



Integritest[®] 5 Integrity Tester

User Guide

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Overview

Introduction and Intended Use

The Integritest® 5 Automatic Filter Integrity Tester is designed for conducting on-site diffusion, bubble point, HydroCorr™, and pressure hold tests on a wide range of membrane filter systems. Both hydrophobic and hydrophilic membrane filters can be tested with the instrument, and testing is not limited to our filters.

The Integritest® 5 tester is designed for continuous operation. It conducts filter integrity tests on the upstream side of the filter system, ensuring sterility of downstream connections.

The instrument tracks and manages data and test results.

The instrument is equipped with the Microsoft® Windows® Operating System that has been validated for use with the instrument.

Installation and Setup

Unpacking the Instrument

Remove the instrument from its packaging and place it on a flat, stable surface (see **Specifications**).

NOTES

Store the packaging in a dry area for future use. The instrument must be packaged in a certified shipping container to be returned for servicing.

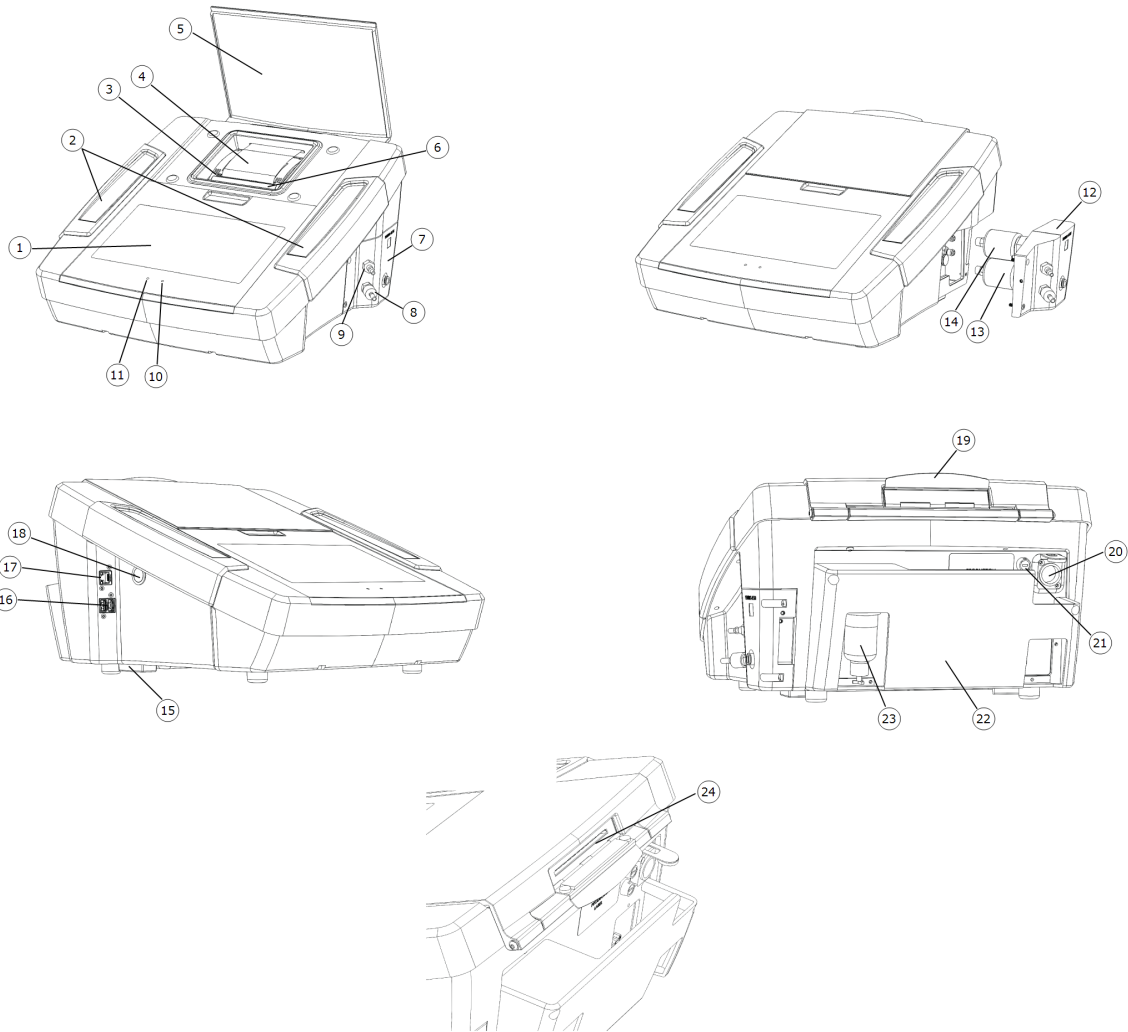
When positioning the instrument, the power cord must be easily accessible. To disconnect the unit from a power source, remove the power cord from the source.

Packing List

The following items are included in the Integritest® 5 instrument shipment:

- Integritest® 5 Integrity Tester
- Certificate of Quality
- Quick-disconnect fitting with Tri-Clover® (TC) connection
- Power cords
- Internal printer paper (3-pack)
- Quick Start Guide
- Inlet and outlet tubing
- 1.5-inch Tri-Clover® (TC) housing adapter
- 0.75-inch Tri-Clover® (TC) housing adapter
- EC Declaration of Conformity

Instrument Overview



Key No.	Component	Key No.	Component
1	Display	13	Exhaust valve
2	Carrying handles	14	Inlet valve
3	Printer status LED	15	Kickstand
4	Printer	16	Two USB connection ports
5	Top cover (opened)	17	Ethernet connection port
6	Printer mode button	18	On/Off button
7	Housing interface module (closed)	19	Paper port (closed)
8	Air outlet port	20	Power port
9	Air inlet port	21	Two Fuse ports
10	Activity LED	22	Storage pocket
11	On/Off LED	23	Water trap
12	Housing interface module (HIM) (open)	24	Paper port (open)

Installing the Instrument

Connecting the Power Cord

Connect the power cord to the power port. Plug the power cord into an appropriate electrical outlet.

NOTE

To ensure data integrity during a power failure, connect the instrument to an uninterruptible power supply (UPS). This also serves as a line conditioner and a surge protector. A UPS with a 30-minute power supply is recommended.

Connecting a Bar Code Reader

If a bar code reader is used, plug it into one of the USB connection ports on the instrument.

Connecting an Ethernet Cable

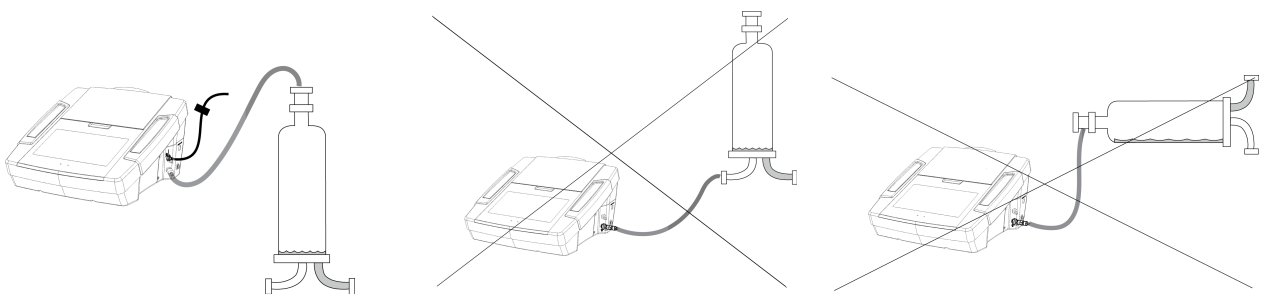
Plug the Ethernet cable into the Ethernet connection port.

Connecting the Air Supply

Connect the pressurized air supply tubing to the air inlet port. See **Specifications** for pressurized air specifications/requirements.

Connecting the Filter

The air outlet port must be attached to the top of the filter housing or to the housing vent connection. The filter housing must be perpendicular to the floor.



Correct Installation

Incorrect Installation

Using the Housing Interface Module (HIM)

The following features prevent liquid from entering the Integritest® 5 instrument:

- A float valve seals the inlet line from liquid in the line.
- A spring-closed valve closes when air supply or power to the system is interrupted.

- A P3 pressure sensor compares the internal pressure to the external line pressure. If there is a negative pressure drop during a test, the inlet valve closes and the exhaust valve opens.

If liquid does enter the HIM, replace or clean the module. See **Cleaning the HIM**.

Setting Up and Using the Internal Printer

The instrument is shipped with the internal thermal printer fully installed and ready to operate.

Performing a Self Test

With the Integritest[®] 5 instrument powered on, depress the printer mode button. When the button is released, the printer performs a self test and releases a test print.

Printer Status LED

The LED indicates the current condition of the printer. Faults are indicated by a flashing sequence. Asterisks (*) in the following table represent flash sequences.

LED indication	Condition	Solution
LED is on	Printer is on.	--
LED is off	Printer is off.	--
* * *	Paper is out or cover is open.	Install new paper or close cover.
** ** **	Thermal print head is too hot.	Allow thermal head to cool.
*** *** *** or **** **** ****	Power is low.	Check power supply and connections.

Installing a New Paper Roll

NOTES

Use only 80 mm wide thermal paper. Other paper may not feed properly or may not be detected.

New paper rolls may be installed when the instrument is either powered on or off.

When the printer is out of paper, the printer status LED flashes (see **Printer Status LED**).

1. Press the printer mode button to feed through the last of the paper.
2. Open the printer cover by pulling the lever until the cover is released from the locked position. Do not use excessive force.
3. Remove the empty plastic core and any remnants of paper.

4. Pull about two inches of paper from a new roll. Place the new paper roll into the paper reservoir with the free end of the paper on top and pointing toward the back of the instrument. Thread the end of the paper through the paper port at the back of the Integritest® 5 instrument.
5. Close the printer cover by applying equal pressure on each side. Ensure that the cover is securely locked.

If the Integritest® 5 instrument is powered on, the printer status LED stops flashing.

Using the Kickstand

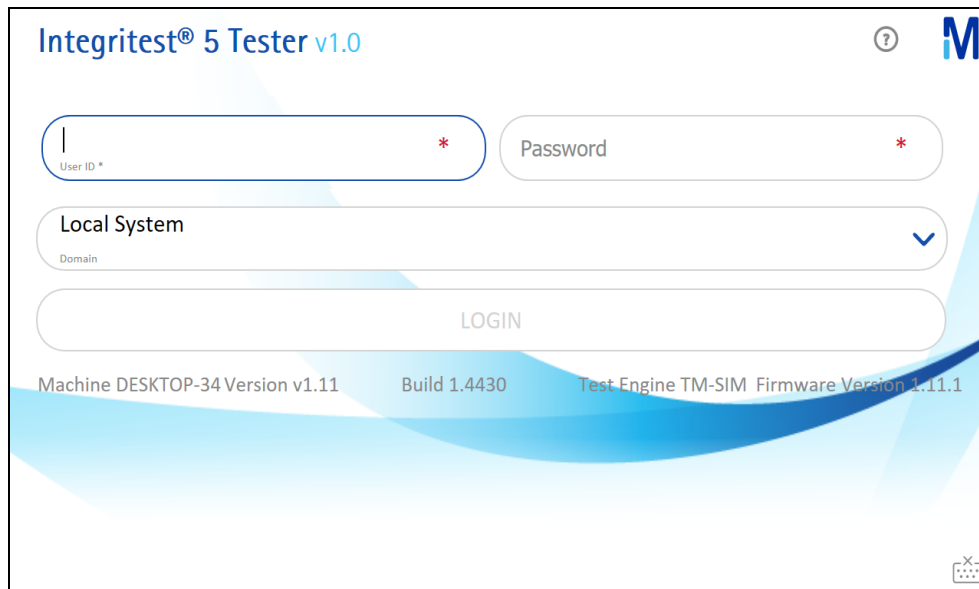
Use the wire kickstand to change the instrument's angle of orientation.

To engage the kickstand, tip the instrument on its side and swing the kickstand out from beneath the instrument.

Using the Integritest® 5 Instrument

Switching the Instrument On

Ensure that all installation instructions have been followed. Switch the machine on using the on/off button on the left side of the instrument (see **Instrument Overview**). The login screen opens.



Logging In for the First Time

To log into the system the first time, use **it5admin** for both **User ID** and **Password**.

An installation wizard starts, which includes instructions for Windows® settings: date and time, network (wifi, network, or Bluetooth), and printer.

NOTE

After the initial log on, the password should be changed. See **Changing a Password**.

Logging In

NOTE

If a test was running at the time of logout, a test status icon displays the current status:

 Test Running

 Test Finished

To log in:

1. Enter **User ID** (required) and **Password** (required).
2. If applicable, select a **Domain** from the drop-down menu.

3. Select **[LOGIN]**. If there are tests running, the **Test Run Status** screen opens. If there are tests in the Run Queue, the **Run Queue** screen opens. If there are no tests in the Run Queue, the **Collections** list opens.


After three failed login attempts with the same user ID, the user is locked out. Login is unsuccessful under the following conditions:

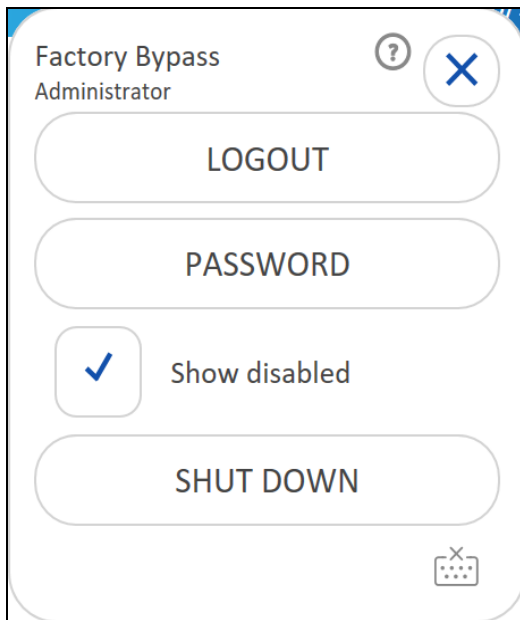
- User ID and password do not match.
- The user attempting to log in does not have access rights to the system.
- Password has expired; contact the system administrator for support.

NOTES

Users not logging in through a domain are prompted to change their assigned password the first time they log into the Integritest[®] 5 instrument. See [Changing a Password](#).

Logging Out and Shutting Down

In the main navigation header, select the user profile icon . The user profile pop-up opens.




To log out, select **[LOGOUT]**.

NOTE

The user may be logged out automatically at lock out time. Lock out time is the amount of time the system remains open when not in use. (See [Configuring Unit Settings](#).)


To shut down the instrument and log out of the software, select **[SHUT DOWN]**.

Changing a Password

1. In the main navigation header, select the user profile icon . The user pop-up window opens.
2. Select **[PASSWORD]**. The Change Password screen opens.
3. Follow the screen prompts.

Viewing Disabled Items in Lists

Disabled items appear in gray.

1. In the main navigation header, select the user profile icon . The user pop-up window opens.
2. To view disabled items, select the **Show disabled** checkbox.

NOTE

This option is available only for the Instrument Manager, Service, and Administrator roles.

Using the Software

User Access









Access to functions and actions is role dependent. Roles are Operator, Supervisor, Instrument Manager, Service, and Administrator.

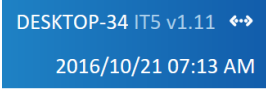


Role	Permitted actions
Operator	Run tests, view, print and sign any report
Supervisor	Operator actions, plus: editing and signing any report as second authorization, if that option has been selected
Instrument Manager	Supervisor actions, plus: settings and service functions
Service	Instrument Manager actions, except: second authorization signer
Administrator	Same as Instrument Manager, plus: Windows® Operating System access

Using the Main Navigation Header



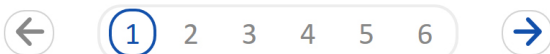

































Main navigation header tabs and icons:

Name	Tab or Icon	Function
Collections tab	Collections	Opens the Collections list. Test collections are user defined groups of tests such as all tests for filter A, or all tests used in lab B.
Tests tab	Test	Opens the Tests list and lists all tests stored on the instrument.
Reports tab	Reports	Opens the Reports list and lists all reports stored on the instrument.
Run queue icon		Opens the run queue. The run queue is the list of tests waiting to run. The number on the icon indicates the number of tests in the queue.
Test status icons		<p>Access the test run status screen. The icon is empty at the beginning of a test and fills as the test progresses. When the test is complete, an icon indicates the status of the current completed test. Result icons appear on the reports screen (see Common Icons).</p> <p> indicates a test is in progress</p> <p> indicates a passed test</p> <p> indicates an aborted or invalid test</p>
Settings icon		Select to access settings to configure the instrument, including preferences, users, display, and managing clusters. Access is role dependent.
Tools icon		Select to access tools, which are functions mostly related to equipment maintenance, including calibration, diagnostics, backups, audit log, and Windows® Operating System access. Access is role dependent.
User profile icon		Select to log out, reset, enter password, shut down, or toggle on-screen keyboard.

Name	Tab or Icon	Function
System information		Displays date and time and software version. Select to access additional information: instrument name and serial number, software version and build, network, cluster name, test module, firmware version, last and next calibration and maintenance dates. See Configuring Unit Settings for more information.
Network connection icons		The Integritest® 5 instrument is connected to a network.
		The Integritest® 5 instrument is not connected to a network.

Common Icons

Icon	Description
	Return to the previous screen. Data entered on this screen is saved.
	Close the screen and return to the previous screen. Data entered on this screen or any subsequent screen is not saved.
	Use the screen numbers and arrows at the bottom of the screen to navigate through multiple screens
	Remove or Delete
	Go to next screen
	Go to previous screen
	Page up and page down
	Zoom in and out
	On-screen keyboard is not in use (helpful when using an external keyboard)
	On-screen touch keyboard is in use
	Required field
	Test passed
	Test incomplete
	Test aborted or invalid

Icon	Description
	Test completed but failed
	Preview a test to add run headers (optional)
	Abort test
	Rerun test
	Collection is secured
	Create new
	Open drop-down menu
	Close drop-down menu
	Item is selected
	Appears next to column head in list screens. Indicates column by which list is sorted. Select to toggle between ascending and descending order.
	Add test to Run Queue. If there are numbers next to it, select it to see contents of a component; for example, members of a group or tests in a collection.
	Select to add or remove a checkmark
	Search
	Select the X to close the search function
	Signature required on report (the number indicates how many signatures are required and the checkmark indicates the report is fully signed)
	Print the report
	View the test report
	View test results
	Add a chart mark and comment
	Export the audit log


Using On-Screen Help


Select the  icons for on-screen help.

