

USER MANUAL



Manufacturer:

Viavi

Product Name:

Viavi SmartClass™ HD4i Digital Handheld Video Display Kit with Patch Cord Module & Probe Scope

Manufacturer Part Number:

FBP-SD4IP

▶ [Click here for more details on the Viavi SmartClass™ HD4i Digital Handheld Video Display Kit with Patch Cord Module & Probe Scope](#)



FBP-HD4i/HD4iP and OLP-82/82P SmartClass™ Fiber

User manual

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English

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CONTENTS

1 INTRODUCTION	5
SmartClass Fiber Devices	5
User Manual Update	6
Symbols Used in this User Manual	6
2 SAFETY INFORMATION	8
Proper Usage	8
Battery Information	8
Ventilation	9
PS4 Universal AC/DC Power Supply	9
3 GETTING STARTED	10
Unpacking the Instrument	10
Delivery Content	10
Controls	11
Power Supply	12
Operation from AC Power	16
4 DEVICE SETUP AND CONTROLS	18
Operator Control Panel	18
Input Select Key (ISK)	19
Home Screen Display	20
Navigating in the Menus	21
Home Screen Menu	21
Recall Image	22
Review OPM Data	24
System Settings	25
User Info	29
PC CONNECT	30
5 INSPECTION	31
Hardware Overview	31
P5000i Digital Probe	31
Integrated Patch Cord Microscope (PCM)	33
Brightness	35
Profile	35
Test	36
Tip / Adapter	37
Freeze	37
More...	38

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CONTENTS



6 OPTICAL POWER MEASUREMENT 40
Optical Power Meter 40
Power Meter Controls 41
Measuring Optical Power 45

7 SPECIFICATIONS AND ORDERING INFORMATION 46

8 ADDITIONAL INFORMATION 47

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1 INTRODUCTION

SmartClass Fiber Devices

VIIVI's SmartClass Fiber family is the next generation of optical handheld test solutions that allow technicians to inspect, test, certify, and save on a single device. Designed to help users work smarter and faster, the SmartClass Fiber family incorporates the features that technicians rely on every day to deliver best-in-class reliable networks to their customers.

Products in the SmartClass Fiber family include:



HD4i
Digital handheld video display



OLP-82
Digital handheld video display with optical power meter

Key Features and Functions

Description	HD4i	OLP-82
Portable handheld display with 3.5" color touch screen	✓	✓
Simple graphical menu-driven interface	✓	✓
Accepts PASS/FAIL P5000i Probe	✓	✓
Accepts external USB power meter	✓	✓
Integrated connector certification reporting	✓	✓
On-board storage: Endface images and inspection analysis	✓	✓
User-definable acceptance criteria	✓	✓
Integrated optical power meter		✓
On-board storage: Power meter results		✓
Integrated PON power meter (BPON, EPON, and GPON)		
Integrated PASS/FAIL patch cord microscope option	✓	✓

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This User Manual will focus on the HD4i and OLP-82 products.

Symbols Used in this User Manual

Various elements are used in this user manual to draw attention to special meanings or important points in the text.

Symbols and terms used in warnings

The following warnings, symbols and terms are used in this document in compliance with the American National Standard ANSI Z535.6-2011:

▲ CAUTION

Follow the instructions carefully to avoid a low or medium risk of **injury to persons**.

Warning format

All warnings have the following format:

▲ WARNWORD

Type and source of danger

Consequences of ignoring the warning

- ▶ Action needed to avoid danger.
-

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Character formats used in this user manual

The following character formats are used in this user manual:

✓	Requirement This requirement must be met first; e.g. ✓ The device is switched on.
▶ 1. 2.	Instruction Follow the instructions given (the numbers indicate the order in which the instructions should be followed); e.g. ▶ Select mode.
<i>Italics</i>	Result Indicates the result of following an instruction; e.g. <i>The page opens.</i>
Bold type face	Pages, controls, and display elements Screen pages, controls, and display elements are indicated in bold type.
Text in blue	Cross references Cross references are indicated in blue type. When using the PDF version, just click on the blue text to skip to the cross reference.

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2 SAFETY INFORMATION



Proper Usage

This instrument is intended for measurements on optical fiber devices and systems. Please make sure the instrument is not operated outside the permitted ambient conditions. Always make sure that the instrument is in proper working order before switching it on.

Battery Information

Short-circuiting the batteries

Short-circuiting the batteries can result in overheating, explosion or ignition of the batteries and their surroundings.

Li-ION battery

The Li-ION battery used in this device may present a risk of fire or chemical burn if mistreated. Do not disassemble, heat above 65 °C or incinerate. Replace battery with manufacturer-specified battery only. Use of another battery may present a risk of fire or explosion. Dispose of used battery promptly.

- ▶ Never short-circuit the battery contacts by touching both contacts simultaneously with an electrical conducting object.
- ▶ Only use AA size dry batteries or rechargeable batteries.
- ▶ Make sure the batteries are inserted with the correct polarity.

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Ventilation

Insufficient ventilation

Insufficient ventilation can damage the instrument or adversely affect its function and safety

- ▶ Ensure adequate ventilation when operating the instrument.

PS4 Universal AC/DC Power Supply

Safety class

The PS4 Universal AC/DC Power Supply unit has a protective isolation that conforms with IEC 60950.

Ambient temperature too high/low

Temperatures outside the operating range of 0 to +40 °C can damage the PS4 Universal AC/DC Power Supply or adversely affect its function and safety.

