FiberChekPRO™

Automated fiber inspection and analysis software

USER MANUAL

⊘ **FiberChek**^{PRO}

VIAVI

NOTICE   Every effort was made to ensure that the information in this manual was accurate at the time of printing. However, information is subject to change without notice, and VIAVI reserves the right to provide an addendum to this manual with information not available at the time that this manual was created.

PATENTS   RibbonDrive Tips: US Patent No. 6,751,017 / 6,879,439

CleanBlast: US Patent No. 7,232.262

TESTED EQUIPMENT   All pre-qualification tests were performed internally at VIAVI, while all final tests were performed externally at an independent, accredited laboratory. This external testing guarantees the unerring objectivity and authoritative compliance of all test results. VIAVI Commerce and Government Entities (CAGE) code under the North Atlantic Treaty Organization (NATO) is 0L8C3.

FCC INFORMATION   Electronic test equipment is exempt from Part 15 compliance (FCC) in the United States.

EUROPEAN UNION   Electronic test equipment is subject to the EMC Directive in the European Union. The EN61326 standard prescribes both emission and immunity requirements for laboratory, measurement, and control equipment. This unit has been tested and found to comply with the limits for a Class A digital device.

INDEPENDENT LABORATORY TESTING   This unit has undergone extensive testing according to the European Union Directive and Standards.

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FiberChekPRO Installation

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Minimum System Requirements

- PC/laptop with 1.0 GHz CPU or higher
- Windows 7® or Windows 10® Operating System
- 400 MB of hard drive space for application software
- One open USB 2.0 port
- 2 GB RAM
- .NET Framework 4.0

NOTE: If the .NET Framework software is not already installed on the PC/laptop, FiberChekPRO will install it. Please allow time for the software to be installed.

Software and Driver Install

ⓘ **IMPORTANT!** *Install the FiberChekPRO software before attaching the microscope to the PC.*
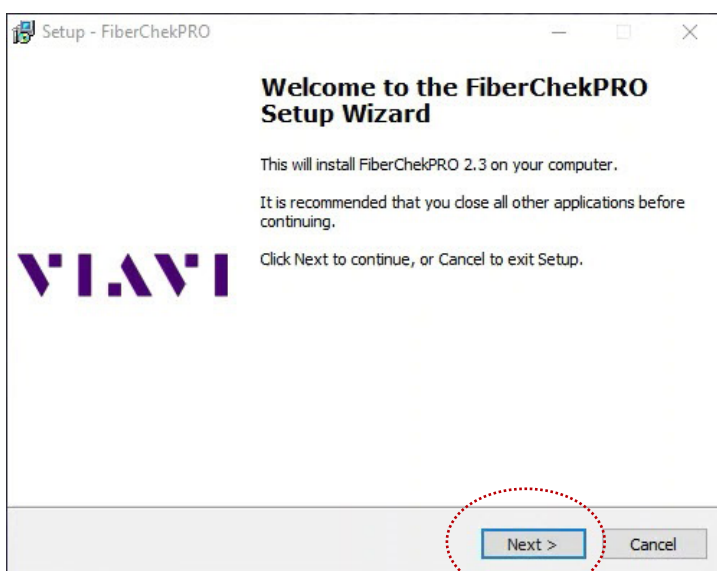
1. **Download FiberChekPRO Software and Driver**

   - Go to http://fcpro.updatemyunit.net/ and download the latest version of the FiberChekPRO installer.

2. **Install FiberChekPRO Software and Drivers**

   - Navigate to the folder where the FiberChekPRO installer file is located, and then double-click the file to start the **FiberChekPRO Setup Wizard**.
   - Click **Next**.

- At the **License Agreement** step, select **I accept the agreement**, and then click **Next**.

- At the **Select Destination Location** step, accept the default location (strongly recommended) for the application files, or click **Browse** to select a location, and then click **Next**.

- At the **Select Components** step, select each component you want to install, and then click **Next**.
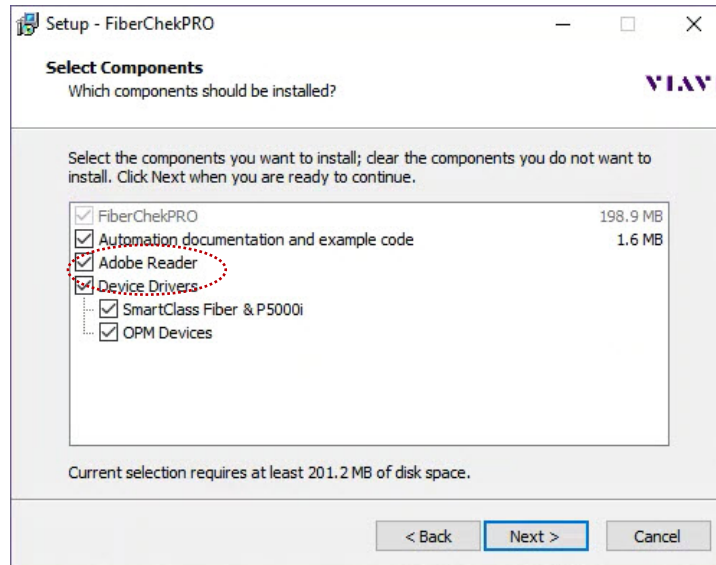
NOTE: *Select **Adobe Reader** if the application is not already installed on the PC and you want to access reports saved to PDF.*

- At the **Select Additional Tasks** step, select any required options, and then click **Next**.

- At the **Ready to Install** step, confirm the installation settings, and then click **Install**.

- After the software is installed, click **Next** to start the VIAVI Driver Installer and install the drivers for each device you specified at the **Select Components** step.

- At the **Completing the FiberChekPRO Setup Wizard** step, click **Finish** to exit the setup Wizard.

3.   **Install Hardware**

- Plug the probe microscope into the computer.

- Wait for the automatic **Found New Hardware Wizard** to complete.

FiberChekPRO Software Controls and Menus

<div style="text-align: right">

2

</div>

FiberChekPRO is a software application used to determine the acceptability of optical fiber end faces through automated inspection and analysis. Used in conjunction with VIAVI digital analysis microscopes, FiberChekPRO will identify and characterize defects and contamination, and then provide a PASS or FAIL result according to a pre-configured failure criteria setting. In addition, the application allows you to import saved data from VIAVI devices, archive data, generate reports, and obtain an optical power measurement with either the MP-series or FI-series test tools.

FiberChekPRO provides the following test-mode options to facilitate collecting analysis results:

- Quick Test mode (default): Discrete testing. Results are saved individually.
- Job mode: Combines tests utilizing pre-configured job definitions and saves results to a group.

NOTE: Job mode is not supported on the FiberChek Sidewinder™ MPO Inspection Probe and the FVAm™ Series Benchtop MPO Autofocus Microscope.

FiberChekPRO Performs the Following Automated Procedures

1. Acquires the fiber image.

2. Analyzes the image.

3. Finds defects and their location relative to fiber core.

4. Measures and evaluates the defects within each specified Zone.

5. Determines whether defects within the Zones are acceptable according to the pre-configured failure criteria for each Zone.

6. Displays the results as PASS or FAIL.
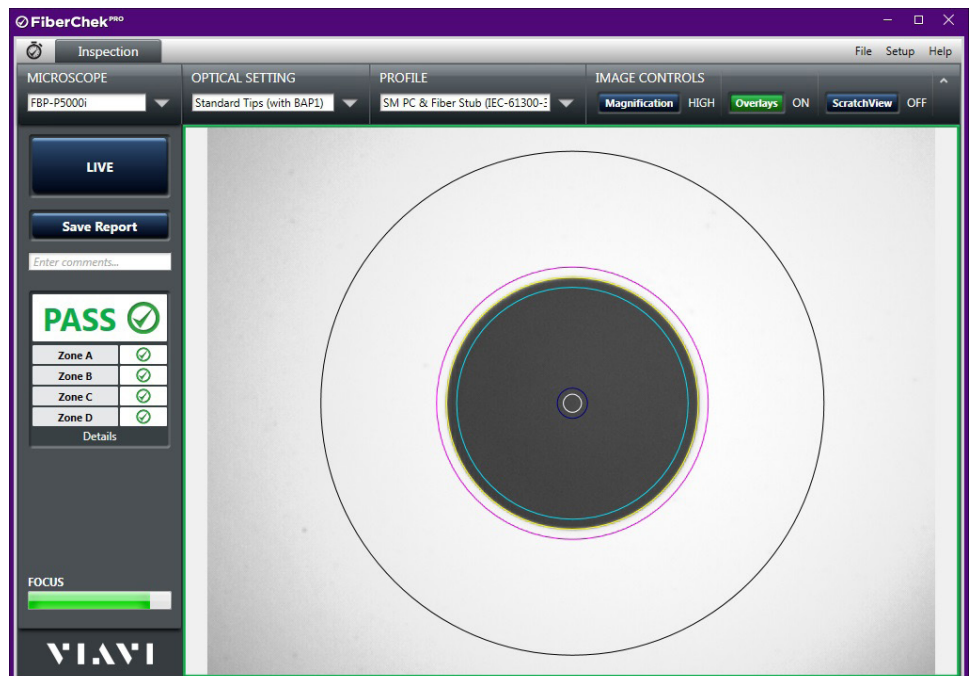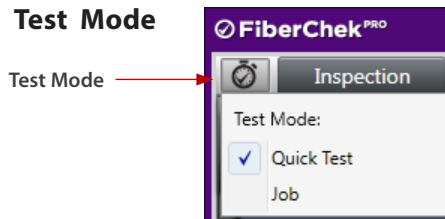
Test Mode

Test Mode

Click to set the test mode:

- **Quick Test** ⏱
- **Job** 💼

***NOTE**: The **Test Mode** icon reflects the active test mode.*

Quick Test Controls: LIVE View

MICROSCOPE

TEST

SAVE

OPTICAL SETTING   PROFILE   IMAGE CONTROLS

SHOW/HIDE

FOCUS QUALITY METER
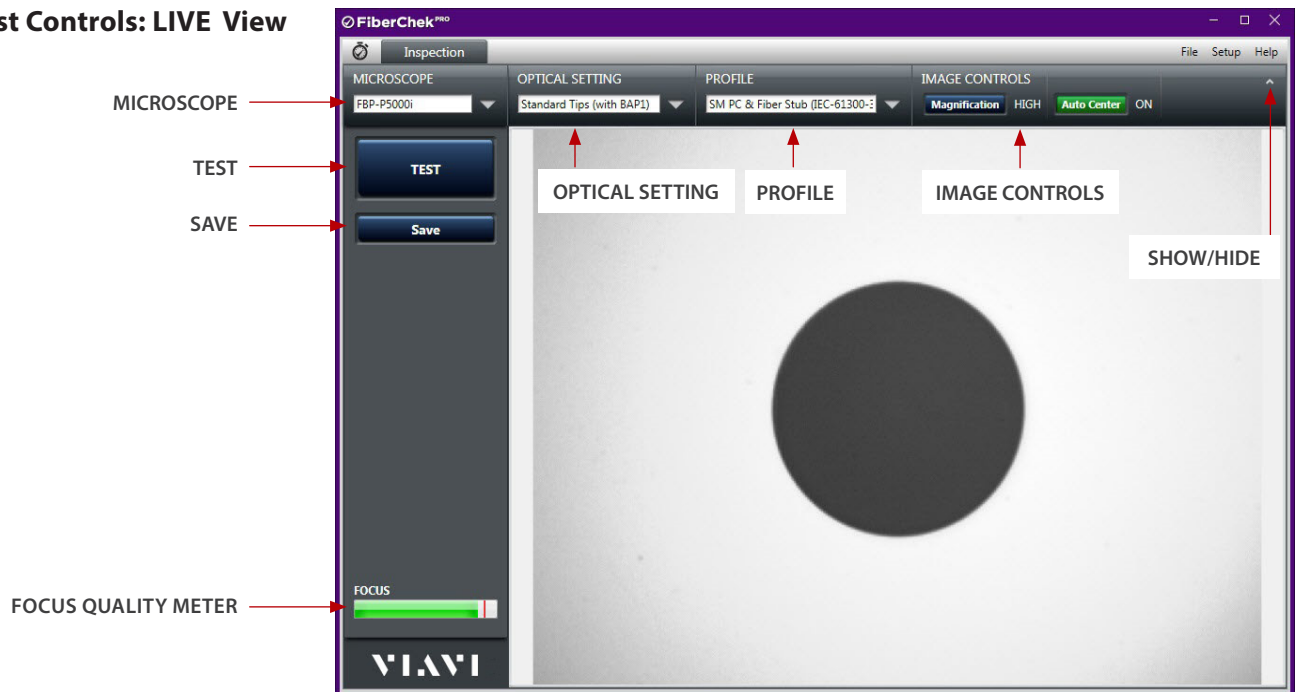
Microscope	When multiple microscopes are connected to FiberChekPRO, you can select a microscope from the drop-down list.
Optical Setting	Select the best optical settings for the type of inspection tip that is attached to the device. For more information, see "Optical Settings" on page 2-28.
Profile	Select the profile that specifies the analysis parameters by which PASS/FAIL criteria are determined. For more information, see "Analysis Profiles (FiberChekPRO)" on page 2-12 and "Analysis Profiles (device)" on page 2-33.
Image Controls	Provides controls for fine-tuning the image. Select between viewing at LOW or HIGH magnification. Enabling Auto-Center helps ensure that the fiber is in the center of the Field of View.
Focus Quality Meter	Color-coded visual gauge that aids in obtaining the optimal focus point. The vertical line on the meter indicates the highest focus quality. As the focus is adjusted, the color of the horizontal bar changes to reflect the focus quality:

- Green: Optimized focus
- Yellow: Acceptable focus
- Red: Unacceptable focus (testing disabled)

Show/Hide   Optimizes the size of the application window for small screens. Select to show or high drop-down lists.
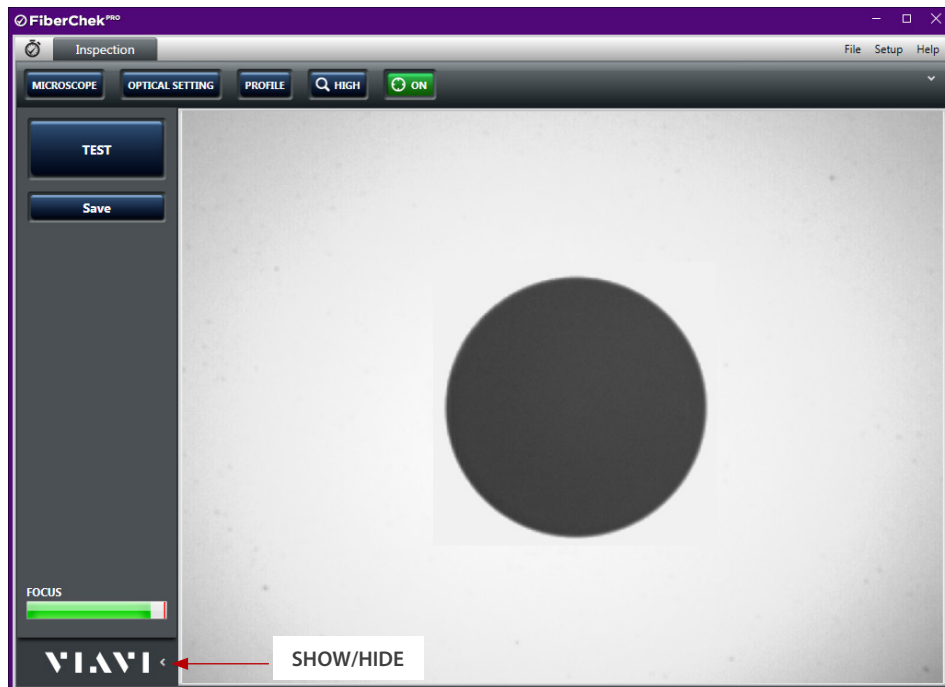
NOTE: *When drop-down lists are hidden, a Show/Hide control appears in the side bar, enabling you to show or hide the side bar controls.*

TEST   Initiates the automated PASS/FAIL test process.

Save   Captures and saves the image as it appears on the screen (without analysis).

Quick Test Controls: TEST View
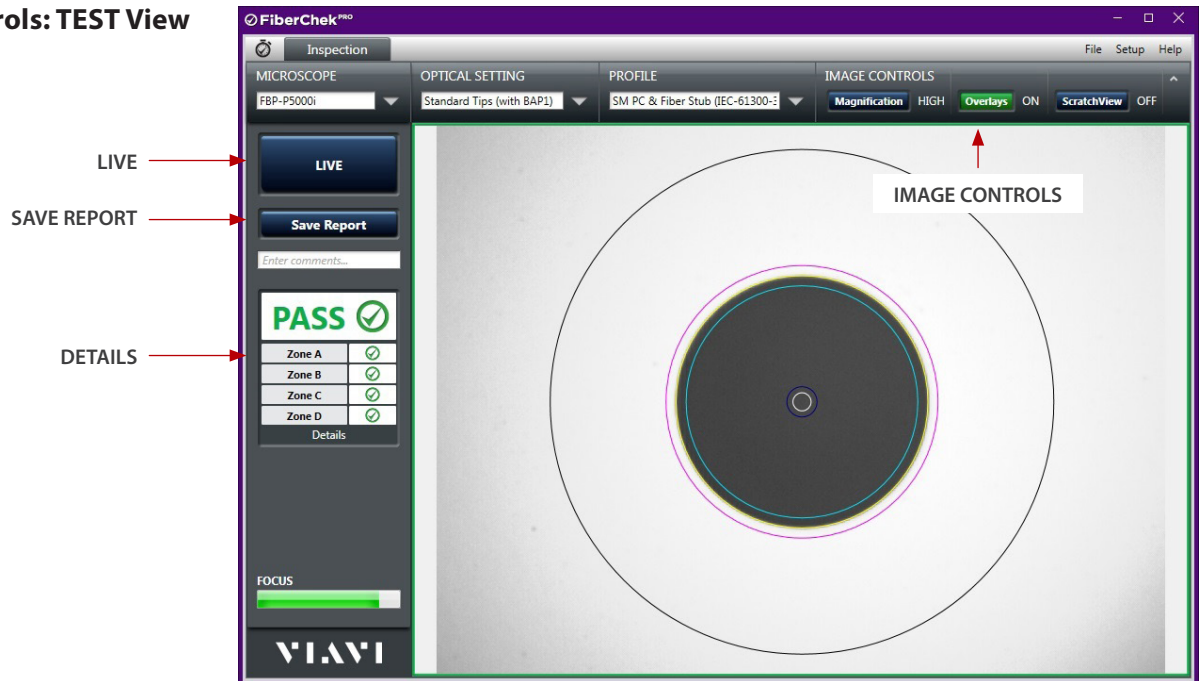
Image Controls   Provides specific controls for fine-tuning the image:

- Select between viewing at LOW or HIGH magnification.

- Turn overlay details ON or OFF.

- Turn the ScratchView feature ON or OFF,

    NOTE: *By default, FiberChekPRO ships with the **ScratchView** feature disabled. This feature can be enabled in the Setup Archiving Options (see "Archiving Options" on page 2-17).*

LIVE   Returns to a live image of the fiber connector.

Save Report   Generates a summary report of the tested fiber.

Details   Provides specific information on the analysis results for the tested fiber.

