



OV350-PM-VIS

Power Meter and Video Scope

Users Guide

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Section 1 Safety

Prior to using the quick start guide or operating the equipment in any way, it is highly suggested the user reads all safety information.

This product has been designed and tested in accordance with the Manufacturer's safety standards, and has been supplied in a safe condition.

Personal Safety

Personnel should always be aware when working with fiber optic test equipment that active fibers may be present and therefore infrared optical energy may be present.

Never look directly into the end of a connected fiber optic cable or fiber optic adapter of test equipment, to do so could expose the user to laser radiation and could result in severe personal injury.

To Prevent Fire or Shock Hazard

- Batteries are not field replaceable, equipment must be returned to the factory for battery replacement
- Do not use the charger without the batteries installed
- Do not expose the battery charger to rain or excessive moisture
- Do not use the AC adapter when there are signs of damage to the enclosure or cord
- Ensure that you are using the correct charger for the local line voltage

To Prevent Damage

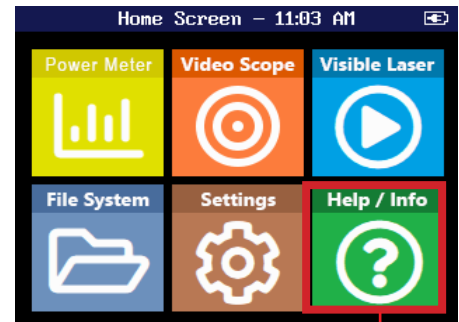
Fiber-optic connectors are easily contaminated or damaged. Dirty or damaged connectors may impair the instruments capabilities at minimum and at worst result in the need to return this equipment to the factory for expensive repairs. Prior to making any connection to the unit, ensure that all proper cleaning procedures have been followed.

Section 2 Quick Start Guide

Power Up

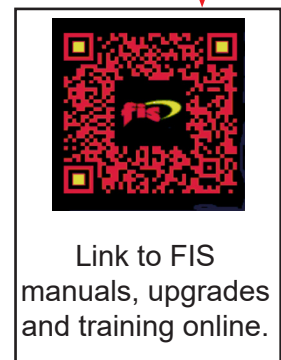
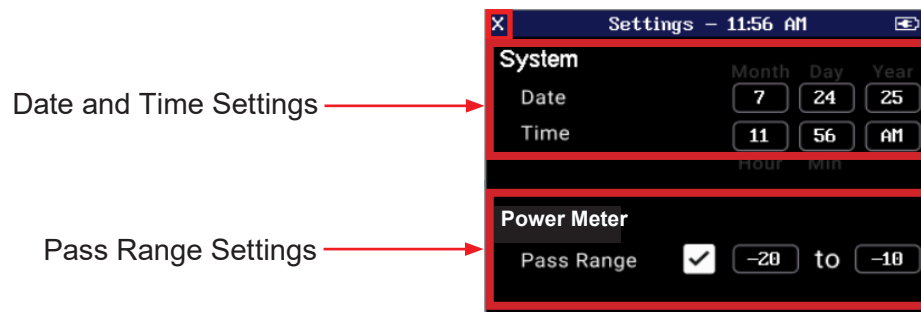
Press the  button to power up the unit and the home screen will be displayed.

The home screen offers direct access to the power meter and the video scope modules. There is a visible laser which is operated directly from the home screen, simply touch the Visible Laser icon and toggle through CW, modulated and off. File management icon opens file management screen to manipulate and transfer files saved in the power meter, and video scope modules. The settings icon opens the settings page to set date and time and pass/fail range for the PM. The Help icon offers the user a link to Fiber Instrument Sales manuals, upgrades and training online.



Setting Screen

Select the Settings icon to open the settings screen.



