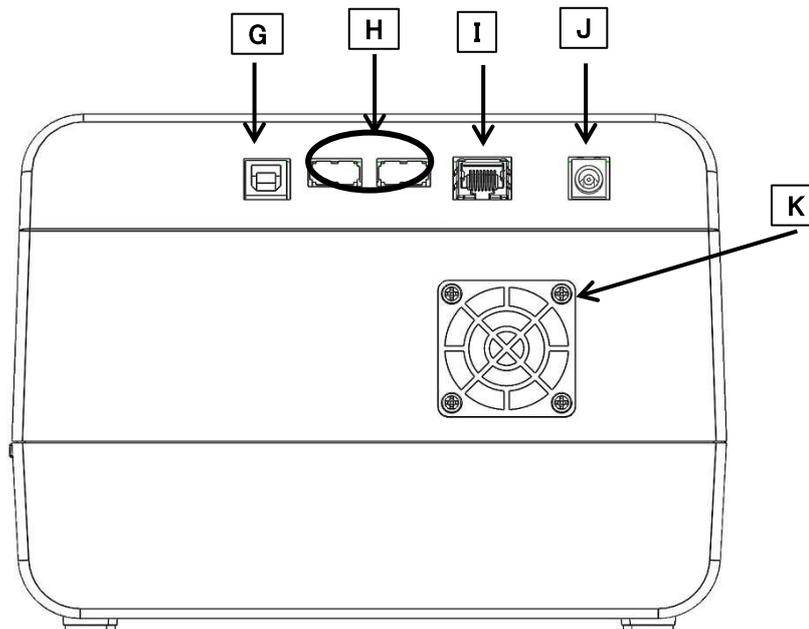
(A)	Power button	On/Off switch
(B)	Touch panel	Use this screen to operate the system.
(C)	Inlet nozzle (ambient)	Instrument uses this inlet to sample the particle concentration in the ambient air.
(D)	Inlet nozzle (sample)	Instrument uses this inlet to sample the particle concentration inside of the mask.
(E)	Touch pen	Use this pen to operate the touch panel (B).
(F)	Alcohol cartridge	Contains alcohol that is necessary for measurement
(G)	USB port (Type B)	Connects to the PC
(H)	USB port (Type A)	Connects to the USB flash drive or the printer
(I)	LAN port	Connects to the LAN cable
(J)	AC jack	Supplies power from the provided AC adapter
(K)	Cooling fan	Maintains correct operating temperature (This cooling fan is to maintain appropriate processing temperatures.)

1.2 Software Screen

①Activities
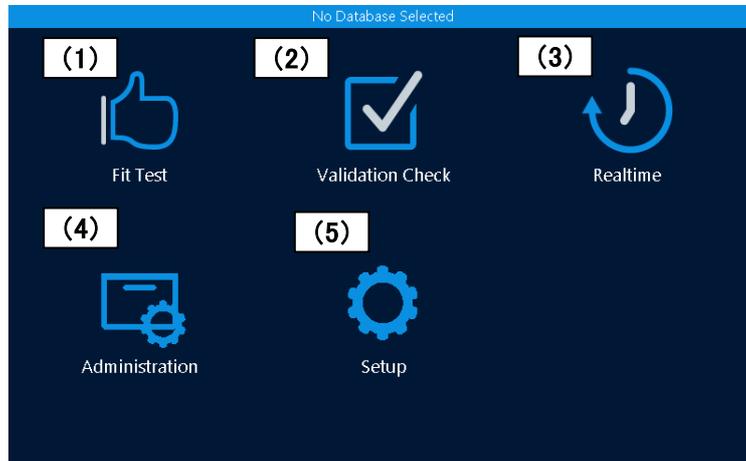
(1)	Fit Test	Performs mask fit test
(2)	Validation Check	Conducts a system check prior to performing series of measurements
(3)	Realtime	Displays the fit factor graph and particle concentration of the ambient air on a real time basis
(4)	Administration	Proceeds to the screen ② (Refer to **5. Administration and Setup for details**.)
(5)	Setup	Proceeds to the screen ③ (Refer to **5. Administration and Setup for details**.)

② Administration
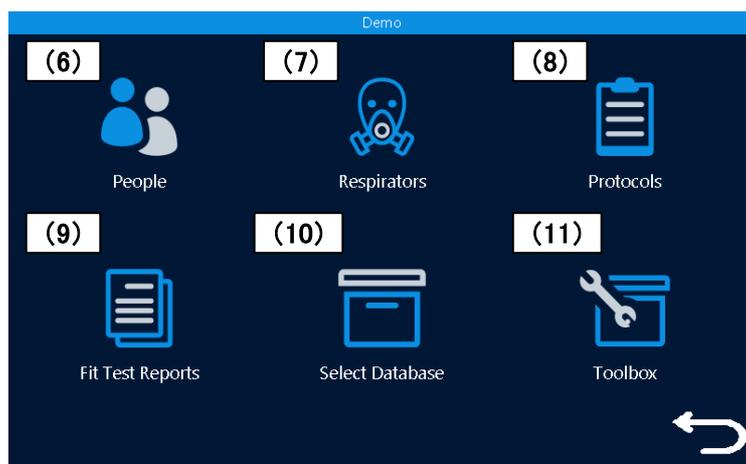
(6)	People	Confirms and selects the list of people being tested. Enters a new person to database
(7)	Respirators	Confirms and selects the list of respirators Enters a new respirator to database

(8)	Protocols	Confirms and selects the test protocol
		Enters a new test protocol to database
(9)	Fit Test Reports	Displays the result of conducted fit tests
(10)	Select Database	Selects database to load as active
(11)	Toolbox	Sets the advanced mode

③ Setup
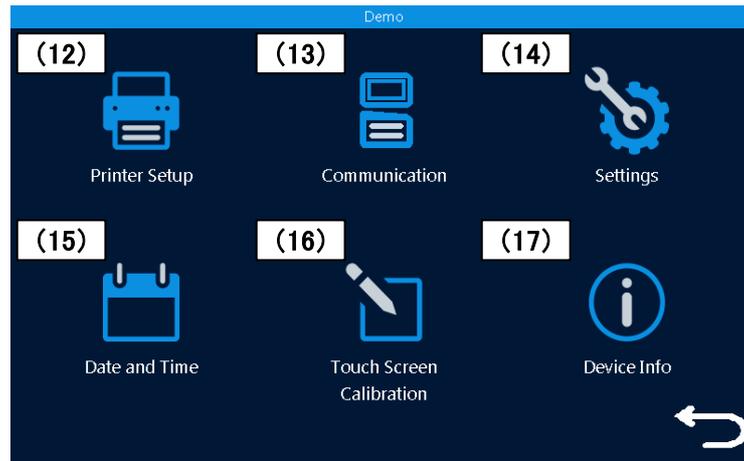
(12)	Printer Setup	Configures the printer setting
(13)	Communication	Confirms and sets the internet environment
(14)	Settings	Configures the setting for the device
(15)	Date and Time	Edits the date and time setting
(16)	Touch Screen Calibration	Calibrates the touch screen
(17)	Device Info	Checks the device information

2. Principle of Measurement

2.1 Principle

This device measures particle concentration in the ambient air and inside of the mask, and determines how well a mask fits by comparing the ratio of these particle concentrations.   The ratio of the above concentrations is called "fit factor".   If the fit factor is 100, it essentially means that the inside of the mask is 100 times as clean as the ambient air.

$$\text{Fit factor} = \frac{Particle\ concentration\ in\ the\ ambient\ air}{Particle\ concentration\ inside\ of\ the\ mask}$$

This device measures particle concentration in the ambient air twice in total, before and after a mask fit test exercise.   Particle concentration in the ambient air can be variable over time; therefore this device measures the particle concentration in the ambient air before and after each measurement, and uses the average value.   The particle concentration in the ambient air must be measured for the first measurement.   For the second measurement and subsequent measurements, the concentration after the previous measurement will be used and there is no need for a redundant second measurement of the ambient air.

$$F = \frac{\bar{x}(C_{before} + C_{after})}{2\ Conc_{mask}}$$

The sequence would thus be as follows:

$C_{ambient}$ // C_{mask} // $C_{ambient}$ // C_{mask} // $C_{ambient}$ ···etc.