Job Controls: START View

START
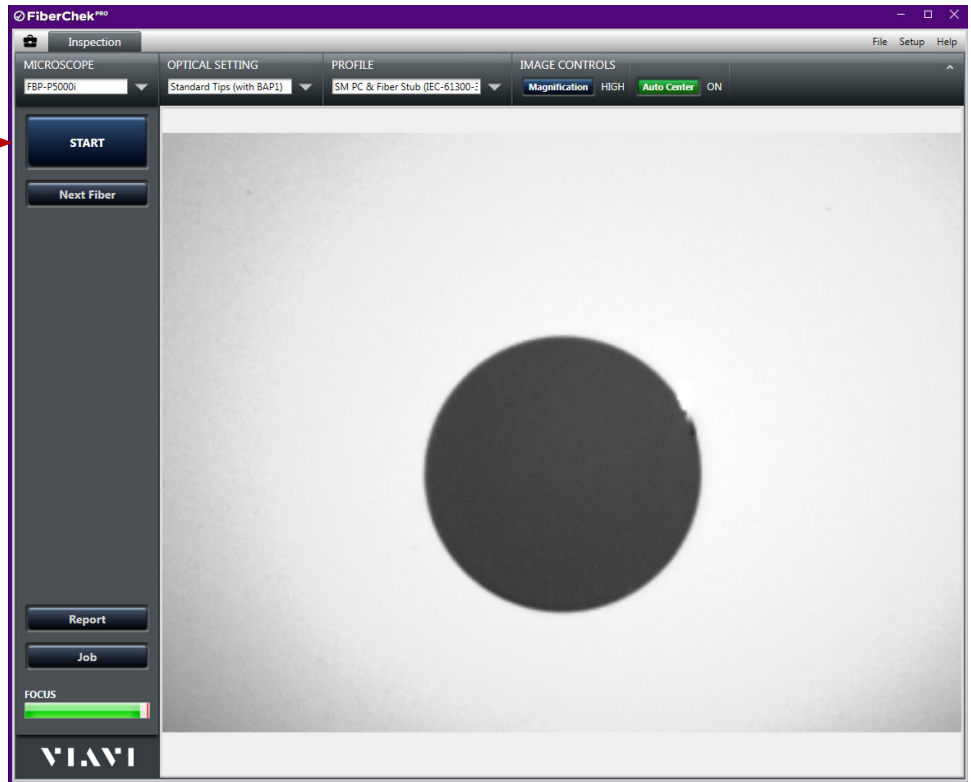
START
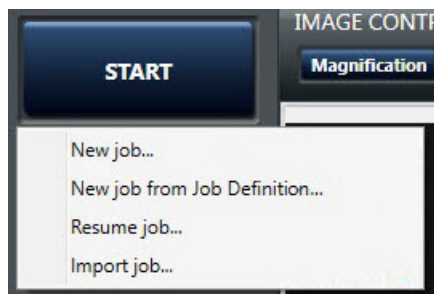
Provides options for starting a fiber-inspection job:

- **New job:** Starts a new job.
- **New job from Job Definition:** Starts a job using a pre-configured job definition.
- **Resume:** Resumes the selected saved job (see "Job" on page 2-7).
- **Import:** Starts a job using imported job information that was previously exported.

New job

Click **START**, and then select **New job** to access the **Start Job** dialog box. Specify job details as required.
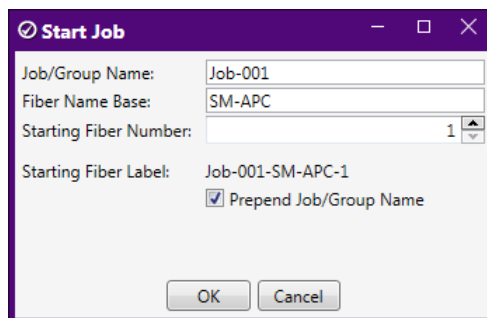
- **Job/Group Name**: Name of the job or group that the results of the PASS/FAIL tests are saved to.
- **Fiber Name Base**: Base name for the fiber being inspected.
- **Starting Fiber Number**: First fiber number being inspected.
- **Starting Fiber Label (Prepend Job/Group Name** option**)**: Label automatically applied to the starting fiber.

New job from Job Definition

Click **START**, and then select **New job from Job Definition** to access the **Start Job** dialog box. Specify job details as required.

- **Job/Group Name**: Name of the job or group that the results of the PASS/Fail tests are saved to.

- **Job Definition**: List of available job definitions (see "Job Definitions" on page 2-21).

Resume job

Click **START**, and then select **Resume job** to access the **Resume Job** dialog box. Select the saved job you want to resume, or click **Import from file** to import a job file.

Import job

Click **START**, and then select **Import job** to navigate to and select the job you want to import.

Job Controls: TEST View
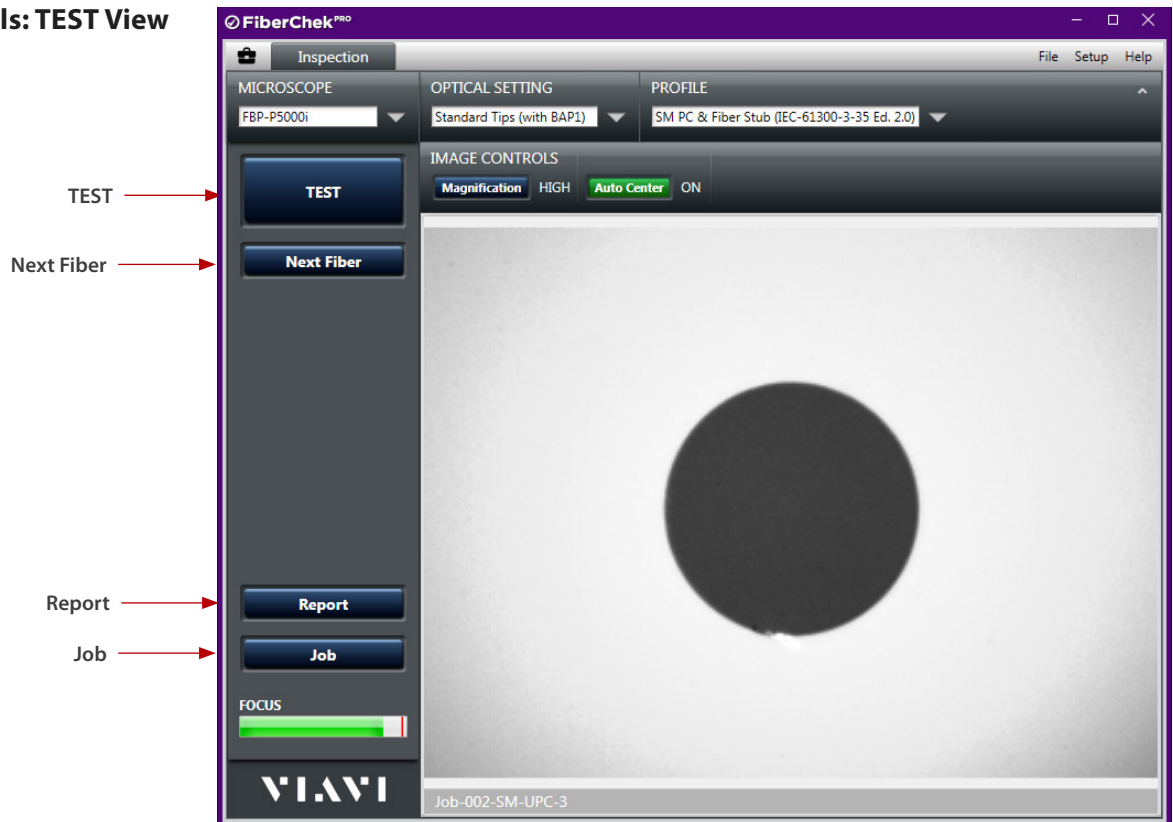
TEST   Starts a test of the fiber connector.

Next Fiber   Advances FiberChekPRO to the next fiber connector in the job.

NOTE: If the active job is based on a job definition, a tool window appears, enabling you to select the next fiber end face to test.

Report   Generates a summary report for the job, including test results, and saves it to the archive location for the device. You can choose whether to finish the current job and start a new job.
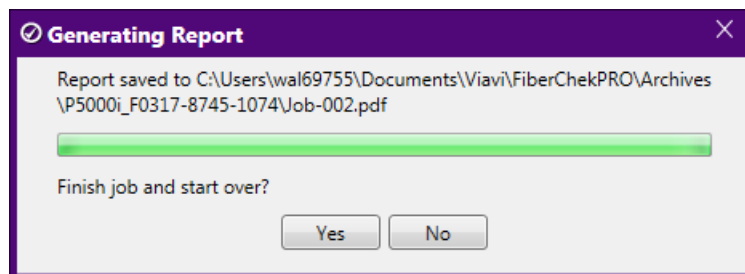
Job   Provides the following options:

- **Save and close job**: Saves the current job after at least one fiber is tested.

- **Export job**: Exports the current job details, including test results, to a file (*.zip) saved to a local folder.

- **Cancel job**: Discards the current job, including all test results.

IMPORTANT: To ensure that required information is retained for your records, VIAVI recommends that before canceling a job, you either export the job or generate a report.

File Menu
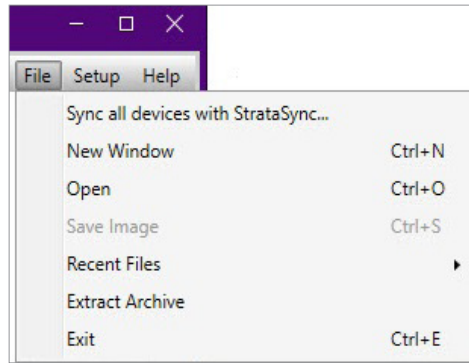
Sync all devices with StrataSync   When you are already logged in to StrataSync via FiberChekPRO, initiates synchronization of all saved device data to StrataSync. If you are not already logged in via FiberChekPRO, accesses the **Login to StrataSync** dialog box.

New Window   Opens a new FiberChekPRO window, enabling you to either control separate microscopes independently or open previously saved images.

Open   Opens reports, files and images saved in FiberChekPRO.

Save Image   Saves the image displayed in the FiberChekPRO window.

Recent File   Lists the most recently saved files for quick re-opening.

Extract Archive   Accesses the **Extract Archive** dialog box, where you can select an archive folder. FiberChekPRO then scans all .xml files in the folder and creates a .xlsx workbook report file that summarizes all fibers, zones, scratches, and particles. The file is then opened with the application associated with the .xlsx extension (i.e., Microsoft Excel®).

NOTE: The .xlsx file is named according to the current date and time and is placed in the archive folder you selected.

Exit   Closes all FiberChekPRO windows and exits the application.

Help Menu
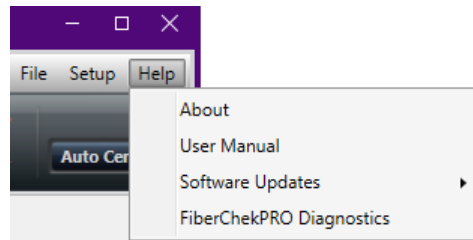
About   Displays the FiberChekPRO version information.

User Manual   Provides access to FiberChekPRO user documentation.

Software Updates   Lets you select whether FiberChekPRO automatically checks for software updates at startup.

FiberChekPRO Diagnostics   Lets you run FiberChekPRO Diagnostics to collect data you can use to help resolves issues.
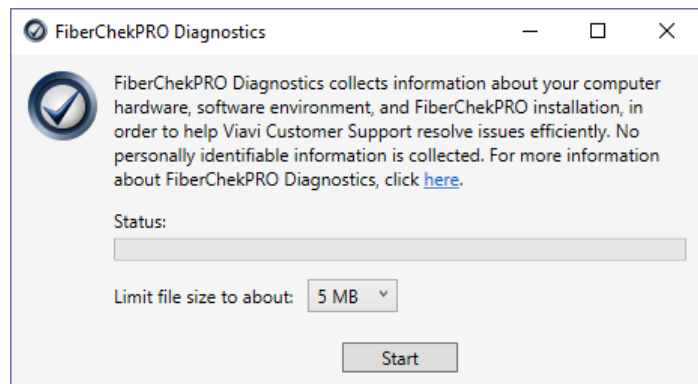
Setup Menu   The Setup menu is the single location where the user can access and setup details for FiberChekPRO or any of the connected devices. It is accessed by clicking **SETUP** in the menu bar.

FiberChekPRO Setup   General setup options for FiberChekPRO are available by selecting an option from the list of categories in the panel on the left side of the window as follows:
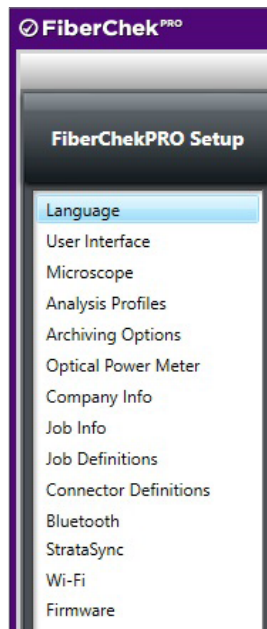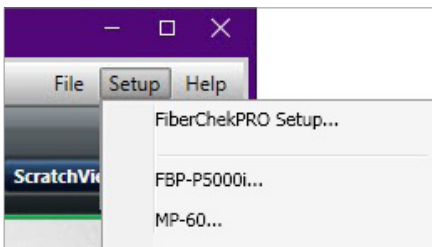
- **Language**
- **User Interface**
- **Microscope***
- **Analysis Profiles***
- **Archiving Options***
- **Optical Power Meter****
- **Company Info**
- **Job Info**
- **Job Definitions**
- **Connector Definitions**
- **Bluetooth*****
- **StrataSync**
- **Wi-Fi******
- **Firmware**

* Appears after the first time a Probe Microscope is connected.

** Appears after the first time a USB Optical Power Meter is connected.

*** Appears only when a Bluetooth dongle/adapter is connected.

**** Appears after the first time a Wi-Fi enabled device (e.g., Sidewinder) is connected to a PC with Wi-Fi capability (i.e., built-in or connected via USB).

Language   Shows the current language setting. If required, select another language from the list.
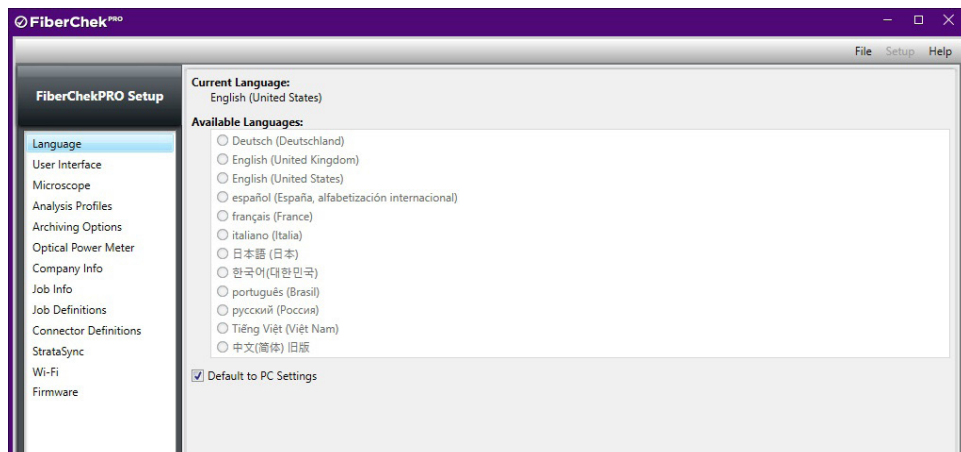
User Interface   Allows you to fine-tune the scale of the user interface for optimized use with device resolution.

Microscope   Provides the following options for the connected microscope:

- **Auto-test On in Focus** allows you to choose whether to run a test when the fiber comes into focus and specify the following settings:

    - **Disabled:** Select to enable or disable **Auto-test On in Focus**.

    - **Enabled with Test Button:** Select to enable or disable **Auto-test in Focus** when the **Test** button is clicked.

    - **Enabled with Test Button or Fiber Insertion:** Select to enable or disable **Auto-test in Focus** when the **Test** button is clicked or a fiber is inserted.

NOTE: Auto-test On in Focus works best when used with devices without auto-focus capability or while manually focusing a device.

- **Advance Settings**

    - **Enable test limit editing:** Select to enable modifications to the recommended and minimum focus for an acceptable inspection.

    - **Show number on focus meter:** Select to enable or disable the appearance of a focus-quality number with the focus meter. The number continuously updates as the focus quality indicated by the meter changes.
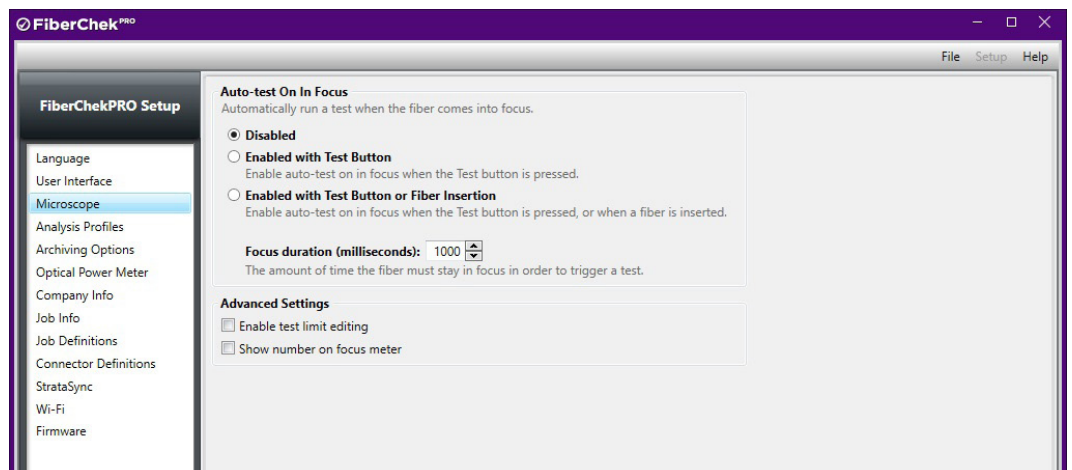
Analysis Profiles (FiberChekPRO)

The **Setup Analysis Profiles** menu contains the PASS/FAIL analysis parameters. Within each profile you can define the fiber type, analysis sensitivity, the "zones" of interest within a fiber, and the criteria for failure within those zones. As such, you will need a unique profile for each fiber type you are working with, and possibly different profiles depending on the loss budget associated with a given product. The **Available Profiles** list contains all the profiles available in FiberChekPRO that you can use with devices that support them.

In addition to providing factory-installed profiles, FiberChekPRO provides tools for managing profiles, allowing you to create customized profiles, import profiles, and export profiles to files.

Factory-installed Profiles

FiberChekPRO is installed with the following pre-configured Analysis Profiles, which match the PASS/FAIL criteria in the IEC visual inspection standard, **IEC-61300-3-35** or **IEC-61300-3-44**.