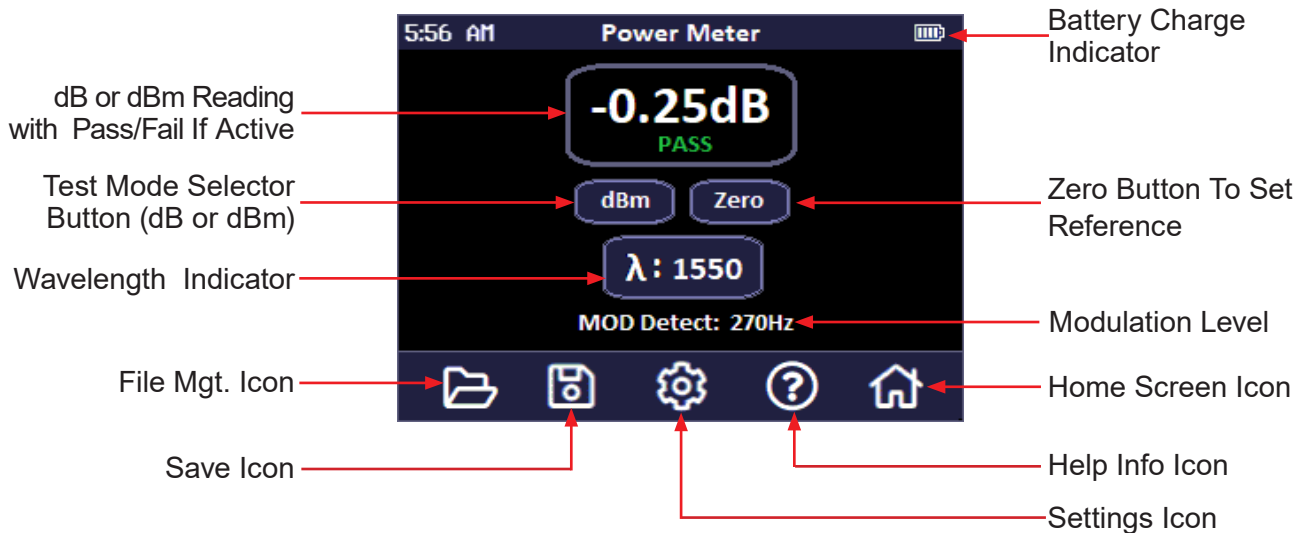
Setup

Follow the steps below for initial setup and periodic adjustments

- From the Home screen or the Power Meter menu screen, select the Settings icon to enter the settings screen.
- Set the date and time for accurate time stamps on saved files.
- Pass/Fail range and an on screen indication of pass/fail is set from this screen. Use the check box to turn on a pass or fail indication below the power reading. To set the pass/fail range, long touch the displayed values to cycle to the desired setting.
- When finished, select the Exit icon in the top left of the display.

Section 2 Quick Start Guide

Power Meter Operation Screen



Screen Labels and Buttons

<u>Loss or Power Reading</u>	Indicates the loss (dB) or power (dBm) reading with Pass Fail annunciator if active.
<u>Battery Charge Indicator</u>	Displays battery charge level.
<u>Test Mode Button</u>	Select to switch between loss (dB) or power (dBm) readings.
<u>Zero Set Button</u>	Used to set the reference when conducting loss tests.
<u>Wavelength Indicator</u>	Indicates the wavelength being tested and when selected, will cycle through calibrated wavelengths to set the proper wavelength for testing, if compatible FIS source is not being used to accommodate auto wavelength recognition.
<u>Modulation level</u>	If the source is being modulated, this will indicate the modulation level, 270Hz, 1KHz, 2KHz or CW for constant wave signals.

Menu Icons

<u>File Management Icon</u>	Opens the file management screen to manage and open stored tests and video scope file.
<u>Save Icon</u>	Saves the active PM test
<u>Settings Icon</u>	Opens the settings screen to set real-time clock and set pass/fail range
<u>Help Info</u>	Displays information to access FIS manuals, upgrades and training online.
<u>Home Icon</u>	Select the home icon to return to the home screen.