Using the On-Screen Touch Keyboard and a Remote Keyboard

The default keyboard is the on-screen keyboard. An external keyboard can be attached using the USB connection.

Select the keyboard icon at the bottom right of the login screen or the user profile pop-up window to switch between the on-screen touch keyboard and an external keyboard:

 indicates that the on-screen touch keyboard is in use.

 indicates that the on-screen keyboard is not in use; attach an external keyboard.

When the on-screen touch keyboard is on, a keyboard pops up when needed. The keyboard is alphanumeric or numeric, depending on the field. Some function keys, such as **[NEXT]** and **[DONE]**, are available on the keyboard when appropriate. The keyboard automatically jumps to the next field when one field is completed.

Navigating through the System

Refer to **Common Icons** table.

Action Buttons

Select a list item to access action buttons. Action buttons are role dependent and include: **[EDIT]**, **[COPY]**, **[DISABLE]**, **[ENABLE]**, and **[DELETE]**.

Action buttons in gray are temporarily disabled because conditions are not met; for example, required information has not been entered.

Using Input Fields

Asterisks

Asterisks * indicate required fields.

Alpha-Numeric Fields



- Maximum length is 80 characters
- Limited to characters found on pop-up keyboard (see **Using the On-Screen Touch Keyboard and a Remote Keyboard**).

Numeric Fields


- Maximum length is 80 characters
- Limited to numbers and decimal points

Working with List Screens

Sorting a List

By default, items on a screen are sorted by items in the first column, alpha-numerically in ascending order. To sort collections alpha-numerically by other column headings, select the column heading by clicking on the header. Bold text indicates the column by which the list is currently sorted. To toggle between ascending and descending order, select   next to the column heading.

Searching a List

1. Select . A search pop-up window opens.
2. Enter search criteria.

NOTES

Input fields reflect user-defined fields configured in the **Settings** screen.

The keyword entry searches only the visible columns.

There is no wildcard function. There is no "or/and" function. For example: "big filter" will find *big filtering device*. "big, filter" will find *big, filter*.

3. Select **[SEARCH]**. The pop-up window closes and the results of the search are displayed on a list screen.
4. After a search, input remains in the fields. Select **[CLEAR]** to clear the fields.

Settings

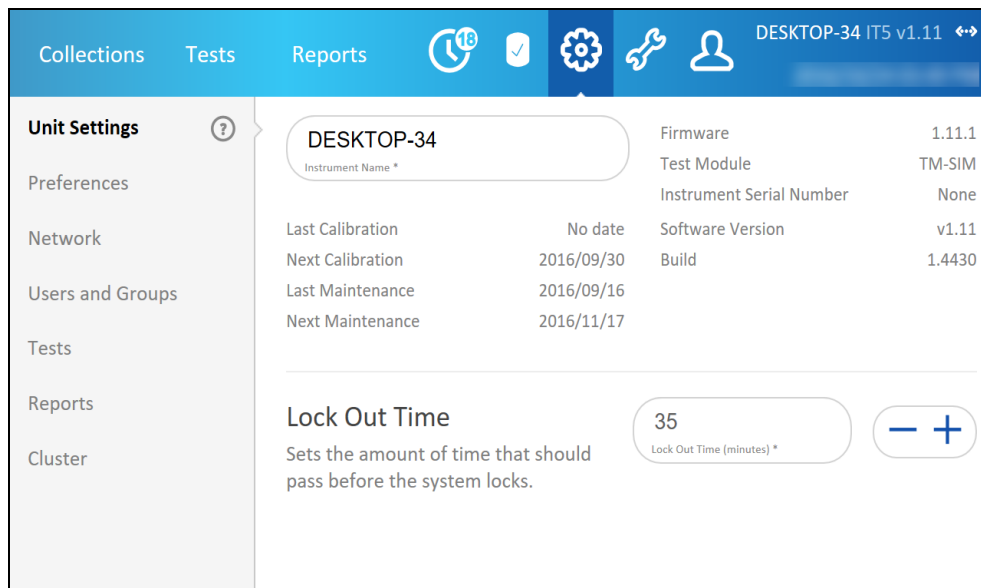
Configuring Unit Settings

Select . The **Unit Settings** screen opens.


NOTES

Lock out time is the amount of time in minutes that the system remains open when not in use before logging the user out.

Users must have the role of instrument manager, service, or administrator to access .



Enter a name in the **Instrument Name** field (required). The instrument name should be unique. It is used to identify the unit in test reports. It is also used for setting up a network or a cluster.

To set lock out time, select the symbols in the  icon to change the value in the **Lock Out Time** field (required).

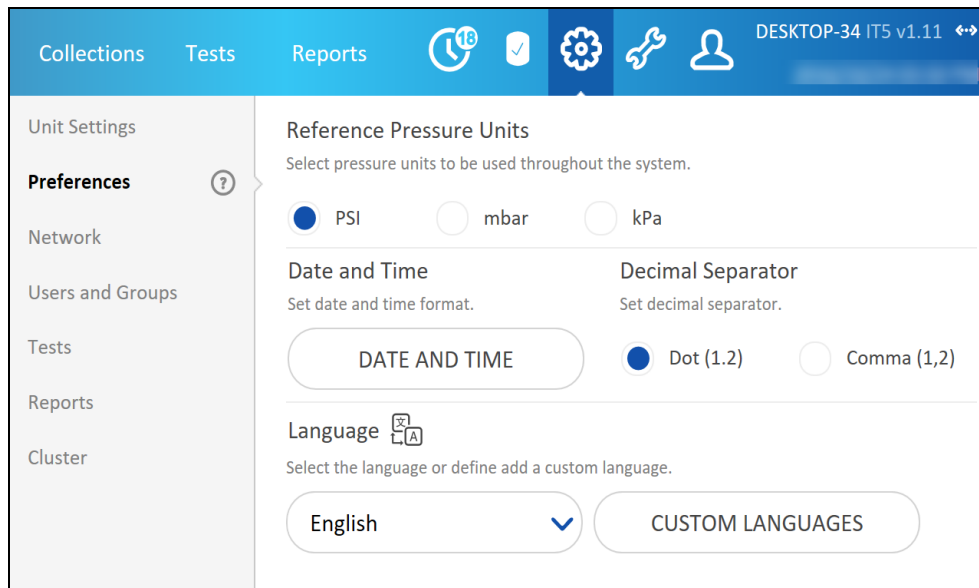
The following read-only information appears on this screen:

Item	Description
Last Calibration	The date of the last calibration is set automatically when the system is calibrated.
Next Calibration	To set the date for the next calibration, see Setting the Next Calibration Date . If calibration is not done, reports for tests run after this date will contain the message "Calibration out of date."
Last Maintenance	To set the date of the last maintenance procedure, see Setting Maintenance Dates and Running Diagnostics .
Next Maintenance	To set the date for the next maintenance procedure, see Setting Maintenance Dates and Running Diagnostics . If the next maintenance date is not changed, reports for tests run after this date will contain the message "Maintenance out of date."
Firmware	The revision level of the firmware contained in the instrument is automatically updated each time the firmware is updated from the Firmware Update tab of the Service screen. See Updating the Firmware .
Test module	An identifier assigned to the instrument's test module; it can be changed only at the factory.

Item	Description
Instrument Serial Number	A unique number set at the factory used to identify the instrument.
Software Version	Version of the software currently installed.
Build	Update of the version of the software currently installed.

Configuring Preferences

Select . Select **Preferences**.



Selecting Pressure Units

Select the appropriate unit of measurement.

NOTE

Change pressure units cautiously and infrequently. Verify all test specifications after a pressure unit change. Because of different rounding rates used by filter manufacturers, changing units may cause test specifications to no longer match filter specifications.

When units are changed, units in previous reports do not change.

Selecting the System Language

Select a System Language from the drop-down menu. The software displays in the system language selected when the system is configured by an authorized user.

Supported languages are: English, French, Spanish, German, Italian, Japanese, Simplified Chinese, Korean, and Portuguese. Additional custom languages may be supported if they have been loaded into Integritest® 5 instrument.

Managing Custom Languages

On the **Preferences** settings screen, under the **Language** section, select [**CUSTOM LANGUAGES**]. The **Custom Languages** screen opens.

The screenshot shows the 'Custom Languages' configuration window. At the top, there is a navigation bar with a back arrow on the left, the title 'Custom Languages' in the center, and a help icon on the right. Below the navigation bar, the window is organized into three distinct sections:

- Spreadsheet Location:** This section contains a single text input field labeled 'Path' with a red asterisk to its right, indicating it is a required field. Above the field is the instruction: 'Choose a location to save/load the custom language spreadsheet.'
- Save language:** This section contains three elements: a dropdown menu labeled 'New Language' with a blue downward arrow and the text 'Language to Export' below it; a text input field labeled 'Save English Name' with a red asterisk to its right; and a button labeled 'SAVE LANGUAGE FILE'.
- Load language:** This section contains two elements: a text input field labeled 'Load English Name' with a red asterisk to its right; and a button labeled 'LOAD LANGUAGE FILE'.

Saving a Language

1. Under the **Spreadsheet Location** section, in the **Path*** field, enter a valid Windows® Operating System path (format must be *D:\pathname*). The path must be either on a removable drive or a network share. It must not be on a local drive within Integritest® 5 instrument.
2. Under the **Save language** section, do one of the following:

From the **Language to Export** drop-down menu, select the language to save (default is **New Language**). The list contains languages currently available in Integritest® 5 instrument, and the option to enter a new language.

In the **Save English Name*** field, enter the file name. If exporting an existing language, this field will be pre-populated. The file is saved as a spreadsheet with an *.xlsx* extension.

3. Select [**SAVE LANGUAGE FILE**].

Editing a Language Spreadsheet

Spreadsheet column B is the English language listing of text strings used in the various screens (already populated).

Column C is populated with previously defined text strings if the selected language was one of the default or previously created languages. Column C is empty if exporting a new language.

Enter the corresponding text for the new language in Column C, following these guidelines:

- Do not edit or change anything in curly brackets or symbols near curly brackets. For example: `{*0}`.

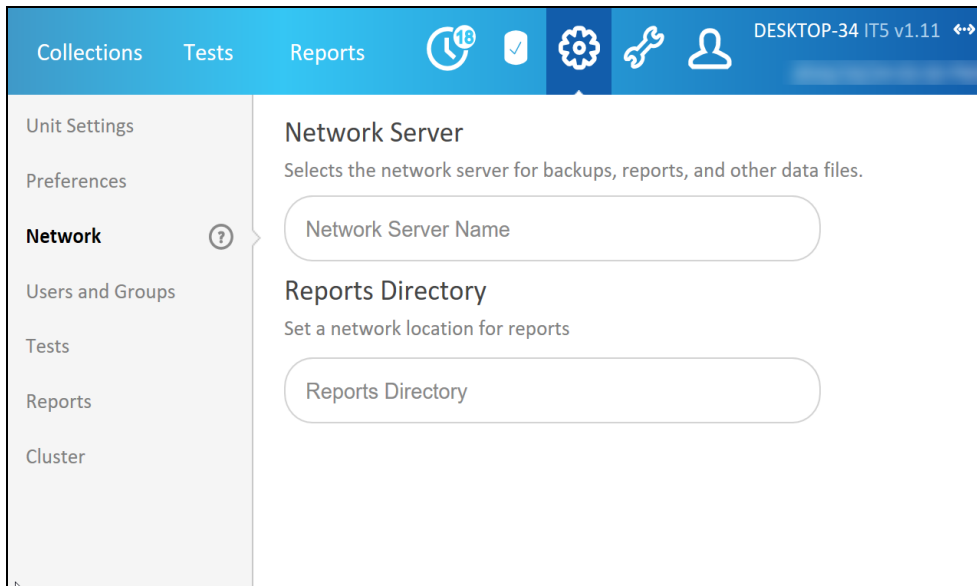
- Do not edit or change backslashes or characters next to backslashes. For example: \n.
- Do not edit the English column B. All edits in that column will be lost.
- For English abbreviations, keep the same length of letters, or limit to similar visual length in characters. For example: Sun, Mon, Tue; cc, in.
- If applicable to your language, follow the capitalization format of the English words. For example: tests, Tests, TESTS.

Loading a Language

1. Under the **Spreadsheet Location** section, in the **Path*** field, enter a valid Windows[®] Operating System path (format must be *D:\pathname*). The path must be either on a removable drive or a network share. It must not be on a local drive within Integritest[®] 5 instrument.
2. Under the **Load language** section, in the **Load English Name*** field, enter the English name of the language you are loading.
3. Select **[LOAD LANGUAGE FILE]**.

Configuring Network Settings

Select . Select **Network**.



Enter the network server, used to store the backups, reports, and other data files, in the **Network Server Name** field.

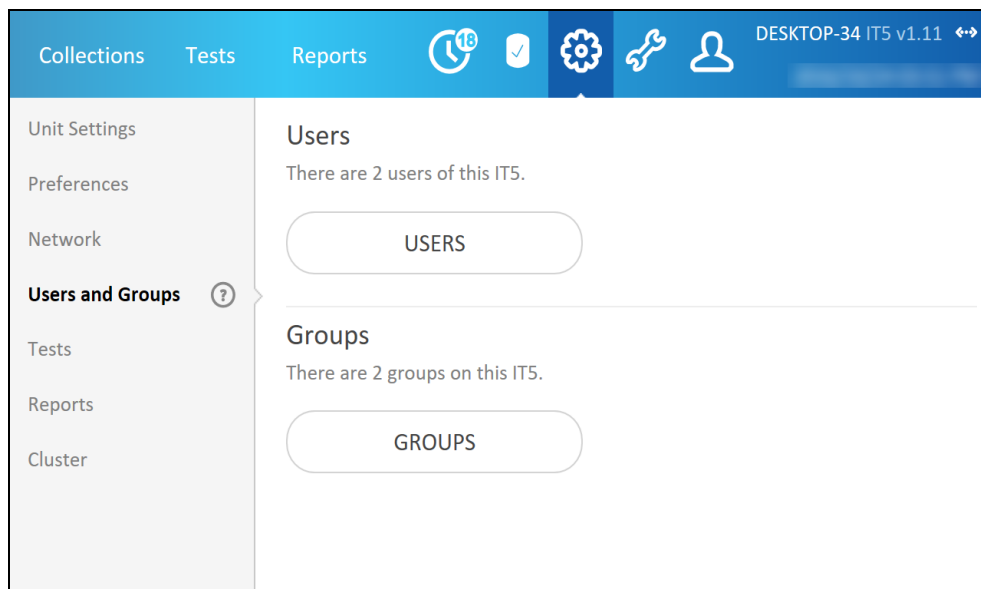
Enter the network location for the reports directory in the **Reports Directory** field. This is the directory name where the reports will be stored. The reports are named based on the naming report setting (see **Naming**).

NOTE

The network server and directory location must already exist and be accessible in the Windows® Operating System; the instrument does not create them.

Configuring Users and Groups

Select . Select **Users and Groups**.



Managing Users

Select **[USERS]**. The **All Users** screen opens. This screen displays a list of existing users (columns can be sorted). It also creates new users, and edits, disables, and enables existing users, and adds users to groups.

		EDIT	ENABLE/DISABLE
All Users ?			
^User ID	Name	Role	Groups
test	test user	Operator	1 >
test 5	tester 5	Operator	2 >
<div style="display: flex; justify-content: space-around; align-items: center;"> + 1 🔍 </div> <p style="text-align: center;">2 users</p>			

NOTE

Users cannot be deleted; only disabled.

Item	Description
[EDIT]	Edits the settings of the selected user.
[DISABLE]	Disables the user; this prevents this user from being used. If Show disabled is selected, a disabled user appears gray. If Show disabled is not selected, a disabled user does not display on the screen. Gray button indicates no user selected.
[ENABLE]	Enables the user. Gray button indicates no disabled user selected.
Groups	Displays the number of groups of which the user is a member.
>	Displays and edits the groups of which the selected user is a member.
+	Creates a new user.
← 1 2 →	Displays the number of pages. Use the arrows to navigate through the pages.
🔍	Searches the list of items using configurable criteria.

Editing an Existing User

1. Select a user from the list, then select **[EDIT]**.
2. Edit the **Name**.
3. Select a new **Role** from the drop-down menu. (See [User Access](#).)
4. Select **Reset Password** to change the user's password. New fields open:


Enter the new **Password**, then enter it again in **Password Again**. The user will be prompted to change his or her password when logging in with this new password.

NOTE

Users not logging in through a domain are prompted to change their assigned password when logging in the first time.

5. Edit or add a domain in the **Domain** field, if applicable.
6. Select **[SAVE]**. The **All Users** screen opens.

Creating a New User

1. In the **All Users** screen, select . The **New User** screen opens.
2. Enter a **User ID** and a **Name**.
3. Select a **Role** from the drop-down menu.
4. If the instrument is connected to a network, enter the **Domain** name (optional).

5. Enter a **Password**, then enter it again in **Password Again**.

NOTE

Users not logging in through a domain are prompted to change their assigned password when logging in the first time.