F: Fit factor
C_{before} : Particle concentration in the ambient air before measurement
C_{after} : Particle concentration in the ambient air after measurement
C_{mask} : Particle concentration inside of the mask

3. Getting Started

3.1 Recharging the Alcohol Cartridge

⚠️ **Warning**	Isopropyl alcohol used for this device is a hazardous material. Do not allow the alcohol to contact your eyes and skin. Refer to the Safety Data Sheet (SDS) for chemical material when storing alcohol in a special container and when using it.
⚠️ **Caution**	Recap the alcohol container immediately after use to prevent the alcohol from absorbing moisture and from evaporating. Do not use the device at any tilt angle. If to do so, alcohol could leak from the bottle, which may damage the device.

The CPC (Condensation Particle Counter) in this device detects particles using isopropyl alcohol vapor.   Installing the alcohol cartridge soaked in the alcohol solution to this device will provide the alcohol vapor in the CPC.   When the alcohol vapor and an airborne particle come in contact, a droplet which has the particle at its center will be formed.   If the alcohol solution in the alcohol cartridge becomes depleted, the device cannot measure particles correctly.   To avoid this, please recharge the alcohol cartridge before using the device.

3.1.1 Preparation

Isopropyl alcohol and the following components are required.
   ・Alcohol storage container
   ・Storage cap
   ・Alcohol cartridge

The **isopropyl alcohol** used for this device must be a high-purity guaranteed reagent alcohol. Please do not use isopropyl alcohol that is available from pharmacies or supermarkets.   The purity of this alcohol is low (about 70%), and may cause damage to the CPC.   Any problems caused by a use of alcohol other than specified below is not covered by the warranty.
Please be sure to use the appropriate alcohol with strict adherence to the handling directions.

The alcohol used for this device must be a guaranteed reagent satisfying at least the following requirements:

Chemical name: 2-Propanol

Synonym: Isopropyl alcohol

Chemical formula: $(CH_3)_2CHOH$

Formula weight: 60.10

Assay: 99.5% or better

When the device is not in use, the alcohol cartridge must be stored in the alcohol storage container and the alcohol cartridge inlet must be sealed with the storage cap to keep dust out.
When the device is in use, the storage cap must be used to seal the alcohol storage container.

3.1.2 Recharging the Alcohol Cartridge

⚠️ **Caution**	Do not leave the alcohol cartridge inlet open. Failure to observe the above may cause contamination of the optical system or a malfunction.

1. Turn the device off.

2. Open the alcohol storage container by turning the storage cap (or the alcohol cartridge) about 45° counterclockwise.

   Stand the storage cap (or the alcohol cartridge) straight up in a clean place.

3. Pour isopropyl alcohol in the alcohol storage container up to the marked level.
   Be careful not to tip the bottle and spill the alcohol.

   Fill level ➡️

4. Insert the alcohol cartridge into the alcohol storage container, and turn it about 45° clockwise until it is firmly locked.   Do not use excessive force.

5. After the alcohol cartridge is inserted, the felt in the cartridge will be soaked in alcohol.   You can use the device after a few minutes of soaking the felt in alcohol.

3.1.3 Installing the Alcohol Cartridge

1. Remove the alcohol cartridge from the alcohol storage
   container and gently shake off any excess alcohol solution.
   Failure to do this may cause the absorbed alcohol to clog the
   front of the alcohol cartridge. As a result, the flow of the
   incoming airborne particles and alcohol vapor will be disturbed,
   making it impossible to measure correctly.
   Please wait until the outer surface of the alcohol cartridge dries
   or wipe the excess alcohol off with a non-abrasive lint-free
   wipe.

   **The front of the
   Alcohol cartridge**

2. Insert the alcohol cartridge into the inlet as shown on the
   right, and turn the alcohol cartridge clockwise about 45°.

   To install the alcohol cartridge correctly, be sure to turn it
   firmly until it stops. (See the picture at right.)

   【**Caution**】
   **If alcohol accumulates inside the cartridge inlet, wipe
   the alcohol off with a non-abrasive, lint-free wipe.**

| ⚠ **Caution**	・To prevent the alcohol from absorbing moisture and from evaporating, always recap the alcohol storage container with the storage cap. Contaminated alcohol must be disposed of.
	・When the device is not in use, the alcohol cartridge must be stored in the alcohol storage container. To keep the inside of the instrument clean, seal the cartridge inlet with the storage cap.
	・**Do not carry or store the device with the alcohol cartridge installed.** Failure to observe the above may allow the alcohol solution to get into the optical system and affect measurements. When carrying or storing the device, seal the alcohol cartridge inlet with the storage cap to keep dust out.
	・Always keep the storage cap and alcohol cartridge clean. (Refer to **6. Maintenance**.) If dust sticks to the side of the cartridge or inside of the cap, it may get into the device during operation, affecting measurtement.
	・After measuring for a long period of time, alcohol may accumulate inside the cartridge inlet. If you notice that the measured value of the ambient particle concentration has shifted dramatically check the cartridge inlet, and wipe the accumulated alcohol off with a non-abrasive, lint-free wipe before restarting the device.

3.2 Getting Started (Main Unit)

Turn on the device to display the Activities screen (①).   Prior to performing a series of measurements, you need to perform Validation Check (2) to confirm that the device is operating correctly and the environment is appropriate for measurements (i.e., that there are sufficient particles present and the instrument can measure them).   Failure to do this may cause unreliable test results.   Always ensure that a Validation Check is performed prior to conducting a mask fit test or a series of fit tests.

Fit Test (1) cannot be performed without conducting a Validation Check (2).   To perform the check, follow the procedures as follows:

3.2.1 Confirming the External Memory

This device does not have a built-in memory to record the measurement results.   Before starting a measurement, make sure that a USB flash drive that has been configured with the required information to perform measurement is connected to the device.