Section 2 Quick Start Guide

Video Microscope

Video Microscope Icons



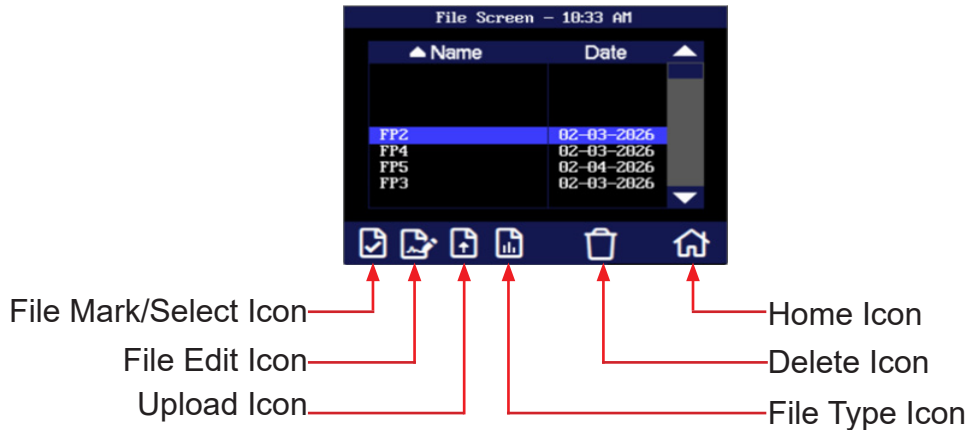
Video Scope Icon Function

<u>Live Icon</u>	Selecting the live icon turns on live or running mode. This is a real time reading of the connector face.
<u>Pause</u>	To freeze an image inspection, select the Pause icon. While in auto of the auto/pass/fail mode, pressing pause will also grade the connector end face and display calculated pass or fail.
<u>Zoom In</u>	Selecting Zoom In increases the image to 250x
<u>Zoom Out</u>	Selecting Zoom Out returns the image to 125X
<u>Save Icon</u>	Selecting the Save Icon opens the file save/naming screen with QWERTY keyboard
<u>Pass/Fail</u>	Selecting the set pass/fail icon while in the live mode will toggle through fail, pass and auto grading markers (Auto will be accomplished by the unit when entering the pause mode.)
<u>Brightness</u>	Selecting the brightness icon will cycle through the brightness levels available.
<u>Grading Rings</u>	Selecting this icon will toggle the grading rings off and on. These pass/fail grading rings are used to assist with manually grading a connector. The rings represent 25um, 120um, 130um and 250um.
<u>Edit Icon</u>	This is used to mark the points of contamination and is accomplished in the paused mode. Available markers will be displayed at the top of the screen. Pick up the marker by using the stylus and touching the contamination sample size that is required. Touch the image where the marker is to be placed. The marker may be fine-tuned with the stylus to cover the contamination point. Once positioned properly, touch the statement "Place marker on image then touch here" to lock marker in place. Repeat this as necessary to mark all the points that need to be indicated for the pass/fail status. At this point the image should be saved as the marks are removed upon returning to live mode.
<u>Home Icon</u>	Select the home icon to return to the home screen.

Section 2 Quick Start Guide

File Management

File Management Screen/Icons



Icon Function/Use

Mark/Select Selecting this will mark the highlighted file for uploading or deleting.

File Edit When selected the highlighted file will open in with the QWERTY keyboard for editing.

Upload Icon Selecting this will upload Marked and highlighted files to the computer through FIS Connect Software.

File Type This is a toggle and will display power meter or video microscope files.

Note that the image changes from a bar graph or scope target inset.

Delete Icon This is a non-recoverable delete key, once selected the marked and highlighted files are erased immediately.

Home Icon Select the home icon to return to the home screen

Section 3 Introduction

The FIS OV350 PM-VIS Power Meter and Video Inspection Scope is a single unit that also contains a visible light source. The power meter is calibrated at 850, 1300, 1310, 1490, 1550 and 1625 nm, with a +5 to -77dB dynamic range. It measures in dB and dBm with a 0.01dB resolution. It is supplied with 2.5mm and 1.25mm PM adapters. The user can set pass/fail attenuation thresholds, and will display a green “PASS” or red “FAIL” under the loss (dB) reading. The video inspection scope supports the FIS VIS300 video inspection probe. The VIS also has an auto pass/fail feature for easy grading of the fiber connectors. This unit can store up to 1,000 PM or VIS test results which can then be transferred via the provided USB cable to the PC reporting software which is available for free download from the FIS website. The unit includes a visible light source that is presented in CW or modulated modes via a 2.5mm universal port. (Please contact your FIS sales representative for a 1.25mm adapter if required.)

FIS now offers a bench top version of a video scope that supports the VIS300 video probe features. Please contact your FIS sales representative for more information.

Section 4 Preparation For Use

4.1 Inspection

Before shipment, this instrument was inspected and found to be in perfect working order and free of defects.

The shipping carton contains the following:

1. OV350 PM-VIS
2. 2.5mm and 1.25mm power meter adapters
3. VIS300 video inspection probe
4. 2.5mm and 1.25mm video scope adapter tips
5. USB 5V, 3.4A chargers
6. USB C cable
7. Quick reference Guide

4.2 Identification and Configuration

Each instrument's Model/Part Number, Serial Number and Date of Manufacture are indicated on a label located on the back of the unit. The instrument's history is filed at the factory by model/part number and serial number.

4.3 Power Requirements

The OV350-PM-VIS power merer with video inspection scope is equipped with a 8000mAh Li-Poly battery. It is also supplied with a 100-240V USB power adapter with 5VDC, 3.4A output. A fully charged Li-Poly battery will typically enable approximately 10 hrs. of use and require approximately 4 hours of recharging.

Warning

To Prevent Fire or Shock Hazard:

- Batteries are not field replaceable, equipment must be returned to the factory for battery replacement
- Do not use the charger without the batteries installed
- Do not expose the battery charger to rain or excessive moisture
- Do not use the AC adapter when there are signs of damage to the enclosure or cord
- Ensure that you are using the correct charger for the local line voltage

Failure to follow these caution statements may void the warranty of this equipment.

Section 5 Physical Description

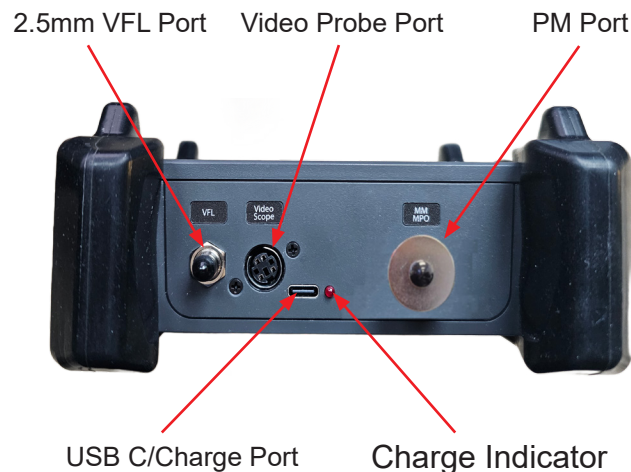
The OV350-PM-VIS is packaged in a rugged housing which is further protected with a rubberized boot. Although the front panel is weather resistant, care must be taken to avoid liquids and contaminants around the fragile optical and electrical connectors, and the glass display. Use a mild cleaning agent and damp soft cloth to clean the panels and the outside case. See the maintenance section for notes to clean the optical connector. NEVER open the instrument for cleaning. Return to the factory for servicing if necessary.