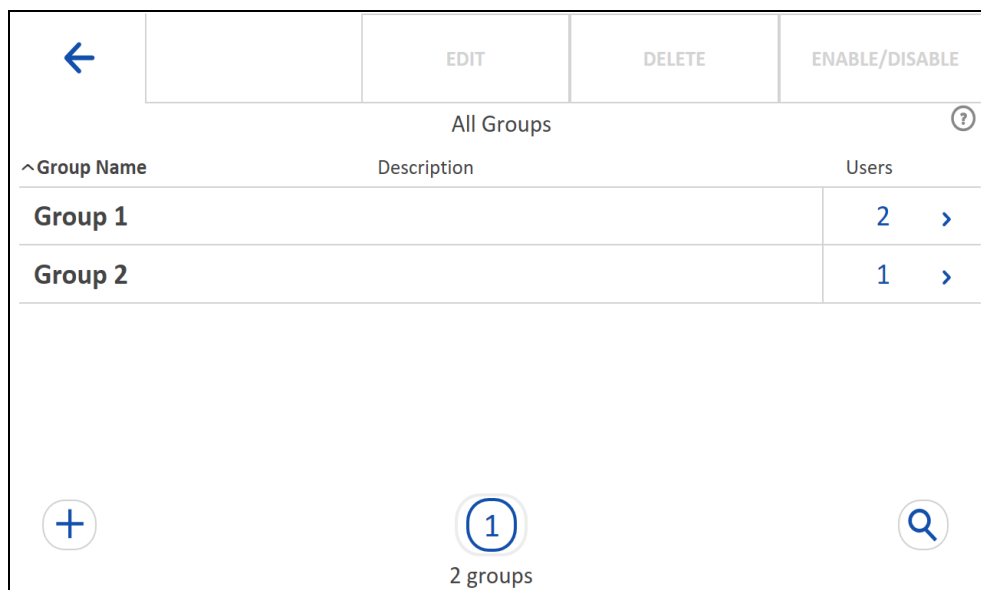
6. Select **[SAVE]**. The **All Users** screen opens.

Managing Groups




A group is used to organize multiple users, which is useful for the secure function for collections of tests. If a group is assigned access rights to several collections of tests, all users assigned to the group have the same access rights. This is a time saving tool when managing a large number of users. For example, if a group called "Lab A users" is given access to four collections, and a new user "Bob" is added to the group, then "Bob" now has access to those four collections.

For more information about the secure function, see **Securing a Collection**.

Select **[GROUPS]**. The **All Groups** screen opens. This screen displays a list of existing groups (columns can be sorted). It also creates new groups, and edits, deletes, disables, and enables existing groups, and adds users to groups.




Item	Description
[EDIT]	Edits the settings of the selected group.
[DELETE]	Deletes the group. Gray button indicates no group selected.
[DISABLE]	Disables the group; this prevents the selected group from being available. If Show disabled is selected, a disabled group appears gray. If Show disabled is not selected, a disabled group does not display on the screen. Gray button indicates no group selected.
[ENABLE]	Enables the group. Gray button indicates no disabled group selected.
Users	Displays the number of users in the group.

Item	Description
	Displays and edits the users in the group.
	Creates a new group.
	Displays the number of pages, previous/next arrows buttons to navigate through the pages, and the number of existing items.
	Searches the list of items using configurable criteria.


Editing a Group

1. Select a group from the list, then select **[EDIT]**.
2. Edit the **Group Name**.
3. Edit the **Description**.
4. Select **[SAVE]**. The **All Groups** screen opens.

Creating a New Group

1. In the **All Groups** screen, select . The **New Group** screen opens.
2. Enter a **Group Name** and a **Description**.
3. Select **[SAVE]**. The **All Groups** screen opens.

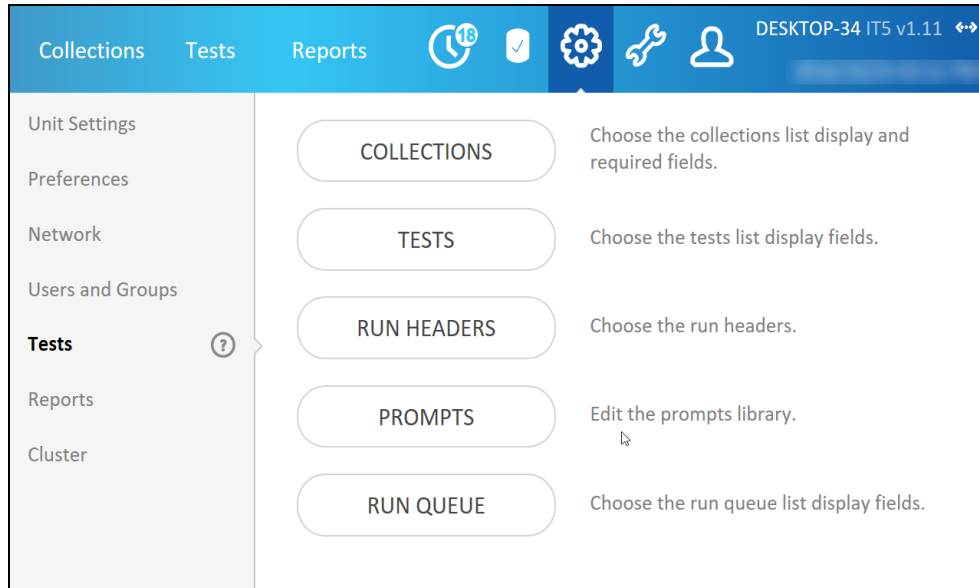
Adding Users to a Group

1. On the **All Groups** screen, in the row of the group the user is being added to, under the **Users** column, select . The **All Users for Group: Group Name** screen for the selected group opens.
2. Select **[ADD]**. The **User Selection** screen opens.
3. Select the checkbox next to the user to be added. To select all the users, select the checkbox at the top of the column.
4. Select **[SAVE]**. The **All Users for Group: Group Name** screen for the selected group opens.

Configuring Settings for Collections, Tests, Prompts, Run Headers, and Run Queue

This screen configures the column heading/field names that display on the **Collections**, **Tests**, and **Run Queue** screens. Set these fields so the instrument displays the names that will be used when searching.

Select . Select **Tests**.



The available configurable settings are:

Item	Description
Field Name	Available column heading/field names.
Required	Option to make column headings or field names required. This may not be available on some screens.
Display	Option to select the column headings or field names to display. Select the checkbox to make the item visible and searchable when the screen is open. Names in parenthesis (Filter/Vessel) indicate that the column heading name may change depending on screen being viewed. There is a maximum of three field names that can be configured at a time. Clear one of the three field names to add another field name.
	Exits the screen without saving the changes.
[SAVE]	Saves the selections.

Configuring Collections

Select **[COLLECTIONS]**. The **Collections Settings** screen opens.

Collections Settings		?	SAVE
Displayed fields: 3 (maximum: 3)			
Field Name	Required	Display	
Name	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<input type="text" value="User Defined 1"/> <small>User Defined 1</small>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<input type="text" value="User Defined 2"/> <small>User Defined 2</small>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

1. In the **User Defined** fields, enter names for the two user-defined categories.
2. Select the checkbox for **Required** (to require it when creating a collection) and **Display** (to display it on the **All Collections** screen).

Configuring Tests

Select **[TESTS]**. The **Test Settings** screen opens.

Tests Settings		?	SAVE
Displayed fields: 3 (maximum: 3)			
Field Name	Display		
Test Name	<input checked="" type="checkbox"/>		
Test Description	<input type="checkbox"/>		
Test Type	<input checked="" type="checkbox"/>		
Test Version	<input type="checkbox"/>		
Name (Filter/Vessel)	<input type="checkbox"/>		
← 1 2 3 →			

Select the checkboxes next to the fields (maximum of three) to display on the **All Tests** screen.

Configuring Prompts

Prompts are used to prompt the user.

The response lists the type of confirmation from the user running the test. The user must acknowledge the prompt before the test starts.

This screen displays a list of all existing prompts, and adds and deletes prompts. Select **[PROMPTS]**. The **Prompts Library** screen opens.

Prompts Library		
All Prompts		
^Prompt	Answer Type	Delete
Enter the wetting procedure number	Input	
Has the filter been wetted in the last 10 minutes?	Checkbox	

2 prompts

The first column contains the **Prompt**, the second column contains the **Answer Type**, and the third column provides the option to **Delete** the prompt.

To remove a prompt, select .

To create a new prompt:

1. Select . The **New Prompt** screen opens.
2. Under **Prompt**, type a message.
3. Select the **Answer Type**:

Input - The user must input a message before the test can be run to ensure that the user has done the action described in the prompt. For example, the user must enter the wetting procedure number that has been completed. For example: user input: *executed wetting procedure 3465*.

Checkbox - The user must select the checkbox before the test can be run to ensure the user has completed the action described in the prompt. For example: *has the filter been wetted in the last 10 min?*

4. Select **[SAVE]**.

NOTE

The answer type is set when the prompt is created and cannot be changed once a prompt is created. To change the answer type, create a new prompt.

Configuring Run Headers

Information is entered into the run header just before a test is run and appears on the test report. An example run header: *Product Batch*.

Select **[RUN HEADERS]**. The **Run Headers Settings** screen opens.

Run Header	Required	Active
Product Batch <small>Run Header 1</small>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Filter Lot Number <small>Run Header 2</small>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Filter Serial Number <small>Run Header 3</small>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

← 1 2 →

1. In the **Run Header** fields, enter the run header field names.
2. Select the checkbox for **Required** (to require that information be entered when running a test) and **Active** (to enable a field for optional information when running a test).

Configuring the Run Queue


Select **[RUN QUEUE]**. The **Run Queue Settings** screen opens.

Field Name	Display
Test Name	<input checked="" type="checkbox"/>
Name (Filter/Vessel)	<input checked="" type="checkbox"/>
Product Batch	<input checked="" type="checkbox"/>
Filter Lot Number	<input type="checkbox"/>
Filter Serial Number	<input type="checkbox"/>

← 1 2 →

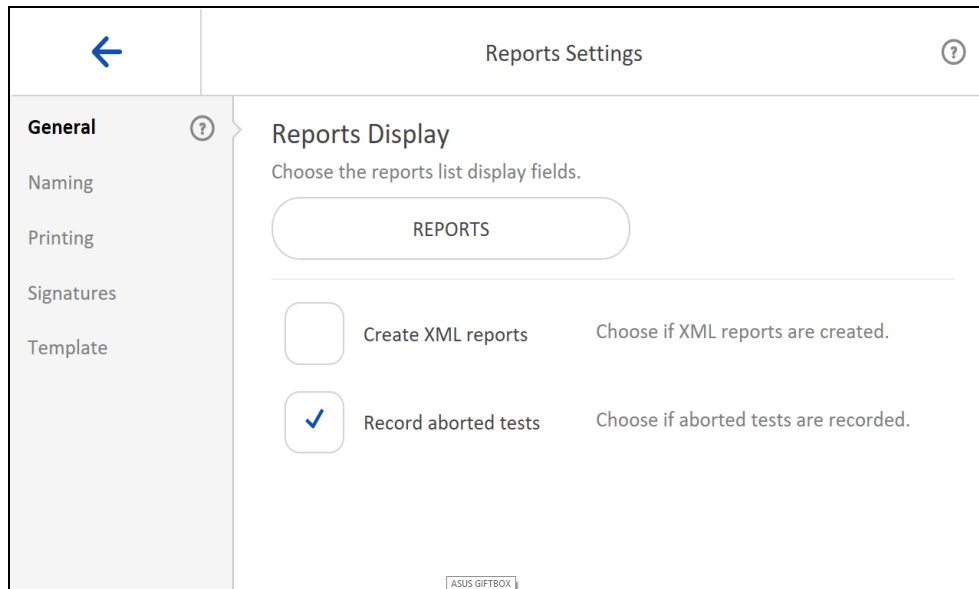
Select the checkboxes next to the fields (maximum of three) to display on the **All Run Queue** screen.

Configuring Reports Settings

To configure the fields that will be displayed on the reports list, select . Select **Reports**. The **Reports Settings General** screen opens.

General

On the **Reports Settings** screen, select **General**.

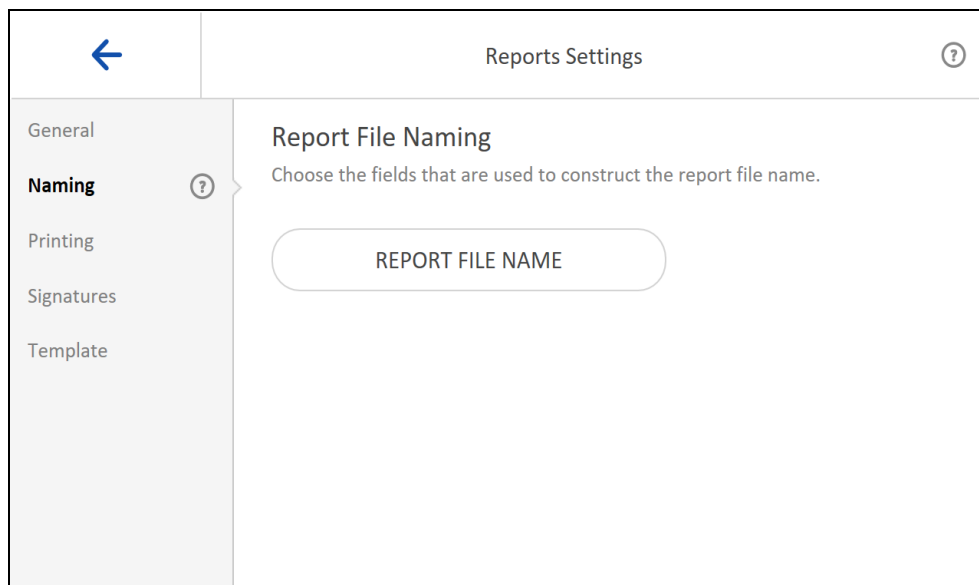


On the **General** screen, select **[REPORTS]**. The **Reports Settings** screen opens.


Select up to three fields that will be displayed on reports. On the **General** screen, select the **Record aborted tests** checkbox. If this option is selected, data is recorded and a report is generated for aborted tests.

Naming

On the **Reports Settings** screen, select **Naming**.



Select **[REPORT FILE NAME]** to choose the fields used to construct the *.pdf* report file name. The **Report File Name** screen opens. Gray checks in the Display column indicate required elements. Select additional elements and enter separators in the separator fields.

Use  and  to change the order of field names.

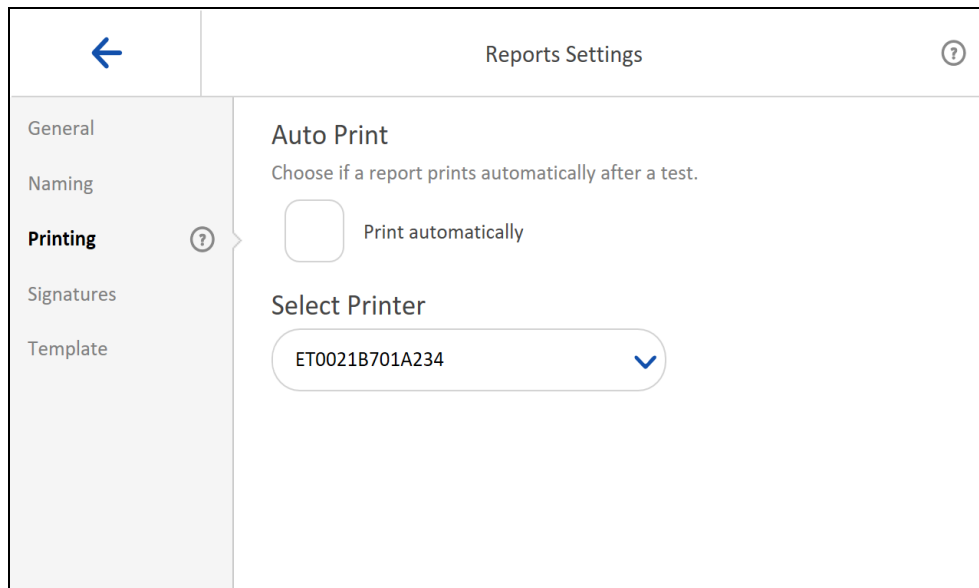
NOTES

Separators are characters that divide information in a file name such as an underscore (_) or plus sign (+). Special characters <>:"/ \ | ?* cannot be used.

File length is limited by the operating system and may be truncated.

Printing

On the **Reports Settings** screen, select **Printing** to print a report automatically after a test completes.



The screenshot shows the 'Reports Settings' screen. On the left is a navigation menu with options: General, Naming, **Printing** (highlighted with a question mark icon), Signatures, and Template. The main content area is titled 'Auto Print' and contains the instruction 'Choose if a report prints automatically after a test.' Below this is an unchecked checkbox labeled 'Print automatically'. Underneath is a 'Select Printer' section with a dropdown menu showing 'ET0021B701A234' and a downward arrow icon.

Select a printer from the drop-down menu.

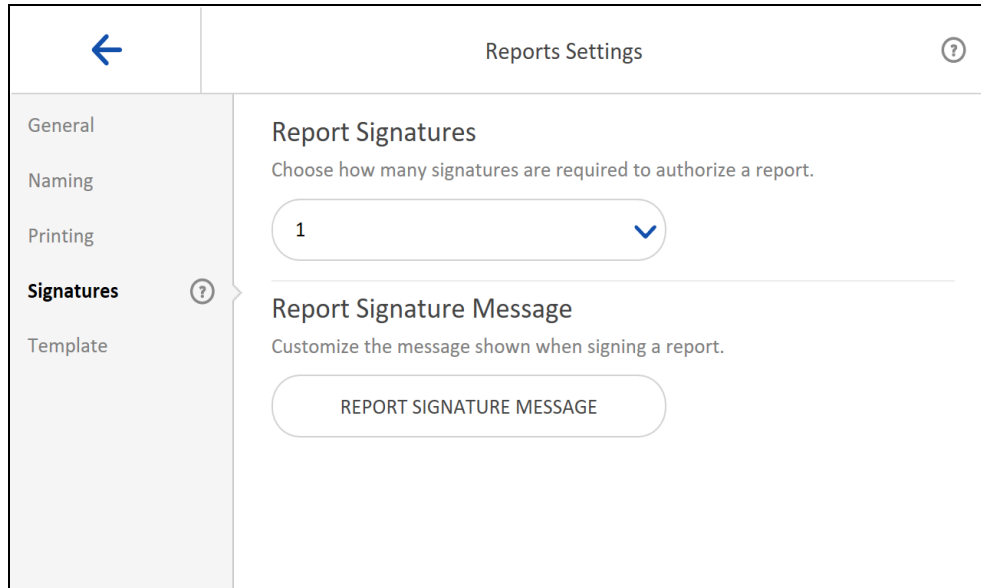
NOTE

Reports that are printed automatically when a test is completed are not signed digitally; they must be signed manually.

External printers must be installed and managed through the Windows[®] Operating System (see [Administrator Information](#)).

Signatures

On the **Reports Settings** screen, select **Signatures**.



From the **Report Signatures** drop-down menu, choose the number of signatures required to authorize a report.