3.2.2 Database Selection	Insert the USB flash drive into the USB port Type A (H) of the device, prior to performing Validation Check (2). Select the desired database and tap [Load] then tap[Fit Test] or [Exit] button. By tapping the [Refresh] button, the databases in the pull-down menu box will be updated to display the databases stored in the USB flash drive.
3.2.3 N95 Selection	If you perform Validation Check in the N95 mode, select the N95 Enabled check box.
3.2.4 Particle Check	Remove the HEPA filter or the mask if attached, and tap the [Start] button to check that the particle concentration in the ambient air is sufficiently high enough to calculate the mask fit factor. Depending on the ambient particle concentration (i.e., outside of the mask), the environment may be inappropriate to perform a mask fit test. This process also confirms that the device is operating properly. When this measurement is complete, procede to the Zero Check
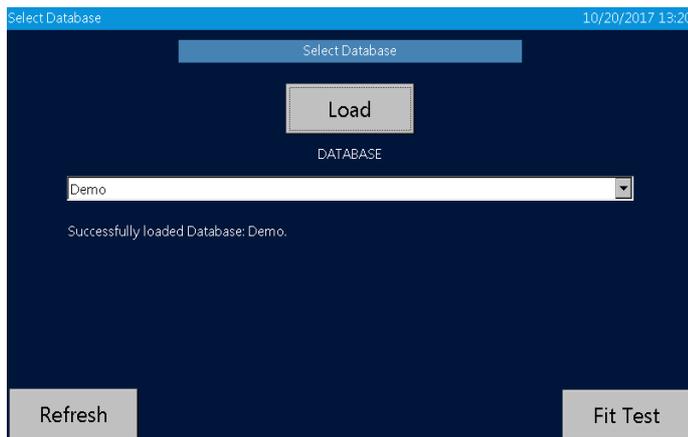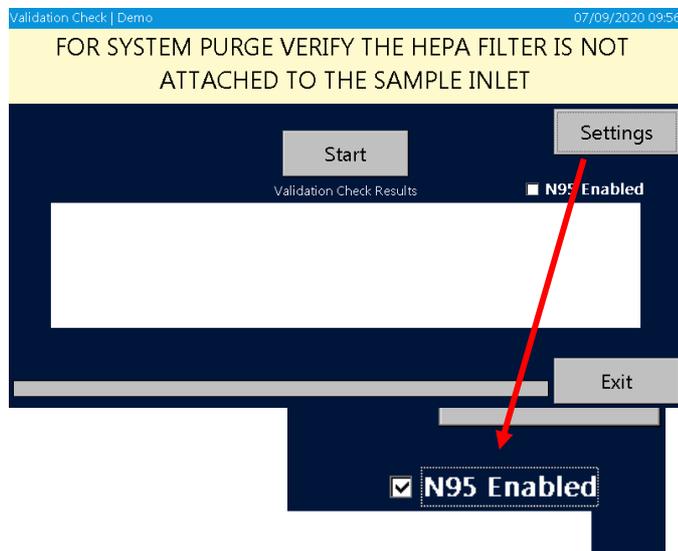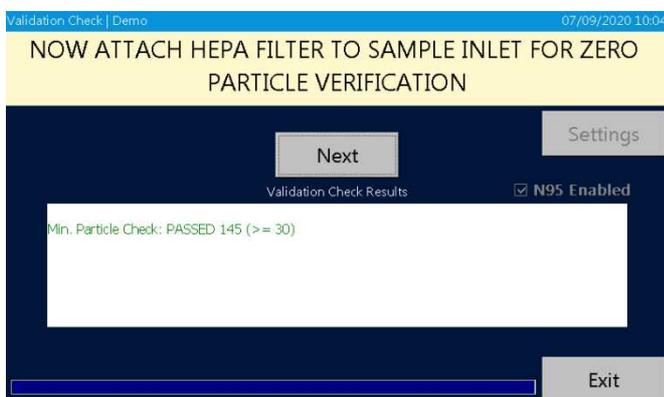
3.2.5 Zero Check
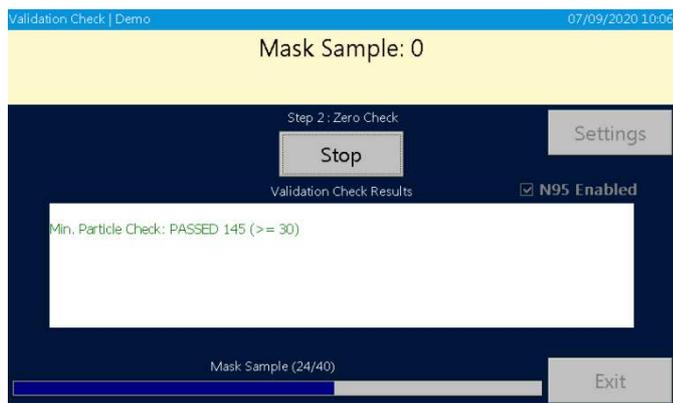
If a leak occurs inside of the device, the test
result may be affected. The Zero Check determines that there are no internal leaks or loose connections.
Install the HEPA filter to the sample inlet line (making sure that the arrow on the HEPA cartridge is aligned with the flow), and tap [Next] to begin the Zero Check measurement. When the Zero Check is complete the AccuFIT9000 PRO automatically continues to the next check.

3.2.6 Fit Factor
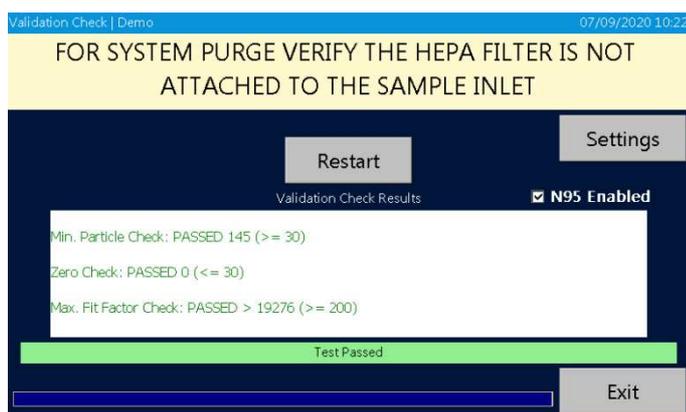
To confirm whether the device performs correctly, this test confirms the fit factor using the HEPA filter. The instrument measures the particle concentration in the ambient air and calculates the ratio to the particle concentration via the HEPA Filter. By determining this ratio, the device confirms that it is correctly performing this function.
If the Validation Check is passed, a message
"Test Passed" will appear. If no message appears, perform Validation Check again.

*If there is no database, the alarm appears. Execute the Save As command from Toolbox (11) to create a database.

3.2.7 Validation Check Settings

By tapping the [Setting] button on the Validation Check screen, you can change the value(s) for the check as necessary. After changing the value(s), tap the [Save] button to save the change(s).

Recommended values are >/= 1000 Minumum particles, </= 20 Zero particles, and >/= 10,000 Max Fit factor

If you select the **Validation Check Settings for N95** check box in the N95 Mode, you can change values necessary in the Validation Check.

3.3 Get the Person being Tested Ready

Prior to a mask fit test, attach the mask to the inlet of the Device using the appropriate adapter, have the person being tested don the mask and check the seal of the mask by himself or herself, and confirm whether he or she is wearing the mask properly.   After that, the person being tested must continue to wear the mask for approximately 5 minutes (29 CFR 1910.134) to clear the respirable particles from inside of the mask, and then proceed to the measurement process.

Every person being tested for respirator fit must have been previously trained in the proper procedures for wearing respiratory protective devices.   Inappropriate use may result in inaccurate measurements.   The mask may not be adjusted once a fit test is initiated in order to ensure the reliability of the fit test results.

4. Measurement

4.1 Step 1

Fit Test: Step 1 of 4 | Demo   06/09/2020 12:27

FIT TEST STEP 1 of 4 - SELECT PEOPLE

New

People List

First Name   Middle Name   Last Name

EMP. ID   Company   Medical C.   Misc.

☐

Test Date   Due Date

Exit   Next

Fit Test

Tap Fit Test icon (1) on the Activity screen ① to start a measurement.

*If Validation Check (2) has not been completed, the screen for the check will be displayed.

Refer to **3.2 Getting Started (Main Unit**) to conduct the check prior to a measurement.

SELECT PEOPLE

If the person to be tested is already in the database, select the name from the pull-down menu.

When the person is being tested for the first time, or is not in your database the subject's data must be entered prior to the fit test.

Tapping the [New] button allows these data to be entered. Use the provided touch pen and display keypad to enter the personal information.

When the entry is complete, tap the [Save] button to finish the entry.

4.2 Step 2

Fit Test: Step 2 of 4 | Demo   09/04/2020 10:22

FIT TEST STEP 2 of 4 - SELECT RESPIRATOR

New

Mask Size *   Small

Respirator List

Manufacturer Model	Type	Pass Value

☐ Filter efficiency less than 99%

Back   Exit   Next

Mask size
Select the size (Small, Medium, Large, Other, or One Size Fits All)

SELECT RESPIRATOR
Select the mask to use for the test.
If the mask is already in the database, you can select it.   If the mask is not already in the database it must be entered prior to the test.
   When you select the N95 Mask, the check box of the **Filter efficiency less than 99%** is marked. You cannot deselect this.
Tapping the [New] button allows these data to be entered.   Use the provided touch pen and display keypad to enter the personal information.
When the entry is complete, tap the [Save] button to finish the entry.

4.3 Step 3

Fit Test: Step 3 of 4 | Demo   06/09/2020 12:29

FIT TEST STEP 3 of 4 - SELECT PROTOCOLS

Display   New

★ Current Protocol
ANSI/AIHA Z88.10-2010(D)

Protocols
ANSI/AIHA Z88.10-2010(D)

★   Operator   TEST DATE   Due Date
                    06/09/2020   06/09/2021

Back   Exit   Next

Confirming the measurement parameters (Protocols)
Select the appropriate protocol.

Enter the name, initials, or ID of the person conducting the fit test. (Operator) (REMEMBER it's your database so be consistent)

Check the next test date (Due Date) The date of the next test is displayed. (Per 29 CFR Part 1910.134 this would be one year from current date.)

To entry a new protocol, tap the [New] button.
For details, refer to **5.1.3. Protocols**.