Front Panel OV350 PM and LS



Top Plates

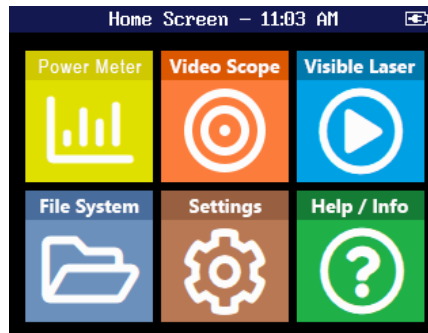
OV350 PM



Section 6 User Interface

6.1 Home Screen

OV350 PM-VIS



Home Page Icons



On the power meter, select the PM Icon to enter the power meter module.



Select this video scope icon to enter the video scope module.



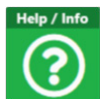
The visible laser can be operated directly from the home screen, simply touch the Visible Laser icon and toggle through CW, modulated and off.



File management icon opens full file management module, vs. the simple file save screens available from the video scope modules.



Settings icon opens the settings page.

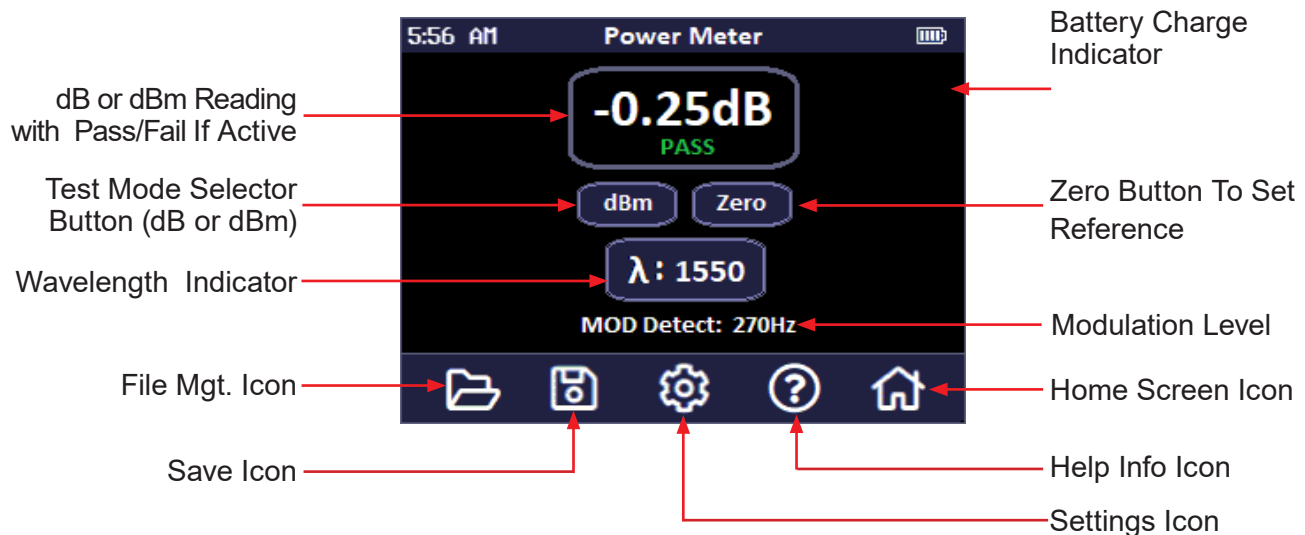


The Help icon offers the user a link to Fiber Instrument Sales manuals and training online.

Section 6 User Interface

6.2 Power Meter Screen

Power Meter Screen



Screen Labels and Buttons

<u>Loss or Power Reading</u>	Indicates the loss (dB) or power (dBm) reading with Pass Fail annunciator if active.
<u>Battery Charge Indicator</u>	Displays battery charge level.
<u>Test Mode Button</u>	Select to switch between loss (dB) or power (dBm) readings.
<u>Zero Set Button</u>	Used to set the a reference when conducting loss tests.
<u>Wavelength Indicator</u>	Indicates the wavelength being tested
<u>Modulation Level</u>	If the source is being modulated, this will indicate the modulation level, 270Hz, 1KHz, 2KHz or CW for constant wave signals.