- E2000 (metal ferrule)
- MM (IEC-61300-3-35 Ed. 1.0)
- MM (IEC-61300-3-35 Ed. 2.0)
- Ribbon, MM (IEC-61300-3-35 Ed. 1.0)
- Ribbon, MM (IEC-61300-3-35 Ed. 2.0)
- Ribbon, SM APC (IEC-61300-3-35 Ed. 1.0)
- Ribbon, SM APC (IEC-61300-3-35 Ed. 2.0)
- SFP Ball Lens
- SFP Fiber Stub (IEC-61300-3-44 Ed. 1.0)
- SFP Special/Flat Len
- SM APC (IEC-61300-3-35 Ed. 1.0)
- SM APC (IEC-61300-3-35 Ed. 2.0)
- SM PC & Fiber Stub
- SM PC (IEC-61300-3-35 Ed. 1.0)
- SM UPC (IEC-61300-3-35 Ed. 1.0)
- SM UPC (IEC-61300-3-35 Ed. 2.0)
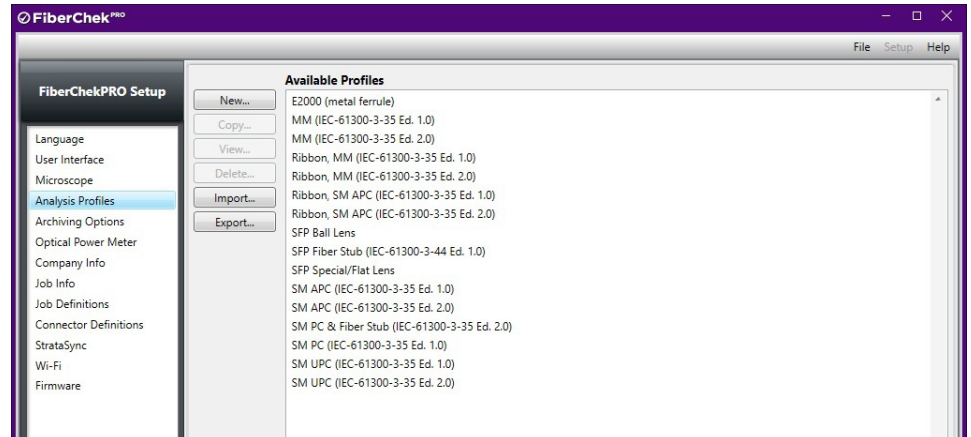
*NOTE: You can also manage analysis profiles via the **Setup Analysis Profiles** menu for a device. For information, see "Analysis Profiles (device)" on page 2-33.*

Creating a New Profile   Click **New** to access the profile details window, which contains all the information needed for managing the acceptance criteria.
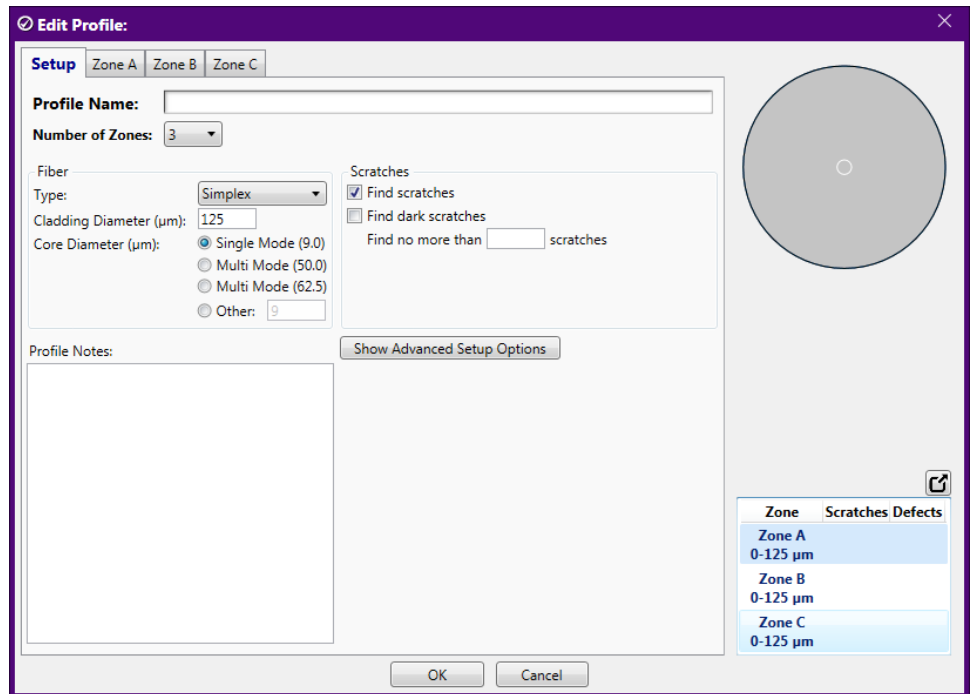
The **Setup** tab specifies general details about the profile:

- **Profile Name** defines the name of the profile.

- **Number of Zones** defines the number of zones. The parameters for each zone are configured in the other tabs at the top of the window. A visual representation of the zone sizes is shown at the top right side of the window.

   What are Zones?

   When grading the visual image of a fiber end face, it is generally agreed that you must be more critical the closer you are to the core (center) of the fiber. This being so, it is common to divide the image into a series of concentric circles that begin with a small one centered on the core (also known as zone "A") and then radiate out from there. This creates a "bull's-eye" pattern. Failure criteria must then be established for each zone that is defined. Failure criteria are simply the thresholds that determine what is not acceptable.

- **Fiber Type** allows you to define the type of fiber that is being tested. Supported fiber types include:

   - **Simplex:** Contains a single fiber located in the center of the ferrule; common types include FC, LC, SC and ST.

   - **Ribbon:** Contains multiple fibers in a single connector to provide high-density connectivity; the most common configuration is MPO (also called the MTP®).

   - **Jewel:** A simplex fiber with a polyimide coating around the cladding, designed for exceptional environments.

   - **Ball Lens:** Optical devices that collimate light using a curved ball lens to a desired beam diameter; when selecting this setting, specify cladding diameter.

   - **Custom:** For any user-defined fiber kind with specified Custom cladding diameter.

   - **E2000:** Contains a single fiber with 2.5 mm diameter metallic ferrule and a spring-loaded protective shutter.

   - **Flat Lens:** Optical devices that collimate light using a flat lens to a desired beam diameter; when selecting this setting, specify cladding diameter.

   - **SFP Fiber Stub:** Simplex fiber located in the center of a ferrule that is installed in a small form-factor pluggable (SFP) transceiver.

NOTE: When selecting the fiber type, the cladding diameter should be specified according to fiber type being analyzed. This is especially critical for receptacles that use lenses (ball or flat) to minimize optical return loss.

- **Cladding Diameter** allows you to define the specific fiber diameter. The default diameter that appears is 125 μm.

- **Core Diameter (μm)** allows you to define the core diameter in μm: Single Mode (9.0), Multi Mode (50.0), Multi Mode (62.5) or Other. As part of the analysis, FiberChekPRO will identify the core with an overlay of the core diameter in addition to the specified zones.

- **Scratches** allows users to define the detection parameters for scratches.

  - **Find scratches:** When enabled, FiberChekPRO detects any scratch. It will activate a Scratches tab in each of the zones tabs where you can provide specific details on the analysis parameters for scratches. This may be useful if you are not concerned with scratches or want to increase the speed of the processing.

  - **Find dark scratches:** When enabled, FiberChekPRO detects scratches that appear dark. Most scratches appear light in nature relative to the cladding, but occasionally (process dependent) appear dark in color. By selecting this check box, FiberChekPRO will search for those dark scratches. We do not recommend this feature since it will slow down processing considerably.

  - You can also define the maximum number of scratches that FiberChekPRO will detect by setting a value for **Find no more than ___ scratches**. This value defines the number which you would like the software to stop searching for scratches. This amounts to a time-out feature and is recommended. VIAVI recommends setting the value fairly high (e.g., 25). This will speed analysis of catastrophically scratched fibers.

- **Profile Notes** allows you to include specific notes about the profile.

- **Advanced Setup Options** provides further criteria that allow users to fine tune the analysis parameters

  - **Sensitivity:** FiberChekPRO can be parameterized for greater or lesser sensitivity, affecting what scratches and defects will be found. For best results on probe microscopes we recommend setting sensitivity to "5" for all parameters.

    There are boxes for independently determining the sensitivity of dirt, chips/pits and scratches. For a given profile, these should all generally be set to the same level, however, you can try a different combination of settings if your application demands it.

    Low value settings will detect easily visible scratches and defects, and define them as existing only in the zones where there is clear evidence of their presence.

    High value settings will search for extremely faint scratches and defects that are very difficult for a human to detect reliably. High value sensitivity settings are intended for use only in a post polish application using an FVDi or FVAi type system. This level of detection is useful for process control purposes but is counterproductive for connectors that have already made it through quality assurance and into the field.

  - **Overall Inspection Criteria:** These are specific criteria that the user can define relating to epoxy gap and core saturation.

  - **Add Password Protection:** Allows you to apply password protection to the profile.

Zones   The **Zone** tabs specifies details about each zone in the profile.

- Define the name, diameter and color code for the zone.

  *NOTE: As the you click through the **Zone** tabs, the selected zone will also be highlighted in the zone overlay diagram on the right side of the window.*

- **Scratches**: Define specific acceptance criteria for scratches
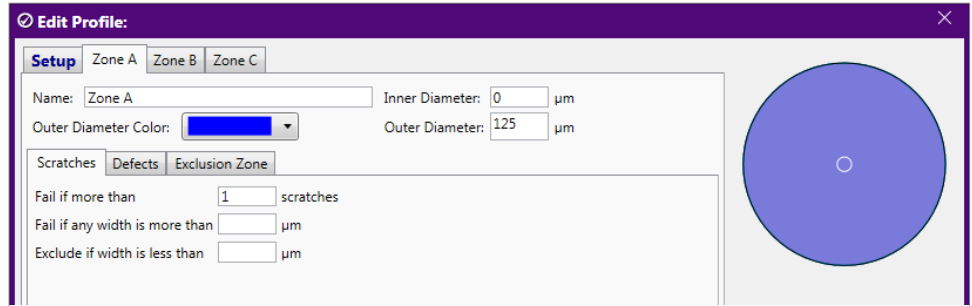
- **Defects**: Define specific acceptance criteria for defects. The defect category includes any non-scratch defect on the connector, including dirt, debris, pits and chips. Specific criteria can be defined for both Individual and Combined defects.

- **Enable Advanced Criteria:** Define additional options to fine-tune acceptance criteria that address specific requirements.
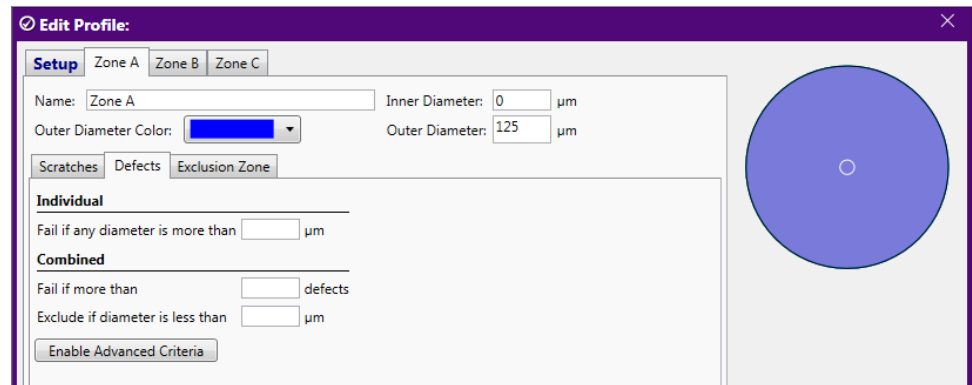
- **Exclusion Zone**: For each zone, specify an inner and outer radius in which defects and scratches are not counted toward the acceptance criteria.
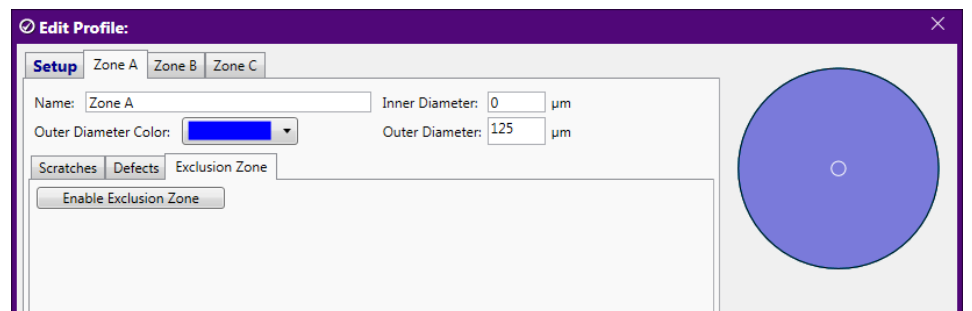
Copying a Profile

1. Select a profile.

2. Click **Copy** to access the details window for the profile copy.

   The Profile name includes "Copy of" at the beginning of the name.

3. Change the profile name and settings as needed.

4. Click **OK** to add the new profile to the same list as the profile used to create the copy.

Editing a Profile

1. Select a profile.

2. Click **Edit** to access the profile details window.

3. Make edits as needed.

4. Click **OK** when complete.

   NOTE: *Factory-installed profiles cannot be edited.*

Importing a Profile

1. Click **Import**.

2. Navigate to the location on the PC where the profile file (*.pro) is located, select the file, and then click **Open** to add the profile to the **Available Profiles** list.

Exporting One or More Profiles

1. Click **Export** to access the **Select Profiles** dialog box, which lists all available profiles. By default, all profiles are selected.
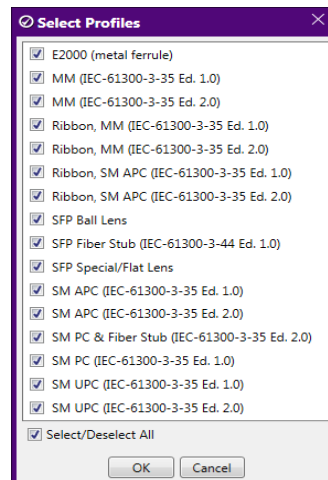
2. Do one of the following:

   • Click **OK** to export all profiles.

   • Clear the **Select/Deselect All** check box to deselect all profiles, select the check box for each profile you want to export, and then click **OK**.

3. In the **Browse For Folder** dialog box, do one of the following:

   • Navigate to the folder where you want to save the exported profile or profiles, and then click **OK**.

   • Click **Make New Folder** to create a folder, and then click **OK** to save the exported files to the new folder.

   NOTE: *The filename extension for exported analysis profiles is .pro (for example, SFP Ball Lens.pro).*

Deleting a Profile

1. Select a profile.

2. Click **Delete**.

3. In the confirmation dialog, click **Yes**.

   NOTE: *Factory-installed profiles cannot be deleted.*

Archiving Options

The **Archiving Options** menu provides settings for how reports are created and formatted, and where auto-generated reports are saved.

- **Archive Location:** The location on the PC where reports are saved. To specify a location other than the default, click the browse button to navigate to and select a location.
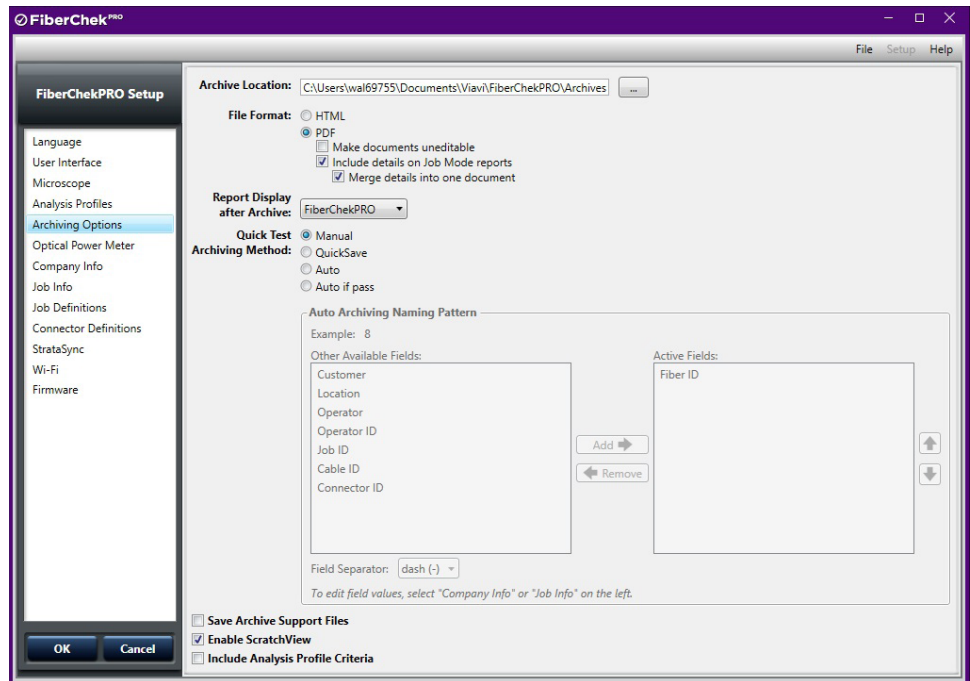
- **File Format:** Select the report file format. Options are HTML or PDF. HTML reports are dynamic, meaning that you can interact with the fiber images displayed. The PDF reports are editable by default, but can be made uneditable. Users can also choose whether to include details on Job Mode reports and whether to merger details into a single document.

- **Report Display after Archive:** Specify where to display the report after it is generated: within in the FiberChekPRO, in an internet browser, or not at all.

- **Save Archive Support Files:** Select whether to save all image files (low-magnification, high-magnification, and high-magnification with ScratchView) discretely when archiving a file.

- **Enable ScratchView:** Select whether to view images with the custom ScratchView contrast setting, which helps highlight fine scratches on bench-top microscopes.

- **Include Analysis Profile Criteria:** Select whether to include PASS/FAIL parameters specified in the Analysis Profile used to inspect the fiber in the report.

- The **Quick Test Archiving Method** can be configured to any of the following settings:

  - **Manual:** Each fiber image is archived individually. Select this setting if you do not plan on archiving every test, or if you are not archiving at all.

  - **QuickSave:** Speeds the archiving process by allowing you to enter the file name directly into FiberChekPRO.

  - **Auto:** Automatically saves each test, incrementing the step (e.g., Fiber-1, Fiber-2, Fiber-3, etc.) with each analysis.

  - **Auto if Pass:** Automatically saves each PASS result test. Only fibers or connectors that pass analysis will be archived.

  - **Auto and QuickSave Archive Location:** Define the archive location when using either the QuickSave, Auto, or Auto if Pass archiving methods.