4.4 Step 4

Fit Test: Step 4 of 4 | Demo   11/15/2018 12:10

Doe, John, 1357
3M 8210 DISPOSABLE [100]
OSHA 29CFR1910.134
Mask Size: Small, Operator: m

Exit

Exercise Name	Fit Factor	Exercise Name	Fit Factor
1:NORMAL BREATHING	-	2:DEEP BREATHING	-
3:HEAD SIDE TO SIDE	-	4:HEAD UP AND DOWN	-
5:TALKING	-	6:GRIMACE	Excl.
7:BENDING OVER	-	8:NORMAL BREATHING	-
	-		-
	-		-

Fit Factor		Concentration Values	
Overall Fit Factor	-	Ambient	-
Pass Value	100	Mask	-

Back   Click "Start" To Begin   Start

Fit Test: Step 4 of 4 | Demo   11/16/2018 17:12

Test Passed

Exercise Name	Fit Factor	Exercise Name	Fit Factor
1:NORMAL BREATHING	20587	2:DEEP BREATHING	26728
3:HEAD SIDE TO SIDE	19879	4:HEAD UP AND DOWN	24327
5:TALKING	28435	6:GRIMACE	Excl.
7:BENDING OVER	18122	8:NORMAL BREATHING	30108
	-		-
	-		-

Fit Factor		Concentration Values	
Overall Fit Factor	23259	Ambient	16468
Pass Value	100	Mask	0

Exit   Print   Start   New Test

Start and Exit

The fit test exercises for the selected protocol are displayed.

If not correct, tap the [Exit] button to return to the previous page and configure the setting again.   After confirmation, tap the [Start] to start the test.

When the test completes, the test result (passed or failed) will be displayed at the top of the screen. The measurement result will be saved automatically in the selected database.

*If the test result is not passed and there is reason to believe that there may be a malfunction, refer to **8. Troubleshooting** for details.

Tap the [Print] button to print the result of the mask fit test.
To start a new test, tap the [New Test] button.

*If there is no database, the alarm appears. Execute the Save As command from Toolbox (11) to create a database.

⚠
Caution

To keep the inside of the device clean, attach the zero (HEPA) filter to the inlet after using the device and run the AccuFIT9000 PRO for approximately 5 minutes before turning the power off.   Allowing the contaminated particles to accumulate inside of the device could potentially cause trouble. When the device is not in use, keep the zero filter attached to the inlet.

4.5 Record

After measurement, the data will be saved automatically into the active database on the USB flash drive.   If the AccuFIT9000 PRO is used in Standalone mode data cannot be saved on the fit test instrument by itself.   To save data, use a USB flash drive that is configured with the database.   If you do not have a USB flash drive, the device can perform measurements, but it can not record the data.

4.6 Print

By connecting the device and the printer using a USB cable, you can print the measurement results. You can configure printer setting from Printer Setup (12).

4.7 Real-time Measurement

By selecting the Realtime（3）icon on the Activities screen, real-time particle counts can be displayed graphically and digitally.

*NB: This data can not be saved.

This function is used for training in the use of respirators, determining whether or not a respirator can be fit tested, and for troubleshooting.　Using this function allows you to confirm changes in the fit factor due to minor adjustment of masks.

*Do not use this function immediately prior to the mask fit test.

	To start a measurement, tap the [Start] button. To stop the measurement, tap the [Stop] button. To return to the Activities screen (①), tap the [Exit] button. By selecting the [100], [500], or [1000] button, a reference line indicating the selected pass value can be inserted on the chart. If you select the **N95 Enabled** check box, the real time measurement in the N95 Mode is performed.

Mode	Description
Ambient Particle Count	Displays the particle counts in the ambient environment
Realtime Particle Count	Displays the particle counts in the breathing zone of the mask
Fit factor	Displays the fit factor

4.8 Toolbox (Advanced Modes)

(11) Toolbox

Mode	Functions
Clean Copy	Copies data other than the fit test results from the original data base
Copy	Copies all data saved in the database
Statistics	Shows the number of records of each information type (Validation Check, people, mask, protocol, fit test results) saved in the database and confirms the file size
Save	Stores the database in a USB flash drive. In the event that the measurement data can not be saved in the USB flash drive in use, you can use this command to save the measurement data in a substitute USB flash drive.
Save As	Creates and Stores a database by a different name from the current one. When the device starts for the first time, there is a demo database only; therefore, you can use this command to create and save a new database. This command can also be used to create a backup database.
Delete	Deletes data from the USB flash drive. Please note that the deleted data can not be restored.

4.9 Remote Control Mode

If the software for this device is installed in your PC, you can use your PC to remotely control the device.   For details, refer to the separately provided Software User Manual.

5. Administration and Setup

5.1 Administration

5.1.1 People
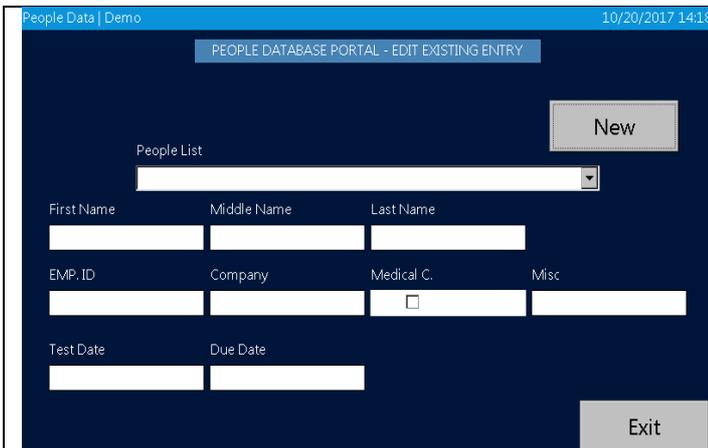
	You can check the existing entry of people. Select the person whose data you wish to check from the pull-down menu. Tap the [New] button to start a new entry as necessary.
	For a new entry, the first name, last name, and EMP.ID are required. Enter the other information as desired. Tap the [Create] button to allow these data to be entered.
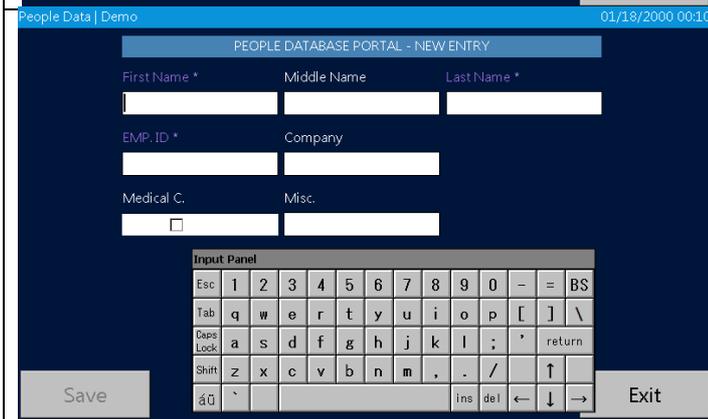
5.1.2 Respirators
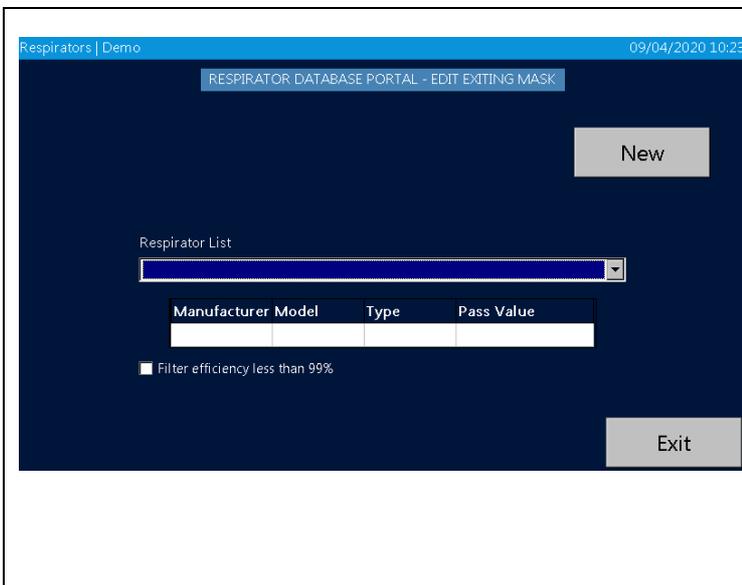
	You can review a mask that is already in the database. Select the mask to display the following information: Manufacturer, Model, Type, and Pass Value. When you select the N95 Mask, the check box of the **Filter efficiency less than 99%** is marked. Tap the [New] button for a new entry as necessary.
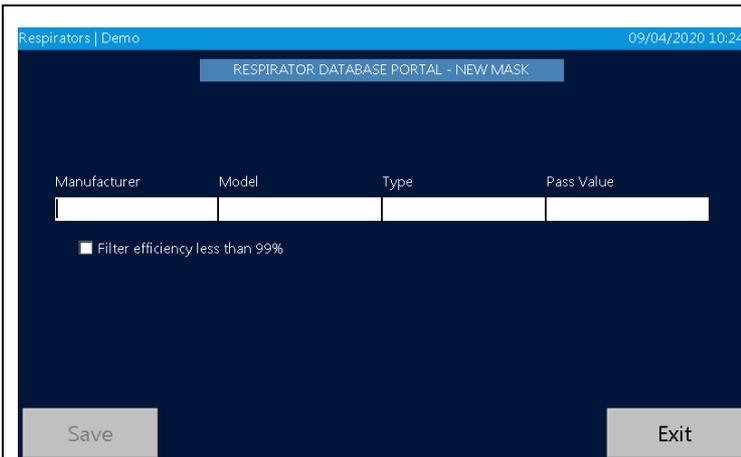
Respirators | Demo   09/04/2020 10:24