- ▶ Only operate the PS4 Universal AC/DC Power Supply indoors.
- ▶ The PS4 Universal AC/DC Power Supply must only be operated at ambient temperatures between 0 and +40 °C.

Insufficient ventilation

Insufficient ventilation can damage the PS4 Universal AC/DC Power Supply or adversely affect its function and safety.

- ▶ Ensure adequate ventilation when operating the PS4 Universal AC/DC Power Supply.

Condensation

Operation in the presence of condensation can damage the PS4 Universal AC/DC Power Supply or adversely affect its function and safety.

- ▶ Do not operate the PS4 Universal AC/DC Power Supply if condensation has formed.
- ▶ If condensation cannot be avoided, such as when the PS4 Universal AC/DC Power Supply is cold and is moved to a warm room, wait until the PS4 Universal AC/DC Power Supply Unit is dry before plugging it into the AC power line.

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3 GETTING STARTED

Unpacking the Instrument

Packing material

We suggest that you keep the original packing material. It is designed for reuse. Using the original packing material ensures that the instrument is properly protected during shipping.

Checking the package contents

The following items will be included with each SmartClass Fiber instrument. Kitted packages contain additional items.

Delivery Content

- SmartClass Fiber Instrument
- Soft bag for SmartClass Fiber and accessories
- Power Supply and Plugs
- USB cable USB-A to micro-USB
- Quick Start Guide and Safety Instructions
- Dry batteries (8X AA)

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Controls



- | | |
|----|---|
| 1 | Connector interface (OLP-82/82P only) |
| 2 | 3.5 inch color touch screen |
| 3 | Key pad (operator control panel) |
| 4 | LED indicators |
| 5 | Patch Cord Microscope (PCM) with FMAE adapter (HD4iP and OLP-82P only) |
| 6 | Test head cover (OLP-82/82P only) |
| 7 | Battery life indicator |
| 8 | Graphic menu interface |
| 9 | PCM controls (focus control, automated PASS/FAIL analysis, magnification control) |
| 10 | 2x USB2 interfaces, 1x micro-USB interface, external power supply connector |

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Power Supply

The following power sources can be used to operate SmartClass Fiber devices:

- Eight 1.5 V dry batteries (Mignon AA size, alkaline type recommended)
- Eight 1.2 V NiMH rechargeable batteries (Mignon AA size)
- PS4 Universal AC/DC Power Supply (optional)
- Li-ION Battery Pack (optional)

Battery operation

⚠ CAUTION

Dangers in handling batteries

Batteries can be dangerous if not handled properly.

- ▶ Do not replace individual batteries. Always change all batteries at the same time.
- ▶ Always use batteries of the same type; i.e. do not mix rechargeable and non-rechargeable batteries.

General tips on using batteries

- Always handle batteries with care.
- Do not drop or damage the batteries or expose them to excessively high temperatures.
- Do not store the batteries for more than one or two days at very high temperatures (e.g., in a vehicle), either separately or fitted in the instrument.
- Do not leave discharged batteries in the instrument for a long time if it is not being used.
- Dispose of used batteries promptly.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.

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Replacing AA batteries


- ✓ The battery compartment is on the back of the instrument.
- 3. Open the lid of the battery compartment.
- 4. Insert new batteries or remove the used batteries and replace them with fresh ones.
- 5. Close the battery compartment.
- 6. Press **POWER** key  to switch on.



Fig. 1: AA batteries fully loaded in back

Recharging the batteries

The rechargeable Li-ION Battery Pack will be recharged when the PS4 Universal AC/DC Power Supply is being used to power the instrument. The instrument switches to trickle charging automatically as soon as the Li-ION Battery Pack is fully charged.

NOTE: Rechargeable AA-Batteries will not be recharged in the instrument. For AA-type rechargeable batteries, please use an external charger.

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Using or replacing the Li-ION Battery Pack

⚠ CAUTION

Dangers in handling batteries

Batteries can be dangerous if not handled properly.

- ▶ Dispose of used batteries promptly.
- ▶ Keep away from children.
- ▶ Do not disassemble and do not dispose of in fire.

1. Open the lid of the battery compartment.

2. Remove the AA battery tray or existing Li-ION battery.

3. Replace with battery pack.

4. Close the battery compartment.

5. Press **POWER** key  to switch on.



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Other basic safety precautions

- Do not use PS4 Universal AC/DC Power Supply outdoors or in wet or damp locations.
- Connect the PS4 Universal AC/DC Power Supply to the correct mains voltage, as indicated on the ratings label.
- Do not allow anything to rest on the power cord, and do not locate the product where people can walk on the power cord.
- Avoid using this product during electrical storms. There may be a remote risk of electric shock from lightning.
- Do not use this product in the vicinity of a gas leak or in any explosive environment.
- Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous, high voltage points and other hazards.
- Contact qualified service personnel for all service and repair.

Protecting the environment

Please dispose of any unwanted dry batteries and rechargeable batteries carefully. They should also be removed from the instrument if it is to be scrapped. If facilities in your country exist for collecting such waste or for recycling, please make use of these rather than throwing the batteries in with normal trash. You will often be able to return used batteries to the place where you purchase new ones. Any dry or rechargeable batteries that you purchased from VIAVI can be returned to one of our Service Centers for disposal.

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Operation from AC Power

NOTE: Only the PS4 Universal AC/DC Power Supply may be used to operate the SmartClass Fiber device from AC power.