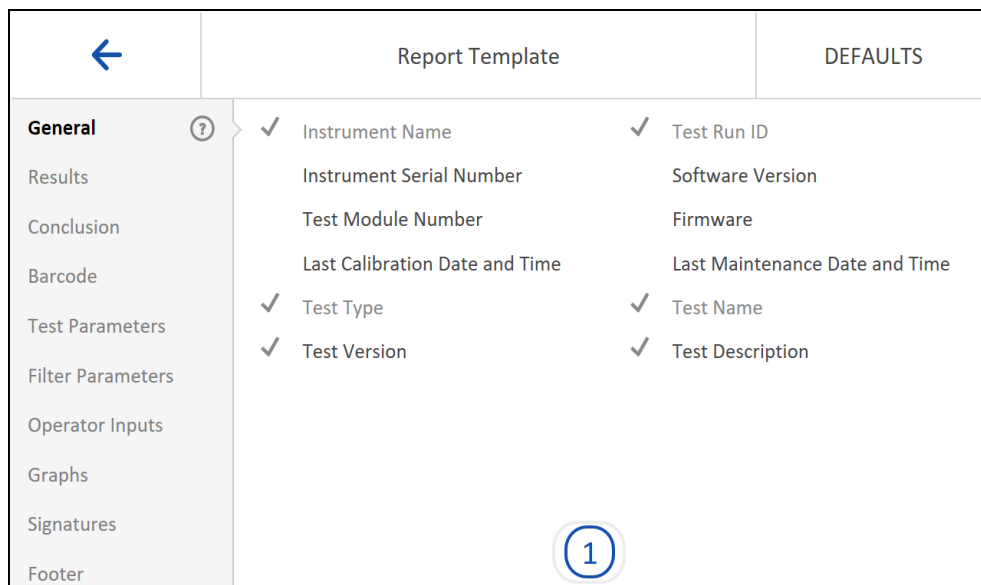
NOTE

If 2 [**Second is supervisor**] is selected, only supervisors, instrument managers, or administrators can sign reports as the second authorization.

Select [**REPORT SIGNATURE MESSAGE**] to customize the message shown when signing a report. The **Report Signature Message** screen opens. Enter a custom message or select **USE DEFAULT** to use the default message. Select [**SAVE MESSAGE**] to save the message. Select [**CANCEL**] to delete entries in the signature field.

Template

On the **Reports Settings** screen, select **Template**. The **Report Template** screen opens.



Use the **Report Template** screen to create a report template.

Fields will appear only on test reports to which they apply. For example, if minimum bubble point is selected, the field will appear on all bubble point test reports, but will not appear on a diffusion test report.

Screen	Available report parameters
General	Instrument Name Test Run ID Instrument serial number Test Module Number Last Calibration Date and Time Last Maintenance Date and Time Test Type Test Name Test Version Test Description
Results	Constant Pressure Flowrate Measured Bubble Point Measured Upstream Volume EBP Diffusion Pass/Fail [diffusion portion of enhanced bubble point test] EBP Bubble Point Pass/Fail [bubble point portion of enhanced bubble point test] Pressure Changed
Conclusion	Start Date UTC Start Date Test Pass/Fail Calibration
Barcode	Filter Name Vessel Name Test Name Test Version Date Test Run ID Test Type Test Pass/Fail Calibration Printed On [date] Signatures

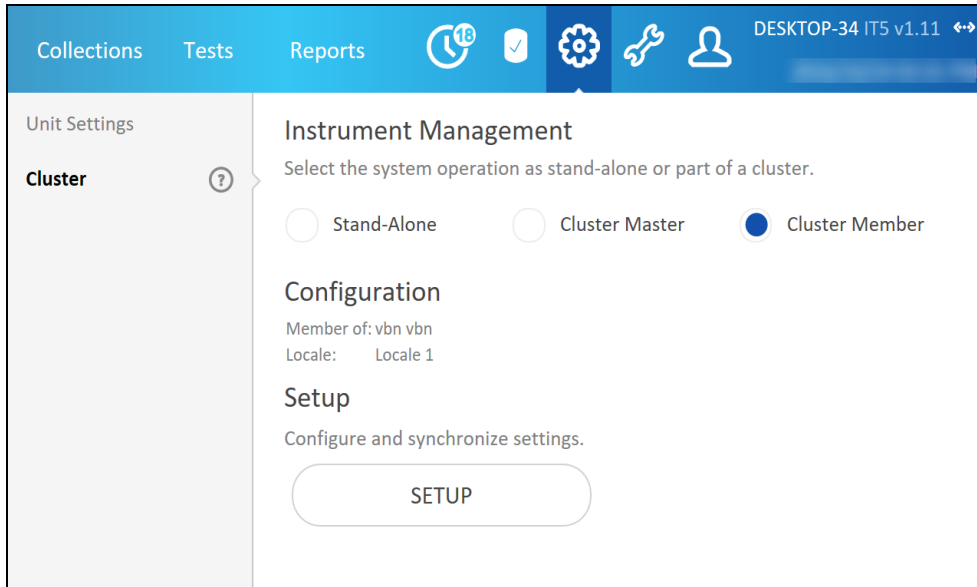
Screen	Available report parameters
Test Parameters	Diffusion Pressure Specification Diffusion Flowrate Specification Minimum Bubble Point HydroCorr™ Pressure Specification HydroCorr™ Flowrate Specification Pre-Pressurize Pressure Pre-Pressurize Time De-Pressurize Time Additional Pre-Pressurize Time Pressure Hold Pressure Pressure Drop Specification Pressure Hold Test Time Number of Filters Perform Self Check Extended Bubble Point Manual Sizing Volume Number of Rounds Housing Can Hold Filter Size Housing Can Hold
Filter Parameters	Filter Name Vessel Name HydroCorr™ Filter Type Catalog Number Description Manufacturer Configuration Filter Size Filter Pore Size Wetting Fluid Wetting Fluid Description PES/Asymmetric
Operator Inputs	Operator Name Run Headers Prompts
Graphs	Flowrate-Time Graph Flowrate-Time Table Flowrate-Pressure Graph Flowrate-Pressure Table Pressure-Time Graph Pressure-Time Table
Signatures	Test Pass/Fail Signatures
Footer	Number of Pages Printed On [date]

Configuring Clusters

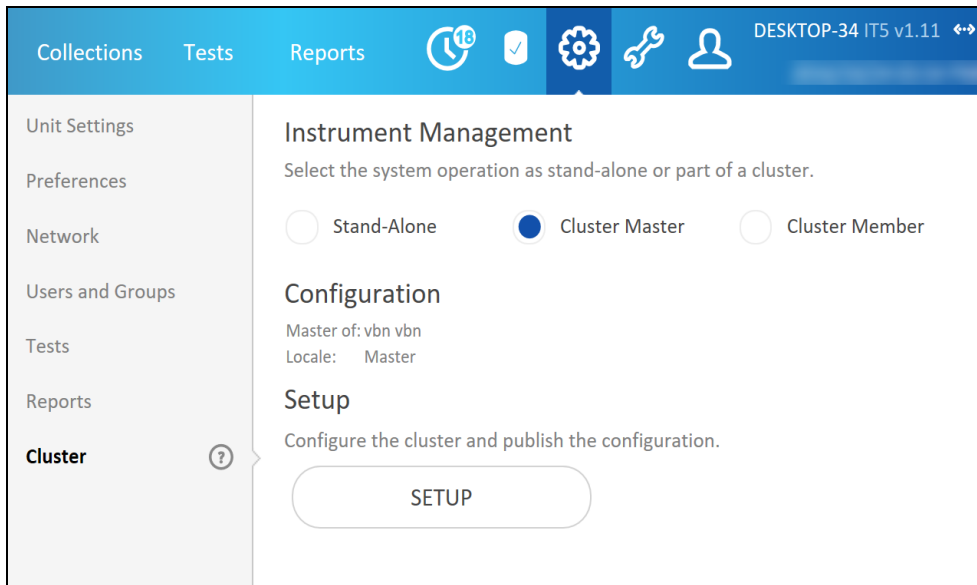
Select . Select **Cluster**.

A **cluster** is a group of Integritest® 5 instruments that share the same settings, collections, test definitions, and users.

A **cluster member** is an instrument in that group.



The **cluster master** is the Integritest® 5 instrument or PC computer that controls the settings, collections, test definitions, and users for all cluster member instruments. Changes to cluster member instruments can be made from the cluster master instrument.



A **locale** is a subset of member instruments within a cluster that has settings that are different from the settings of the other members. Only certain settings can be different.

NOTES

Configuration files created by a master can be shared with members by a network folder or a USB drive.

Test reports and test data are not included in configurations published by the cluster master.

Selecting the System Operation

Select one of the following:

- **Stand-Alone:** Select this to configure the instrument as a stand-alone instrument that is not configured by a cluster master.
- **Cluster Master:** Select this to publish configurations that can be shared with member instruments. Also select this to create locales and to add instruments to locales.
- **Cluster Member:** Select this to synchronize with the cluster master and share configurations created by the cluster master.

Working as a Stand-Alone


The instrument can be configured as a stand-alone instrument that is not configured by a cluster master. The configuration can be exported or imported.

To configure the instrument as a stand-alone:

1. Select **Stand-Alone**.
2. Configure **Unit Settings, Preferences, Network, Users and Groups, Tests, and Reports**.

To export the stand-alone configuration:



1. Select **[EXPORT]**. The **Export Configuration** screen opens.

2. Enter a file name (required) in the **Export File** field, and an **Export Comment** (optional).
3. Enter a **Path** where the file will be saved (required). This is usually a network folder or a USB drive.
4. Select **[START EXPORT]**.
5. When export is complete, select  to return to the **Cluster** screen.

To import the stand-alone configuration:

1. Select **[IMPORT]**. The **Import Configuration** screen opens.

Source	Files
Local drive	3 >

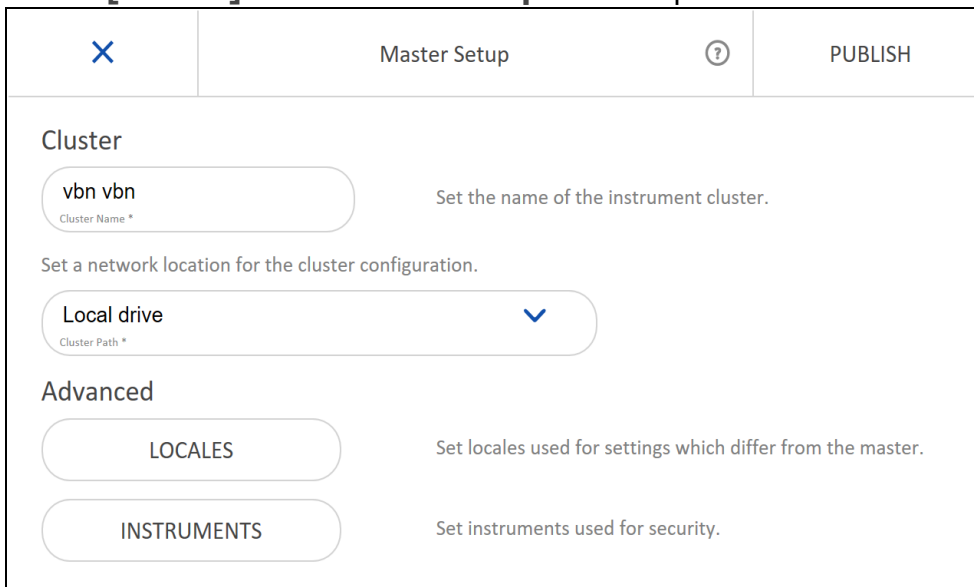
2. Select the path of the source file. A new path can be entered by selecting  .
3. Select a file from the drop-down menu.
4. Select **[START IMPORT]**.
5. When import is complete, select  to return to the **Cluster** screen.

Working as the Cluster Master

The instrument can be configured as a cluster master instrument to publish definitions, collections, and settings to configurations that can be shared by cluster member instruments.

To configure the instrument as a cluster master and share configurations:

1. Select **Cluster Master**.
2. Configure **Unit Settings, Preferences, Network, Users and Groups, Tests, and Reports**.
3. Select **[SETUP]**. The **Master Setup** screen opens.



The screenshot shows the 'Master Setup' screen with a title bar containing a close button (X), the title 'Master Setup', a help icon (?), and a 'PUBLISH' button. The main content area is divided into sections: 'Cluster' with a text input field containing 'vbn vbn' and a label 'Cluster Name *' with the instruction 'Set the name of the instrument cluster.'; a section for setting a network location with a dropdown menu showing 'Local drive' and a label 'Cluster Path *' with the instruction 'Set a network location for the cluster configuration.'; and an 'Advanced' section with two buttons: 'LOCALES' with the instruction 'Set locales used for settings which differ from the master.' and 'INSTRUMENTS' with the instruction 'Set instruments used for security.'

4. Enter a **Cluster Name** (required).

5. Enter a **Cluster Path** where the file will be saved (required).

NOTE

Cluster configurations can be accessed from a network folder or from a USB drive. If saving to a network folder, the folder must be a shared folder (set in the Windows[®] Operating System) for cluster members to access it.

The Integritest[®] 5 instrument has a default shared folder for fast, basic cluster setup:
C:\milliporeit5.

6. Select [**PUBLISH**].

As an advanced option, locales and instruments can also be set up. See **Setting Up Locales** and **Assigning Instruments to Locales**.

Setting Up Locales

A locale is a group of instruments within a cluster that has settings that differ from the cluster master settings. Configure locale settings such as displayed pressure units and language, network server location and directory for data files, printers, and automatic backups.

To edit or delete an existing locale or to add a new locale:


In the **Master Setup** screen (see **Working as the Cluster Master**), select [**LOCALES**]. The list of locales opens.

All Locales		EDIT	DELETE
All Locales			
^Locale Name	Description		
Locale 1	Locale settings 1		
Master	The master locale settings		

2 locales

To create a new locale:

1. In the locales list, select . The **New Locale** screen appears.
2. Enter **Locale Name** (required) a **Description** (optional).

3. Select **[NEXT]**. The **Locale Settings** screen for the new local appears.
4. Configure **Preferences, Network, Printing, and Backups**.
5. Select **[SAVE]**. The **Locales** list appears.
6. Select  to return to the **Master Setup** screen.

To edit a locale, select the locale and select **[EDIT]**. The **Edit Locale** screen opens.

NOTE

The locale name cannot be changed.

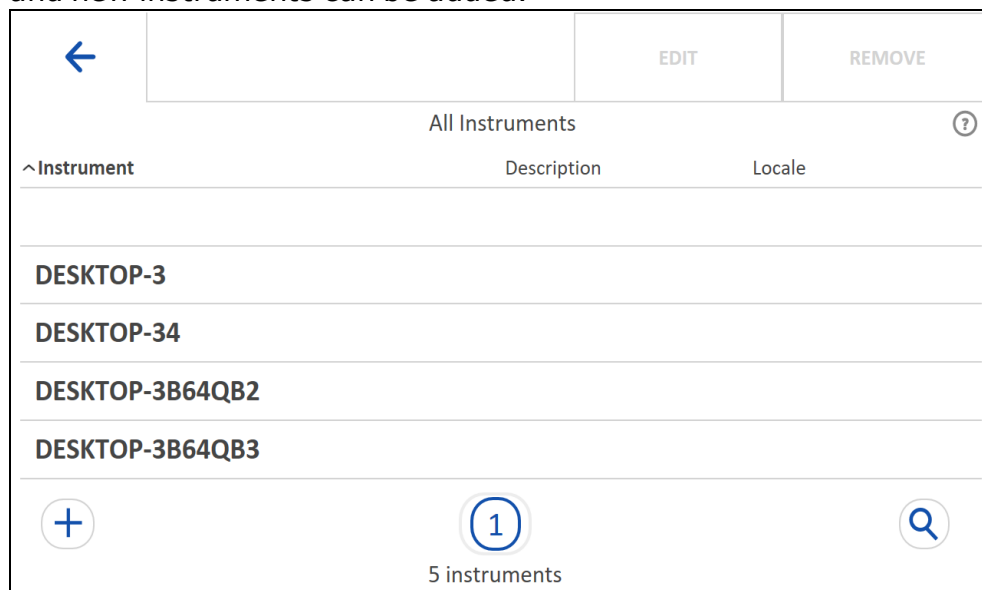
To delete a locale, select the locale and select **[DELETE]**. A confirmation pop-up appears.

Assigning Instruments to the Cluster


Instruments can be added to the cluster master's list of known instruments. This can then be used to secure collections to specific instruments, and to assign locale settings to the instruments.

Instruments can still join a cluster without being added to this list of known instruments.

In the **Master Setup** screen (see **Working as the Cluster Master**), select **[INSTRUMENTS]**. The list of instruments opens. Instruments can be edited or removed, and new instruments can be added.



To add a new instrument to the cluster master's list of known instruments:


1. In the instruments list, select . The **New Instrument** screen appears.
2. Enter an **Instrument Name** (required) and a **Description** (optional).

NOTE

Instrument names for the cluster members can be assigned on the member units in [Configuring Unit Settings](#).

3. Select [**PUBLISH**].
4. From the drop-down list, select the **Locale**.
5. To check the instrument's availability, select [**CHECK AVAILABILITY**]:
 - Online: The instrument exists and is online.
 - Offline or not found: The instrument does not exist or it is not connected.

NOTE: An instrument not currently online or connected may be added to the list by entering the correct instrument name.

6. Select [**SAVE**]. The instruments list opens
7. Select  to return to the **Master Setup** screen.

To edit an instrument, select the instrument and select [**EDIT**]. The **Edit Instrument** screen opens.


To remove an instrument from the list of known instruments, select the instrument and select [**REMOVE**].

Working as a Cluster Member

The instrument can be configured as a cluster member instrument that synchronizes with the cluster master and shares configurations created by the cluster master.

NOTE

Cluster configurations can be accessed from a network folder or from a USB drive. If saving to a network folder, the folder must be a shared folder (set in the Windows[®] Operating System) for cluster members to access it.

The  icon in the fourth column of the cluster member collections list or tests list indicates a collection or test that does not originate from cluster master settings.

To configure the instrument as a cluster member and synchronize configurations from the cluster master:

1. Select **Cluster Member**. The **Member Setup** screen opens.

2. Enter a **Cluster Path** where the cluster configuration is stored.

NOTE

The Integritest 5® instrument has a default shared folder for fast, basic cluster setup: C:\milliporeit5.