RESPIRATOR DATABASE PORTAL - NEW MASK

Manufacturer   Model   Type   Pass Value

☑ Filter efficiency less than 99%

Save   Exit

Enter information into the [Manufacturer],
[Model], [Type], [Pass Value] fields, and tap the [Save] button to confirm the entry.

For the N95 Mask, select the **Filter efficiency less than 99%** check box.

If the entry in each field is not appropriate, tapping the [Save] button will have no effect.

5.1.3 Protocols
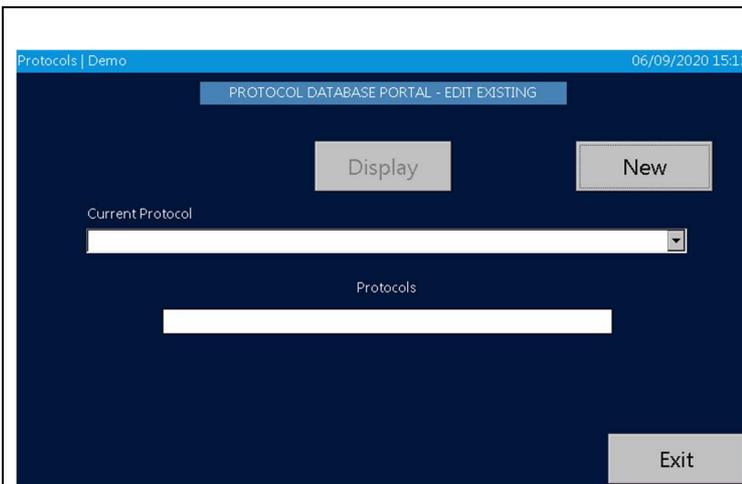
Protocols | Demo 06/09/2020 15:13 PROTOCOL DATABASE PORTAL - EDIT EXISTING Display New Current Protocol Protocols Exit	You can check the mask fit test protocols. Select the protocol you wish to check from the pull-down menu and tap the [Display] button.
Protocols | Demo 11/15/2018 12:12 Protocol Details Protocol Name OSHA 29CFR1910.134 Next Test In 12 mo. Ambient Sample Time 5 sec. Mask Purge Time 11 sec. Ambient Purge Time 4 sec. **Exercise Name** / Sample Time / Excl. / **Exercise Name** / Sample Time / Excl. 1:NORMAL BREATHING 40 No 2:DEEP BREATHING 40 No 3:HEAD SIDE TO SIDE 40 No 4:HEAD UP AND DOWN 40 No 5:TALKING 40 No 6:GRIMACE 15 Yes 7:BENDING OVER 40 No 8:NORMAL BREATHING 40 No - - - - - - - - - - - - ☐ Stop fit Test immediately when any exercise fails. ☐ Use fit test with 2 ambient samples. Exit	You can confirm the details of the protocol By checking the box at the bottom left of the screen, you can modify parameters of condition(s) to the mask fit test.
Protocol Details 06/09/2020 13:31 Protocol Name NEW PROTOCOL Next Test In 12 months Ambient Sample 5 sec. Ambient Purge 4 sec. Mask Purge 11 sec. OK Exit	To entry a new protocol, tap the [New] button. Enter Protocol Name you wish to add, followed by the Next Test, Ambient Sample time, Ambiebnt Purge time, and Mask Purge time. To save your entry, tap the [OK] button. The screen for entering an exercise will appear. If you tap the [Exit] button, data you entered is discarded, and the current screen will return to the Protocol Selection screen.
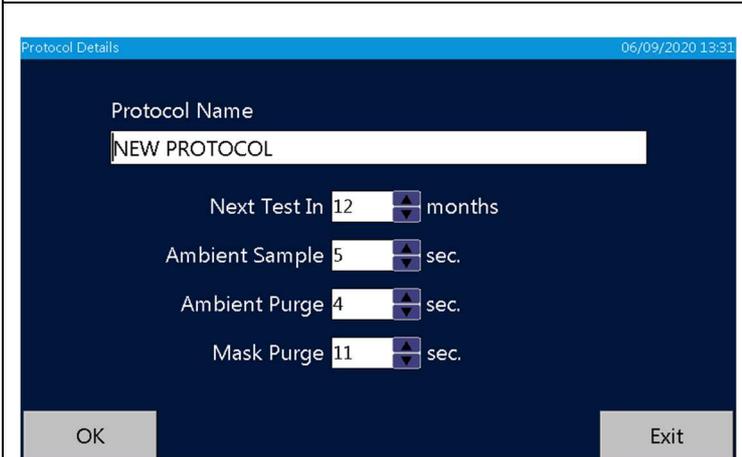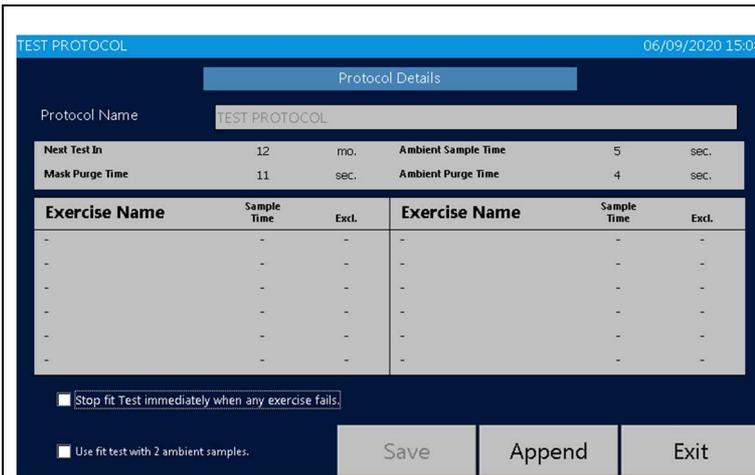
TEST PROTOCOL　　　　　　06/09/2020 15:08 Protocol Details Protocol Name　TEST PROTOCOL Next Test In　12　mo.　Ambient Sample Time　5　sec. Mask Purge Time　11　sec.　Ambient Purge Time　4　sec. **Exercise Name**　Sample Time　Excl.　**Exercise Name**　Sample Time　Excl. -　-　-　-　-　- -　-　-　-　-　- -　-　-　-　-　- -　-　-　-　-　- -　-　-　-　-　- -　-　-　-　-　- ☐ Stop fit Test immediately when any exercise fails. ☐ Use fit test with 2 ambient samples.　Save　Append　Exit	Tap the [Append] button to add an Exercise. When you tap the [Append] button, the screen for entering an exercise will appear.