To fit one of the mains plug adapters:

1. Select the appropriate AC line plug adapter.
2. Slide the AC line plug adapter into the slot.

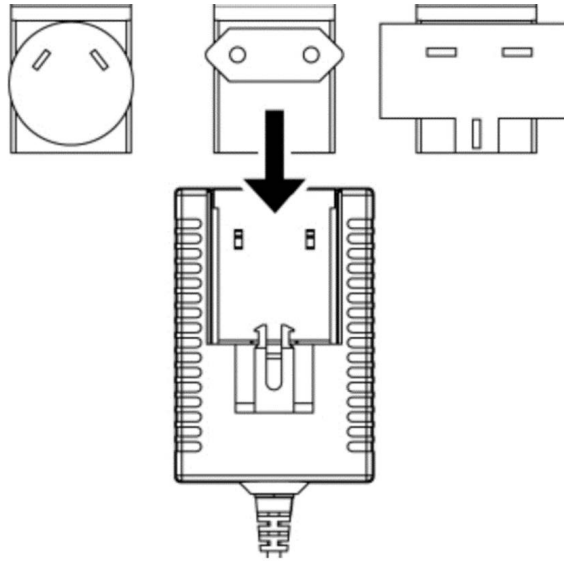


Fig. 2: PS4 Universal AC/DC Power Supply is ready for use

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To change the AC line plug adapter:

1. Squeeze both sides of the PS4 latch lock.
2. Push the AC line plug adapter upwards.
3. Slide a different AC line plug adapter into the slot.

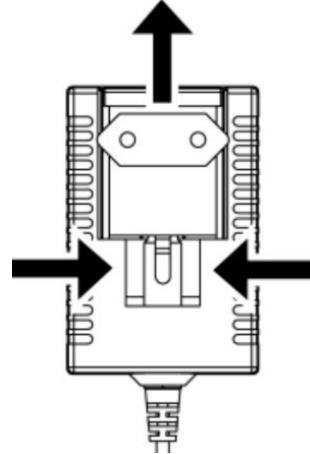


Fig. 3: AC line plug adapter

To operate the SmartClass Fiber device from AC power:

1. Connect the PS4 DC power cord to the DC power socket on the device. (The socket is under the cover on the right side.)
2. Plug the PS4 into the AC line socket.

NOTE: The PS4 provides power even if dry or rechargeable batteries are fitted in the instrument.

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4 DEVICE SETUP AND CONTROLS

Operator Control Panel

Mode	Description
	Home ▶ Press to go to the home screen.
	Menu ▶ Press to open a menu.
	Back ▶ Press to go back one step.
	Input Select Key (ISK) ▶ Press for fast toggling between device functions. ▶ See “ Input Select Key (ISK) ” on page 19 for more information on using the ISK.
	Power ▶ Press to switch the instrument ON and OFF. LED glows green when the instrument is ON.
	Arrow keys ▶ Press to navigate through the menus. ▶ Press to change values in the menus. Center key ▶ Press to confirm the selection.
	Save ▶ Press to save results
	Low battery Glows red when battery is low
	Test in process Glows red when a measurement is running in the background
	Charge Glows amber when battery is charging. If the power is OFF, charging will continue with no LED indicator.

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Input Select Key (ISK)

The **Input Select Key** allows users to inspect, test, certify, and save results quickly on the SmartClass Fiber device. Using this feature drives the user's behavior by incrementally stepping them through each application as it should be used in a proper testing workflow. Pressing the ISK will immediately switch to the next application that is used in a typical workflow. Once pressed, a small icon will appear on the screen for a few seconds to indicate the application that is now active.

When pressing  from the Home Screen:

Display switches to PCM Inspection (or the next available application)

When pressing  from an active application:

Display switches to the next available application as follows:

**PCM Inspection > Probe Inspection > USB OPM >
On-board OPM > PCM Inspection >...**

NOTE: Each application will only appear if it is available on the device, either on-board or via USB connection.

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Home Screen Display

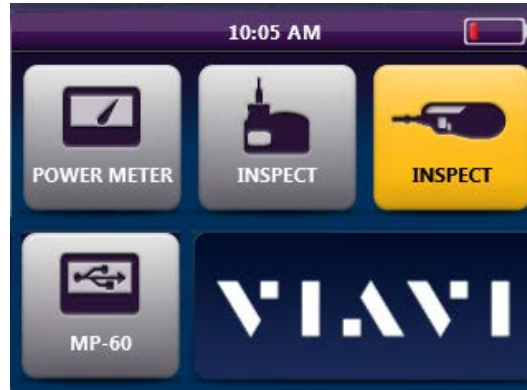


Fig. 4: OLP-82P Home Screen shown with P5000i Probe and MP-series USB OPM attached via USB

Icon	Description
	Battery Status Indicates the battery charge level / status.
	Optical Power Meter (OPM) Activates the on-board OPM to view optical power measurement results, edit acceptance criteria, and view saved results.
	Inspect (PCM) Activates the integrated Patch Cord Microscope (PCM) to inspect and analyze fiber endfaces, detect scratches and defects, and provide PASS/FAIL results. The PCM is ideal for inspecting male fiber connectors such as patch cords and test leads.
	Inspect (Probe) Activates the handheld P5000i Digital Probe microscope to inspect and analyze fiber endfaces, detect scratches and defects, and provide PASS/FAIL results. The probe is ideal for inspecting connectors located behind bulkheads.
	USB Optical Power Meter (OPM) Activates OPM devices (such as MP-60 or MP-80) that are connected to one of the USB ports to view optical power measurement results, edit acceptance criteria, and view saved results.