Menu Icons

	File Mgt.	Opens file mgt. screen to manage and open, stored tests, and video scope files
	Save	Saves the active PM test
	Settings	Opens the settings screen to set real-time clock and set pass/fail range
	Help	Displays information to access FIS manuals, upgrades and training online
	Home	Select the home icon to return to the home screen

Section 7 Power Meter Operation

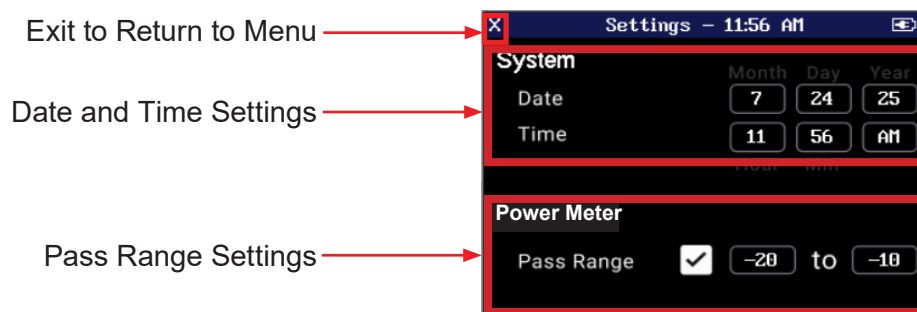
7.1 Start-up

Press and hold the power button for one second to start the OV350-PM-VIS power meter and light source.

Note: Make sure to always practice proper cleaning procedures on all connectors and equipment while using the power meter to ensure accurate test measurements are achieved.

7.2 Settings Screens

Select the Settings icon to open the settings screen.



Set Date and Time

To ensure proper date and time stamps are saved on files, set date and time to local time zone.

To set the date and time, long hold the date and time fields to scroll through available numbers until the proper information is displayed.

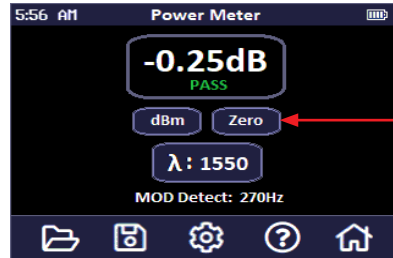
Set Power Meter Pass/Fail Range

To set the MPO and ORL pass ranges long press the available limits to cycle to the desired passing criteria.

For a quick indication of passed or failed tests, a green "PASS" or red "FAIL" may be displayed below the loss/power indication by checking the box next to the pass range selection buttons.

Section 7 Power Meter Operation

7.3 Zero The Reference Cable/s



Zero Button To Set
Reference

It is suggested that test or reference cables be used between the fiber under test and the OV350 Power Meter. This reference fiber should be approximately one meter in length and have minimal loss.

When using the power meter to conduct loss/relative (dB) test, there are two basic methods; single fiber or two fiber. With a single fiber test, one cable is used to zero reference and remains connected to the light source at all times to maintain an accurate reference. The fiber under test is placed between the power meter and the reference cable. With two fiber tests, a fiber is attached to the light source and another to the power meter. These cables are connected together to conduct the zero reference. Both cables remain connected to their assigned equipment and the fiber under test is placed between the two reference cables for testing.

Whether conducting single or two fiber tests, to zero/reference the test cable/s out from the reading, the PM and LS must be attached with just the reference cable/s and the light source needs to be warmed and stable. The PM needs to be in loss (dB), which is indicated by the dB reading on the test screen. It is also evident by the fact that the dB/dBm button displays as dBm, meaning that button may be used to change over to absolute (dBm) readings. Note that there is no pass/fail indicator while in dBm mode.

Touch the Zero button on the power meter. The dB reading should now indicate ~zero dB. This may fluctuate slightly, depending on the stability of the light source.

Note: Once a fiber is removed from the light source, a new zero reference must be conducted to reset the zero reference accuracy.

7.4 Conducting a Loss (dB) Measurement

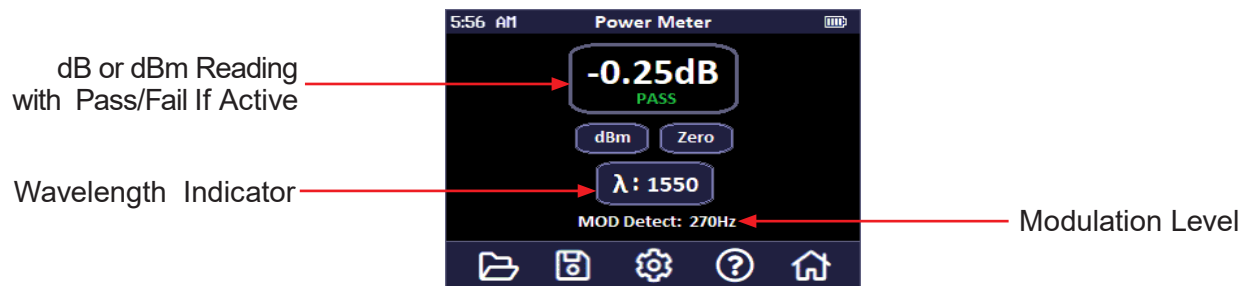
Once zeroing is complete, loss (dB) testing may be accomplished.