exerciseNParameters　　　　　　06/09/2020 15:09 New Exercise Number　1　▲▼ New Exercise Name │ Mask Sample Time 10　▲▼ sec ☐ Exclude Exit　Save	Confirm New Exercise Name, Mask Sample Time and Exclude. When multiple exercises are entered, change the New Exercise Number to modify. To save your entry, tap the [Save] button. The current screen will return to the Protocol Details screen. If you tap the [Exit] button, your entry is discarded, and the current screen will return to the Protocol Details screen.
TEST PROTOCOL　　　　　　06/09/2020 15:12 Protocol Details Protocol Name　TEST PROTOCOL Next Test In　12　mo.　Ambient Sample Time　5　sec. Mask Purge Time　11　sec.　Ambient Purge Time　4　sec. **Exercise Name**　Sample Time　Excl.　**Exercise Name**　Sample Time　Excl. 1:HEAD SIDE TO SIDE　10　No　-　-　- -　-　-　-　-　- -　-　-　-　-　- -　-　-　-　-　- -　-　-　-　-　- ☐ Stop fit Test immediately when any exercise fails. ☐ Use fit test with 2 ambient samples.　Save　Append　Exit	If you wish to add another exercise, tap the [Append] button. To save your entry, tap the [Save] button. The current screen will return to the Protocol Details screen. If you tap the [Exit] button, all protocols and exercises you have entered are discarded, and the current screen will return to the Protocol Selection screen.
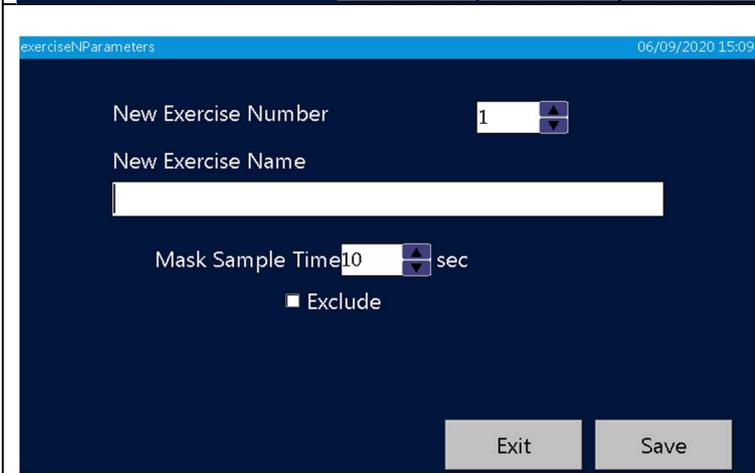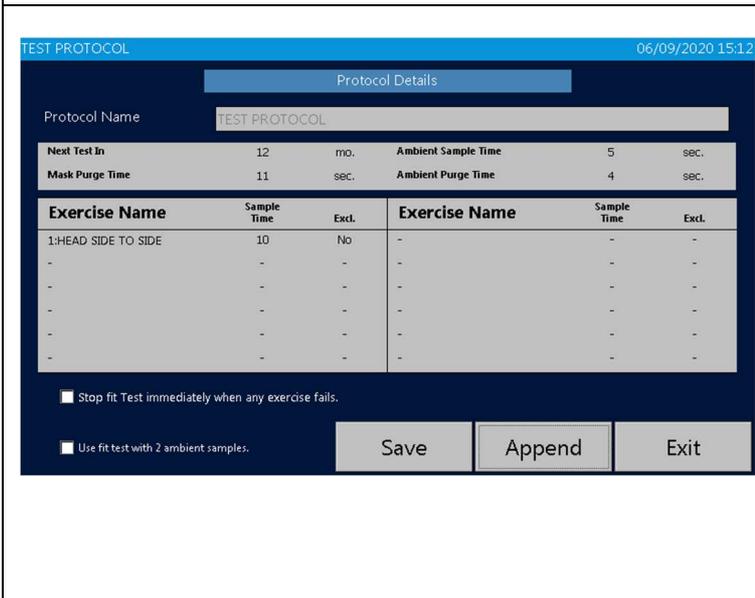
5.1.4 Fit Test Reports
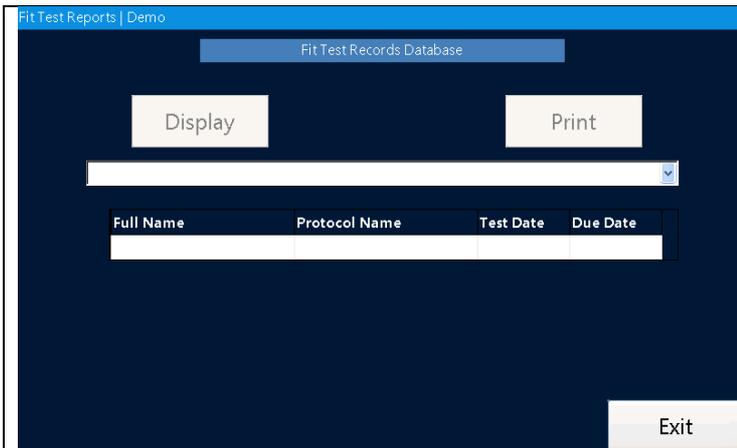
	You can review the fit test results saved in the database. Tap the [Display] button to check the results. To print the results, tap the [Print] button. Prior to printing the results, configure the printer settings from the Printer Setup (12).
	The screen shown to the left displays the test results. This screen also can be printed by tapping the [Print] button.
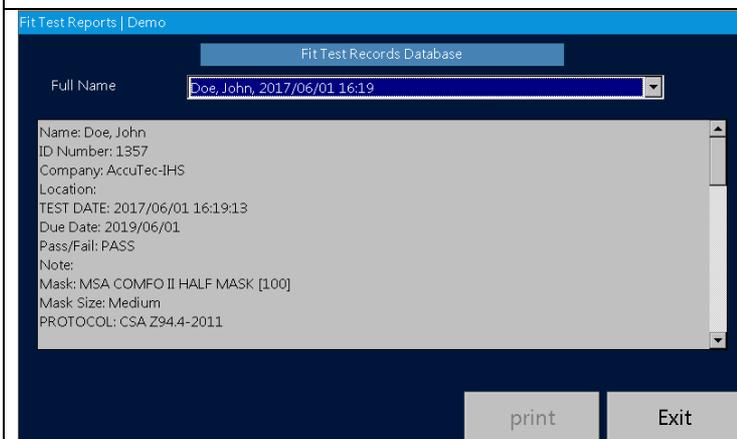
5.1.5 Select Database
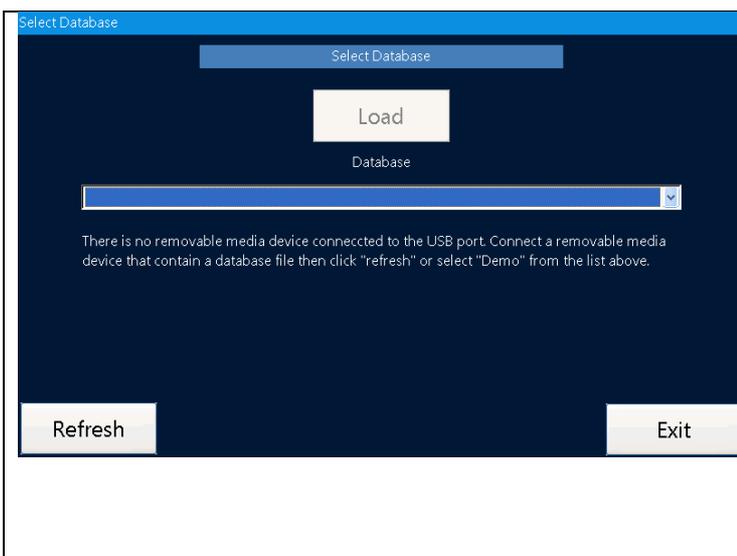
	You can load the database and renew it. Highlight the database you wish to use from the pull-down menu and tap the [Load] button to use the selected database. The [Refresh] button is to renew the pull-down menu after changing the USB flash drive.