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Navigating in the Menus

- ▶ Press the **MENU** key to open the context-sensitive menu.
Depending on which application is in the foreground, a different menu opens.

To select a menu item:

1. Press the **ARROW KEYS** to highlight an item.
2. To confirm, press the **CENTER KEY** within the arrow keys
– or –
press the desired button on the touch screen.

To leave a menu:

- ▶ Press the **BACK** key.

NOTE: Actions can be operated via the operator control panel or the touchscreen. The following instructions describe only touchscreen operation.

Home Screen Menu



Fig. 5: Home screen menu

Button	Description
BRIGHTNESS	Adjusts the brightness of the display
MORE...	Access additional features and functions universal to the device: <ul style="list-style-type: none">• RECALL IMAGE• REVIEW OPM DATA• SYSTEM SETTINGS• USER INFO• PC CONNECT

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BRIGHTNESS

Adjusts the brightness of the display.

Once the BRIGHTNESS button is selected:

1. Press the **ARROW KEYS** to adjust the brightness level:
 - left = darker
 - right = brighter
2. Press the **CENTER KEY** to confirm your selected brightness level.
 - or –
 - Use the touch screen as follows:
 - a. Tap the desired arrow buttons to adjust the brightness level.
 - b. Tap the **OK** button to confirm your selected brightness level.

Recall Image



Fig. 6: Recall Image

Opens list of fiber images saved on the device. Select one or multiple saved fiber images to view further details including analysis results.

Once RECALL IMAGE is selected:

1. Press the up and down **ARROW KEYS** to browse through the list of saved images.
2. Press the **CENTER KEY** to select one or multiple saved fiber images.
3. Press the **MENU** key to select any of the following:

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SELECT ALL

Selects all saved fiber images. When selected, a check indicator will appear in the selection box to the left of the image name.

CLEAR ALL

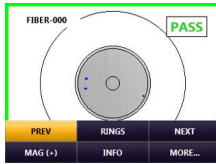
Clears all check indicators in the selection boxes.

DELETE

Deletes any items with a check indicator in the selection box.

VIEW

Opens the saved image for all selected items starting with whatever image is highest in the list of saved fiber images. Once a saved image appears, users can press the **MENU** button for additional options:



PREV

Opens the previous fiber image selected from the list of saved fiber images (if applicable).

MAG

Toggles between low and high magnification

NO OVERLAY / RINGS / RINGS + TABLE

Toggles between overlay view options for the selected image.

NO OVERLAY

Image only view

RINGS

Image with overlay of zones and defects

RINGS + TABLE

Image with overlay of zones, defects, and a summary table with the analysis result for each zone

INFO

Provides further information on the displayed fiber image

NEXT

Opens the next fiber image selected from the list of saved fiber images (if applicable).

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Review OPM Data



Selection	Measurement Value	Date/Time	Wavelength
<input checked="" type="checkbox"/>	-21.56dBm	08/31/22 02:42 PM	1550nm
<input type="checkbox"/>	-23.17dBm	08/31/22 02:42 PM	1310nm
<input type="checkbox"/>	-12.85dBm	08/31/22 02:41 PM	1550nm
<input type="checkbox"/>	-14.24dBm	08/31/22 02:41 PM	1310nm
<input type="checkbox"/>	-10.55dBm	08/31/22 02:40 PM	1550nm

Fig. 7: Review OPM Data

Opens list of OPM data saved on the device. Each saved result includes the following:

- Measurement value
- Date saved (day/month/year)
- Time saved (hour:minute:second)
- Wavelength
- Frequency (if applicable)

To review OPM data:

- ▶ Press the **MENU** key to select any of the following:
 - **SELECT ALL**: Selects all saved fiber images. When selected, a check indicator will appear in the selection box to the left of the image name.
 - **DELETE**: Deletes any items with a check indicator in the selection box.

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System Settings



Fig. 8: System Settings

Opens a list of general system settings.

When pressed, the following menu will appear:

Setting	Description
BRIGHTNESS	Adjusts the brightness of the display
LANGUAGE	Changes the user interface language
DATE	Adjusts the date
DATE FORMAT	Selects how the date is formatted
TIME	Adjusts the time
TIME FORMAT	Selects between 24-hour or 12-hour format
AUTO OFF	Adjusts the automatic switch-off period of the device
TIME FORMAT	Selects between 24-hour or 12-hour time
AUTO OFF	Adjusts the automatic switch-off period of the device
TOUCHSCREEN CALIBRATION	Initiates manual touch screen calibration process
SYSTEM INFORMATION	Displays further information about the device

BRIGHTNESS

- ▶ See “[BRIGHTNESS](#)” on page 22 for operation details.

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LANGUAGE

Changes the user interface language.

- ▶ Select 1 language from the 11 options presented.

DATE

Once **DATE** is selected, three fields will appear as follows:
[MONTH] [DAY] [YEAR].