Note: Fiber-optic connectors are easily contaminated or damaged. Even though the connection on the OV350 PM is not a physical contact type of connection, dirty or damaged connectors may impair the instruments capabilities. Prior to making any connection to the unit, ensure that all proper cleaning procedures have been followed.

Section 7 Power Meter Operation

Connecting Cables

After ensuring proper cleanliness practices have been accomplished, and a proper warming period has been allowed on the light source being used, place the fiber under test between the power meter and the reference cable for single fiber test or between the two reference cables for a two fiber test. The reading on the display will now be the loss/relative (dB) measurement.



dB Measurements

While testing for loss (dB), a green “PASS” or red “FAIL” will be display under the reading, if the loss threshold indicator is turned on in the settings screen. The wavelength of the source will be automatically displayed as above with a compatible FIS light source when it is first energized. If it is not recognized, that button may be used to cycle to the proper wavelength to ensure the correct wavelength is being tested..

Save dB Measurements

To save loss (dB) measurements, with the measurement on the screen, touch the Save icon. This will open the file naming screen and allow the user to name the file appropriately.

7.5 Conducting a Power (dBm) Measurement

If only a power reading is desired, if testing loss (dB), touch the dBm button to display the dBm power reading. If reference cable/s were being used, they will no longer be referenced out. There is no pass/fail threshold or indication while in dBm mode. The test mode button will display dB while in dBm mode, to return to dB, simply touch the Test Mode button again.

While in Power (dBm) mode, the auto wavelength and modulation level of the source will be displayed.

Measurements are saved in the same manner as dB readings.

Section 8 Video Scope Operation

Select Video Scope icon from the home screen.

8.1 Video Scope Screen

Video Scope Screen



Video Scope Icon Function

	Live	Selecting the live icon turns on live or running mode
	Pause	Selecting pause freezes an image in position and focus level for inspection, also runs auto pass/fail when set to auto.
	Zoom In	Toggles image to 250x
	Zoom Out	Toggles image to 125x
	File Save	Selecting this icon opens file save to the QWERTY keyboard
	Set Pass/Fail	Sets pass, fail and auto grading markers
	Brightness	Selecting the brightness icon will cycle through the brightness levels available
	Grading Rings	Selecting this icon will toggle the grading rings off and on
	Edit	This is used to mark the points of contamination on image
	Home	Returns to the home screen

Section 8 Video Scope Operation

8.2 Video Probe Operation

To operate the video scope, touch the Scope icon on the Home Screen. If a probe is not connected already, connect the Video Probe to the video probe port on the top of the unit.

Video Probe Tips

There are a number of video probe tips available. To remove a tip from the Probe, grasp the probe tip and unscrew the tip retention nut from the tip. Pull the tip straight up from the probe. To place a tip on the probe, ensure the lens is clean, slide the tip on to the end of the probe and tighten the tip retention nut. Do not overtighten the retention nut.

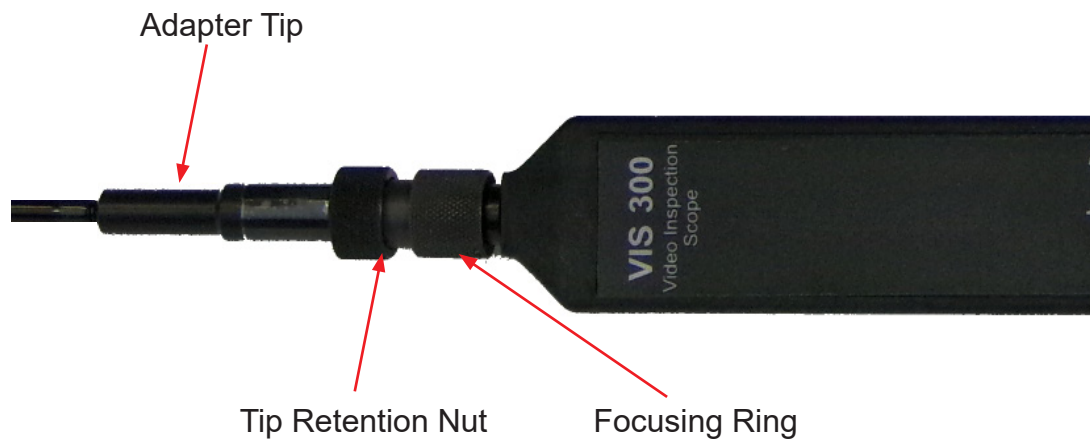


Fig 11.1

Viewing/Focusing a Connector

With the video scope turned on and the video probe plugged into the unit, insert a connector in to the tip or insert the panel adapter tip into the appropriate port. The scope must be in the live scanning ("Running" noted at the top of the display) mode to make focus adjustments. Use the focus ring to get the connector image as sharp as possible. When using panel adapters it is possible to turn the body of the probe while the adapter is inserted into the panel to make focus adjustments.

NOTE:

To auto center the image, touch the center of the connector core image and the connector will move as close as possible to the center of the display.