If this folder is used on the master, the member can access this path by connecting to the same network and entering `\\[ClusterMasterName]\milliporeit5`.

3. From the drop-down list, select the **Cluster Name**.
4. Select **[START SYNCHRONIZE]**.

NOTE

If **Auto Sync** is selected, the system syncs with the published master configuration every minute, when a user is not logged in.

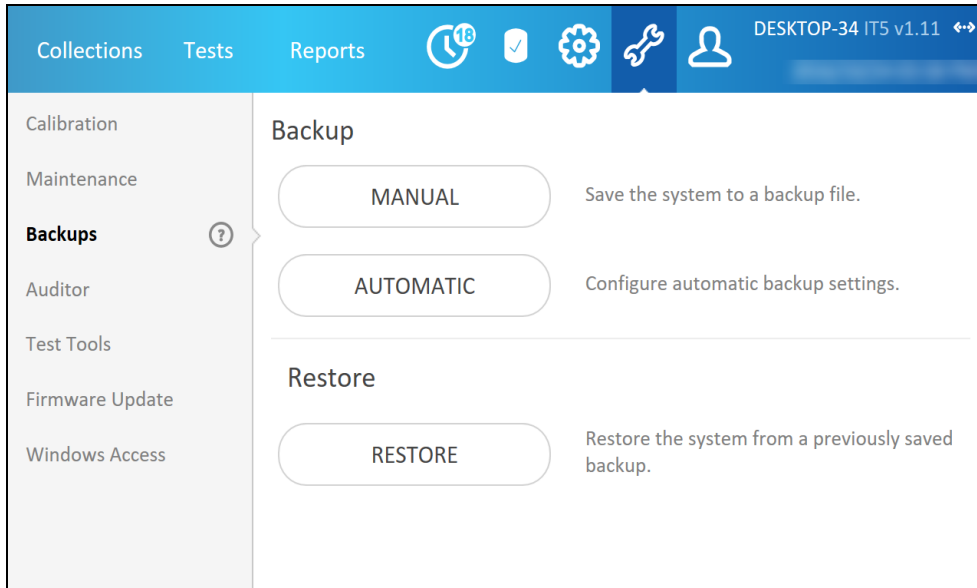
If **Auto Sync** is not selected, synchronizing must be done manually.

Tools

Creating Backup Files and Restoring the System

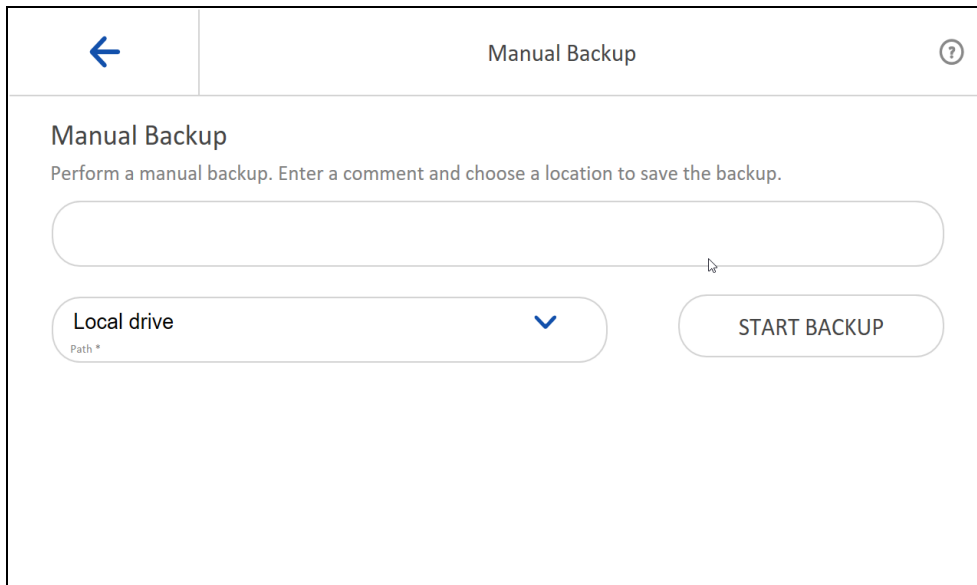
Select . Select **Backups**.

Instrument manager, service, or administrator roles are required to access .



Backing Up Manually

To manually create a system backup file, select **[MANUAL]**. The **Manual Backup** screen opens.



1. An optional comment can be entered in the **Backup Comment** field. The comment is included in the Backuplog.txt file that is part of the backup file, and can be seen when restoring from backup along with the date.
2. In the **Path** field, enter a path where the backup file will be saved. If the path is on a removable drive or a network share, the path includes a root-level directory "Millipore IT5" with a sub-directory "Backups." If these directories do not exist, they are created during the backup process.

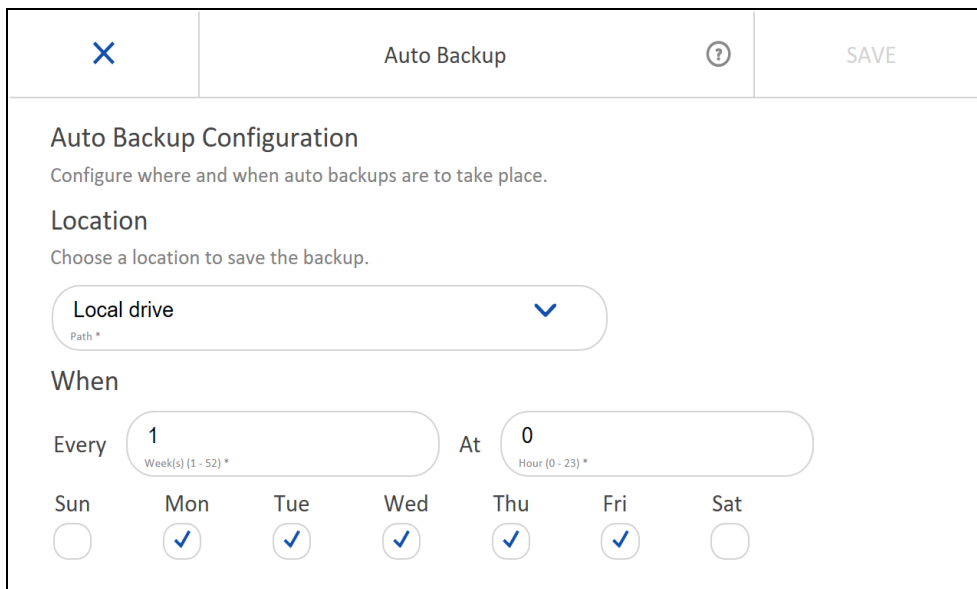
The backup file format is: backup_YYYY-MM-DD-HH-MM-SS(-GH-GM).zip, where:

- YYYY-MM-DD = the backup date (year, month, day)
- HH-MM-SS = the backup time (hour, minutes, seconds)
- GH-GM = the backup time in Coordinated Universal Time (UTC) (hour, minutes)

3. To back up the system, select **[START BACKUP]**.

Backing Up Automatically

To configure time and location for automatic backups, select **[AUTOMATIC]**. The **Auto Backup** screen opens.



Auto Backup Configuration

Configure where and when auto backups are to take place.

Location

Choose a location to save the backup.

Local drive

Path *

When

Every At

Week(s) (1 - 52) * Hour (0 - 23) *

Sun Mon Tue Wed Thu Fri Sat

1. In the **Path** field, enter a valid Windows® Operating System path (format must be *D:\pathname*).

If the path is on a removable drive or a network share, the path includes a root-level directory "Millipore IT5" with a sub-directory "Backups." If these directories do not exist, they are created during the backup process.

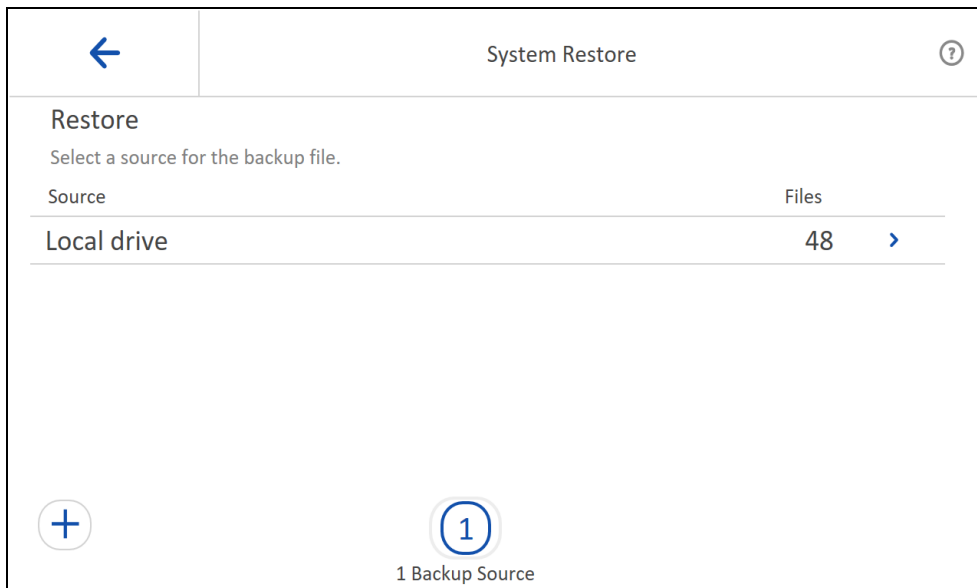
The backup file format is: backup_YYYY-MM-DD-HH-MM-SS(-GH-GM).zip, where:

- YYYY-MM-DD = the backup date (year, month, day)
- HH-MM-SS = the backup time (hour, minutes, seconds)
- GH-GM = the backup time in Coordinated Universal Time (UTC) (hour, minutes)

2. To set a time for the backup:
 - In the **Week** field, enter a weekly interval (from 1 to 52)
 - In the **Hour** field, enter an hour of the day for the backup to take place (0–23)
 - Select days of the week. Backups will take place on the days that are checked. Only one day can be selected unless weekly interval is set to 1.
3. Select **[SAVE]** to save the automatic backup configuration.


Restoring the System from a Backup File

To restore the system from a backup file, select **[RESTORE]**. The **System Restore** screen opens.




This screen lists the available sources for the backup file and the number of files in each source.

To create a new custom path:

1. Select . The **Add Path** screen opens.
2. In the **Path** field, enter a valid Windows[®] Operating System path (format must be *D:\pathname*).
3. Select **[VERIFY]** and then **[SAVE]**.

To select a source:


1. Select the  icon at the end of a row.
2. Select a backup from the drop-down menu.

3. Select **[START RESTORE]**. A pop-up appears with the message, "System restore will cause a restart. Do you really want to restore the system?"

Using the Auditor Function

Select . Select **Auditor**. The **Audit** screen opens.

The auditor logs the activities of the instrument. This screen displays the audit log items by the categories selected.

Item	Description
Security	Filters the list to display security related items, such as log in and log out and attempts to access restricted screens.
Tests	Filters the list to display test related items such as running a test, configuring a test, signing a report.
Settings	Filters the list to display setting related items such as preference, screen setup, and other system-wide settings. Generally not related to test runs.
Tools	Filters the list to display tools related items such as maintenance, calibration, and self-check diagnostic screen.
Exceptions	Filters the list to display messages and alarms that occur.
Recent Events	A list of all event items the machine has performed. This is typically used to debug the system and software. These files are only saved for 5 days.
	Opens Audit Export screen.
Date Range	Displays the date range of items in the audit log at the bottom of the screen. Use the search icon to view different date ranges or search for keywords.

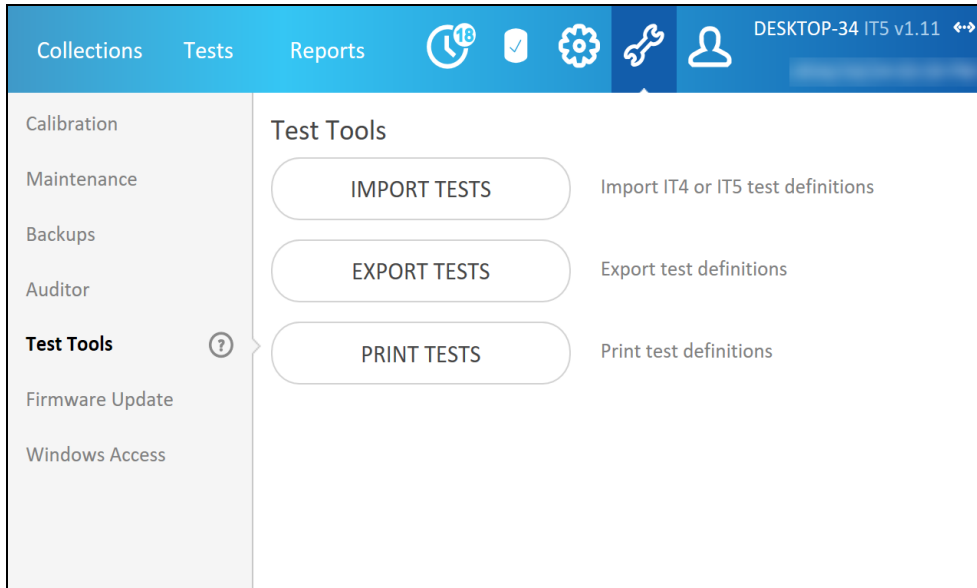
Exporting the Audit Log

1. Select . The **Audit Export** screen opens.
2. Enter an **Audit Export Comment**.
3. Select **[START EXPORT]**.

When the export is complete, a confirmation pop-up appears showing the file name.

Importing, Exporting, and Printing Test Definitions

Select . Select **Test Tools**.



Importing Test Definitions

Test definitions created on Integritest[®] 5 instruments or Integritest[®] 4 instruments can be imported.

1. Select **[IMPORT TESTS]**. The **Import Tests** screen opens.
2. From the drop-down list, select a source for the import file.
3. Select the imports.

To create a new custom path:

1. Select **+**. The **Add Path** screen opens.
2. In the **Path** field, enter a valid Windows[®] Operating System path (format must be *D:\pathname*).
3. Select **[VERIFY]** and then click **[SAVE]**.

Exporting Test Definitions

Test definitions can be exported to a local drive or a portable USB drive.

1. Select **[EXPORT TESTS]**.
2. Select tests by selecting the checkbox in the last column.
3. Select **[EXPORT]**.
4. Enter a file name for the export (required) in the **Test Export File Name** field.

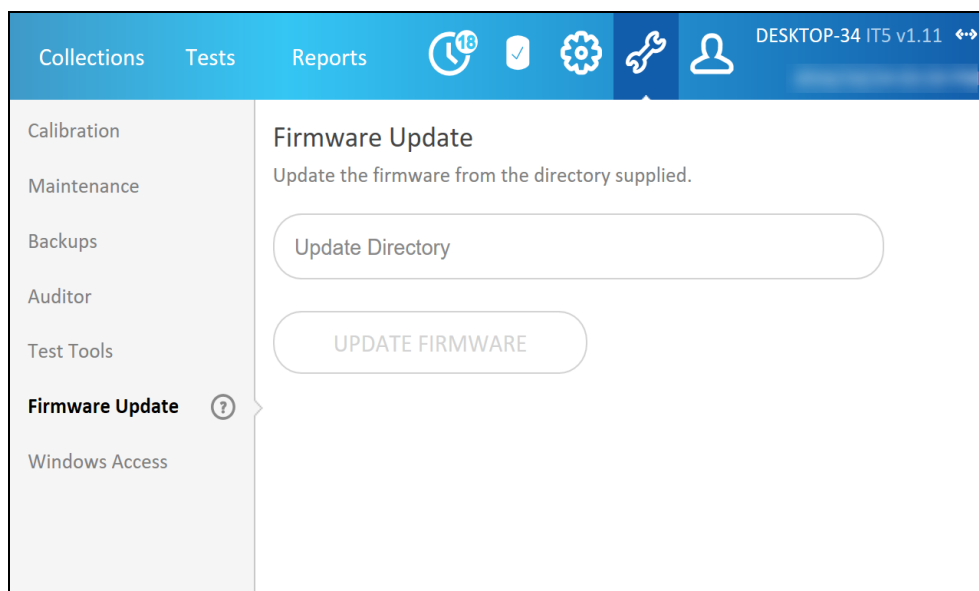
5. Select a **Path**, from the drop-down menu, or enter a valid Windows® Operating System path (format must be *D:\pathname*). (required).
6. Select **[START EXPORT]**.

Printing Test Definitions

1. Select **[PRINT TESTS]**. The **Print Tests** screen opens.
2. Select tests by selecting the checkbox in the last column.
3. Select **[PRINT]**. A confirmation pop-up opens. Select **[YES]** to print to the default printer.

Updating the Firmware

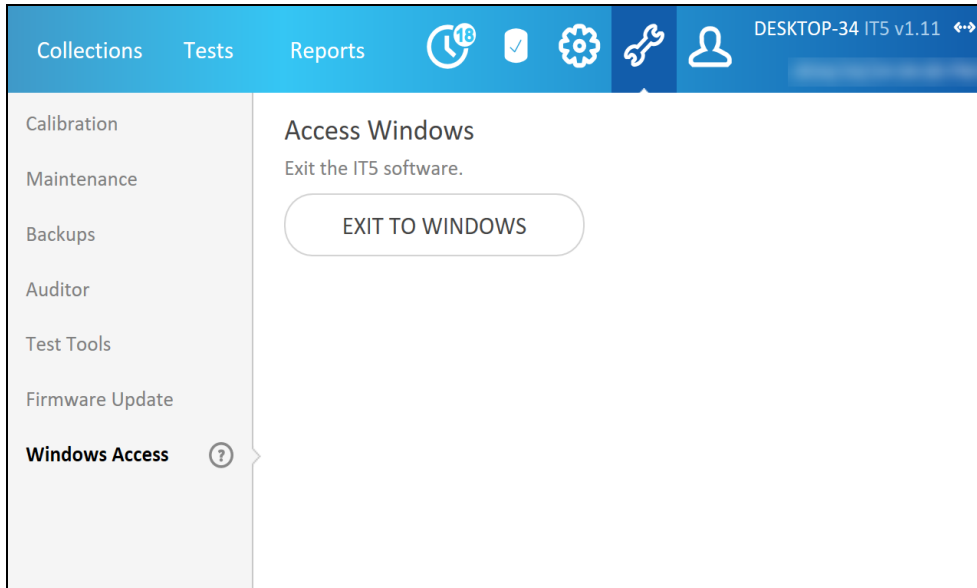
Select . Select **Firmware Update**.