To set the date:

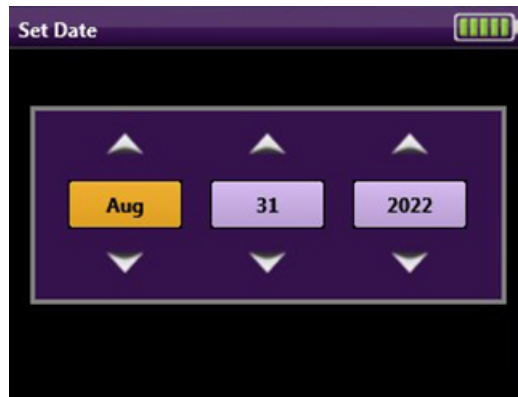


Fig. 9: Set Date

1. Select one of the fields to edit:

NOTE: The editable field will be highlighted **yellow**.

Press the left or right **ARROW KEYS** to select a field.

– or –

Tap the desired field on the touch screen.

2. Once selected, press the up or down **ARROW KEYS** (on either the control panel or the touch screen) to adjust the desired field.
3. Press the **CENTER KEY** to confirm.

DATE FORMAT

Select how the date is formatted.

- ▶ Select one format from the three options presented.

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TIME

Once **TIME** is selected, fields will appear as follows:

- 12-hour time format: [HOUR] [MINUTE] [AM/PM]
- 24-hour time format: [HOUR] [MINUTE]

To set the time:

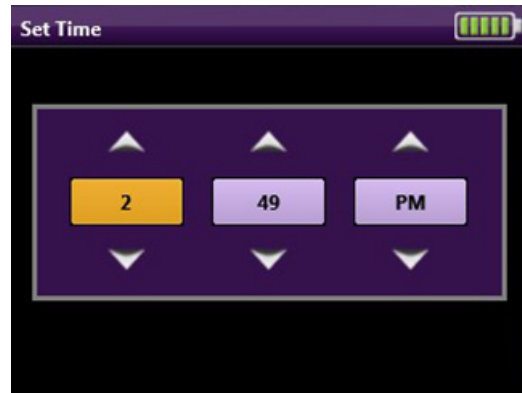


Fig. 10: Set Time

1. Select one of the fields to edit:

NOTE: The editable field will be highlighted **yellow**.

Press the left or right **ARROW KEYS** to select a field.

– or –

Tap the desired field on the touch screen.

2. Once selected, press the up or down **ARROW KEYS** (on either the control panel or the touch screen) to adjust the desired field.
3. Press the **CENTER KEY** to confirm.

TIME FORMAT

Select the desired time format (24-hour or 12-hour) that the device will display:

- ▶ Press the **CENTER KEY** or tap the touch screen to select the desired format.

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AUTO OFF

Once **AUTO OFF** is selected, the following list will appear:

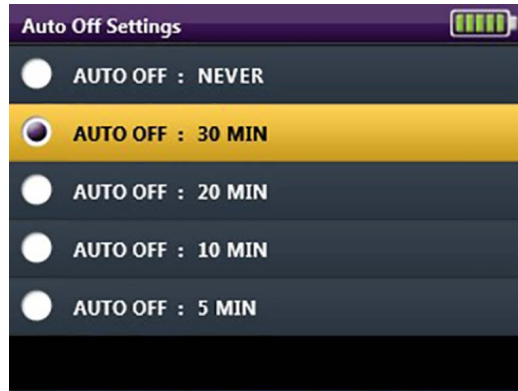


Fig. 11: Auto Off Settings

Chose the desired time duration from the list to determine when the device will automatically turn **OFF**.

- ▶ Press the **CENTER KEY** or tap the touch screen to select the desired time limit.

TOUCHSCREEN CALIBRATION

Five touchscreen icons will be displayed.

- ▶ Touch the center of the crosshair icons to calibrate the touchscreen.

SYSTEM INFORMATION

Displays further information (e.g. Serial Number, Board Revision, Firmware Version, Battery Strength, Up time) about the device. This screen is informational only and does not include anything that can be changed.

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User Info

The **User Info** menu allows you to enter information about your organization, including the Company name, Address, Customer, Location, Job ID, Operator, Cable ID, Fiber ID, and any comments about the job.



Fig. 12: User Information

To edit any of these fields:

1. Select the desired field via navigation keys or touch screen.
2. Enter the data using the alpha-numeric keypad on the screen.



Fig. 13: Edit Company (example)

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PC CONNECT

PC CONNECT is used to establish or re-establish a connection between the device and a PC using the included USB-A to Micro-USB cable. Once connected, users can export any of the stored data from the device to the PC using FiberChekPRO™ software.

The device will automatically establish a connection with the PC once both ends of the USB-A (connects to PC) to Micro-USB cable (connects to device) are connected.

Once connected, a message will appear on the device's display screen stating that it is connected to the PC. If this connection is lost, this message will disappear.

The connection will be re-established by selecting **PC CONNECT**.

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5 INSPECTION

Hardware Overview

Inspection of fiber optic interconnects is essential for the optimal performance and longevity of fiber optic connectivity. SmartClass Fiber devices have the capability to inspect end faces, provide PASS/FAIL analysis, and store the results directly on the device. Inspecting fiber endfaces with SmartClass Fiber devices is accomplished with a **P5000i Digital Analysis Microscope**. In addition, certain configurations are equipped with an Integrated **Patch Cord Microscope (PCM)** on the device.

P5000i Digital Probe

The **P5000i** is a compact probe microscope connects directly to the device via USB. It is specially designed to fit comfortably 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.



Fig. 14: P5000i Probe Microscope Controls

1 Inspection Tip
2 Capture button Instantly captures and analyzes fiber image
3 Focus control Adjust focus manually of the live fiber end face image on the display
4 Magnification control Switch between LOW and HIGH magnifications of the fiber end face image
5 USB 2.0 connector
6 6 ft coil cable

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NOTE: For further information on the P5000i please refer to the P5000i Getting Started Guide.