Section 8 Video Scope Operation

8.3 Video Scope Operation

Live / Pause

The scope starts up in live (Running) mode. To pause or freeze the image, select the Pause icon. Live is a real time viewing of the connector end face. Most features are available in live mode, however editing (marking contamination) is not.

Zoom In - Zoom Out

Select the Zoom In icon to increase the magnification to 250x. Selecting the Zoom-Out icon will return the image to 125x.

File Save

Selecting the File Save Icon opens the file save/naming screen with QWERTY keyboard. Enter the file name as desired, upon starting the unit, the default file name is "Default". This will be the case every time the unit is powered on. Once a file is saved, the default file name is the previous saved name. There is a limit of 15 characters to file names. Once the file name is entered, select the Save (check mark) button. To back out without saving, select the Cancel (X) button

Pass/Fail Icon

Use the pass/fail icon to mark the connector image in live mode (running). Selecting the icon will cycle through fail, pass and auto. If set to auto, this allows the smart grading system to evaluate the connector. To start the auto pass fail process, with the image as close to centered as possible, select the Pause icon. The video scope will attempt to auto center then run the test and display a pass or fail label.

Note: If the connector shows all red or the test fails to complete, maneuver the probe tip to allow for centering of the image and retry the test.

Brightness

Touch the Brightness icon to cycle the brightness levels for best image quality. The brightness could affect the auto analysis.

Grading Rings

Turn on and off the grading rings when in live (running) mode. by selecting the Grading Rings Icon. These are use to indicate the IEC61300-3-35 grading zones. These pass/fail grading rings are used to assist with manually grading a connector. The rings represent 25um, 120um, 130um and 250um. Use Pass/Fail Criteria Tables on the following page to help grade the connector end face. 2, 3, 5 and 10 micron contaminant examples are displayed when the edit icon is active.

Section 8 Video Scope Operation

Edit (marking contamination points)

To mark the points of contamination the unit must be in paused mode. Pick up the contamination marker by using the stylus and touching the contamination sample size that is required. Touch the image to place the marker. The marker may be fine-tuned with the stylus to cover the contamination point on the image to be marked. Once the marker is positioned properly, touch the area just above the image that states “Place marker, touch here to apply” to lock the marker in place. Repeat this as necessary to mark all the points that need to be indicated for the pass/fail status. At this point the image should be saved, the markers will be cleared with the next scan.

8.5 Pass/Fail Criteria Tables

Fiber End Face Criteria Table

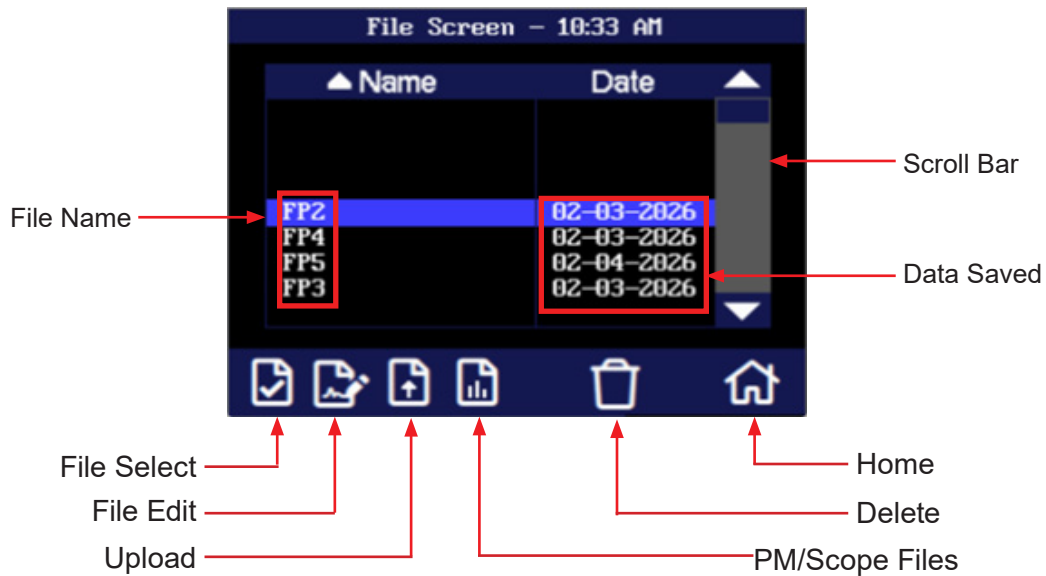
Zone	Description	Diameter	Allowable Scratches (Width)	Allowable Defects (Diameter)
A	Critical Zone	0µm to 25µm	None	None
B	Cladding Zone	25µm to 120µm	No limit $\leq 3\mu\text{m}$ None $> 3\mu\text{m}$	No Limit $< 2\mu\text{m}$ 5 from $2\mu\text{m}$ to $5\mu\text{m}$ None $> 5\mu\text{m}$
C	Adhesive Zone	120µm to 130µm	No limit	No limit
D	Contact Zone	130µm to 250µm	No limit	None $\geq 10 \mu\text{m}$

Section 9 File Management

File Management is accessed through the home screen menu. To open the file management screen, bring up the home screen menu and touch the File System icon.