  - **Auto Archiving Naming Pattern:** When either **Auto** or **Auto if Pass** is selected, you can specify the Auto Archiving Naming Pattern based on the **Company Info** and **Job Info** settings (see page 2-20). Moving fields into the **Active Fields** column from the **Other Available Fields** column will add them to the auto archive name. An Example field shows how the name pattern will appear.
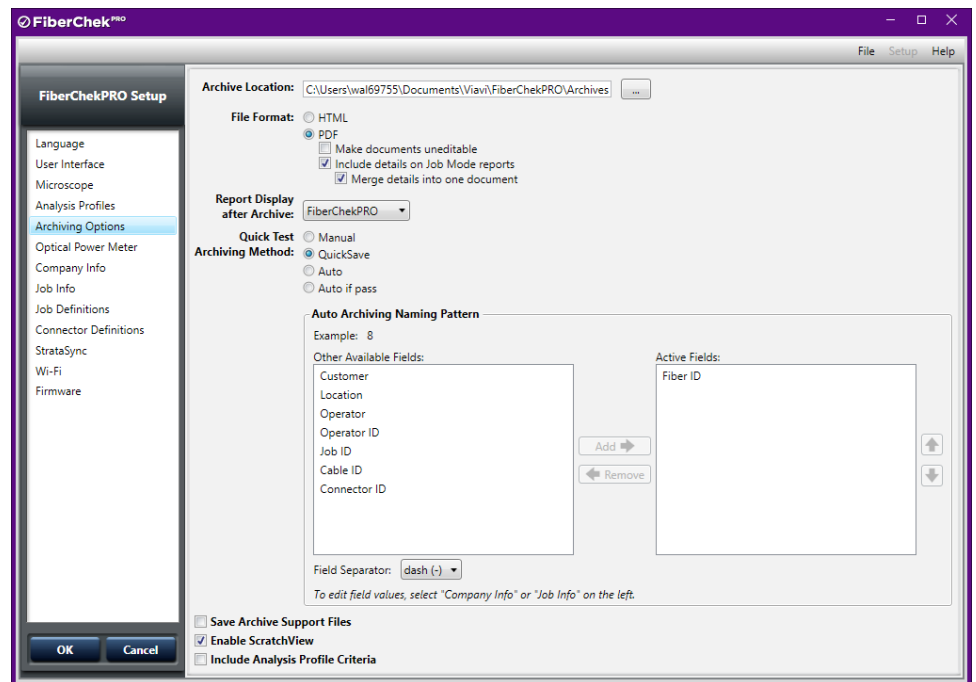
NOTE: *The **Quick Test Archiving Method** options are applicable only when FiberChekPRO is set to Quick Test mode.*

Optical Power Meter
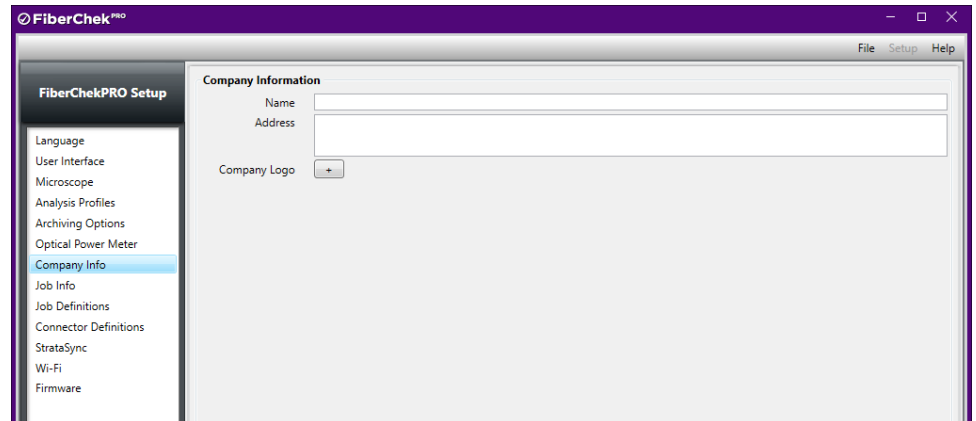
The **Optical Power Meter** menu allows you to configure options for using a USB-enabled VIAVI OPM, such as the FI-series or MP-series.
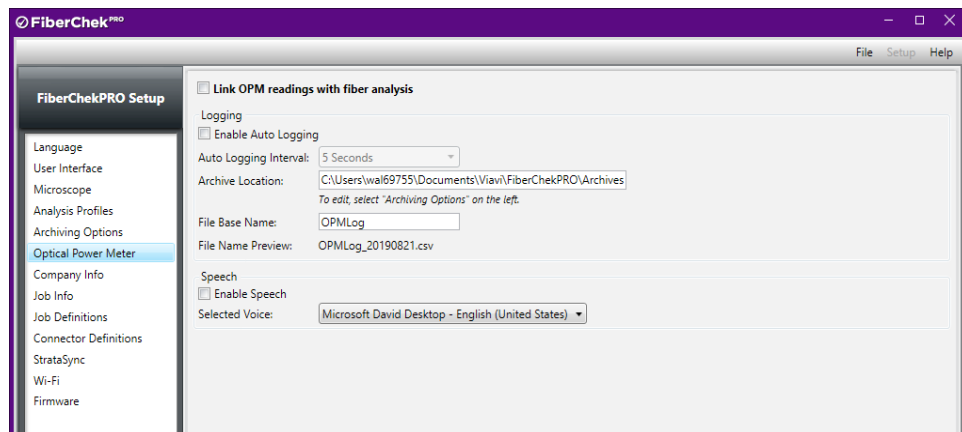
- **Link OPM readings with fiber analysis:** Associate power meter readings with a fiber analysis. Select the **Link OPM readings with fiber analysis** check box, click **OK**, and then do the following:

  1. Run an analysis on the fiber end face.

  2. Insert the fiber end into the OPM and take measurement.

  3. Press the **Store** button (you may store multiple power readings).

  4. Press the **Save Report** button.

- **Logging:** Setup an automatic log of power meter readings and specify a time interval at which the OPM will take a power meter reading.

- **Speech:** Enable audible power meter readings.

Company Info
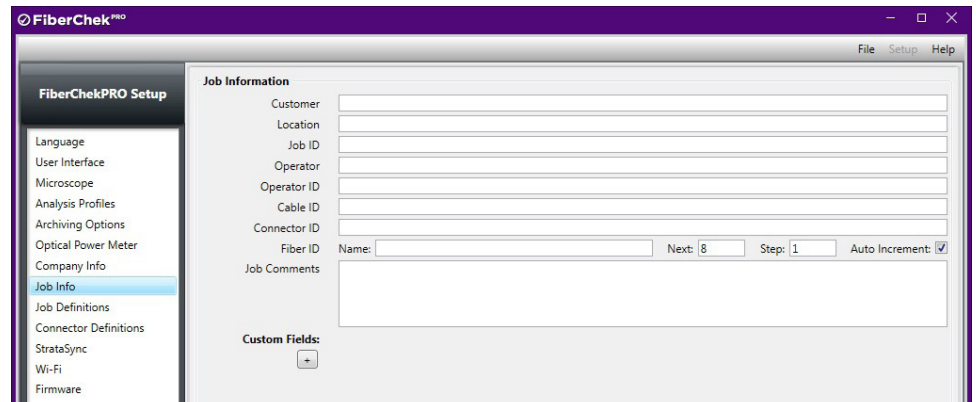
The **Company Info** menu allows you to enter information about your organization, including the company name and address. You can also include a small company logo to appear on all of your archived reports.

Job Info

The **Job Info** menu allows you to enter information about the specific job or project you are working on. It includes fields for the customer, location, job ID, operator, cable ID, fiber ID, and any comments about the job. You can also add up to two custom fields that will appear in archive reports you create.

Job Definitions

The **Job Definitions** menu lets you create and manage job definitions, which are used with Job mode.
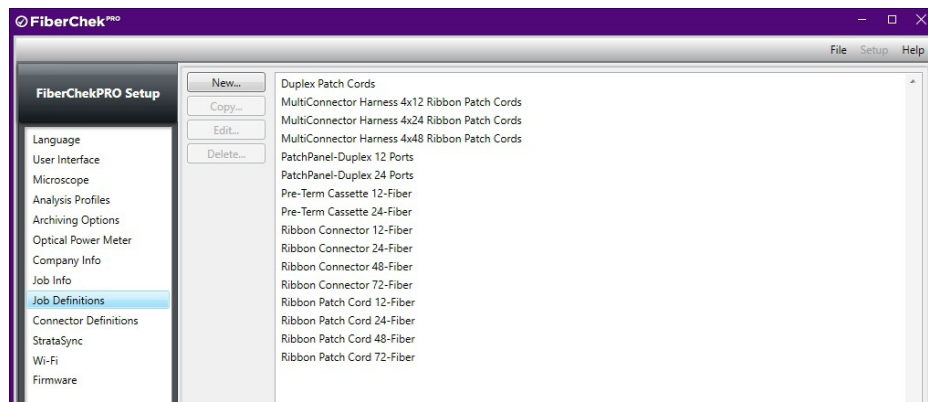
Creating a Job Definition

1. Click **New**.

2. Use the **Job Definition Editor** to define the following:

    a. Job name

    b. Column and row counts

    d. Column labels (e.g., Con1, Con2, etc.) and row labels (e.g., EndA, EndB, etc.)

    e. Test and report order

3. Click **OK**.
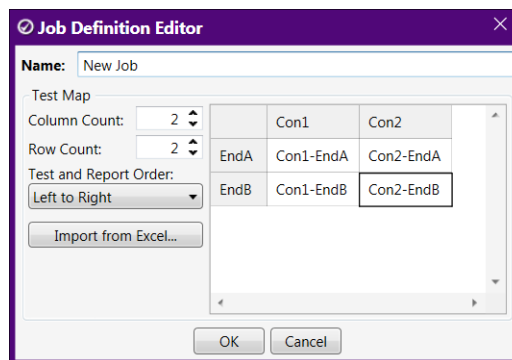
Importing a Job Definition

You can create a Job Definition in Microsoft Excel and then import it into FiberChekPRO. This allows the use of various Excel features such as Copying/Pasting and Drag-to-increment. Click **New** to access the **Job Definition Editor**, click **Import from Excel**, and follow the steps. Before importing a Job Definition file, ensure that its contents are laid out as follows:

*   The upper-left corner of the grid (including column and row labels) is at cell A1 on the first worksheet of the of the Excel workbook.

*   Cell A1 is empty if column and row labels are included. This ensures that the remaining cells of Row 1 become column labels and the remaining cells of Column A become row labels. Cells for column and row labels appear shaded in the Test Map pane of the Job Definition Editor.

    If cell A1 in the Excel worksheet is not empty, columns and row labels will not be included, and all cells are used for test names.

    NOTE: *Only the contents of the first worksheet in the Excel workbook file are imported. Also, cell formatting (for example, font, shading) is not imported.*

**View or Edit an Existing
Job Definition**

1. Select a Job Definition, and then click **Edit** to access the **Job Definition Editor**.

2. If required, modify the settings, and then click **OK**.

Connector Definitions

Connector Definitions define fiber connector configurations for inspections using Sidewinder or FVAm MPO microscopes. You can use pre-configured connector definitions or create custom definitions based on new definition settings or existing connector definitions.

NOTE: *Create a custom definition only when none of the pre-configured definitions are applicable; for example, for a unique form factor, or a unique, unpopulated or untestable fiber position.*
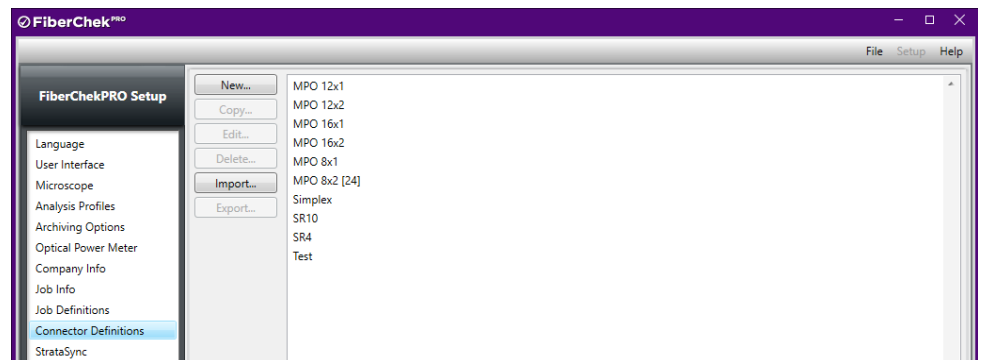
**Creating a New
Connector Definition**

1. Click **New**.

2. In the **Connector Definition Editor**, type a unique name for the definition in the **Name** field.
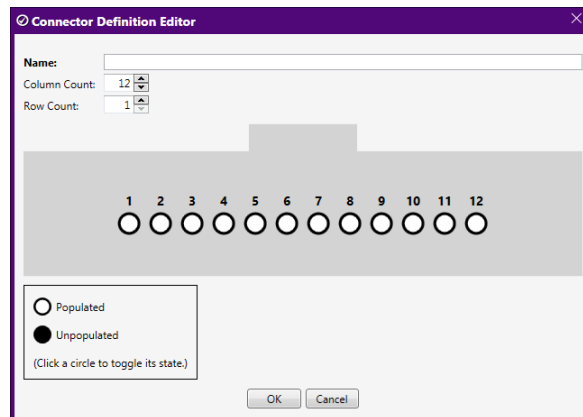
3. Specify the connector configuration by entering values in the **Column Count** and **Row Count** fields. The connector configuration image updates dynamically to reflect the column and row values specified.

4. In the connector configuration image, click a circle to identify the fiber as populated or unpopulated within the connector.

5. Click **OK** to added the new definition to the list of connector definitions.

Copying a Connector Definition

1. Select a definition.

2. Click **Copy** to access the **Connector Definition Editor**.

   "Copy of" is prepended to the name that appears in the **Name** field.

3. Change the definition name and settings as needed.

4. Click **OK** to add the definition to the list of connector definitions.

Editing a Connector Definition

1. Select a profile.

2. Click **Edit** to access the **Connector Definition Editor**.

3. Make edits as needed.

4. Click **OK**.

Importing a Connector Definition

1. Click **Import**.

2. Navigate to the location on the PC where the definition file (*.fccon)is located, select the file, and then click **Open** to add the profile to the **Available Profiles** list.

Exporting a Connector Definition

1. Select a definition, and then click **Export**.

2. Navigate to the location on the PC where you want to save the definition file, and then click **OK**.

   NOTE: *The filename extension for exported connector definitions is .fccon (for example, Simplex.fccon).*

Deleting a Connector definition

1. Select a definition.

2. Click **Delete**.

3. In the confirmation dialog, click **Yes**.

Bluetooth   The **Bluetooth** menu allows you to manage devices, such as a VIAVI PowerChek Optical Power Meter, that can pair with FiberChekPRO via Bluetooth.

NOTE: The Bluetooth option appears only when the PC where FiberChekPRO is running has built-in Bluetooth hardware or has a Bluetooth dongle/adapter connected to it.
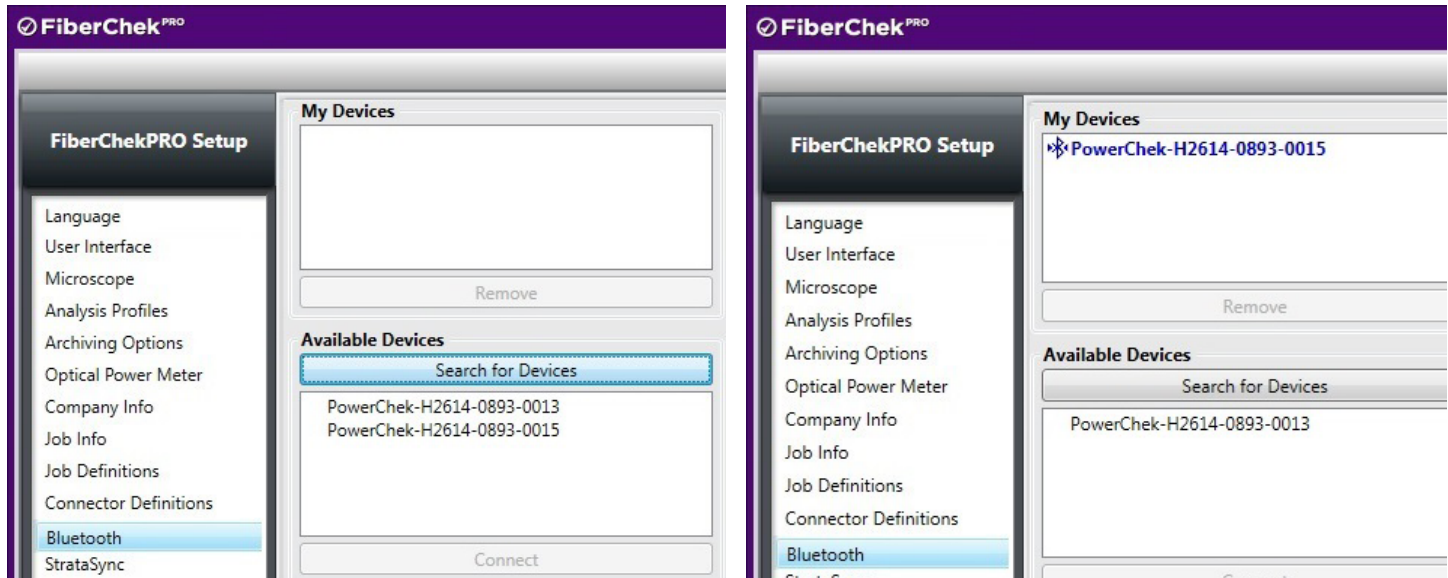
Pairing a PowerChek with FiberChekPRO

1. Setup the PowerChek for Bluetooth pairing:

   a. Press the Menu key on the PowerChek home screen and browse to the Bluetooth screen.

   b. Press the Bluetooth Icon on the top right corner of the screen to make the PowerChek discoverable by the Bluetooth host devices.

   c. When the device is discoverable, the icon appears on the screen.

2. In the FiberChekPRO Setup menu, access the Bluetooth settings, and select **Search for Devices**.

   The discoverable device will appear as PowerChek-serial number*
   (for example, PowerChek-H2614-0893-0015) under **Available Devices**.

3. Click the name to select it; then click **Connect**.

4. After the PowerChek is paired, the name of the device appears under **My Devices**.

   a. **If the device is paired and does not have an active connection,** the serial number appears dimmed in **My Devices**.

   b. **If the device is Paired and has an active connection,** the serial number appears with the symbol next to it.

StrataSync

The **StrataSync** menu allows you to set up or log in to a StrataSync account, and then select one or all devices to synchronize.

For information about StrataSync, refer to http://www.viavisolutions.com/en-us/products/stratasync.
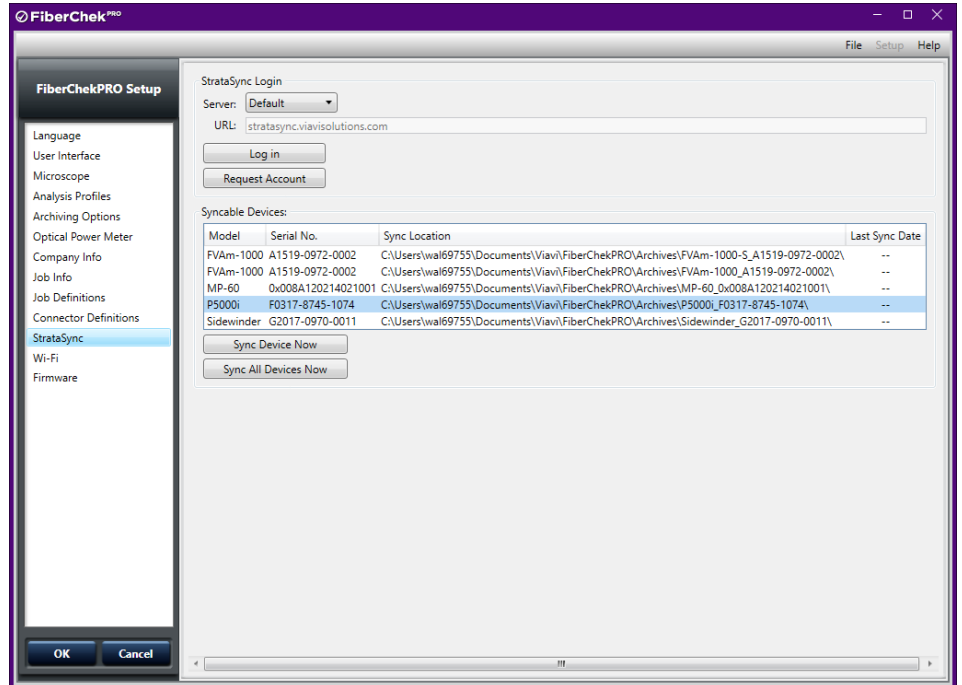
Wi-Fi

The **Wi-Fi** menu allows you to access Wi-Fi enabled devices (e.g., Sidewinder, FiberChek Probe, or FBPP-WiFi) for use with FiberChekPRO.
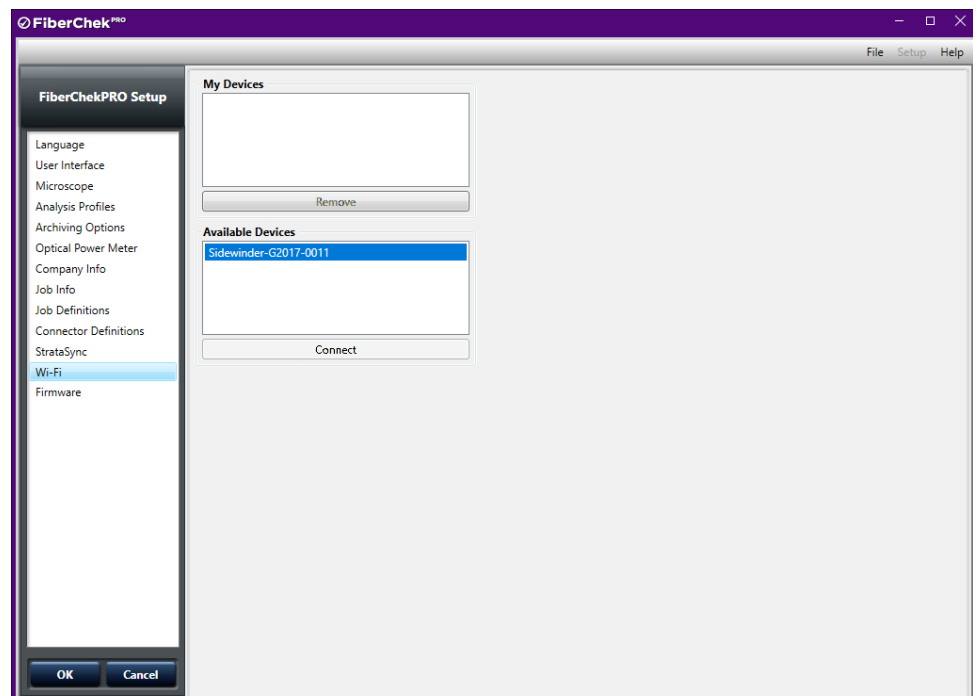
Connecting over Wi-Fi

1. Enable Wi-Fi connectivity the device. This ensures that the device appears in the list of available devices on the **Wi-Fi** menu.