P5000i activation

1. Select the appropriate FBPT tip that corresponds to the connector type and side being inspected and attach to probe.

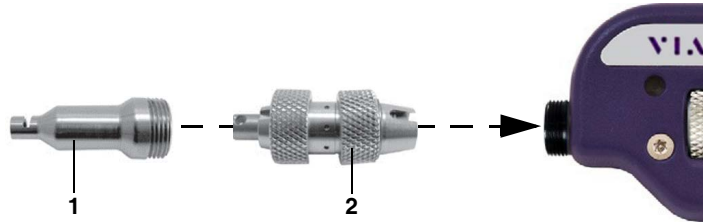


Fig. 15: FBPT Series Tips for the P5000i

1 Inspection Tip	2 Barrel assembly
------------------	-------------------

NOTE: The P5000i microscope uses FBPT series inspection tips to ensure consistent and accurate inspection for a wide variety of connectors and applications. These connector-specific and universal inspection tips are interchangeable, which allow the P5000i probe to interface with different types of fiber connectors.



2. Plug your P5000i into a USB port on the device.
3. Connect the P5000i with the fiber being inspected.
4. Press the **HOME** key, then select the **INSPECT (Probe)** button.

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Integrated Patch Cord Microscope (PCM)

Certain SmartClass Fiber devices are also configured with an additional on-board PCM, which allows users to inspect both ends of a fiber connection much faster than with a single probe microscope.



Fig. 16: FMAX Series Adapters for the PCM

NOTE: SmartClass Fiber devices with the PCM use FMAX series adapters to ensure consistent and accurate inspection for a wide variety of connectors and applications. All PCM configurations ship with an included 2.5 mm interface. Kitted configurations include additional adapters.

Capture button	Instantly captures and analyzes fiber image
Focus control	Allows the user to adjust focus manually of the live fiber end face image on the display.
Magnification control	Allows the user to switch between LOW and HIGH magnifications of the fiber end face image.



To activate PCM:

1. Select the appropriate FMAE adapter that corresponds to the connector type and side being inspected and attach to PCM.
2. Press the **HOME** key, then select the **INSPECT (PCM)** button.

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INSPECTION MENU (for both P5000i and PCM)

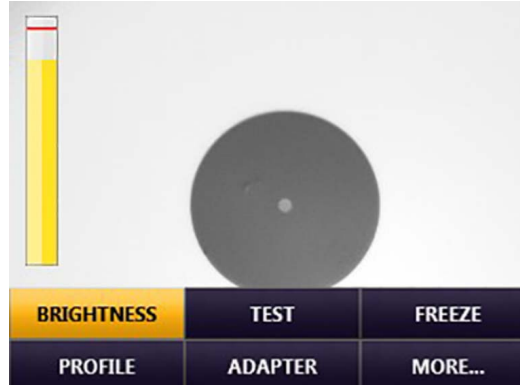


Fig. 17: Inspection menu

Once the inspection application is active for either the P5000i or PCM, it can display a live view of the fiber end face that it is connected to. The Inspection menu contains all the options necessary for setting up and using the inspection application.

- ▶ Press the **MENU** key to select any of the following:

Setting	Description
BRIGHTNESS	Adjusts the brightness of the display
PROFILE	Selects the desired PROFILE which contains the analysis parameters by which PASS/FAIL criteria are determined
TEST	Initiates the automated PASS/FAIL test process
TIP / ADAPTER	Selects the best optical settings for the type of tip or adapter that is attached to the microscope
FREEZE	Freezes a live image
MORE...	Access additional inspection options as follows: <ul style="list-style-type: none"> • RECALL IMAGE • MICROSCOPE SETTINGS • IMAGE SAVE OPTIONS • SYSTEM SETTINGS • USER INFO

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Brightness

Adjusts the brightness of the display. See “**BRIGHTNESS**” on [page 22](#) for more details.

Profile

Allows the user to select from various **PROFILES**, which contain the analysis parameters by which **PASS/FAIL** criteria are determined. Users can select from several pre-configured **PROFILES** already on the device. The pre-configured profiles match the **PASS/FAIL** criteria in the IEC visual inspection standard, IEC-61300-3-35. All of these profiles are factory set and cannot be edited or removed.

Additional profiles can be created, added, and/or removed from the SmartClass Fiber device when used in conjunction with FiberChekPRO software.

- ▶ For further information on profiles, see the FiberChekPRO user manual.

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Test

Initiates the automated **PASS/FAIL** test process.

NOTE: Initiating a test can also be done by pressing the **QuickCapture** button directly on the P5000i Probe or PCM.

Once the test is complete, the result will flash on the screen as either **PASS** or **FAIL**. In addition, the outside edge of the image will be highlighted in either **green (PASS)** or **red (FAIL)**.