5.1.6 Toolbox
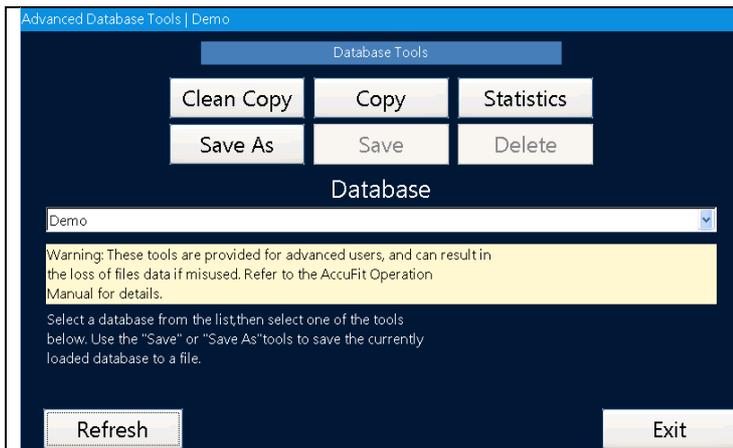
	These are the tools for advanced users. For the details, refer to **4.8 Toolbox (Advanced Modes)**. The [Refresh] button is to renew the pull-down menu after changing the USB flash drive.

5.2 Setup

5.2.1 Printer Setup
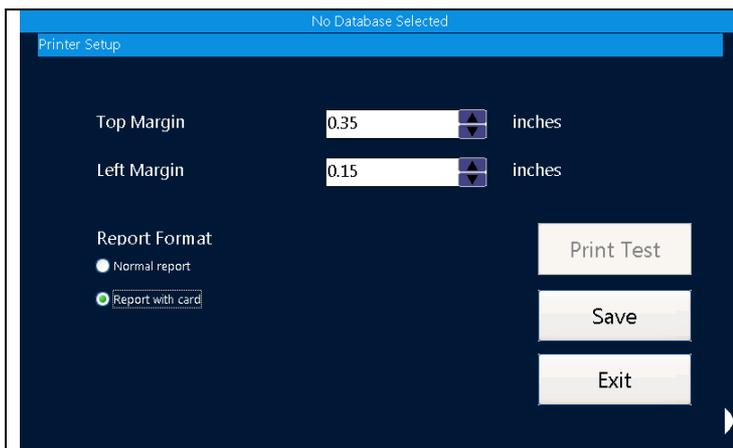
	You can configure the printer settings. Select the top/left margins and report format as necessary. To confirm your printer setting, tap the [Print Test] button to perform the print function. Tap the [Save] button to save your settings. **A printer supporting PLC3 is a printer you can connect.** **Our recommended printer is HP OfficeJet Pro 8210. (Function checks has been made successfully.)**

5.2.2 Communication

※For more information about the Communication settings, please refer to the User's Manual for Software Application.

To connect the Device(s) to your PC, you have three optional methods: USB, LAN and Wi-Fi connections. Please refer to the following procedures.

	● PC Tool For the connection to your PC, enter IP Address to the Host field, and Port No. to the Port field. Entering IP Address and Port No. is necessary for LAN and Wi-Fi connections, but not for USB connection. After you enter IP Address and Port No., tap **Save** button to save the data. You can select your desired connection method by tapping the appropriate button. The status of the connection method you selected will appear in the **Status** text box. When **Ready** is displayed in the text box, tap **Connect** button to complete the connection. When you establish the connection, tap **Exit** button to close the Communication settings screen.

Communication 02/07/2018 15:19 PC Tool LAN Wi-Fi Please input and save the following information to connect to PC Tool via LAN. Name server addresses may be automatically assigned if DHCP is enabled. ○ Obtain an IP address via DHCP. ● Specify an IP address IP Address 192.168.111.25 Subnet Mask 255.255.255.0 Default Gateway 192.168.111.1 Save MAC Address 04:a3:16:ec:13:66 Exit	● LAN Connection For LAN Connection, you are required to enter IP Address, Subnet Mask and Default Gateway. If DHCP is enabled, select **Obtain an IP address via DHCP** to obtain IP Address, Subnet Mask and Default Gateway automatically. If DHCP is not enabled, select **Specify an IP address.** Upon confirming the network setting, enter IP Address, Subnet Mask and Default Gateway manually. Selecting the appropriate text box allows you to enter this required information. When you enter the required fields, tap **Save** button to save the data. And then tap **Exit** button to close the Communication settings screen.
Communication 02/07/2018 15:20 PC Tool LAN Wi-Fi Please input and save the following information to connect to PC Tool via Wi-Fi. SSID SSID-01 search SSID Password ******** ■ Show password characters ○ Obtain an IP address via DHCP. ● Specify an IP address IP Address 192.168.2.4 Save Subnet Mask 255.255.255.0 Default Gateway 192.168.2.0 MAC Address 20:f8:5e:c6:82:c6 Exit	● Wi-Fi Connection Tap [search SSID] button, and select SSID of wireless router you use from the displayed list. And then, enter the password of SSID you selected. Set **Show password characters** to reveal the password hidden behind asterisks. If DHCP is enabled, select **Obtain an IP address via DHCP** to obtain IP Address, Subnet Mask and Default Gateway automatically. If DHCP is not enabled, select **Specify an IP address.** Upon confirming the

	network setting, enter IP Address, Subnet Mask and Default Gateway manually. Selecting appropriate text box allows you to enter this required information. When you enter the required fields, tap **Save** button to save the data. And then, tap **Exit** button to close the Communication settings screen.

5.2.3 Settings

|	
Settings 02/07/2018 15:07 High conc. warning level Language 30000 English Save fit tests to database Save all fit tests ☑ Automatically print report for saved fit tests ☑ Terminate fit test early if a passing overall fit factor is impossible to achieve. ■ Buzzer ON Save Exit	You can configure the settings for measurement and language. Tap the [Save] button to save your settings. Please note: Changing language requires a re-start.

5.2.4 Date and Time

People Data | Demo PEOPLE DATABASE PORTAL - NEW ENTRY First Name * Middle Name Last Name * EMP. ID * Company Medical C. Misc ☐ Input Panel Esc 1 2 3 4 5 6 7 8 9 0 – = BS Tab q w e r t y u i o p [ ] \ Caps Lock a s d f g h j k l ; ' return Shift z x c v b n m , . / ↑ Create áü ` ins del ← ↓ → Exit	You can change the date and time settings of the device. Tap the [OK] button to save your change(s).

5.2.5 Touch Screen Calibration
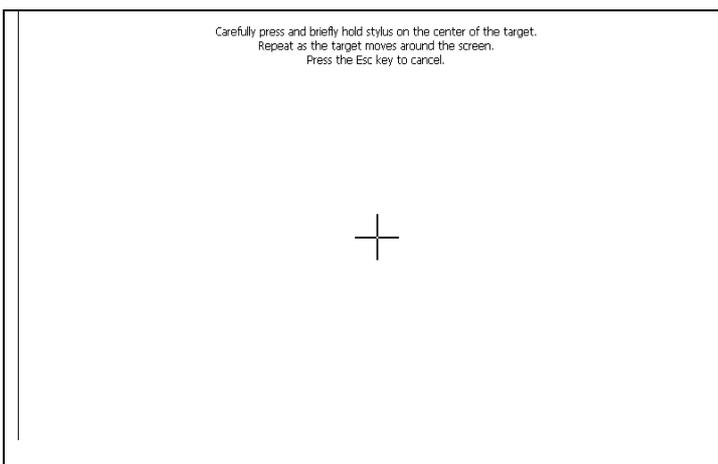
|	
Carefully press and briefly hold stylus on the center of the target. Repeat as the target moves around the screen. Press the Esc key to cancel. +	You can calibrate the touch pen. Tap the center of the cross icon on the screen.　Repeat tapping the center as the cross icon moves around the screen. When completed, the cross icon disappears.　 Tap the screen to return to the Setup screen (③).

5.2.6 Device Info
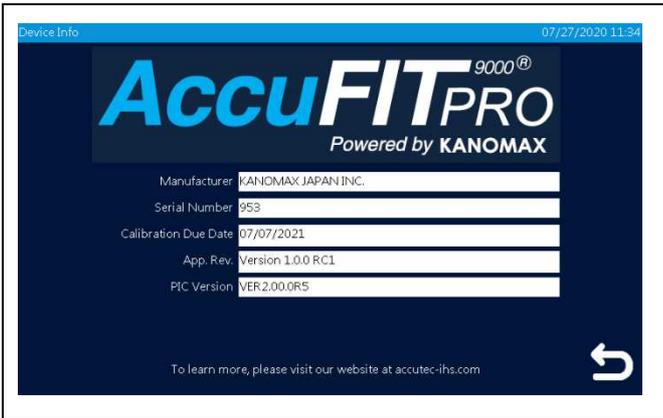
	You can check the device information.

6. Maintenance

This device requires routine maintenance according to the instruction below:

In addition, an annual calibration will ensure that the instrument is operating within manufacturer's required parameters in order to perform accurate measurements. Please contact your distributor for annual calibration.