2. Select the device in the **Available Devices** list, and then click **Connect**.

Available Devices

Sidewinder-G2017-0011

Connect

NOTE: Computer connectivity over a Wi-Fi network is lost while a Wi-Fi enabled device is connected to FiberChekPRO over Wi-Fi. Computer connectivity over a wired network is not affected.

After the first time you connect a Wi-Fi enabled device to FiberChekPRO over Wi-Fi, the name of the device appears in the **My Devices** list while Wi-Fi connectivity is disabled on the device.

My Devices

Sidewinder-G2017-0011
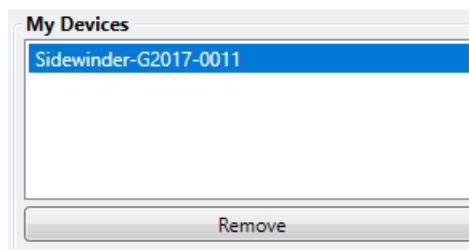
Remove

Removing a Wi-Fi device

Select the name of device in the **My Devices** list, and then click **Remove**.

Firmware

The **Firmware** menu provides firmware-version information for supported devices. When a new firmware version is available for a device, the corresponding **Download** button becomes active. Click **Download** to download the firmware to FiberChekPRO. This will enable FiberChekPRO to prompt you to update the device firmware when the device is connected to FiberChekPRO.

Model	Local Version	Cloud Version	Size	
P5000i	2.0.273.3264, 2.0.1213.3264	2.0.273.3264, 2.0.1213.3264	NA	Download...
OLP-82x/HD4ix	1.6.1166.3112	1.6.1166.3112	NA	Download...
FVAi/FVDi-xxxx	2.0.1189.3268	2.0.1189.3268	NA	Download...
FiberChek	2.1.925.3313	2.1.925.3313	NA	Download...
FBPP-WiFi	1.3.167.2801	1.3.167.2801	NA	Download...
Sidewinder/FVAm	2.0.1776.3236	2.1.1921.3347	17.8 MB	Download...

FiberChekPRO Setup

Language
User Interface
Microscope
Analysis Profiles
Archiving Options
Optical Power Meter
Company Info
Job Info
Job Definitions
Connector Definitions
StrataSync
Bluetooth
Firmware

☑ Automatically check for updates at startup

OK   Cancel

Automatically Check for Updates at Startup

Select to set whether FiberChekPRO checks for updated device firmware when it is started. While this option is enabled, a dialog appears at startup when updated device firmware is available for download.
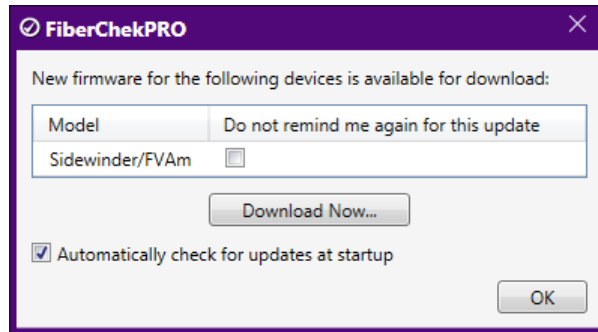
Device Setup

When a supported device (for example, P5000i, MP-60, etc.) is connected, it appears in the SETUP menu so that you can manage settings specific to the device.

P5000i Setup

Device Information

Displays the serial number, ID, and hardware and firmware versions of the device.
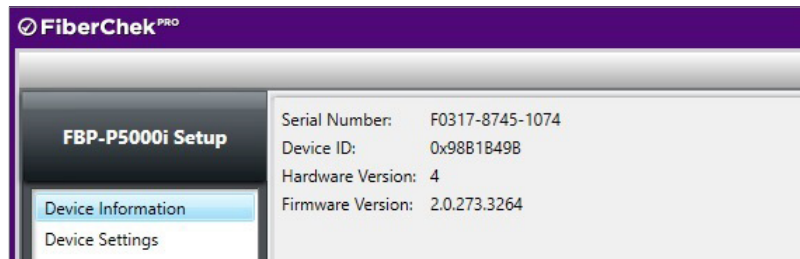
Device Settings

Provides options for device operation.
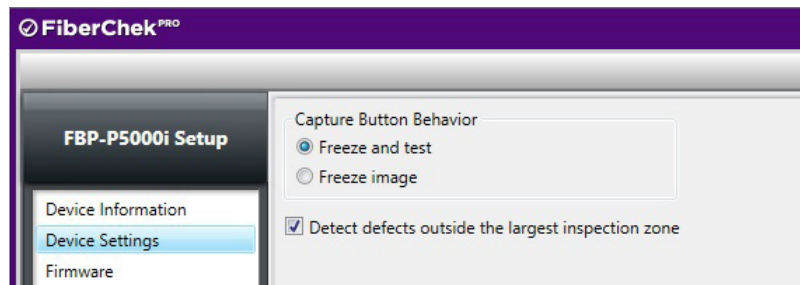
- **Capture Button Behavior** allows the user to choose the function of the capture button on the device. Choose either **Freeze and Test** or **Freeze image**.

  Freeze image displays a static image of the fiber connector on the Inspection tab that you can select and pan within the image pane.

  NOTE: Freeze image is supported in Quick Test mode only. Sidewinder and FVAm Series microscopes do not support this feature.

- **Detect defects outside the largest inspection zone** allows users select whether FiberChekPRO will look for defects outside of the largest inspection zone. For example, when this option is disabled, if the outer diameter of the largest inspection zone is 250 microns, FiberChekPRO will *not* search for defects beyond that inspection zone.

Firmware   Displays the current firmware version on the active P5000i probe as well as the latest available version. If the connected P5000i does not have the latest firmware, a button appears to enable you to update the firmware. When required, you can perform a system reset to return the device firmware to an earlier version. From that version, you can update to the firmware version you require. This facilitates maintaining firmware version stability and uniformity across a fleet of deployed devices.
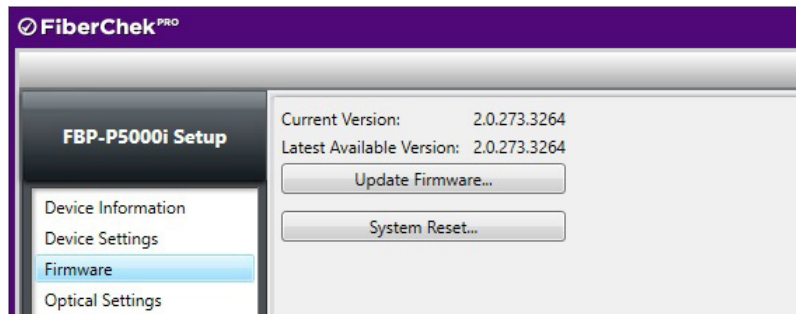
Optical Settings   You can select the best optical settings for the microscope type and inspection tip that they are using.

NOTE: Only optical settings included in the list of On Device settings appear in the Optical Setting drop-down list of the main window (see "Quick Test Controls: LIVE View" on page 2-2) when the device is connected to FiberChekPRO.
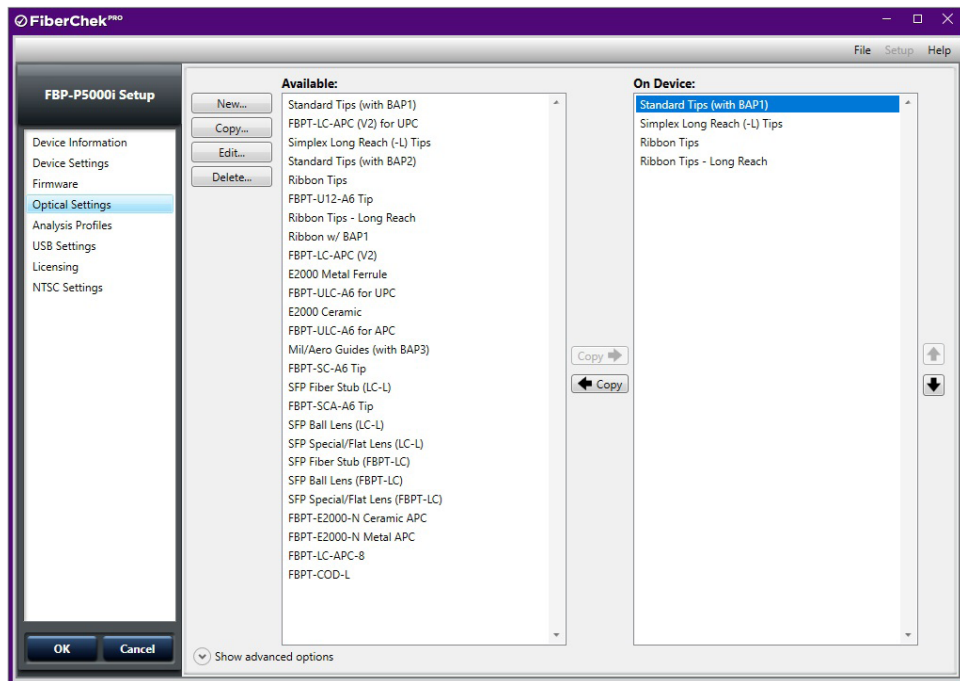
On Device optical settings are factory-installed on the P5000i Probe Microscope:

- **Standard Tips (with BAP1)**
  Select when using standard tips with FBPP -BAP1 barrel assembly. Tips that use this setting include FBPT-SC, FBPT-LC, FBPT-ST, FBPT-FC, FBPT-SC-APC and FBPT-FC-APC.

- **Simplex Long Reach (-L) Tips**
  Select when using long reach inspection tips for simplex fiber. Tips that use this setting include FBT-SC-L and FBT-LC-L.

- **Ribbon Tips**
  Select when using tips designated for inspecting ribbon connectors. A ribbon connector, for example, FBPT-MTP, contains an array of multiple fibers.

- **Ribbon Tips - Long Reach**
  Select when using long reach inspection tips for ribbon fiber; for example, FBPT-MTPA-L.

These settings can be used when the microscope is connected to other compatible VIAVI test platforms. The device can store up to 15 optical settings.

Available optical settings can be moved to and from the **On Device** list by selecting an optical setting and clicking the **Copy to** or **Copy from** button that appears between the lists.

Show advanced options provides access to the following settings:

- **Add Password Protection**
  Lets you apply password protection to the optical setting to users from making unauthorized changes.

- **Import**
  Lets you import an optical setting file (.xml) to FiberChekPRO.

- **Export**
  Lets you export an optical setting to a file (.xml) saved to the PC.

Creating a New Optical Setting

Click **New** to access the optical settings management panel with a live image of the fiber along with controls in a column on the left side. FiberChekPRO will run a quick initialization of the fiber. Once the initialization is complete, follow the instructions as given in the information status bar at the bottom of the window. This will provide instructions and guidance through the process of creating the new setting.
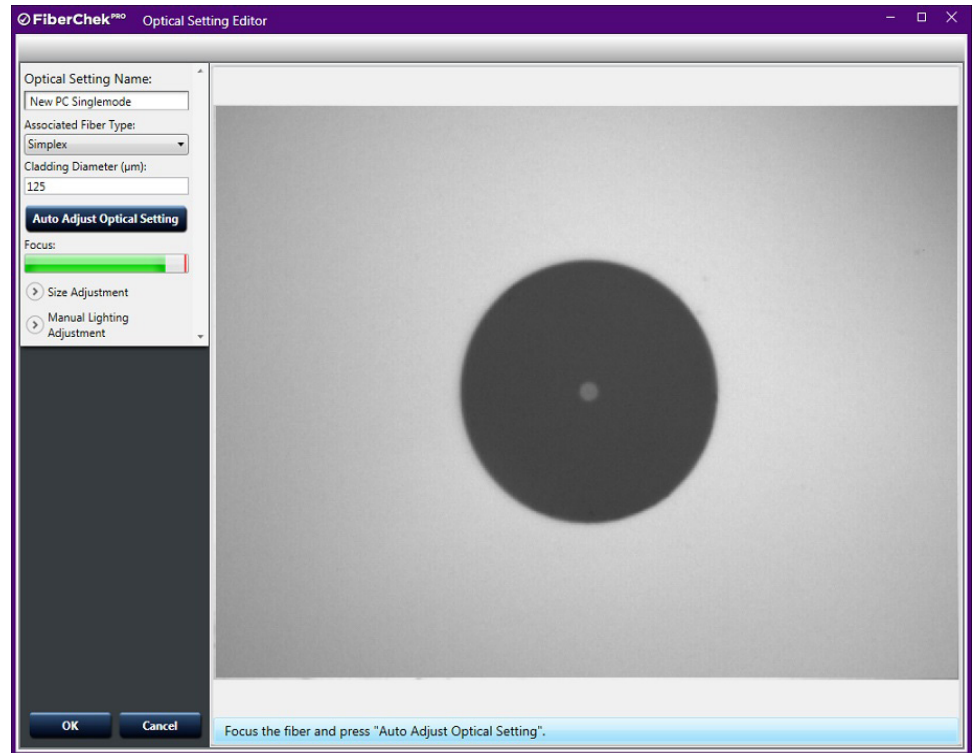
IMPORTANT: When creating a new optical setting, you will either need to use a calibration artifact or a fiber connector with a pristine cladding that has very little epoxy ring or edge chipping.

1. In the **Optical Setting Name** field, type a name for the setting.

2. Focus the fiber, and click **Auto Adjust Optical Setting** to initiate the automatic adjustment process. This will initiate a series of adjustments to the fiber to achieve optimal view and setting. A status bar on the lower left portion of the window will provide the status of the process, which takes about 1 minute to complete.

3. Confirm that the four crosshairs are positioned to touch the outermost edges of fiber cladding.

- If adjustments are required, click **Snap to Estimate**.

- If further adjustments are needed, click on a crosshair to select. The selected crosshair will change from a dashed red line to solid green. The selected line can be adjusted either by using the **Crosshair Position** controls or by holding down the mouse button and manually moving the selected crosshair line. For best results we recommend aligning the crosshairs just inside the fiber edge.

NOTE: Use the Zoom slide dial to get a closer view of the fiber and crosshair position.
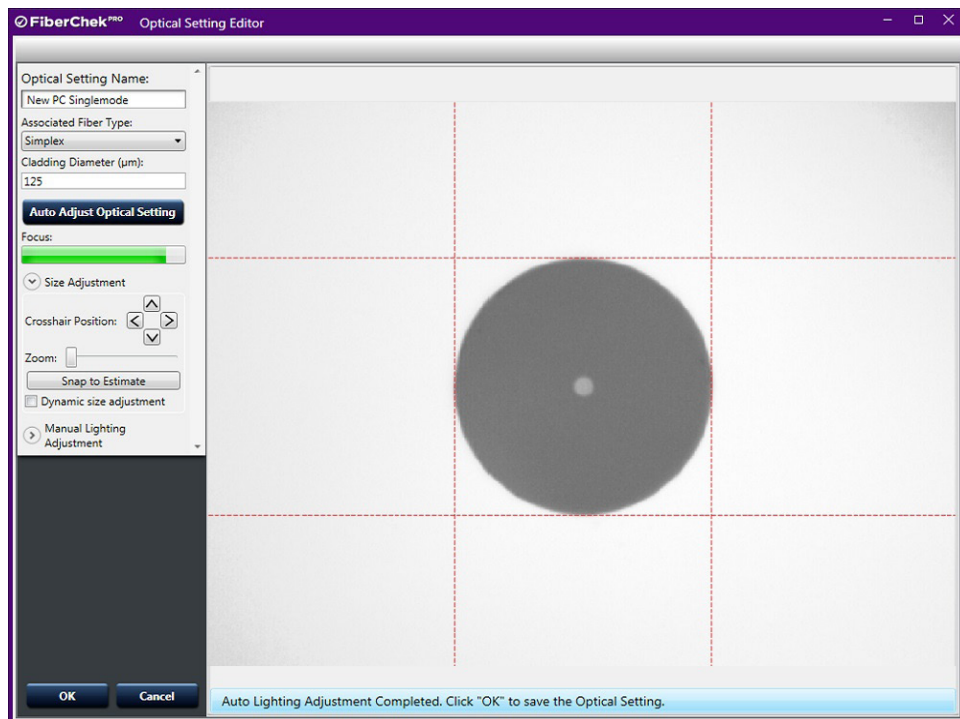
4. Click **OK** to finish. The new setting will appear in the list of available settings.

Copying an Optical Setting

1. Select an available optical setting.

2. Click **Copy** to access the optical settings management panel.

   The Optical Setting name includes "Copy of" at the beginning of the name.

3. Change the name of the optical setting and make edits as needed.

4. Click **OK** when complete.

   The new optical setting appears in the same list of optical settings that was used to create the copy.

Editing an Optical Setting

1. Select an available optical setting.

2. Click **Edit** to access the optical settings management panel.

3. Make edits as needed.

4. Click **OK** when complete.

Deleting an Optical Setting

1. Select an available optical setting.

2. Click **Delete**.

3. In the confirmation dialog, click **Yes** to confirm the deletion.

   The optical setting is removed from the list optical settings.

Sorting Optical Settings

1. Select an available or on-device optical setting.

2. Click the **Up** or **Down** arrow button that appears to the right of the **On Device** list to move the setting to another position in the list.

Analysis Profiles (device)

The **Setup Analysis Profiles** menu for the device contains the PASS/FAIL analysis parameters. Within each profile you can define the fiber type, analysis sensitivity, the "zones" of interest within a fiber, and the criteria for failure within those zones. As such, you will need a unique profile for each fiber type you are working with, and possibly different profiles depending on the loss budget associated with a given product.

The **Setup Analysis Profiles** menu for the device provides the same tools available on the Setup Analysis Profiles for FiberChekPRO for managing analysis profiles. For information, see "Analysis Profiles (FiberChekPRO)" on page 2-12.
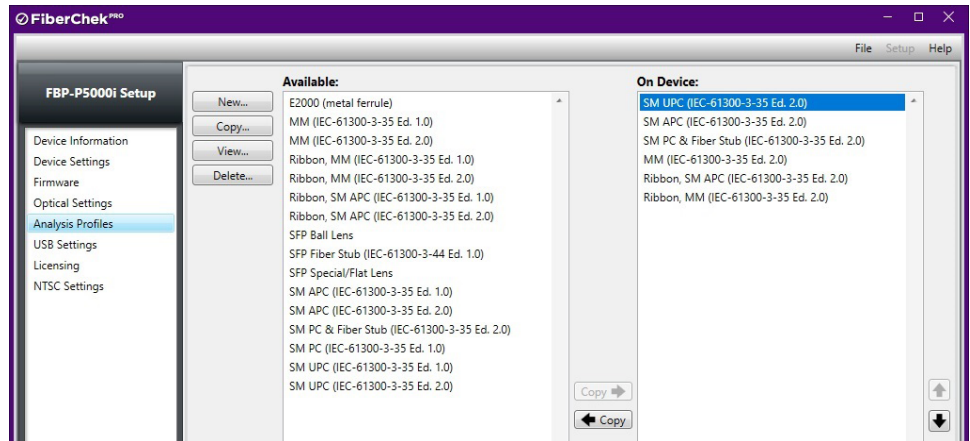
Available profiles can be moved to and from the **On Device** list by selecting a profile and clicking the **Copy to** or **Copy from** button that appears between the lists.