To update the firmware from the directory supplied, enter the **Update Directory**.
Select **[UPDATE FIRMWARE]**.

Accessing Windows

Select . Select **Windows Access**.



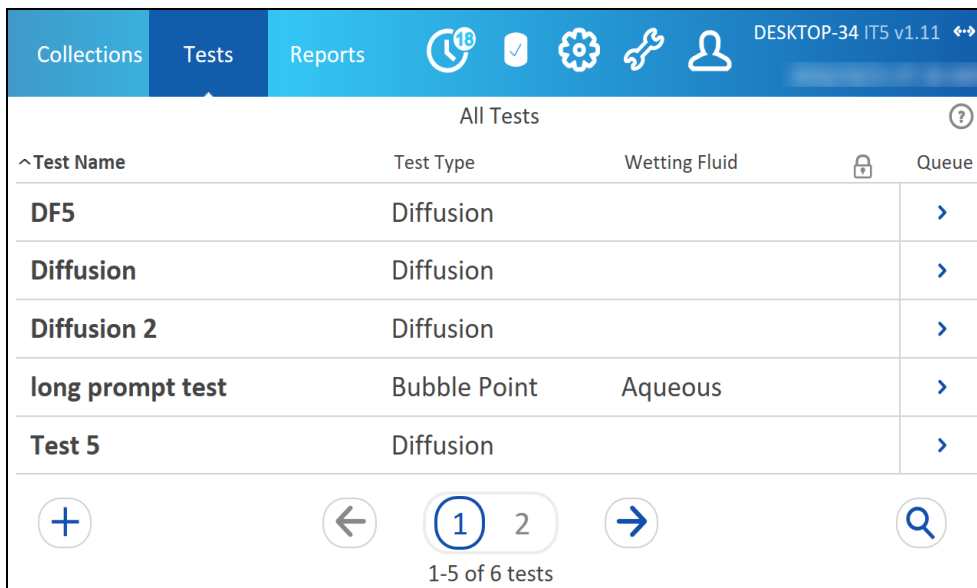
To access the Windows[®] Operating System and exit the Integritest 5[®] instrument, select **[EXIT TO WINDOWS]**.

Test Collections and Tests

NOTE


This function is only available to Administrator roles. The Integritest[®] 5 software cannot track, audit, or restrict actions taken in Windows[®] Operating System.

Select **Tests**. The **Tests** screen opens.



The first column is **Test Name**. The second two columns are user configurable (see **Configuring Settings for Collections, Tests, Prompts, Run Headers, and Run Queue**.) The last column is used to send the test to the run queue.

Sending a Test to the Run Queue

Select the  icon in the run column to send the test to the Run Queue.










Managing Tests

Select a test. A **Tests** screen opens. Function buttons at the top include **[VIEW]**, **[EDIT]**, **[COPY]**, **[DISABLE]**, **[ENABLE]**, and **[RUN]**.

NOTES


Tests cannot be deleted.

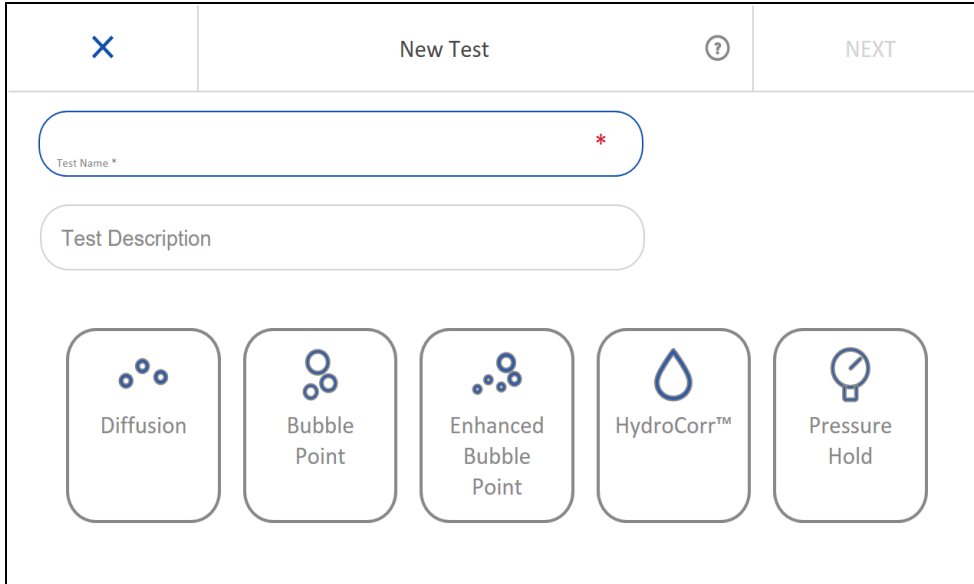
When a test is edited, the revision number changes automatically.

	VIEW	EDIT	COPY	DISABLE	RUN
All Tests ?					
^Test Name	Test Type	Wetting Fluid			Queue
DF5	Diffusion				
Diffusion	Diffusion				
Diffusion 2	Diffusion				
long prompt test	Bubble Point	Aqueous			
Test 5	Diffusion				
  1 2  					
1-5 of 6 tests					

Creating a New Test

Selecting a Test

1. Select **Tests**. The **Tests** screen opens.
2. Select . The **New Test** screen opens.



The screenshot shows the 'New Test' screen. At the top, there is a header bar with a close button (X) on the left, the title 'New Test' in the center, a help icon (?) on the right, and a 'NEXT' button on the far right. Below the header, there are two input fields: 'Test Name *' (with a red asterisk) and 'Test Description'. At the bottom, there are five buttons for test types: 'Diffusion', 'Bubble Point', 'Enhanced Bubble Point', 'HydroCorr™', and 'Pressure Hold'.

3. Enter a **Test Name** (must be unique) and **Test Description** and select a test type. The **General Filter Information** screen opens for all tests except pressure hold; the **General Information** screen opens for pressure hold tests.

Item	Description
Filter Name	A name identifier for the filter. For example: <i>Durapore® KTGE12234</i>
Filter Description	A description of the filter. For example: <i>This is the PTFE filter used most frequently in our suite</i>
Catalog Number	A catalog number of the filter. For example: <i>KVGLG04TT3</i>
Filter Manufacture	The name of the filter manufacturer. For example: <i>MilliporeSigma</i>

Item	Description
Configuration	The configuration used on the test, or the physical set up of the filter. For example: <i>Filter used in steel housing H56, aggressively wetted with procedure C26784</i>
Filter Size*	The filter size in length (inches); typically the published cartridge size. Used for calculating acceptable upstream volume ranges as well as the necessary length of the clearing step. For example, if it is a 10-inch Durapore® cartridge, enter: <i>10</i> If it is a TFF cassette, Virus filters, Millipak®, syringe filter, membrane disk, or any filter less than 1-inch, enter: <i>1</i> To ensure stability and accuracy when testing small area filters such as Millidisc®, Millipak®, and disc filters, the tubing volume connecting instrument to filter should be less than 1.5 ml, which is about 6 inches on 0.25 inch diameter tubing.
<i>Filter Pore Size</i>	The published pore size for the filter. For example, if it is a Durapore® 0.22 µm Opticap® XL 5 capsule, enter: <i>.22µm</i>
* Required field	

4. Enter filter/vessel information. Refer to the following tables for more information.

NOTE

Maximum length for all fields is 80 characters. Special characters are not recognized.

Item	Description
Test Name*	A unique identifier for the test. There can only be one test on the system with this name.
Test Description	A free text field for a description of the test. Because this is a searchable field, use consistent conventions for all tests. For example: product name, process number, plant number
* Required field	

Test Types

Choose the type of test to be created. Once the test type is selected and saved, it cannot be modified; only the test parameters can be edited. If a test is edited, the new

version is saved at the next revision level.

Item	Description
Diffusion	Under pressure, compressed air or nitrogen flows through the liquid that is held in the filter's pores at differential pressures below the bubble point. In small-area filters, this airflow is very small and often not measurable. In large-area filters, it is significant enough to measure and provide a sensitive filter integrity test.
Bubble Point	Liquid is held in the pores of a filter by surface tension and capillary forces. Bubble point tests detect the minimum pressure required to overcome these forces and force liquid out of the largest pores of a membrane filter.
Enhanced Bubble Point	An enhanced bubble point test is a combination test in which a diffusion test is run immediately followed by a bubble point test.
HydroCorr™	Water is repelled by the pores of hydrophobic filters by surface tension and capillary forces. This test is a highly sensitive, non-alcohol, water-flow integrity test for hydrophobic membrane filters. The minimum pressure required to force liquid into the largest pores is called the water intrusion pressure. The HydroCorr™ test is conducted at a pressure below the water intrusion pressure. For integral filters, there is no flow of water through the membrane. This prevents downstream contamination because the membrane does not wet out, the filter can be used immediately after testing, with little or no filter drying required. The water flow measured in an integral filter during the HydroCorr™ test is due only to the compression of the pleated filter structure caused by pressurizing the filter. This does not damage the filter. The HydroCorr™ test specifications are correlated to the bacterial challenge test.
Pressure Hold	This test is also known as pressure decay or pressure drop test. A highly accurate pressure sensor is used to monitor upstream pressure changes caused by leaks or gas diffusion through the filter. This test is done to verify the integrity of a sealed housing or system or to check the integrity of a filter.

5. Select **[NEXT]**. The test specification screen opens. Fields vary depending on the test.
6. Enter appropriate test specifications. Refer to the following tables for more information.

Diffusion Test Specifications

Under pressure, compressed air or nitrogen flows through the liquid that is held in the filter's pores at differential pressures below the bubble point. In small-area filters, this airflow is very small and often not measurable. In large-area filters, it is significant enough to measure and provide a sensitive filter integrity test.

Item	Description
Wetting Fluid/ Pre-Pressurization	Aqueous Wetting Fluid, Non-Aqueous Wetting Fluid, Viresolve® Pro, Viresolve® NFR/NFP, or Custom. This setting runs the correct stabilization time and pre-pressurization to get accurate results. If testing a hydrophilic membrane with water, select Aqueous . If testing a hydrophobic membrane with alcohol or if testing with other fluids, select Non-Aqueous . If testing a Viresolve® filter, select Viresolve® Pro or Viresolve® NFR/NFP based on the filter being tested. Select Custom to manually enter values.
Wetting Fluid Description	Name or type of wetting fluid. For example: <i>70% isopropyl alcohol</i>
Diffusion Pressure Specification	The pressure at which the test is conducted. Specified by the filter manufacturer.
Diffusion Flowrate Specification	The maximum acceptable flowrate result at which the test will pass. Specified by the filter manufacturer.
Extended Diffusion	Select to set the stabilization time when the diffusion test is run. For example, Viresolve® NFR/NFP recommends running at 13 minute Extended Diffusion Time.
Perform Self Check	Select to have the system check calibration before the test. If not selected, the system automatically performs a self check, before the first test is run, after twenty-four hours have passed since the last self check.

Options for Virus Filter/Pre-Pressurization Type

When selected, a drop-down menu appears.

Item	Description
Pre-Pressurization Type	Select Viresolve® Pro or Viresolve® NFR/NFP and the appropriate values for Pre-Pressurize Pressure, Pre-Pressurize Time, De-Pressurize Time and Additional Pre-Pressurize Time will be populated automatically. Select Custom to manually enter the values in these fields.
Pre-Pressurize Pressure	The pressure used to stabilize the filter prior to sizing.
Pre-Pressurize Time	The length of time to hold the pre-pressurize pressure to stabilize the filter prior to sizing.
De-Pressurize Time	The length of time to vent the housing prior to sizing.

Item	Description
Additional Pre-Pressurize Time	The length of time to hold pre-pressurize pressure during a second pre-pressurization step to stabilize the filter prior to sizing.

When running a diffusion test for systems of 3 x 30 inches or greater, the inlet pressure air supply should be higher than 90 psi to avoid long fill times.

Bubble Point and Enhanced Bubble Point Test Specifications

Liquid is held in the pores of a filter by surface tension and capillary forces. Bubble point tests detect the minimum pressure required to overcome these forces and force liquid out of the largest pores of a membrane filter.

Item	Description
Wetting Fluid	Aqueous or Non-Aqueous. This setting runs the correct algorithm to take relevant data points for accurate results on the standard test. This should be set based on the viscosity of the fluid. Fluids greater than 90% water can safely be considered aqueous. 60% - 100% isopropyl alcohol (IPA) is considered non-aqueous. If unsure of the appropriate selection, select non-aqueous and choose an Extended Bubble Point test.
Wetting Fluid Description	Name or type of wetting fluid. For example: <i>70% isopropyl alcohol</i>
Minimum Bubble Point	Minimum bubble point pressure at which the test will pass. Specified by the filter manufacturer.
PES/Asymmetric	PES/Asymmetrical refers to the filter membrane material, polyethersulfone, and pore distribution. This setting runs the correct algorithm to take relevant data points for accurate results. Filters with any Millipore Express® membrane have this membrane. For all other filters, refer to the filter manufacturer for this information.
Extended Bubble Point	Select to run a bubble point test that is longer and records more data points. If not selected, a standard bubble point test is run.
Perform Self Check	Select to have the system check calibration before the test. If unselected, the system automatically performs a self check before the first test is run after twenty-four hours have passed since the last self check.

HydroCorr™ Test Specifications

Water is repelled by the pores of hydrophobic filters by surface tension and capillary forces. This test is a highly sensitive, non-alcohol, water-flow integrity test for hydrophobic membrane filters. The minimum pressure required to force liquid into the largest pores is called the water intrusion pressure. The HydroCorr™ test is conducted at a pressure below the water intrusion pressure. For integral filters, there is no flow of water through the membrane. This prevents downstream contamination because the

membrane does not wet out, the filter can be used immediately after testing, with little or no filter drying required. The water flow measured in an integral filter during the HydroCorr™ test is due only to the compression of the pleated filter structure caused by pressurizing the filter. This does not damage the filter. The HydroCorr™ test specifications are correlated to the bacterial challenge test.



Item	Description
Filter Type	Select from drop-down menu. The broader options PES Cartridges, PVDF Cartridges, and PTFE Cartridges near the end of the list should be selected only if the more specific options are not applicable. If these are also not applicable, select Other.
HydroCorr™ Pressure Specification	Field is auto populated for most filters. The pressure at which the HydroCorr™ test is conducted. Specified by the filter manufacturer.
HydroCorr™ Flowrate Specification	Field is auto populated for most filters. The maximum acceptable flowrate at which the test will pass. Specified by the filter manufacturer.
Perform Self Check	Select to have the system check calibration before the test. If unselected, the system automatically performs a self check before the first test is run after twenty-four hours have passed since the last self check.

Pressure Hold Test Specifications

This test is also known as pressure decay or pressure drop test. A highly accurate pressure sensor is used to monitor upstream pressure changes caused by leaks or gas diffusion through the filter. This test is done to verify the integrity of a sealed housing or system or to check the integrity of a filter.

Item	Description
Pressure Hold Pressure	Sets the starting pressure.
Pressure Drop Specification	Sets the maximum acceptable pressure drop at the end of the test.
Max Test Time	Sets the maximum time for the test to run.
Perform Self Check	Selects to have the system check calibration before the test. If unselected, the system automatically performs a self check before the first test is run after twenty-four hours have passed since the last self check.

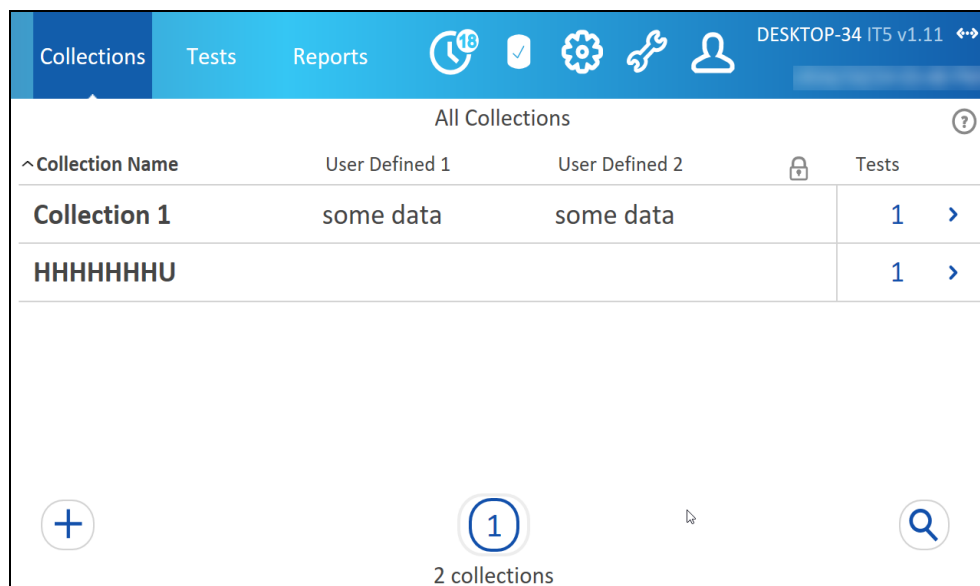
7. Select **[NEXT]**. The **Rounds and Housing Information** screen opens; for Pressure Hold tests, the **Housing Information** screen opens.
8. Enter the **Number of Rounds Used** (1 to 6). Rounds is the number of filters in each housing. The number of rounds determines the total membrane area of a test.


9. If the upstream volume is known, select **Preset Upstream Volume**, enter **Manual Sizing Volume** to speed up the test.
10. If the housing is not filled to capacity, select **Oversize Housing**, and enter **Number of Rounds Housing Can Hold** (1 to 6) and **Filter Size Housing Can Hold** (1 to 40).
11. Select **[NEXT]**. The **Prompts** screen opens.
12. Enter a prompt. Prompts are messages that can be displayed before a test is run.
To add an existing prompt to the test, select the  icon. The Prompts Library screen opens. Select anywhere in a row except the delete button to add the prompt to the test.
The Prompts screen reopens. To remove a prompt, select the  icon.
To add a new prompt to the Prompts Library, see [Configuring Prompts](#).
13. Select **[NEXT]**. The **Confirm Test Definition** screen opens. All test specifications are listed.
14. Select **[SAVE]** to confirm and save the new test. To make changes, return to previous screens.