⚠️ **Warning**	**DO NOT OPEN the outer case of the device.** It is hazardous to open the outer case of the device because a Class 3B laser diode is contained in the device. Opening the outer case will void the warranty. For necessary maintenance or for any service that is not described in this manual, please contact your distributor.

6.1 Calibration

Do not attempt to calibrate this device by yourself.   Contact your distributor.

Failure to observe the above may result in problems in measurements.

6.2 Alcohol Cartridge

The felt inside of the alcohol cartridge absorbs and retains alcohol. The alcohol cartridge is inserted into the main unit and therefore it must be kept clean. If dust gets into the device, it may clog the internal nozzle and affect the proper operation. Be careful when storing and handling the alcohol cartridge and storage cap to protect them from contamination.

·Cleaning and replacing the felt

The felt and mesh inside the alcohol cartridge are user-replaceable.

The device is provided with 2 sets of felt and mesh.   In normal use, there is no need for replacing the felt unless a problem described below occurs.

1. The felt is contaminated with dust or oil.
    → This problem does not occur when the device is used in normal ambient air.
       If the device is used for sampling highly-concentrated particles (e.g. sampling in a boiler room or sampling combustion aerosols), the felt may become contaminated and will require replacement.
2. The mesh inside of the alcohol cartridge is clogged.
    → If the alcohol cartridge has been soaked in contaminated alcohol, the mesh inside of the alcohol cartridge may be clogged.   The mesh can be cleaned by washing; however, if the clogging persists, the mesh must be replaced and the alcohol should be checked.
3. The device is not able to measure due to humidity.

→ Because of the fact that reagent grade 2-propanol is extremely hydroscopic, if extremely humid air is drawn into the device, moisture may accumulate in the alcohol cartridge and reduce the efficiency of the CPC. In this case, remove the felt to allow it to dry and replace it with the spare felt. When the moisture-contaminated felt is dry, it can be re-used. If the felt or mesh is obviously contaminated with something other than moisture it must be replaced with the provided spare.
Over time, the felt may become discolored.   Usually this will not cause a performance problem.

·Checking and replacing the felt and mesh
   1) To remove the felt from the cartridge, hold the cartridge at the joint line with both hands and push the cap off the cylinder.   The cartridge will be separated into the 2 parts, and the white felt will be visible (Figure 1).

   2) After the cartridge is separated, push the felt and mesh out of the cartridge cylinder (Figure 2).

   3) Make sure that the felt and mesh are clean.
      If no contamination is found on the felt, it can be reused.   Dry the felt and reassemble it.
      If the felt is obviously contaminated, it must be replaced with the spare and disposed of.
      Hold the mesh up to the light and confirm that all the holes of the mesh are open and clear.
      If the mesh is clogged, clean air may be used to attempt to clear the mesh.   If the clogging persist, replace the mesh with the provided spare.

1) Disassemble the
   Alcohol cartridge.
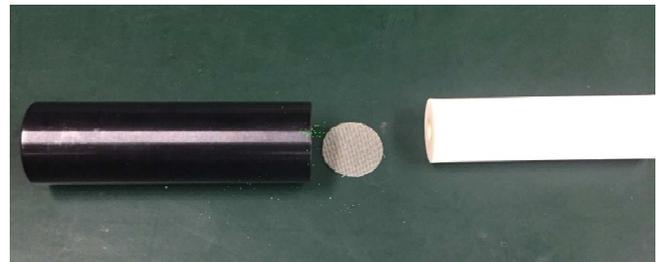
2) Remove the felt and mesh
   from the cartridge cylinder.

·Assembling the Cartridge

⚠ **Caution** Before assembling, make sure that each part is clean.
If there is dust or debris stuck to the felt, it may get into the device and cause several problems.   Please confirm that there is no dust in the alcohol cartridge or on the felt.

Insert the clean mesh into the cartridge cylinder and confirm that the mesh lies flat on the bottom of the cylinder.   Insert the felt until it reaches the bottom of the cylinder, and assemble the alcohol cartridge by reversing the steps shown above.   Finally, blow air on the surface of the alcohol cartridge to remove any dust particles.

6.3 Mesh (Inlet)

Over time, the mesh inside of the inlet may become clogged by dirt.   Remove the inlet and mesh for cleaning as necessary.

7. Specifications

Product name	Respirator Fit Tester
MODEL	AccuFIT9000 PRO
CPC maximum detectable concentration	100,000 particles/cc
False count	0.01 pcs./cc or less
Flow rate	Inlet flow rate: 0.7LPM Sampling flow rate: 0.1LPM
Alcohol/recharging method	Isopropyl alcohol/Felt A full recharge of alcohol allows continuous measurement for approximately 8 hours.
Memory	USB flash drive connection
Display	Color touch screen
Communication	USB, LAN, WiFi
Power source	AC adapter (AC 100 to 240V 50/60Hz) Optional Battery Pack
Operating environment	Temperature: 15 to 35 °C, Humidity: 20 to 85 %RH (with no condensation)*
Storage environment	Temperature: -20 to 50 °C, humidity: 0 to 85%RH (with no condensation)
Dimension	W 208 × D 263 × H 152 mm
Weight	Approximately 3.1kg
Standard accessories	AC adapter, Power cord, Alcohol storage container, Storage cap, Alcohol cartridge, Spare felt (2 pcs.), Wire mesh (2 pcs.), Twin tube (1m), Carrying case, HEPA filter, CD-ROM(Application Software/Instruction manual)

*AccuFIT9000 PRO is not waterproof.   Be careful not to splash water or other liquid onto the device.

8. Troubleshooting

Symptom	Possible Cause	Troubleshooting
A count value is too low (lower than expected).	Alcohol depletion	Recharge the alcohol cartridge with alcohol. (Refer to **3.1 Recharging the Alcohol Cartridge with Alcohol**.)
	The actual particle count in the ambient area is low.	—
	Moisture has accumulated inside the alcohol cartridge.	Replace the felt inside of the alcohol cartridge or dry the felt. (Refer to **6.2 Alcohol Cartridge**.)
	Pump has problems due to low flow (or no flow).	Check the pump performance. Check the touchscreen for an error message. Check the flow rate of the pump. The flow rate must be approximately 700cc/min.
	The device is being operated in an environment outside the specified operable range.	Operate the device in the specified environment. (15 to 35℃, 20 to 85%RH, with no condensation)
	The alcohol is poor quality or is contaminated.	Replace the felt inside the alcohol cartridge. Use only the appropriate alcohol. (Refer to **6.2 Alcohol Cartridge**.)
	The mesh is clogged.	The mesh may be clogged with excess alcohol. Remove the excess alcohol. (Refer to **6.2 Alcohol Cartridge**.)
	Dust and/or alcohol may have gotten into the optical system.	Contact your distributor.
	The device requires a calibration or service.	Contact your distributor.
【PD LD Error】 message	The optical system in the main body is faulty.	Contact your distributor.
【Pump Error】 message	The pump in the main body is faulty.	Contact your distributor.
【Peltier Error】 message	The Peltier device in the main body is faulty.	Contact your distributor.

8. Troubleshooting

【Low Alcohol】 message	The amount of alcohol is low.	Replenish the alcohol cartridge with alcohol.
【Count Over】 message	Measurement concentration is too high.	Ensure that ambient particle concentration is 100,000 particles/cc or less.
【Power Supply Voltage Error】 message	No appropriate AC adapter is connected.	Make sure that the provided AC adapter is connected.
	The circuit in the main body is fautly	Contact your distributor.

9. Contact Information

AccuTec-IHS, Inc.

1408 South Denver Ave Tulsa, OK 74119, USA

TEL: (866) 392-1275

URL: https://www.accutec.com/

E-Mail: info@accutec.Com