NOTE: Only profiles included in the On Device list appear in the Profile drop-down list of the main window (see "Quick Test Controls: LIVE View" on page 2-2) when the device is connected to FiberChekPRO.

To change the position of an available or on-device profile, select the profile, and then click the **Up** or **Down** arrow that appears to the right of the **On Device** list.

USB Settings

FiberChekPRO lets you specify USB connection settings (**USB 1.1**, **USB 2.0**, or **Auto**) for the device.
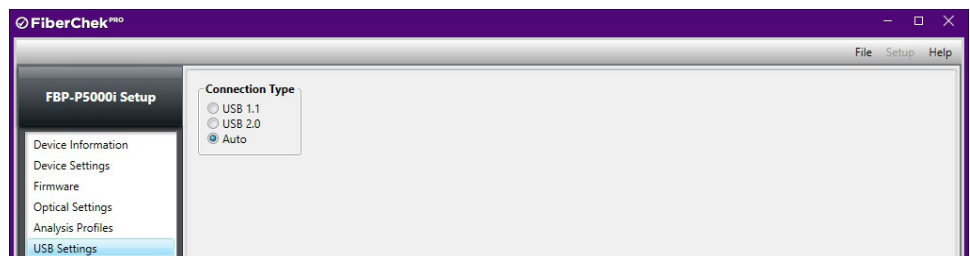
NOTE: The Auto setting enables FiberChekPRO to automatically apply the correct setting for the USB connection.

Licensing   The **Licensing** menu allows users to confirm which functions that a P5000i is licensed for, such as the following:

- **Digital Video:** Displays a video image when connected to the PC
- **Pass/Fail Analysis:** Performs an automated Pass/Fail analysis test of the fiber connector end face.
- **FiberChekMobile:** Allows the device to operate with the FiberChekMobile app for mobile devices.
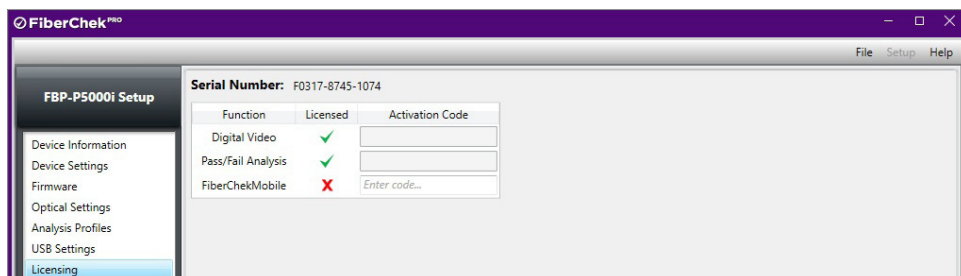
Activating a licensed function

1. Confirm your serial number from FiberChekPRO (displayed at the top of the window).

2. Purchase an Activation Code from VIAVI.

> *NOTE: You will be required to provide your P5000i serial number when purchasing.*

3. Update your P5000i Firmware.

4. Enter your Activation Code in the text box.

NTSC Settings   Allows the user to optimize performance of the P5000i on an analog video display. Click **Apply** to save the current settings and apply them when used on the analog device.

> *NOTE: The values for Fiber Type and Cladding Diameter are determined by the current Profile and Optical Settings (Tip) that are currently activated.*
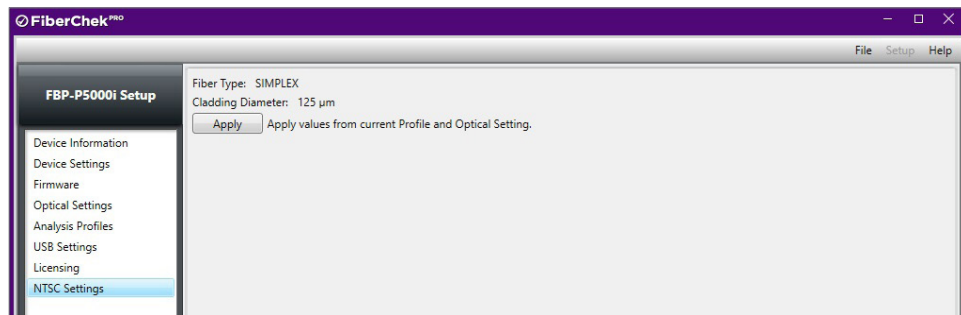
USB Power Meter Setup

Firmware   Displays the current firmware version on the USB OPM and the latest available version. If the connected device does not have the latest firmware, a button will appear in this section to upgrade.

General   Manage the details for all wavelengths stored on the USB OPM.

- **To add a wavelength,** click **Add**. A highlighted box will appear in the list. Type the desired wavelength value in this box and hit the enter key.

- **To edit a wavelength,** click **Edit**, then type the desired wavelength value in this box and hit the enter key.

- **To delete a wavelength,** select the desired wavelength to remove and click **Delete**.

- **Threshold -** Set a threshold level for activating the LED indicator on the USB OPM.

PowerChek Connectors   Manages the various Insertion Loss (dB) values associated with various PowerChek connectors. By default, all values are set to 0.34dB, however each PowerChek connector has a specific Insertion Loss (dB) value when shipped. This value is recorded on the package. Enter this value into the Insertion Loss (dB) field.

- **To add a new Insertion Loss value,** click **Add** and populate the Name and Insertion Loss (dB) fields with the desired values.

- **To edit a value,** either double-click the value or click the value once to highlight, and then click **Edit**.

- **To delete a value,** select the value, and then click **Delete**.
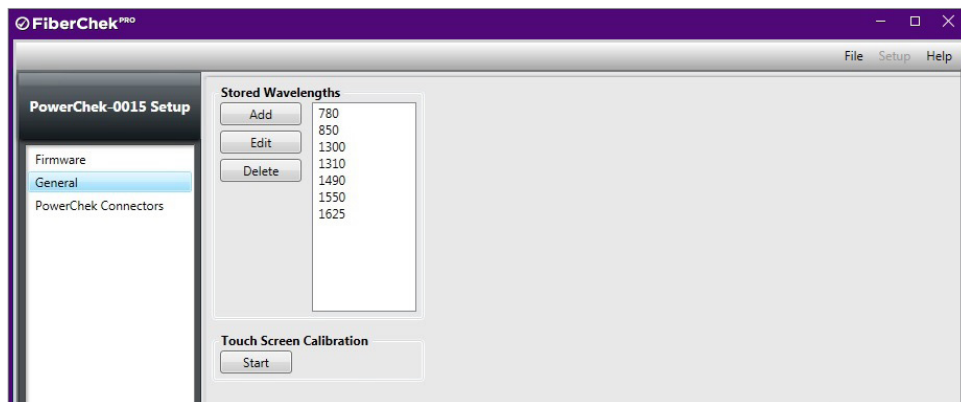
Touch Screen Calibration   Click **Start**, and follow the on-screen instructions on your PowerChek to calibrate the device's touch screen.

NOTE: Touch screen calibration is supported only on PowerChek OPMs.

SmartClass Fiber Device Setup

(*e.g.,* OLP-82, OLP-82P, HD4i, HD4iP)

Analysis Profiles   Displays all of the profiles that are available in FiberChekPRO in the left column and all the profiles that are on the connected device in the right column. Users can copy Profiles back and forth using Copy buttons in the center.
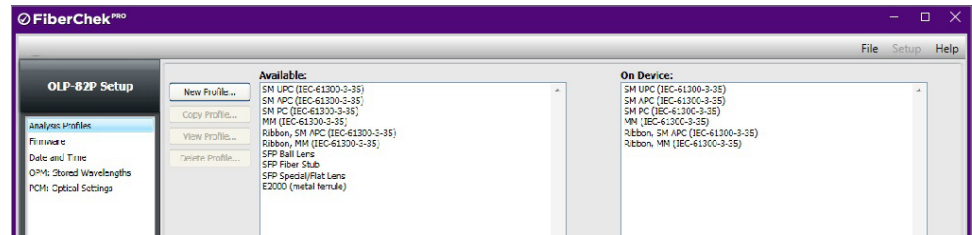
Firmware   Displays the current firmware version on the SmartClass Fiber device and the latest available version. If the connected device does not have the latest firmware, a button will appear in this section to upgrade.

Date and Time   Click the **Synchronize with PC** button to synchronize the date on the SmartClass Fiber device with the Date and Time on the connected PC.

OPM: Stored Wavelengths   Displays all wavelengths currently available on the SmartClass Fiber device. Users can Add, Edit, or Delete wavelengths on the connected device from this menu.
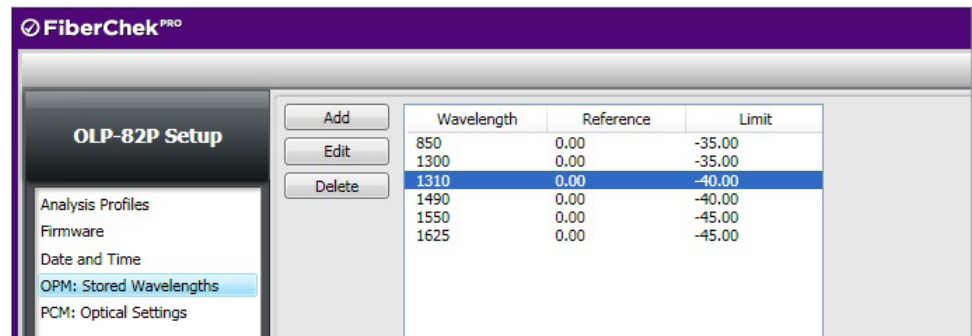
NOTE: This option is only available on devices that have an on-board OPM. It is not available to setup a USB OPM connected to the SmartClass Fiber device. To setup a USB OPM, connect the device directly to the PC via USB and access it directly from the Setup menu.

PCM: Optical Settings   Users can manage the optical settings for the Patch Cord Microscope (PCM) on-board the SmartClass Fiber device. This is managed the same way as Optical Settings for a P5000i microscope. The SmartClass Fiber device comes pre-configured with an optical setting for:

- **Simplex Adapter (FMAE)**
  Select when using and standard adapter for a simplex fiber.

- **Ribbon Adapter (FMAE)**
  Select when using an FMAE adapter designated for inspecting ribbon connectors. (e.g., FMAE-MTP). ***Note:*** Ribbon connectors contain an array of multiple fibers in a single connector.
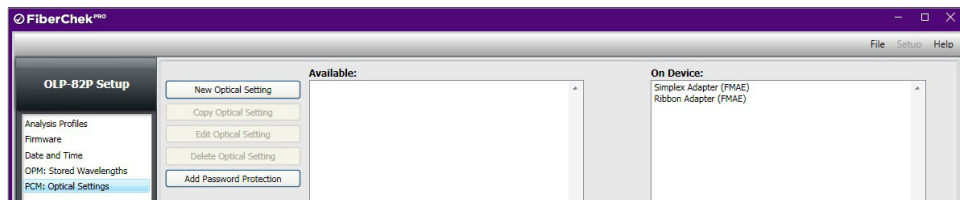
For information about managing and creating optical settings, see "Optical Settings" on page 2-28.

Using FiberChekPRO

NOTE: *For information about using FiberChekPRO with the FiberChek Sidewinder™ Inspection Probe or the FVAm™ Series Benchtop MPO Autofocus Microscope, refer to the user documentation for these devices:*

- *Sidewinder:* *http://fcpro.updatemyunit.net/archives/FCPRO/User_Guide_Sidewinder.pdf*
- *FVAm Series:* *http://fcpro.updatemyunit.net/archives/FCPRO/User_Guide_FVAm.pdf*

Starting FiberChekPRO

FiberChekPRO Desktop Icon
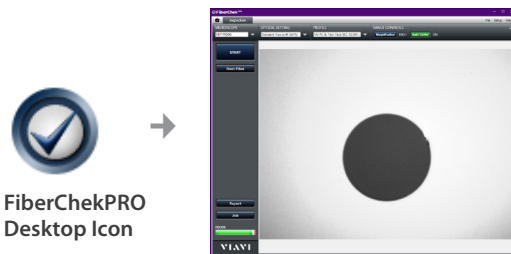
- Locate the FiberChekPRO application and open.
- Connect the Probe Microscope and select the inspection tab.

Operation Modes
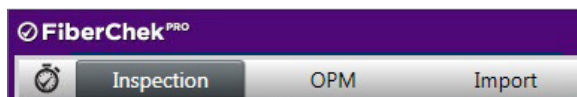
FiberChekPRO can be used in the three different operating modes: **Inspection, OPM, and Import**. The respective tabs will appear as a device with these functions is connected.

Using FiberChekPRO with an Inspection Microscope

Inspection Tip   Barrel Assembly
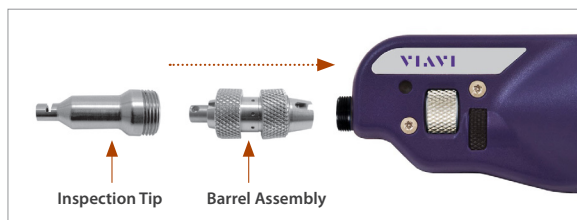
1.   Attach Inspection Tip or Adapter

- For a probe microscope:
  - Select the appropriate inspection tip that corresponds to the connector type and side being inspected and attach to probe.
  - Select the pre-configured Optical Setting from the drop-down list.

FVAi Series with Adapter

- For a benchtop microscope:

  - Select the appropriate inspection adapter that corresponds to the connector type and side being inspected and attach to the microscope.

  - Select an setting from the Optical Setting drop-down list. If there is only one setting available, this section will be grayed out.
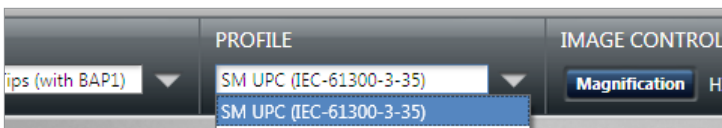
2.   Select Profile Setting

- From the pre-configured PROFILE settings drop-down list, select the appropriate connector being inspected.
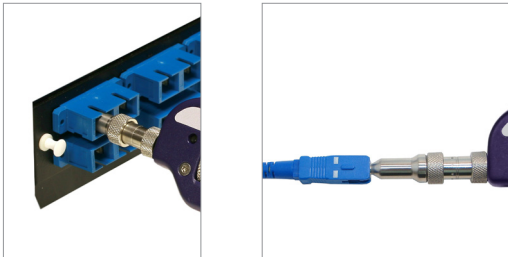
3.   Inspect Fiber

- Insert the probe into the bulkhead (for probe) or insert the path cord ferrule into the probe tip.

4.   Focus the Fiber End Face Image on Screen

- Adjust the focus of the fiber end face image on the computer screen by turning the Focus Control on the microscope.

NOTE: You can activate auto focus on an FVAi Series microscope using the Auto Focus button on the microscope or in the Image Controls in FiberChekPRO.
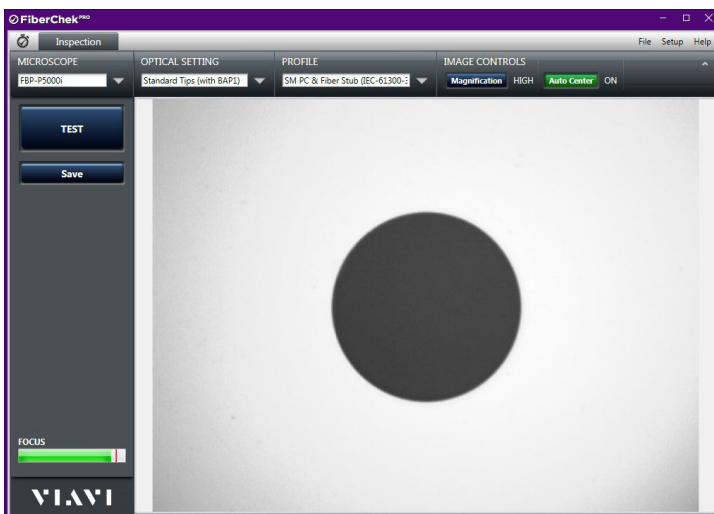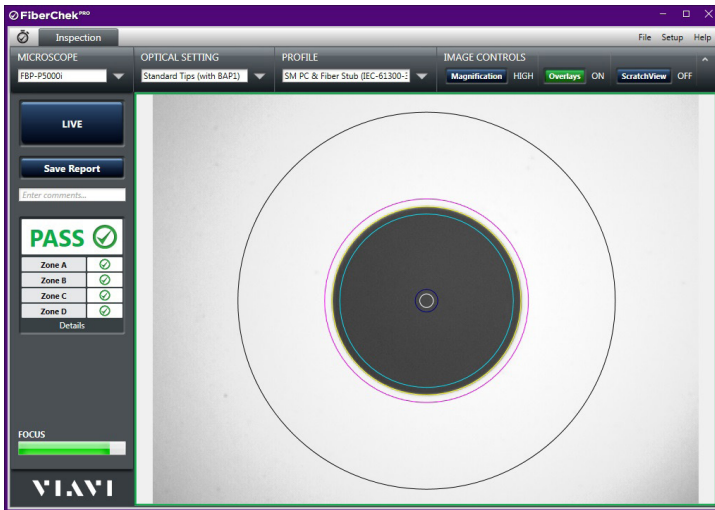
Image overlay of the zones, locations, defects, and scratches

FiberChekPRO Report

5. Test

- Press the **QuickCapture** button on the probe OR click the **TEST** button from the FiberChekPRO toolbar to run analysis. The test progress will be reported at the bottom of the FiberChekPRO window with status reports such as:

  - "Running Inspection…"

  - "Image Capture Finished. Running Analysis…"

- Once the test is complete, the result will be displayed on the screen with the following information:

  - Image overlay of the zone locations, defects, and scratches
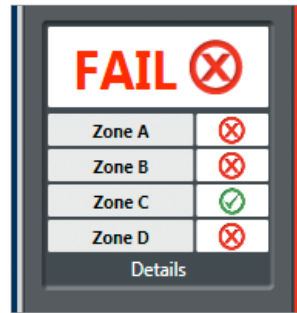
Test result (PASS or FAIL) specific for each Zone

Test Results (PASS or FAIL)

  - Test result (PASS or FAIL)

  - Specific test result for each Zone

  - A Details button: Click this button for specific details about the analysis details in each of the zones
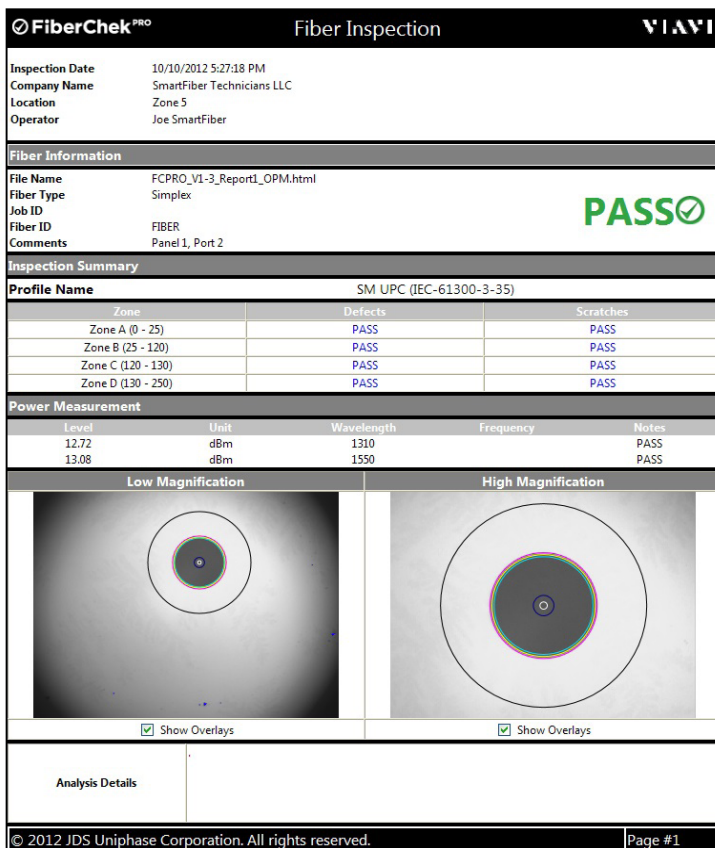
6. Add Comments and Save Report

- Click in the comment box located below the **Save Report** button and type any specific comments, if desired.