Working with Test Collections


A collection is a user defined group of tests, such as a collection for all tests for filter A, or a collection for all tests used in lab B. For example, a collection called "Validated Test" main contain only tests that have been validated in this collection. Every time this collection is opened, only the validated tests display. Security can be added to a collection by assigning the collection to one or more users or groups which would limit viewing and running of those tests to those assigned.

Select **Collections**. The **Collections** screen opens.






The first column is the **Collection Name**. The second two columns are user defined (see **Configuring Settings for Collections, Tests, Prompts, Run Headers, and Run Queue**). A  in the fourth column indicates that security settings have been applied to a collection. The last column contains the number of tests in a collection and provides access to the tests in the collection.

Managing Collections

To manage a collection, select the  icon at the end of the collection row. The Test list for the selected collection opens. Function buttons are **[ADD]**, **[REMOVE]**, and **[RUN]**.

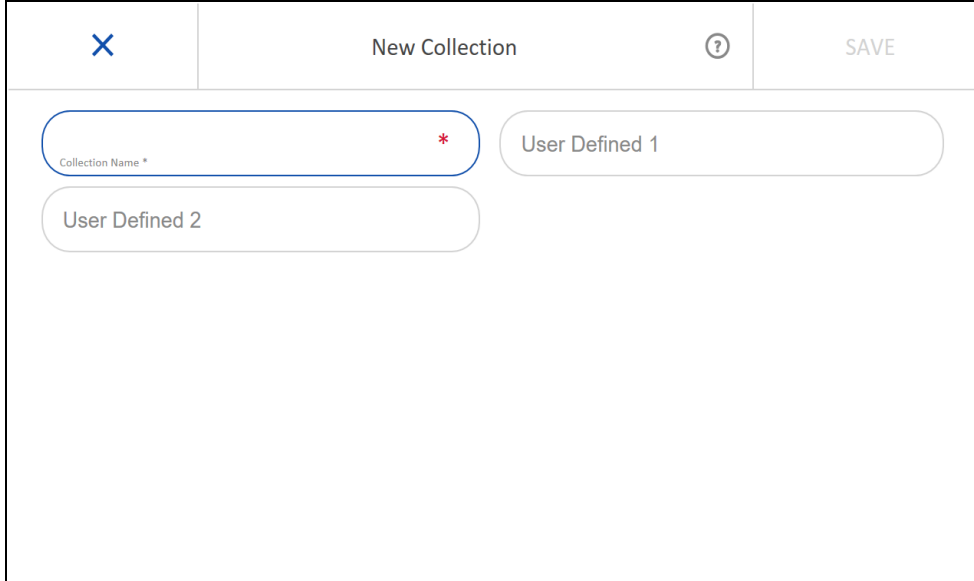


←	ADD	REMOVE	RUN
All Tests for Collection: Collection 2 			
^Test Name	Test Type	Wetting Fluid	Queue
DF5	Diffusion		
Diffusion 2	Diffusion		

 
2 tests

Creating a New Collection


1. On the **Collections** screen, select . The **New Collection** screen opens.



2. Enter a name in the **Collection Name** field.
3. Enter data in the two user defined fields.
4. Select **[SAVE]**. The Collections list opens. The new collection is listed. There are no tests in the collection.
5. To add tests to the collection, see [Managing Collections](#).

Securing a Collection

Collections can be secured so that only certain users or instruments can use them.

A  in the fourth column of the collections list indicates that security settings have been applied to a collection.

To add security to a collection:


1. On the **Collections** screen, select a collection. Action buttons appear: **[SECURE]**, **[DELETE]**, and **[DISABLE]**.
2. Select **[SECURE]**. One of the following screens open:

If the instrument is configured as a Cluster Master, the **Collection Security** screen opens.


If the instrument is configured as a Stand-Alone, the **All Users and Groups** screen opens.

Assigning and Removing Users or Groups

To select the users and groups that can use the collection:

1. Select **[ADD]** (for a Stand-Alone instrument) or **[USERS AND GROUPS]** and then select **[ADD]** (for a Cluster Master instrument) .
2. Select users and groups by selecting the checkbox in the last column.
3. Select **[SAVE]**. The list of users and groups for this collection opens.
4. Select  to return to the previous screen.

To remove a user or group:

1. Select a user or group and select **[REMOVE]**.
2. Select  to return to the previous screen.


Assigning and Removing Instruments and Locales

NOTE


Only an instrument configured as a cluster master can assign and remove instruments to and from the cluster and locales.

To select the instruments and locales that can use the collection, on the **Collection Security** screen, select **[INSTRUMENTS AND LOCALES]**. The list of instruments and locales for the collection opens.

To add an instrument or locale:


1. Select **[ADD]**. The Instruments and Locales Selection screen opens.
2. Select instruments and locales by selecting the checkbox in the last column.
3. Select **[SAVE]**. The list of instruments and locales for this collection opens.
4. Select  to return to the Collection Security screen.

To delete an instrument or locale:



1. Select an instrument or locale and select **[REMOVE]**.
2. Select  to return to the previous screen.

Working with the Run Queue


Tests in the run queue can be run in sequence, or as selected by the user.

Select . The **Run Queue** screen opens. The number in the circle in the run queue icon indicates the number of tests currently in the queue.

The first column is the test name. The second two columns are user defined (see **Configuring Settings for Collections, Tests, Prompts, Run Headers, and Run**


Queue). The  column previews the test specifications. The  column removes the test from the queue.

To enter a run header or view test specifications before the test is run:


1. Select . The **Preview Run Headers** screen opens.
2. Enter data into the fields (see **Configuring Settings for Collections, Tests, Prompts, Run Headers, and Run Queue**).
3. Select **[NEXT]**. The **Preview** screen opens.
4. Review the categories by scrolling down or selecting the hyperlinks: **General, Test Parameters, Filter Parameters, and Run Headers**.
5. Select **[SAVE]**.

Running Tests and Reports

Sending Tests to the Run Queue

Select **Collections**. The **Collections** list opens. Select the  icon in the **Tests** column at the end of a collection row. The list of tests in that collection opens. Select the icon at the end of a test row. The test is sent to the Run Queue.

or

Select **Tests**. The **Tests** screen opens. Select the  icon in the **Queue** column at the end of a collection row. The test is sent to the Run Queue.

Starting a Test


Operator and Supervisor Roles

To start a test from the **Test** list:


1. Select **Tests**. The **Tests** list opens.
2. Select a test. The **Run Headers** screen opens.

3. Enter data into the fields. Select **[NEXT]**. If there are prompts for this test, the **Prompts** screen opens.
4. Confirm any prompts and select **[NEXT]**. The **Confirm** screen opens.
5. Review the categories by selecting the hyperlinks: **General, Test Parameters, Filter Parameters,** and **Run Headers**.
6. Select **[START]**. If a test is running, the test is sent to the run queue. If no test is running, the test screen opens and the test begins. A progress bar indicates the test stages as the test runs. The test results graph completes as the test runs. When the test is complete, the result shows on the screen: **PASSED, FAILED, INVALID, ABORTED**.

To run a test from the Run Queue:

1. Select . The **Run Queue** opens.
2. Select a test anywhere in the row except the **Preview** and **Remove** columns. The **Run Headers** screen opens.
3. Follow steps 3 through 6 in the **Starting a Test** section to start a test from the **Test** list.

To start a test from the **Collections** screen:

1. Select **Collections**. The **Collections** screen opens.
2. Select the  icon at the end of the collection row. The list of tests in that collection opens.
3. Select a test. The **Run Headers** screen opens.

Follow steps 3 through 6 in the previous section, **Starting a Test: Operator and Supervisor Roles** to start a test from the **Test** list.

Instrument Manager, Service, and Administrator Roles

The procedure is the same as for Operator and Supervisor roles with one exception: When running a test from the **Tests** list or the **Collections** list, follow these steps:

1. Select **Tests**. The **Tests** screen opens.
2. Select a test. Action buttons appear on the screen: **[EDIT], [COPY], [DISABLE], [ENABLE], [RUN]**.
3. Select **[RUN]**. The **Run Headers** screen opens.

- Follow steps 3 through 6 in the previous section, **Starting a Test: Operator and Supervisor Roles** to start a test from the **Test** list.


Overriding Temperature Instability

An unstable temperature message indicates that the instrument is not at operating temperature. Select **Override** to run the test. Do not override if the test requires accurate results. The instrument will automatically start the test without user intervention as soon as the temperature is stable.

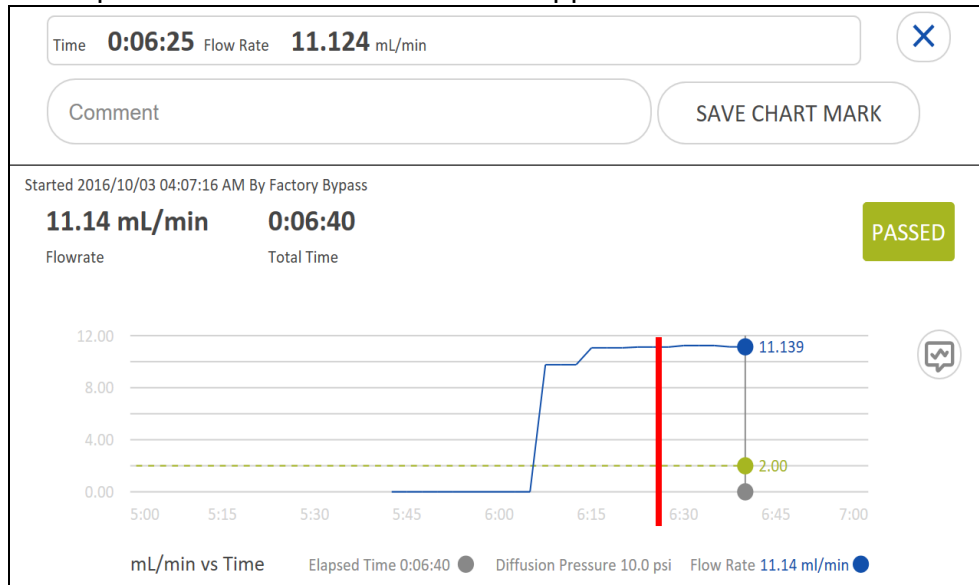
Aborting a Test

To abort a test, select  when the test is running.

Adding a Chart Mark and Comment to Test Results

A chart mark is used to read and record to the data base point on the graph; a short comment can be added. On the test results screen, click  to open the chart mark configuration window. This is only available when the test is complete.

To add a chart mark, select a position on the graph. A marker is added on the X axis. The X and Y parameters of the chart mark appear.



To change the position of the marker, select a different point on the graph.




To save the chart mark to the Test Results chart, select **[SAVE CHART MARK]**. The chart mark will be present whenever the chart is viewed.


To view information about a chart mark, click the chart mark. A pop-up opens with information about the X and Y parameters.

To remove a chart mark, select the chart mark on the graph. The **[REMOVE CHART MARK]** button is available in the chart mark pop-up.


Working with Reports and Test Results

Select **Reports**. The **Reports** list opens. The first column is the **Test Start Date and Time**. The second two columns are user configurable. The third column indicates the status of the test. The last column indicates how many signatures are required to fully sign a report. (See Configuring Reports Settings.)

If only one signature is required, there is no number next to the . If two signatures are required,  indicates the current user will sign the first signature and  indicates the current user will sign the second signature. The second signature may be restricted to supervisors, instrument managers, and administrators.

When a report is fully signed,  replaces the .

A  icon indicates a passed test.

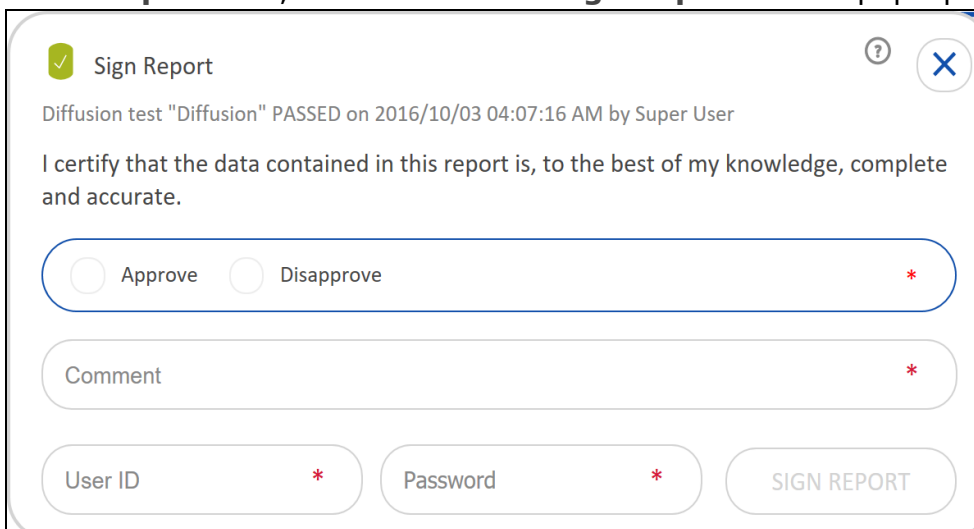
A  icon indicates a completed but failed test.

A  icon indicates an aborted or invalid test.

Report data cannot be deleted.

Signing a Report

- In the **Reports** list, select . The **Sign Report** screen pop-up window opens.



Sign Report

Diffusion test "Diffusion" PASSED on 2016/10/03 04:07:16 AM by Super User

I certify that the data contained in this report is, to the best of my knowledge, complete and accurate.


Approve Disapprove *

Comment *

User ID * Password * SIGN REPORT

- Select **Approve** or **Disapprove** (required).
- Add a **Comment** (required), enter **User ID** (required), and **Password** (required).

4. Select **[SIGN REPORT]**. The pop-up window closes.

5. If an additional signature is required, select  again.

Users do not need to be logged in to sign a report.

Reports can be printed without electronic signatures. For manual signing, see **Configuring Reports Settings**. Automatically printed paper reports cannot be signed electronically.

There may be a slight delay between the time the report is signed and the time the signatures appears on the report.


Viewing a Test Report

1. Select **Reports**. The **Reports** list opens.

2. Select a report. Action icons appear: , , and .

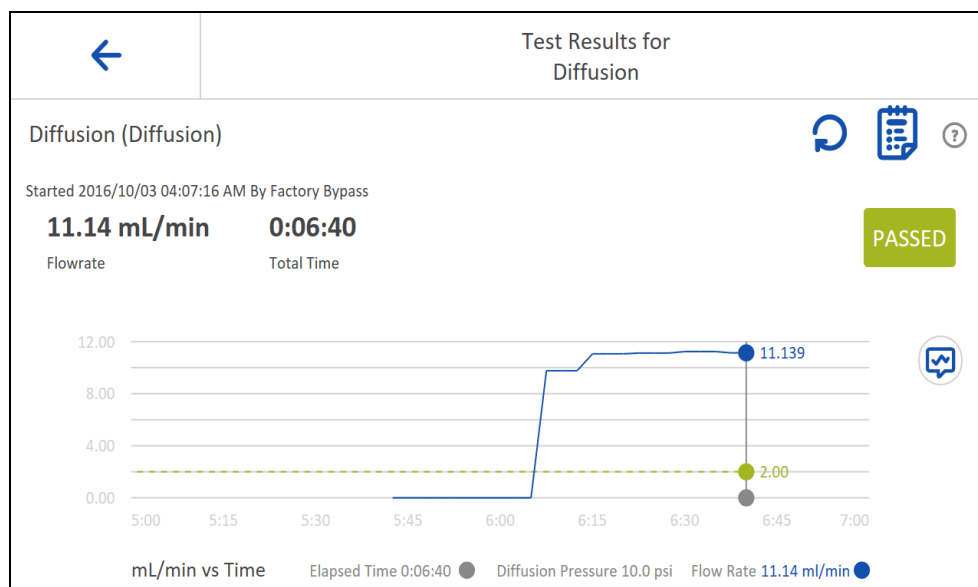
3. Select . The **Report Viewer** screen opens.

Printing a Test Report

In the **Reports** screen or the **Report Viewer** screen, select . A pop-up window confirms that report has been sent to the printer, and identifies the printer. (See **Configuring Reports Settings**.)

Viewing Test Results

In the **Reports** list, select . The **Test Results** screen opens.



Maintenance

Managing Calibration

Calibrating the instrument must be performed only by authorized personnel.

Select . The service screen opens.

Select **Calibration**. The **Pressure Calibration** screen opens.

Setting the Next Calibration Date

The last calibration date displays and indicates if calibration is overdue.

Select [**Next Calibration Date**]. A calendar opens. Select a date.

Viewing Calibration Reports

Select [**REPORTS**]. The **All Calibration Reports** list opens. Columns are **Start Date**, **Test Type**, **Status**, and **Sign**.

Setting Maintenance Dates and Running Diagnostics

Select . The service screen opens.

Select **Maintenance**. The **Maintenance and Diagnostics** screen opens.

Setting the Next Maintenance Date

Select [**MAINTENANCE**]. The **Maintenance** screen opens.





Select [**Next Maintenance Date**]. A calendar opens. Select a date.





Viewing Calibration and Maintenance Reports

Select [**MAINTENANCE**]. The **Maintenance** screen opens.

Select [**REPORTS**]. The **All Calibration Reports** screen opens.

This screen displays a list of completed reports. The reports are sorted by date, with the last completed report first (columns can be sorted).

Item	Description
	Indicates a passed test
	Indicates a failed test
	Indicates an incomplete test
	Indicates an aborted or invalid test

Item	Description
	Click to electronically sign the report. If the number of necessary signatures has been reached, a ✓ will appear.
	Opens the selected report in the Report Viewer screen.
	Opens the Tests Results screen for the report.
	Prints the report.

Viewing Service Notes

Select [**MAINTENANCE**]. The **Maintenance** screen opens.