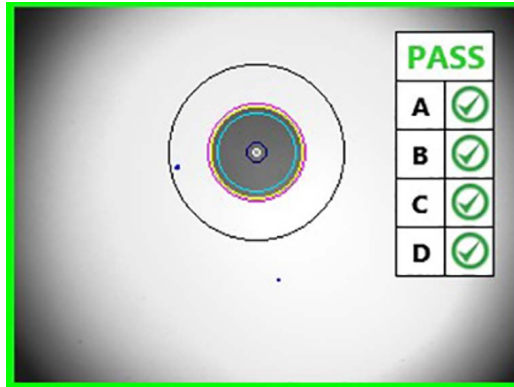


Fig. 18: **PASS** indication

When in the Test view, pressing the **MENU** key again gives the following additional options:

Option	Description
LIVE	Returns to a live view of the image
VIEW	Toggles overlay view options (3 states): <ul style="list-style-type: none"> • NO OVERLAY: image only view • RINGS: image with overlay of zones and defects • RINGS + TABLE: image with overlay of zones, defects, and a summary table with the analysis result for each zone
MAG	Toggles between HIGH (+) or LOW (-) magnification
MORE...	Access additional inspection options This is the same list of options that can be accessed at the Inspection Menu when in a LIVE state (see " INSPECTION MENU (for both P5000i and PCM) " on page 34).

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Tip / Adapter

Allows the user to select the best optical settings for the type of tip or adapter that is attached to their microscope.

Text display	Description
TIP	When using P5000i
ADAPTER	When using PCM

Users can select from the list of pre-configured optical settings.

- ▶ For further information on optical settings, see the FiberChekPRO user manual.

Freeze

Allows the user to freeze a live image. Once the image is frozen, pressing the **MENU** button again gives the following additional options:

Option	Description
LIVE	Returns to a live view of the image
MAG	Toggles between HIGH(+) or LOW (-) magnification
MORE...	Access additional inspection options This is the same list of options that can be accessed at the Inspection Menu when in a LIVE state (see " INSPECTION MENU (for both P5000i and PCM) " on page 34).

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More...

Access additional features and functions associated with inspection.

RECALL IMAGE

Opens list of fiber images saved on the device. Select one or multiple saved fiber images to view further details including analysis results. See "Recall Image" on page 22 for more details.

MICROSCOPE SETTINGS

Opens a list of system settings specific to the microscope functionality. When selected, the following options will appear:



Fig. 19: Microscope Settings

Setting	Description
AUTO CENTER	<ul style="list-style-type: none"> ▶ Check box to turn AUTO CENTER ON ▶ Uncheck box to turn OFF
DEVICE BUTTON	Selects the desired function of the Quick Capture button <ul style="list-style-type: none"> • TEST: Initiates the automated PASS/FAIL test process • CAPTURE: Freezes image
SHOW FOCUS METER	<ul style="list-style-type: none"> ▶ Check box to turn FOCUS METER ON ▶ Uncheck box to turn OFF The FOCUS METER is a visual gauge that aids the users in finding the optimal focus point. As the image comes into focus, the length of the blue bar increases. A red line will show the highest level achievable for each endface. Optimal focus level is reached when the blue bar is closest to the red line at the highest point possible.
DETECT DEFECTS OUTSIDE ZONES	<ul style="list-style-type: none"> ▶ Check box to enable detection of defects outside the largest inspection zone.

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IMAGE SAVE OPTIONS

Allows the user to specify how they want to save an image. Options include the following:

Setting	Description
FILE NAME BASE	Allows user to define a base level name for saved images. Selecting this option opens an alphanumeric keypad for entering the base level text.
ARCHIVING METHOD	Select from one of the following: <ul style="list-style-type: none">• VERIFY BUTTON BEFORE SAVE (displays a confirmation box before saving an image)• ONE BUTTON SAVE (saves the image immediately upon pressing the save button)• SAVE RESULTS IF PASS (automatically saves the image if the inspection test result is a PASS)

SYSTEM SETTINGS

Shortcut to the **SYSTEM SETTINGS**.

- ▶ See “[System Settings](#)” on page 25 for further details.

USER INFO

Shortcut to the **USER INFO**.

- ▶ See “[User Info](#)” on page 29 for further details.

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6 OPTICAL POWER MEASUREMENT

Optical Power Meter

The HD4iP and OLP-82P models feature a built-in Optical Power Meter (OPM) with multiple calibrated wavelengths. The simple, straightforward and intuitive user interface offers a well-organized solution for measuring optical power and saving results with a portable device.



Fig. 20: UPP Power Meter Input

- 1 Universal Push-Pull (UPP) Power Meter Input:
2.5 mm (VPP-UPP25) or 1.25 mm (VPP-UPP12) interface.

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Power Meter Controls

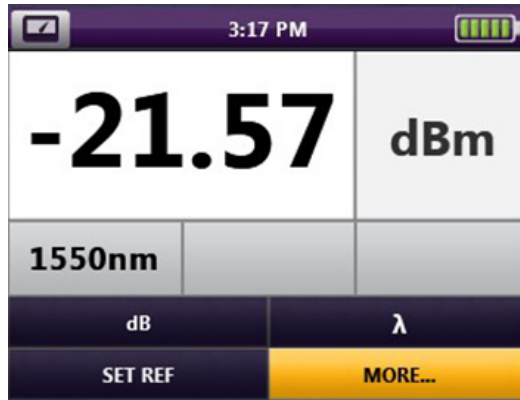


Fig. 21: Power Meter Controls

Setting	Description
dB / dBm	Switches between Absolute (dBm) and Relative (dB) power level unit
SET REF	Stores a reference power level
λ	Select active wavelength
MORE...	Access additional OPM options as follows: <ul style="list-style-type: none"> • EDIT WAVELENGTH TABLE • REVIEW OPM DATA • ENABLE WATTS DISPLAY • ENABLE OPM + IMAGE LINK • SYSTEM SETTINGS • USER INFO

dB / dBm

Switches between **Absolute (dBm)** and **Relative (dB)** power level unit.