- Click the **Save Report** button, type the file name in the dialog box and click Save.

NOTE: If you have chosen to display the report after archiving, FiberChekPRO will open a copy of the report that was saved.

Using FiberChekPRO and P5000i with Other Device Platforms

P5000i Digital Analysis Microscope operates on several VIAVI handheld test platforms to instantly capture, analyze and grade fiber end face images, obtain a PASS/FAIL result and generate certification reports. P5000i will operate on these platforms in a similar way to FiberChekPRO. The user will always specify what profile to test against and what tip is attached (found in setup or options menu). For more information on using the P5000i with other device platforms, see the user manuals for the specific tool or platform. While each VIAVI test platform will have its own user interface, all platforms will have common controls for inspection and analysis.

Compatible Platforms - Other platforms that P5000i connects to include but are not limited to:

- **MTS/T-BERD 2000**
- **MTS/T-BERD 4000**
- **MTS/T-BERD 6000**
- **MTS/T-BERD 5800**
- **HST-3000**

VIAVI platforms capable of using the P5000i will come pre-loaded with profiles matching the requirements in IEC-61300-3-35. Users can create new profiles using FiberChekPRO and export them to the VIAVI test platform as follows:

1. Create the new profile in FiberChekPRO (see "Analysis Profiles (FiberChekPRO)" on page 2-12) and close the application.

2. Export the profile (see "Exporting One or More Profiles" on page 2-16).

3. Copy the profile you want to add to the test platform and save to a portable USB memory stick.

4. Connect the USB memory stick to the test platform and save the profile file to the location specified in the platform manual.

Optical Settings

Optical Settings configure the P5000i for optimal performance with a given tip. Users can select the best optical settings for the type of inspection tip that is attached to their probe. Additional settings can be added to the P5000i using FiberChekPRO. The P5000i comes pre-configured with a selection of default optical settings and can store up to 15 **Active Optical Settings** (listed in the Setup/Optical Settings window) directly on the microscope so that the optical settings can be used when the microscope is connected to other compatible VIAVI test platforms.

For more information on the default optical settings or creating new optical settings, see "Optical Settings" on page 2-28.

Using FiberChekPRO with USB Optical Power Meters

FiberChekPRO is compatible with all VIAVI USB Optical Power Meters, including the MP-series and FI-series. When an OPM is attached to the computer, the Optical Power Meter display will appear with two options for viewing:
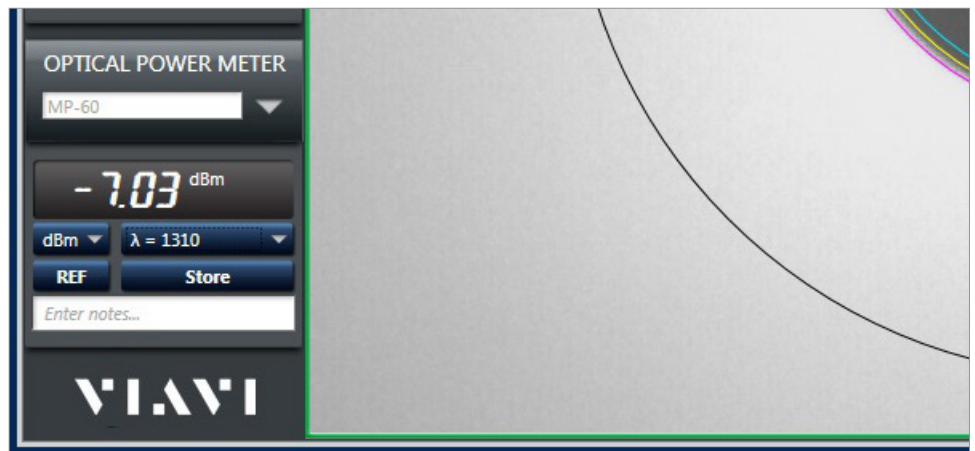
FiberChekPRO will automatically detect which model you have plugged in to your computer. If more than one OPM is attached, the drop-down list will be active and you can select from among the different devices.

OPM View

This view is activated by selecting the OPM tab near the top of the window; which will only appear when a compatible OPM is connected via USB or paired via Bluetooth.

NOTE: Compatible devices include MP Series, FI-Series, SmartClass Fiber, and PowerChek.
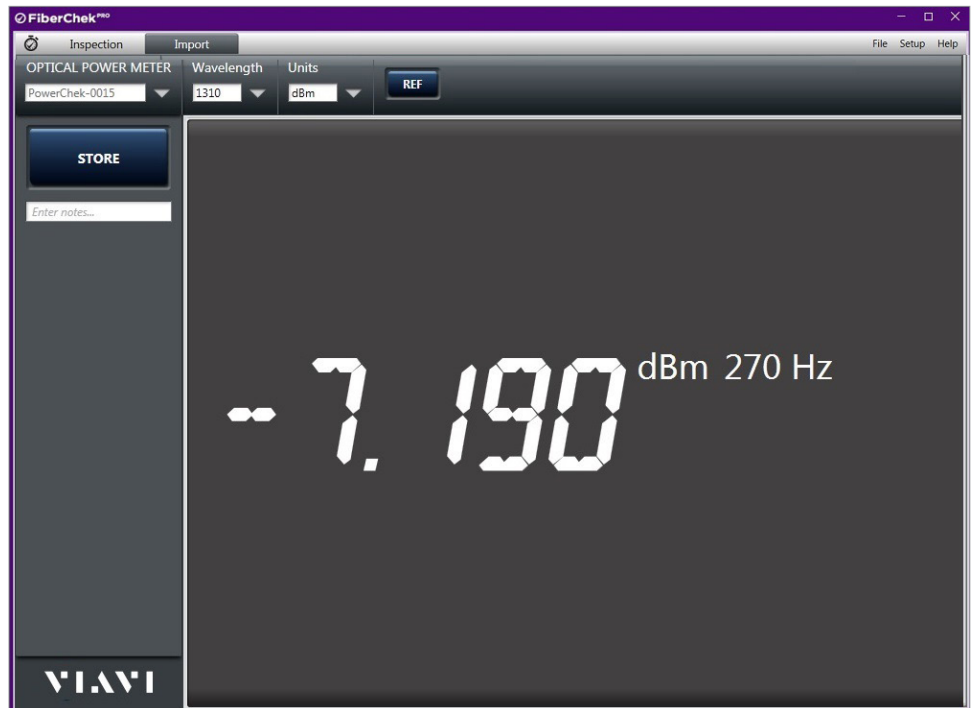
Users can select the units (dBm, dB, mW) the wavelength **λ** (780, 820, 980, 1300, 1310, 1480, 1490, 1550, 1625 nm) from the corresponding drop-down lists in either view.

The REF button allows users to measure a relative power (attenuation) in a link loss test, which is measured in dB. Simply press the REF button on the software to "zero out" the reading in dB for a reference measurement.

NOTE: *A reference can also be achieved by holding down the physical button on the MP-series device for 3 seconds. An audible tone will confirm when the reference has occurred.*

The **STORE** button allows the user to capture the reading and comments in an .CSV log. The log location can be specified in the FiberChekPRO Setup menu located in Setup/Optical Power Meter. The Notes field allows you to add comments about the stored reading.

NOTE: *You can also log by briefly pressing the button on the USB OPM device.*

Using FiberChekPRO to Import Stored Data from Another Device

1. Connect the compatible device with stored data via USB or Bluetooth (*e.g.,* Sidewinder, FVAm-S, FVAi/FVDi, or FiberChek Probe microscope) with the PC and select the Import tab.

> **NOTE:** *This tab will only appear when a compatible device with stored data is connected.* The main window will display a summary of all the Stored Data on the connected device as follows:
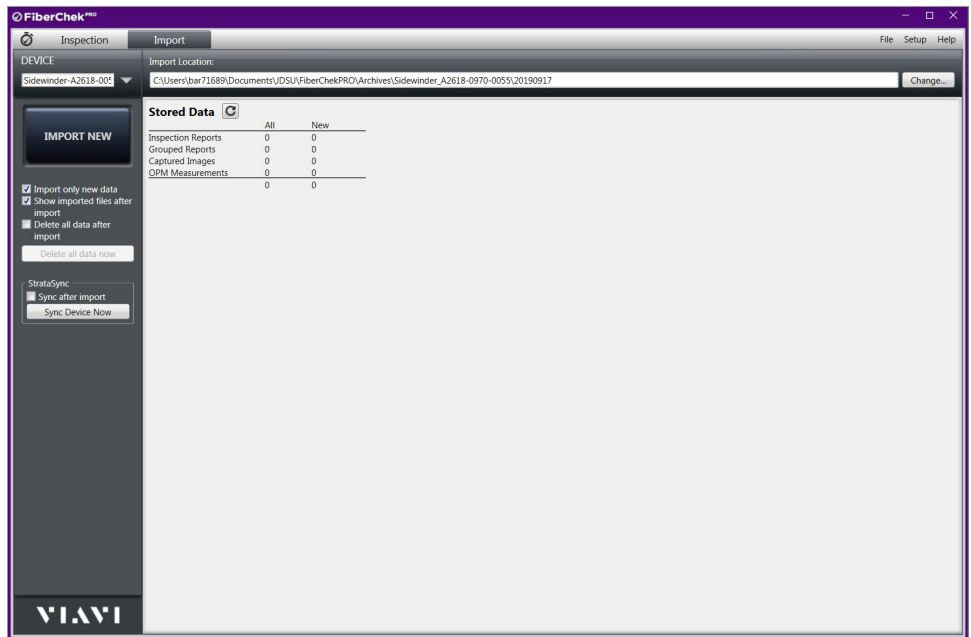
Inspection Reports: Displays the count of all Inspection reports with PASS/FAIL analysis results, fiber images (both low and high magnification), linked OPM readings, user information, date, time, and notes that are stored on the device.

Captured Images: Displays the count of images that were captured and saved specifically as images only (not with PASS/FAIL analysis results). Note: Images associated

with a report are consolidated as part of the "Inspection Reports".

OPM Measurements: Displays the total count of OPM measurements saved on the device (including OPM readings that are linked with inspection reports).

2. Select the desired Import Location from the dialog box marked **Import Location**.

3. Click the **IMPORT ALL** button.

The imported data will be saved in a dedicated folder located in the defined archive location. The folder will be named by Year+Month+Date as follows "YYYYMMDD" (ex: 20121129 = November 29, 2012). The folder will contain the all the Inspection Reports and Captured Images as individual files and a single .csv file with all of the stored OPM Measurements. The .csv file will contain a base name and a date increment as follows "BASE-YYYYMMDD.csv" (ex: BUILDING1-20121129.csv).

Introduction to Fiber Inspection

4

Introduction

Inspection of fiber optic interconnects is essential for the optimal performance and longevity of fiber optic connectivity. Throughout their lives, fiber connectors must be inspected, analyzed and cleaned to maintain an acceptable level of functionality. By developing and introducing the equipment and software to inspect, analyze and clean fiber connectors, VIAVI is able to provide a comprehensive solution for the performance and preservation of fiber optic interconnects.

Key Terms and Concepts

Fiber connectors enable fiber-to-fiber mating by aligning the two optical fibers. Fiber connectors come in various types and have different characteristics for use in different applications. The main components of a fiber connector are detailed below:

Fiber Connector
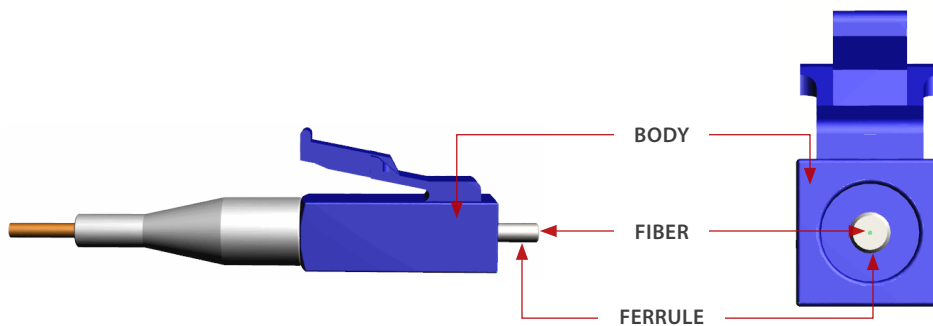
Body

Houses the ferrule that secures the fiber in place; utilizes a latch and key mechanism that aligns the fiber and prevents the rotation of ferrules of two mated connectors

Ferrule

Thin cylinder where the fiber is mounted and acts as the fiber alignment mechanism; the end of the fiber is located at the end of the ferrule

Fiber

- **CLADDING**
  Glass layer surrounding the core, which prevents the signal in the core from escaping

- **CORE**
  The critical center layer of the fiber; the conduit that light passes through

Fiber Connection

FIBER   **FERRULE**   **ALIGNMENT SLEEVE**

PHYSICAL CONTACT
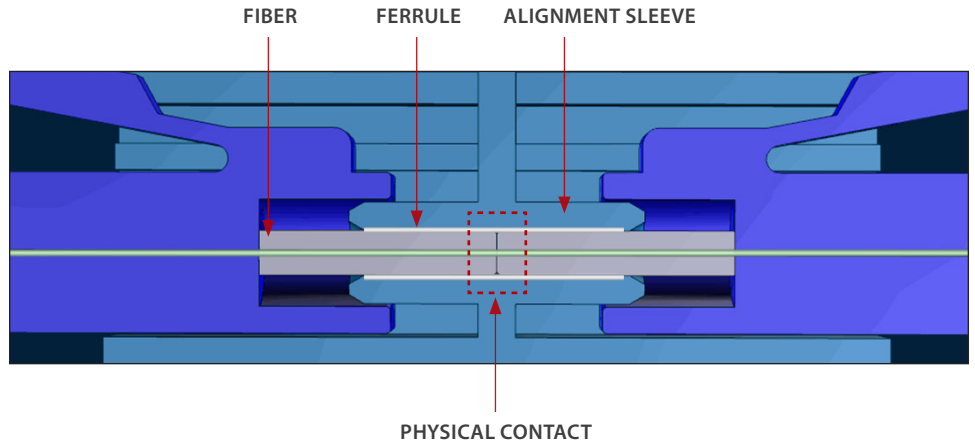
Simplex Fiber Connector

A simplex fiber connector contains a single fiber located in the center of the ferrule. Common types include SC, LC, FC and ST.

FERRULE

SIMPLEX FIBER CONNECTOR   **FIBER**
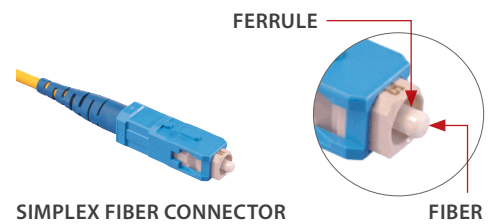
Ribbon Fiber Connector

A ribbon fiber connector contains multiple linear fibers (4, 8, 12, 24, 48 or 72) in a single connector to provide high-density connectivity. The most common configuration is MPO (also called the MTP®).

RIBBON FIBER CONNECTOR   **MULTIPLE FIBERS**
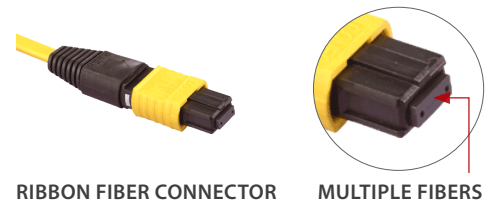
End Face Views of Simplex and Ribbon Fiber Connectors

SIMPLEX FIBER   **RIBBON FIBER**

CORE

CLADDING

FERRULE
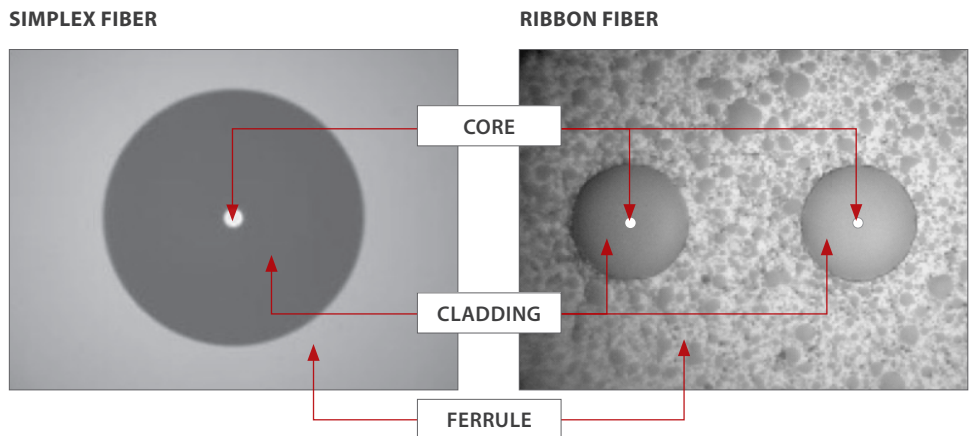
Jewel Fiber Connector

A jewel fiber connector is a simplex fiber with a polyimide coating/layer around the cladding and is designed for exceptional environments such as military, oil and gas, avionic and/or high-temperature settings.

Defects   If dirt particles get on the core surface the light becomes blocked, creating unacceptable insertion loss and back-reflection. Furthermore, those particles can permanently damage the glass interface, digging into the glass and leaving pits that create further back-reflection if mated. Also, large particles of dirt on the cladding layer and/or the ferrule can introduce a barrier that prevents physical contact and creates an air gap between the fibers. To further complicate matters, loose particles have a tendency to migrate.