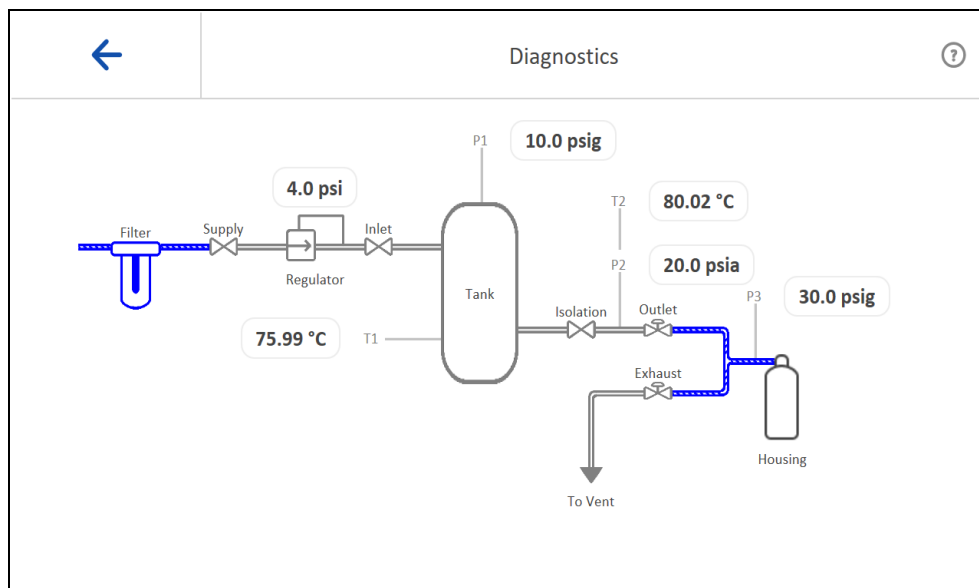
Select [**NOTES**]. The **All Service Notes** screen opens.



This screen displays a list of existing service notes by dates.



Viewing Diagnostics and Changing Pressures and Valves

Select [**DIAGNOSTIC TOOL**]. The **Diagnostics** screen opens.

This screen displays the sensor and values used on the instrument. The pressures and open values can be set on the screen. Simulated fluid flow is indicated in blue with animation in the direction of the flow. If there is no flow, there is no color or animation. This is only a simulation and should not be considered actual flow for safety reasons. If you have high pressures connected, use caution when controlling the flow paths.



Item	Description
 	Valves toggle between open and close by clicking the valve. Open valves are blue; closed valves are not color coded.

Item	Description
T1, T2	Temperatures; view only fields
P1, P2	Pressures; view only fields
	<p>Sets the regulator pressure. To change the regulator pressure:</p> <ol style="list-style-type: none"> 1. Select  or the displayed pressure value. A pop-up window appears. 2. Enter the desired pressure in the EPR field and click [SET]. <p>NOTES The value is not set until the [SET] button is selected. This screen cannot be closed if this window is open.</p>

To toggle valves between open and closed, select the valves. Open valves are blue; closed valves are unfilled.

To change the pressure regulator setting, select the regulator symbol or the displayed pressure value. A window pops up. Enter the desired pressure in the **EPR** field, and select **[Set]**.

Cleaning the Instrument

Clean external surfaces of the instrument and tubing with a lint-free cloth dampened with one of the agents listed below. After cleaning, wipe components with a lint-free cloth dampened with clean water. (See [Cleaning the HIM](#).)

Compatible cleaning agents:

- Hydrogen peroxide (7.5%)
- Quaternary Ammonium Compounds (0.2%)
- Glutaraldehyde (3.4%)
- Alcohol (normally isopropyl alcohol) (70%)
- Sodium Hypochlorite (5.2%)

Emptying the Water Trap

Periodically check the water trap at the back of the instrument. If it becomes full, empty it.

The frequency of emptying and cleaning the water trap is based on the quality of the supply air and frequency of use. Follow Standard Operating Procedures (SOPs) for supply air and water trap maintenance. If there is a concern, add an inlet desiccant air filter.

Replacing the Fuses

NOTES

The main fuses should never require replacement unless there is a major electrical surge from the electrical source. If the fuse needs replacement, the approved fuse must be used.

Before replacing the fuse, the instrument must be shut down and the power cord disconnected.

1. Locate the fuse holder on the back panel of the instrument, located below the power port.
2. Use a small screwdriver to remove the fuse holder.
3. Remove the old fuse from the holder and insert a new fuse.
4. Reinsert the fuse holder and snap it into place.

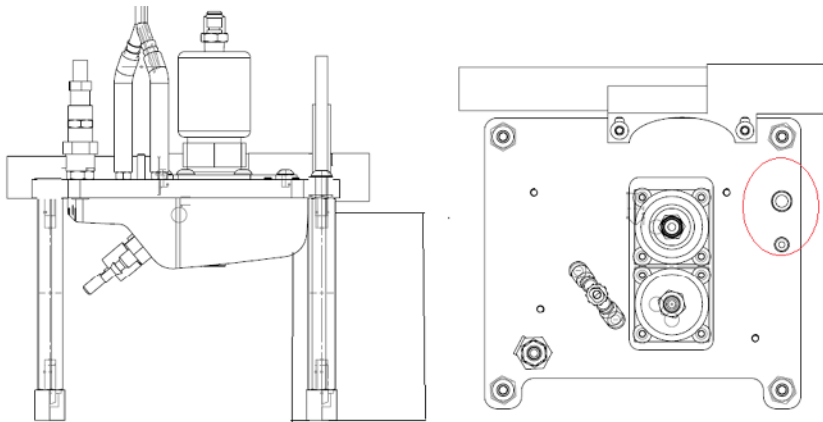
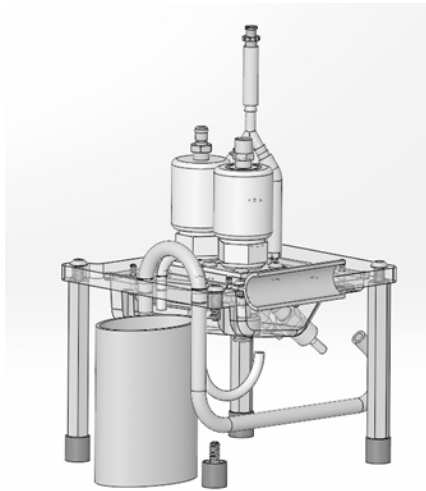
Cleaning the HIM

If liquid enters the HIM, the HIM should be replaced or cleaned.

Removing the HIM from the Instrument

1. Power down the Integritest[®] 5 instrument.
2. Remove the air connection.
3. Use a #2 Phillips head screwdriver to loosen the four screws that secure the HIM to the instrument.
4. Grasp the inlet connection in one hand and the finger slot with the other hand.
5. Wiggling the HIM slightly, pull it away from the instrument. The HIM will clear the instrument when it is pulled out approximately one inch.

Cleaning the HIM (Using the Optional Accessory)



1. Set up the cleaning system by installing the HIM on the underside of the cleaning fixture, using the same screws that held the HIM onto the Integritest® 5 system.
2. Connect the tubing by inserting the small tubing into the exhaust port. Push the larger tubing over the HIM outlet line. Attach tubing T-fitting to the top of cleaning unit where a syringe will be added.
3. Install the beaker by placing the small tubing line into the 250 mL cup.
4. Open a sterile syringe, depress the plunger on the syringe all the way to the bottom to remove any air. Attach the syringe to the tubing with the T connector using the lure connection.
5. Open the inlet valve by removing the connector from its storage location and placing it on top of the valve with the male connector. Screw the pump to the stem valve and pump at least twice. The pump should be very firm which indicates high pressure, to open the valve for cleaning.

6. Rinse the HIM

Fill a beaker with 200 mL of water. Pull water into the HIM by drawing the syringe plunger up to the top (the flow path and tubing contains air that needs to be removed). Depress the syringe until most of the liquid is expelled. Repeat the push pull sequence until no more bubbles are visible in the lines. With the beaker in place, push the syringe to empty about half the water, then remove the syringe to allow the HIM to gravity drain. Detach the syringe and remove fluid from the syringe and the beaker. Pull air into the syringe and re-attach to tubing. Depress the syringe plunger to remove residual water from the HIM.

7. Clean the HIM

Fill the beaker with 200 mL of the cleaning agent. Pull the cleaning solution into the HIM by drawing the syringe plunger to the top (the flow path and tubing will contain water that must be removed). Depress the syringe until most of the liquid is expelled. Repeat the push pull sequence until the fluid is flushed through the line (3 push-pulls is recommended). The cleaning solution is now in the system. Allow contact time appropriate for the cleaning solution. With beaker in place, depress the syringe plunger to empty it about halfway, then remove the syringe to allow HIM to gravity drain. Detach the syringe and remove the fluid from the syringe and from the beaker. Pull air into a new syringe and attach it to the tubing. Depress the syringe plunger to remove residual cleaning solution from the HIM.

8. Rinse the HIM

Fill a beaker with 200 mL of water. Pull water into the HIM by drawing the syringe plunger up to the top (the flow path and tubing contains air that needs to be removed). Depress the syringe until most of the liquid is expelled. Repeat the push pull sequence until no more bubbles are visible in the lines. With the beaker in place, push the syringe to empty about half the water, then remove the syringe to allow the HIM to gravity drain. Detach the syringe and remove fluid from the syringe and the beaker. Pull air into the syringe and re-attach to tubing. Depress the syringe plunger to remove residual water from the HIM.

Repeat the above steps six more times for a recommended total of seven rinses. Additional rinses may be required depending on the application. Rinse and sample as necessary to ensure the device is returned to neutral conditions.

9. Dry the HIM

Remove the syringe from the tubing with the T connector. Attach sterile filtered compressed air at the T connector to blow any remaining water from the HIM. Leave air on for five minutes. Once the drying is complete, the HIM can be reinstalled on the system.

Replacing the HIM in the Instrument

1. Ensure all surfaces are clean.
2. Align the steel pin and the two valve housing connections.
3. Slide module into the instrument.
4. Use a #2 Phillips head screwdriver to install the four screws that secure the housing in the instrument. Do not attempt to guide the module into place using the screws. Install the screws only after the module is in place.
5. Reconnect the air lines and turn the instrument on.

Troubleshooting

Messages

In most instances, the suggested actions/resolutions should resolve the error. If the error persists or is not included in this list, contact Technical Service.

Item	Action
General failure	General error: <ul style="list-style-type: none"> • Restart the unit • If the issue persists, call Technical Service
Gross Leak Detected	Measured flowrate is much higher than the diffusion specification. Try the following: <ul style="list-style-type: none"> • Check for leaks in connection or housing • Ensure the filter is properly wetted • Check test specifications are correct • Replace filter (filter may have lost integrity or broken) • Run a pressure hold test on the system to check for leaks
Max Test Time exceeded	Test is taking too long to complete. <ul style="list-style-type: none"> • Ensure the system is running in stable temperature; this includes exposure to vents, sunshine, and contact with other running equipment • Ensure inlet gas pressure is maintained at 15 psi above test pressures • Ensure the filter is properly wetted • Check diffusion or minimum bubble point test specifications are correct • Filters may have much higher bubble points than the minimum specification; try troubleshooting by using a higher minimum bubble point

Item	Action
Max pressure loss exceeded	<p>Measured pressure drop was higher than test specification.</p> <ul style="list-style-type: none"> • Check for leaks in connection or housing • Check flow rate specifications are correct
Insufficient gas inlet pressure	<p>The inlet pressure must be 15 psi greater than test pressure. Increase inlet pressure and rerun test. The inlet gas pressure is not high enough to run the test.</p> <ul style="list-style-type: none"> • Ensure inlet air pressure is maintained at 15 psi above test pressures
High Altitude	<p>Atmospheric pressure is too low.</p> <ul style="list-style-type: none"> • Re-run the test in an area with higher atmospheric pressure • Contact customer support if the problem persists
Liquid ingress condition	<p>Pressure in the housing was higher than the unit, which creates potential for backflow into the unit.</p> <ul style="list-style-type: none"> • Check test setup before re-running test: unit outlet connected to top of housing, no kinked tubing, housing outlet open to atmosphere • Check housing pressure in the diagnostic screen • If there is evidence of fluid contamination of the tubing or HIM, it is recommended to clean or replace the HIM
Gross leak detected while filling large system	<p>Housing was not filled in expected time based on test parameters used.</p> <ul style="list-style-type: none"> • Check your lines are not kinked, blocked, and are of the appropriate size • Check for leaks • Check test parameters are correct; for example, filter size, number of rounds, over-size housing

Item	Action
Pressure requested exceeds 1.5 times the BP	<p>Unit is using a pressure much higher than the minimum bubble point specification.</p> <ul style="list-style-type: none"> Filters may have much higher bubble points than the minimum specification; try troubleshooting by using a higher minimum bubble point
Gross temperature changes detected	<p>Large temperature changes detected.</p> <ul style="list-style-type: none"> Ensure the system is running in stable temperature; this includes exposure to vents, sunshine, and contact with other running equipment
Pressure did not drop	<p>The expected pressure drop did not occur during the test.</p> <ul style="list-style-type: none"> Check for blocked flow path Check valve operation via the diagnostics screen; in particular, check the outlet valve
Volume has exceeded the max estimated value for this system	<p>Upstream volume is higher than expected time based on test parameters used.</p> <ul style="list-style-type: none"> Check for leaks Check test parameters are correct; for example, filter size, number of rounds, over-size housing
Volume is below the Min estimated value for this system	<p>Upstream volume is lower than expected time based on test parameters used.</p> <ul style="list-style-type: none"> Check that lines are not kinked, blocked, and are of the appropriate size Check test parameters are correct; for example, filter size, number of rounds, over-size housing
Volume is less than Zero	<p>Measured upstream volume is incorrect.</p> <ul style="list-style-type: none"> Ensure the system is running in stable temperature; this includes exposure to vents, sunshine, and contact with other running equipment Ensure the instrument is calibrated This error is more common for small area filters due to their lower stability, and re-running the test will often work

Item	Action
Clear step taking too long	<p>The system pressure is not decaying during the clear step.</p> <ul style="list-style-type: none"> • Check for blocked flow path
Filter blow out trying to find BP	<p>The pressure requested is much higher than the expected bubble point.</p> <ul style="list-style-type: none"> • Filter was likely improperly wetted and blew out; ensure the filter is re-wetted properly and re-run the test • CheckIf problem persists, try editing the test to run an extended bubble point to troubleshoot • CheckFilters may have much higher bubble points than the minimum specification; try troubleshooting by using a higher minimum bubble point
Gross Leak Detected during Hydrocorr™ Test	<p>Measured flowrate is much higher than the diffusion specification.</p> <ul style="list-style-type: none"> • Check for leaks in connection or housing • Ensure the filter is properly wetted • Check test specifications are correct • Filter may have lost integrity or broken • Run a pressure hold test on the system to check for leaks
Gross Leak Detected during diffusion	<p>Measured flowrate is much higher than the diffusion specification.</p> <ul style="list-style-type: none"> • Check for leaks in connection or housing • Ensure the filter is properly wetted • Check test specifications are correct • Filter may have lost integrity or broken • Run a pressure hold test on the system to check for leaks

Item	Action
This step has exceeded the test decay time	<p>Test is taking too long to complete.</p> <ul style="list-style-type: none"> • Ensure the system is running in stable temperature; this includes exposure to vents, sunshine, and contact with other running equipment • Ensure inlet gas pressure is maintained at 15 psi above test pressures • Ensure the filter is properly wetted • Check diffusion or minimum bubble point test specifications are correct • Filters may have much higher bubble points than the minimum specification; try troubleshooting by using a higher minimum bubble point
Flowrate below low threshold	<p>Flowrate measured is lower than expected based on test parameters.</p> <ul style="list-style-type: none"> • Check that lines are not kinked, blocked, and are of the appropriate size • Check the test specifications used are correct; for example, diffusion, bubble point, HydroCorr™ specifications • Check other test parameters are correct; for example, filter size, number of rounds, over-size housing • Filters may have much lower flowrates than test specification; try troubleshooting by using a lower diffusion or HydroCorr™ flowrate specification
Unable to find function in registry	<p>Unable to find function in the registry.</p> <ul style="list-style-type: none"> • Try restarting the unit • If the issue persists, call Technical Service
There is already a test running	<p>There is already a test running, wait for current test to complete. If there is no test running, try restarting the unit. If the issue persists, call Technical Service</p>

Specifications

To minimize water contamination and damage to the instrument, the inlet gas can be filtered with a desiccant air filter.

Computer	Operating System	Windows® 10
	Solid State Drive	≥ 64 GB nominal
	RAM	≤ 4 GB, shared with video
	CPU	AMD Embedded G-Series, 1.6 GHz or faster
Touchscreen Display	Type	Color active matrix TFT LCD, LED backlighted, projected capacitive touch interface
	Size	10.1 inch nominal diagonal
	Resolution	1024 x 600 pixels (WSVGA)
Printer	Type	Direct thermal
	Paper Type	80-mm-wide thermal paper
Compressed Air Specifications	Operating Temperature	1 to 40°C
	Storage Temperature	-20 to +60°C
	Relative Humidity	80% RH max. up to 31°C then linear decrease up to 50% RH at 40°C (non-condensing)
	Ingress Protection	IP54 per IEC 60529
	General	Clean dry air or nitrogen at ambient temperature ± 5 °C; ISO 8573.1 Class 5.3.1
	Maximum Inlet Pressure	120 psi (827 kPa)
	Minimum Inlet Pressure	Defined by the test pressures required. Inlet pressure of 15 psi greater than the test pressure is recommended.
	When running a diffusion test for systems of 3 x 30 inches or greater, the inlet pressure air supply should be higher than 90 psi to avoid long fill times.	
Electrical Specifications	Power Supply Voltage	100 to 240 VAC, 50/60 Hz, 1-phase
	Current Rating	1.5 amps
	Fuse Type (Characteristics)	2 amp, standard blow, 5 x 20 mm, 250 VAC (qty = 2)
	Memory Backup Battery	CR2032

Regulatory Information	FCC Compliance	<p>The following statement applies only to instruments installed in the U.S.: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.</p>
	21 CFR Part 11	<p>The Integritest® 5 instrument is designed to support compliance to 21 CFR Part 11</p>

Standard Product Warranty

The applicable warranty for the products listed in this publication may be found at:

www.millipore.com/ec/cp3/terms (within the “Terms and Conditions of Sale” applicable to your purchase transaction).

Technical Assistance

For more information: In the U.S., call 1-800-MILLIPORE (1-800-645-5476), or visit www.millipore.com/techservice