- ▶ For further information on Absolute and Relative Power, see [“Measuring Optical Power”](#) on page 45.

NOTE: The device can also display values in Watts. To activate this option, check **ENABLE WATTS DISPLAY** in the **MORE...** menu.

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SET REF

Stores a reference power level. This is used when measuring attenuation (relative power).

- ▶ For further information on measuring Relative Power, see “Measuring Optical Power” on page 45.

λ (WAVELENGTH)

Selects the desired active wavelength for testing.

NOTE: The wavelength values that appear in this list is managed in the **EDIT WAVELENGTH TABLE** under **MORE...** (see next section for details).

MORE...

Access additional OPM options as follows:

Edit OPM Wavelengths



Fig. 22: Wavelength table

Upon selection, a list of all the wavelengths will appear as shown above. Each wavelength in this list will include the following:

Setting	Description
Check box / Wavelength	Located on the left side. Checked items will appear on the WAVELENGTH λ list on the main OPM screen. Press the CENTER KEY or use the touchscreen to check or uncheck this box.
REF	Displays a stored reference value (in dBm)
Limit	Displays a set limit value (if defined). For further details, see ENTER LIMIT below

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To edit OPM wavelengths:

- ▶ Press the **MENU** key for the following:
 - **ADD WAVELENGTH λ** : Activates a numeric keypad to enter additional wavelengths
 - **ENTER REFERENCE**: Activates a numeric keypad to manually enter a Reference Threshold
 - **DELETE WAVELENGTH**: Deletes the current highlighted wavelength
 - **ENTER LIMIT**: Activates a numeric keypad for entering a threshold for the lowest acceptable value. If the OPM value being measured is lower than the acceptable threshold, then the word FAIL will appear on the MAIN OPM screen with an explanation that is below the acceptable limit.

Review OPM Data

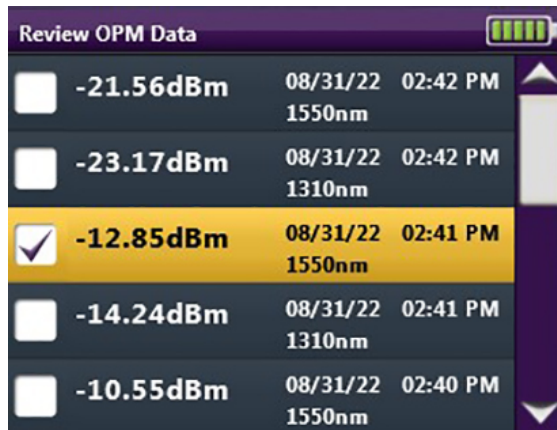


Fig. 23: Review OPM Data

Opens list of OPM data saved on the device. Each saved result includes the following:

- Measurement value
- Date saved (day/month/year)
- Time saved (hour:minute:second)
- Wavelength
- Frequency

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To review OPM data:

- ▶ Press the **MENU** key to determine the following:
 - **SELECT ALL:** Selects all saved fiber images. When selected, a check indicator will appear in the selection box to the left of the image name.
 - **DELETE:** Deletes any items with a check indicator in the selection box.

ENABLE WATTS DISPLAY

- ▶ Check this box to include WATTS as one of the measurement values.

ENABLE OPM + IMAGE LINK

- ▶ Check this box to group the current OPM reading with the last saved inspection image.

All saved OPM readings will be grouped together with the last saved inspection image, until a new image is stored.

SYSTEM SETTINGS

Shortcut to the **SYSTEM SETTINGS**.

- ▶ See "[System Settings](#)" on page 25 for further details.

USER INFO

Shortcut to the **USER INFO**.

- ▶ See "[User Info](#)" on page 29 for further details.

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Measuring Optical Power

Measuring Absolute Power

Absolute power (measured in dBm) is the amount of optical power present in the system. The source of this power is the transmitter or transceiver sending information through the system. This test determines whether the signal has enough power to operate the receiver or transceiver at the end of the link.

To measure absolute power:

1. Select **dBm** from the menu.
2. Press **Select the active wavelength**.
3. The optical power measurement is displayed on the power meter display.

Measuring Attenuation (Relative Power)

Relative power level (attenuation measurement) is the amount of power lost (attenuated) by the optical link being tested, measured in dB. The source of this power is typically a handheld optical light source. This test determines whether the optical link is constructed properly, either as a qualification test or when troubleshooting the network.

To measure attenuation:

1. Get a reference measurement by selecting **SET REF** on the menu.
Once the reference is set, 0.00 dB is displayed in the main OPM window. The referenced value will also appear on the display.
2. Get an attenuation measurement:
 - a. Disconnect reference fiber 1 from the power meter.
DO NOT disconnect reference fiber 1 from the light source.
 - b. Inspect and if necessary, clean all ends of the system port.
 - c. Connect reference fiber 1 to the system port.
 - d. Inspect and if necessary, clean all ends of reference fiber 2.
 - e. Inspect and if necessary, clean the fiber at the far end of the optical fiber link.
 - f. Connect reference fiber 2 to the system port.
The attenuation measurement (insertion loss) of the optical link is displayed in the main window of the power meter.

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7 SPECIFICATIONS AND ORDERING INFORMATION

- ▶ Refer to the “SmartClass Fiber” data sheet for specifications and ordering information

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8 ADDITIONAL INFORMATION

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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 EN 61326 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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