Clean Connection

Light Transmitted

CLADDING   CORE   **CLEAN CONNECTION**

Dirty Connection

Light Transmitted   Back Reflection   Insertion Loss

Core   Cladding   **DIRTY CONNECTION**
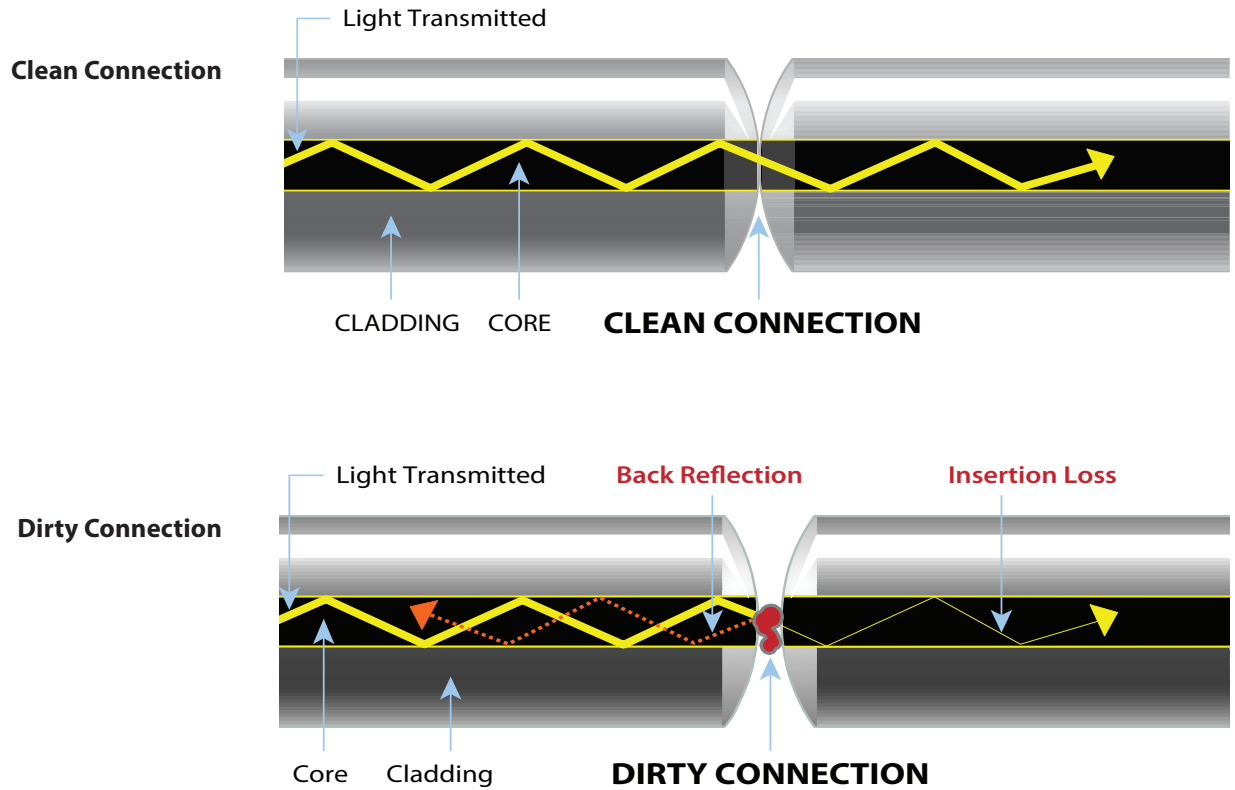
Types of Defects
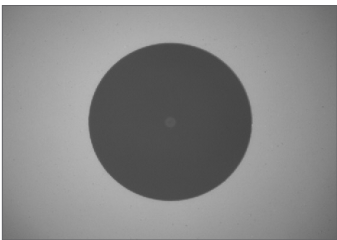
CLEAN FIBER   DIRT CONTAMINATION   PIT/CHIP CONTAMINATION   SCRATCH
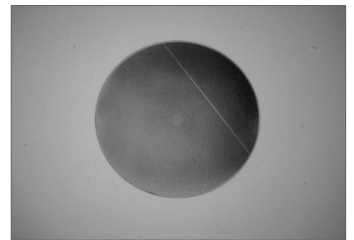
Scratches   Scratches are typically created during polishing, cleaning or mishandling fiber connectors. Scratches that touch the core are problematic because they create back reflection.

FiberChekPRO Hardware

5

Overview   FiberChekPRO automated analysis software is designed to operate on a PC/Laptop, and it instantly captures, analyzes and grades fiber end face images to obtain a PASS/FAIL result and generate certification reports.

FiberChekPRO is a software application used to determine the acceptability of optical fiber end faces through automated inspection and analysis. Used in conjunction with various VIAVI digital microscopes, FiberChekPRO will identify and characterize defects and contamination, and then provide a PASS or FAIL result according to a pre-configured failure criteria setting. In addition, the program allows users to archive data, generate reports and obtain an Optical Power Measurement (OPM) with both the MP-series and FI-series test tools from VIAVI.

Probe Microscopes   Probe microscopes (FBP Series) are portable handheld tools used to inspect both the bulkhead (female) and patch cord (male) sides 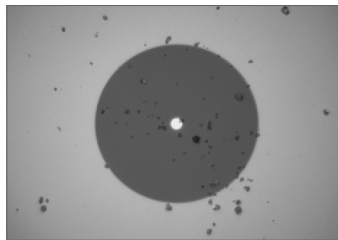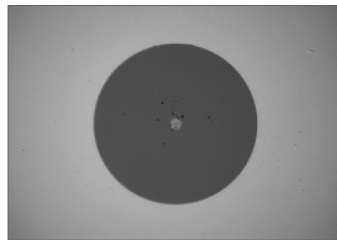of fiber connectors as well as other optical devices, such as transceivers. The probe is specially designed to fit and operate comfortably and easily in-hand, allowing the user to inspect hard-to-reach connectors that are installed on the back side of patch panels or inside hardware devices.

VIAVI Probe Microscopes Compatible with FiberChekPRO

	FBP-P5000i	**FBP-P505**	**FBP-P5**
Connects with PC	Yes	Yes (requires FBPP-USB1)	Yes (requires FBPP-USB3)
PASS/FAIL analysis on PC	Yes	No	No
Image capture	Yes	Yes	Yes
QuickCapture button	Yes	Yes	No
Dual magnification	Yes	Yes	Yes
Magnification toggle button	Yes	Yes*	Yes*
Connection type	USB 2.0	6-pin Hirose™	4-pin Hirose™
Tip compatibility	FBPT Series	FBPT Series	FBPT Series

***NOTE:** FBP-P505 and FBP-P5 include a dial on the probe that manually adjusts the magnification.*

Probe Microscope Controls

QUICKCAPTURE™ BUTTON
Instantly captures and analyzes fiber image

FOCUS CONTROL

FBPT
INSPECTION TIP

MAGNIFICATION
CONTROL

USB 2.0 CONNECTOR

6 FT COIL CABLE

NOTE: *P5000i shown.*

Inspection Tips   Probe microscopes support a range of inspection tips, including the following types of tips:

- Standard Bulkhead Tips
- Standard Patch Cord Tips
- Long Reach Tips
- RibbonDrive™ Tips
- Angled Tips (60 Degrees)
- Universal Flare and FMA Adapters

For information about supported inspection tips for probe microscopes, see VIAVI Solutions Fiber Tips and Adapters Selection Guide.

Installing FBPT Tips on FBP Series Probes

The procedure for installation is different depending on which type of tip you are using. See below:

NOTE: *If you are using a tip that contains its own optics, do not mount the barrel assembly onto the probe. The tip should mate with the probe body.*

Standard Connector Tips

1. Attach the **BARREL ASSEMBLY** to the FBP Series probe.

2. Attach the appropriate **INSPECTION TIP** to the end of the barrel assembly.

3. Insert the probe into the repository. Make sure that the geometry of the tip lines up properly with the geometry of the bulkhead or receptacle.

4. Focus the image if necessary. Rotate the Focus Control until the image is in focus.

5. Capture the image. Once the image is properly centered and focused press the QuickCapture™ button on the side of the unit to capture and analyze the image.

with Barrel Assembly

BARREL ASSEMBLY   INSPECTION TIP (FBPT-U25M)

Notch-key and Key Channel

Front and Back Retaining Nut

Objective Lens
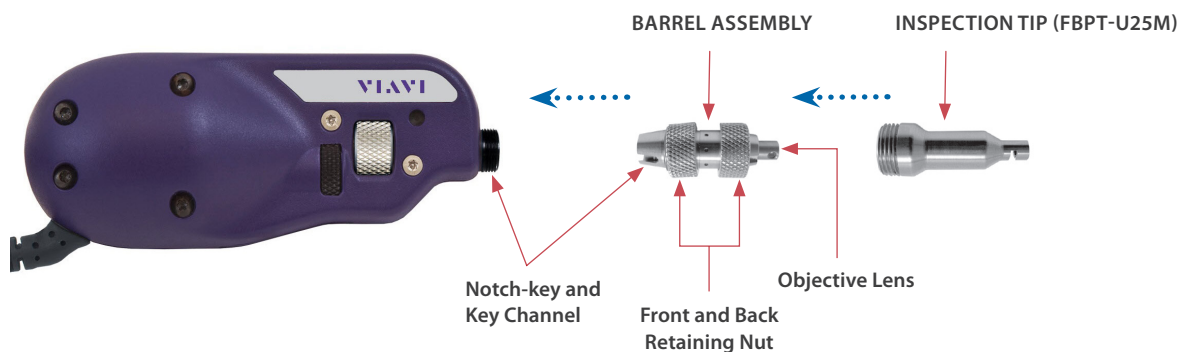
Tips with Optics

LONG REACH, **ANGLED** and **RIBBONDRIVE™** (multi-fiber) tips contain integrated optics and DO NOT require a barrel assembly; they connect directly to the probe body. These tips contain a key channel that mates to the alignment key located in the threaded opening on the front of the probe body.

without Barrel Assembly

INSPECTION TIP (FBPT-LC-L)

Retaining Nut

Notch-key and Key Channel
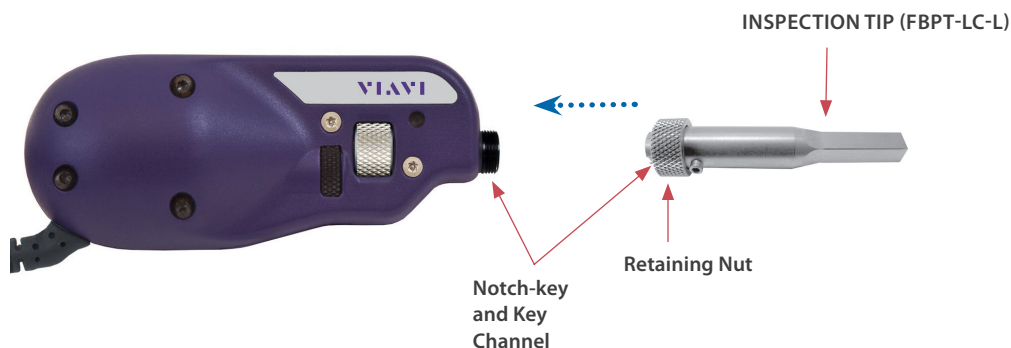
Benchtop Microscopes

The FVAi and FVDi Series Digital Benchtop Digital Fiber Microscopes have been specifically designed to inspect the polished surface or cleaved ends of fiber optic cable. Both of these high-resolution inspection microscopes are ideally suited for post-polish inspection of high-quality end faces and can repeatedly detect scratches that human technicians would often miss, delivering the sensitivity the industry has long sought. The FVAi and FVDi series microscopes connect directly to the PC via USB 2.0 connection.

The FVAi series fully automates the inspection process, significantly reducing inspection time and simplifying workflow. Upon inserting the fiber into the FMA series adapter, the microscope works in conjunction with FiberChekPRO to automatically focus and center the fiber, locate and count the defects and scratches and evaluate against the PASS/FAIL criteria. For more information about the FVAi and FVDi Series microscopes, see the *FVAi and FVDi Series Benchtop Automated PASS/FAIL Analysis Microscopes Quick Start Guide*, 22097669.
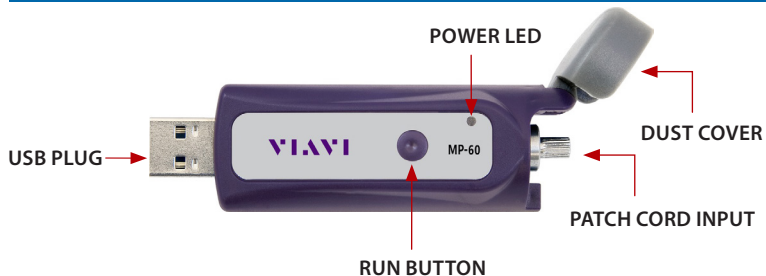
VIAVI USB Optical Power Meters (OPM)

The VIAVI USB Optical Power Meters are small form factor devices that can measure optical power via a USB 2.0 connection to a PC/laptop. These unique devices make digital processing of optical power measurements possible by integrating with FiberChekPRO software to measure optical power at multiple pre-calibrated wavelengths (850, 980, 1300, 1310, 1490, 1550 and 1625 nm). The simple, straightforward and intuitive software interface offers a well-organized digital solution to both fiber inspection and test procedures. USB Optical Power meters include the following:

VIAVI USB OPMs Compatible with FiberChekPRO

	MP-series	FI-series	PowerChek
Connects with PC	Yes	Yes	Yes
Connection type	USB 2.0	USB 2.0	USB 2.0, Bluetooth
Fiber connector input	2.5 mm, 1.25 mm	2.5 mm, 1.25 mm	PowerChek connectors
On-screen display	No	Yes	Yes
On-board data storage	No	Yes	Yes
Power source	USB	2 x AA batteries	Li-ion battery, USB power

USB OPM Controls: MP-series

POWER LED

DUST COVER

USB PLUG

MP-60

PATCH CORD INPUT

RUN BUTTON

USB OPM Controls: PowerChek

POWERCHEK CONNECTOR

THREADED COLLAR

ADJUSTABLE ARM

CAPTURE BUTTON

DISPLAY SCREEN

-45.54 dBm

1310nm

REF

MICRO-USB INPUT

PowerChek

USB OPM Controls: FI-series

INTERCHANGEABLE INPUT FOR POWER METER

OPM CONTROLS

DATA STORE AND RECALL CONTROLS

STORE RECALL

USB INPUT FOR CONNECTION TO PC FOR USE WITH VIAVI FIBER ANALYSIS SOFTWARE
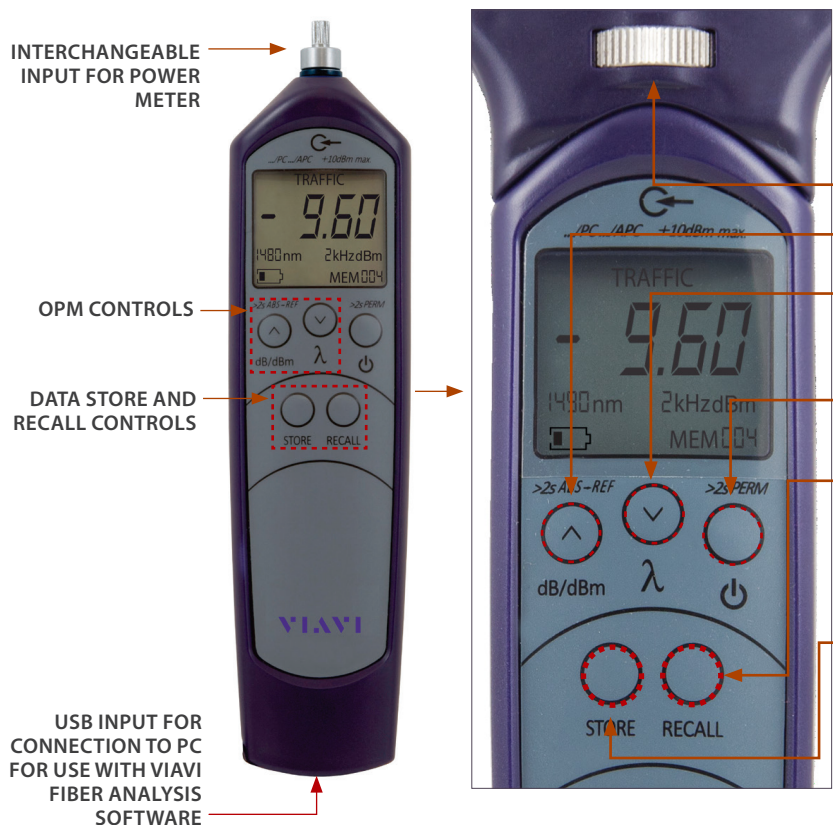
NOTE: The LFI head can be removed by turning the **LFI Release/ Attach Screw** located below the **Alignment Groove** (see the FI-60 user manual for more information).

LFI Release/Attach Screw

dB/dBm - Switches between absolute and relative power level display

λ - Selects available wavelengths or AUTO wavelength detect ON
- *Press and hold for 2 seconds to set a reference value ("REF" will flash when set)*

Power - Turns Power ON/OFF
- *Press and hold for 2 seconds to activate PERM (permanent on) mode. The button lights green when the device is powered on.*

RECALL - Press to retrieve stored OPM readings for the wavelength selected on the device. When in RECALL mode, the recalled reading values will be displayed on the screen and the corresponding memory number (i.e., MEM001) will be flashing. Use the up (∧) and down (∨) arrows to scroll through recalled readings.

STORE - Press to store optical power measurement reading on the device. The device will store up to 100 readings. Each stored value will be assigned a memory number (i.e., MEM001) that is located on the lower left corner of the display.

To erase stored readings on the device, press and hold both STORE and RECALL together for 2 seconds. An audible tone will confirm that the readings have been erased and the area in the lower-left corner will be cleared.

General Information

6

Warranty Information

VIAVI warrants this equipment against defects in material and workmanship for a period of one year from the date of original shipment. VIAVI also warrants that this equipment will meet applicable specifications under normal use. During the warranty period VIAVI will, at its sole discretion, repair, replace, or issue credit for any defective product free of charge should the equipment need to be repaired.

IMPORTANT!

The warranty will become null and void if:

- The equipment has been tampered with, repaired or worked upon by unauthorized or non-VIAVI personnel.
- The warranty label has been removed.
- Product enclosure screws, other than those specified in this manual, have been removed.
- The product enclosure has been opened, other than as explained in this manual.
- The equipment serial number has been altered, erased or removed.
- The equipment has been misused, neglected or damaged by accident.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL VIAVI BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

Liability

VIAVI shall not be liable for damages resulting from the use of the purchased product, nor shall VIAVI be responsible for any failure in the performance of other items to which the purchased product is connected or the operation of any system of which the purchased product may be a part. VIAVI shall not be liable for damages resulting from improper usage or unauthorized modification of the product, its accompanying accessories and software.

Exclusions

VIAVI reserves the right to make changes in the design or construction of any of its products at any time without incurring obligation to make any changes whatsoever on units purchased. Accessories, including but not limited to fuses, pilot lamps, and batteries used with VIAVI products are not covered by this warranty.

Certification

VIAVI certifies that this equipment met its published specifications at the time of shipment from the factory.

Contacting Technical and Customer Support

For technical and customer support, contact VIAVI. Please be sure to have the following information available:

- Name and serial number (if applicable) of the product(s) as well as a description of your problem close at hand
- The type of computer you are using
- The operating system you are using

Contact Info

VIAVI Solutions Inc.
6001 America Center Drive, 6th Floor
San Jose, CA 95002
USA

Phone (North America):   1-844-GO-VIAVI / 1-844-468-4284
All Other Regions: www.viavisolutions.com/contacts

Service and Repair   VIAVI commits to providing product service and repair for five years after the date of purchase.

To send any equipment for service or repair:

1.   Call VIAVI Customer Care. Support personnel will determine if the equipment requires service.

2.   If the equipment must be returned to VIAVI, support personnel will issue a **Return Merchandise Authorization (RMA)** number and an address for return.

3.   If the unit has an internal storage device, do a backup of your data before sending the unit for repairs.

4.   Pack the equipment in its original shipping material, if possible. Be sure to include a statement or report fully detailing the problem and the conditions under which it was observed.

5.   Return the equipment, freight prepaid, to the address given by the support personnel. Be sure to write the RMA number on the outside of the shipping container. VIAVI reserves the right to refuse and return any package that does not bear an RMA number.

6.   After repair, the equipment will be returned with a repair report. If the equipment is not under warranty, the customer will be invoiced for the cost appearing on this report. Return-to-customer shipping costs will be paid by VIAVI for equipment under warranty. Shipping insurance is at the customer's expense.