9.1 File Management Screen

Main File Management Screen



File Management Menu Icons

	File Select	Marks a file for an action/operation
	File Edit	Opens a file name to be edited
	Upload	Uploads marked files to FIS Connect software
	Files Types	Indicates files displayed, Bar Graph icon indicates dB/dBm files. If selected, it will be replaced by the Video Scope Files icon indicating the video scope files are being displayed.
	Delete	Deletes marked files
	Home	Returns to the home screen

Section 9 File Management

File Naming and Editing Screen (QWERTY Keyboard)



9.2 Saving files

To save a file while in the power meter or video scope screen, select the File Save icon and enter the file name (up to 15 characters) then select Save on the QWERTY screen. When powered up, the default file name will be “Default”. After the first file is saved, during that session, the new default will be the last file saved. When the equipment is powered off, the default file name will revert to “Default”. The power meter and video scope are independent and will each store their own file names.

9.3 File Management Operations

File Select

Multiple files may be uploaded (copied) to a computer, or deleted at a time. To mark the files for these operations, highlight a file to be included in the operation and touch the File Select icon. The highlighted filename will now be displayed in yellow and the next file will be in the highlighted position. Continue selecting files by touching the select icon. To skip files simply move down the file list until the next file to be marked is highlighted and touch File Select again. The file select is a toggle and to unmark a file, place it in the highlighted position and touch File Select again and it will be unmarked. Once the files are selected touch the icon for the delete or upload functions.

Note: If files have been marked for batch processing, only the marked files are process not the highlighted file as in single file processing. (The last file in a list may be marked when in the highlighted position) If only one file is to be process, having it in the highlighted position will be sufficient.

Section 9 File Management

File Edit

With a file highlighted, select the File Edit icon and the file will be opened in the QWERTY keyboard screen. Make file name changes as necessary and select Save.

Upload Files

The upload files icon is used to send files to the computer for use with the FIS Connect software suite. One or more files may be uploaded at a time. Use the mark (select) feature to select multiple file or have the file to be uploaded in the highlighted position. With the power meter connected to the computer with the USB cable, and the FIS Connect software running touch the upload icon and the files will transfer to the selected folder on the computer.

View Files

The Bar Graph File icon will be displayed when dB/dBm files are being viewed, to switch to video scope files, select the Bar Graph File icon and the Video Scope Files icon will now be displayed. Double tap on a file name to view it in the appropriate screen.

Delete Files

To delete a single file, with the file name in the highlighted position, touch the delete icon. To delete a group of files, mark all files to be processed and press the delete icon.

Note: Once the delete icon is selected, files are immediately deleted and they can not be recalled.

Exit

Select the Home icon to return to the home screen.

10.1 VFL Safety



Caution

This Visual Fault Locator is classified as a Class II laser system and must be used with all commensurate safety precautions. Never view the light emanating from the fiber directly. Place a white piece of paper at the end of the fiber and look for the presence of a red spot on the paper.

10.2 VFL Description

The Visual Fault Locator emits visible (red) light at the 650 nm wavelength. Its intended function is to allow an operator to identify the exact location of a break, micro bend, or other discontinuity in a fiber optic cable. As the radiation is visible, light emanating from a break or micro bend enables the user to locate the exact position of a fault even at very short distances that would not be detectable by conventional means such as an Optical Time Domain Reflectometer, (OTDR). It is also useful for identifying a particular fiber in a cable by exciting the fiber to be located with visible radiation.

Fiber-optic connectors are easily contaminated or damaged. The adapter on the VIS is a physical contact type of connection and dirty or damaged connectors may impair the instruments capabilities at minimum and at worst result in the need to return this equipment to the factory for expensive repairs. Prior to making any connection to the unit, ensure that all proper cleaning procedures have been followed.

10.3 VFL Operation

The Visual Fault Locator is accessed from the Home screen.

The fiber to be tested is connected to the VFL port by means of a standard 2.5 mm fiber optic connector. On the PM, the source may be used in one of its two modes, modulated or continuous. In the modulated mode the laser is turned on and off at a 2 Hz rate. This mode is helpful in permitting the user to identify the source radiation in the presence of high levels of ambient light. It also aids in conserving battery life.

The usable range for fault location depends on many factors, the type of fiber, the type of cable, the overall loss. To activate the VFL, tap the VFL icon to cycle through the available states of off, continuous and modulated. An active laser symbol is displayed next to the battery indicator, steady illumination for CW mode and flashing indicator for modulated mode.

11.1 Battery Replacement

The battery of the OV350-PM-VIS is not field replaceable please call the factory for an RMA to replace the battery.

Warning

To Prevent Fire or Shock Hazard:

- Batteries are not field replaceable, equipment must be returned to the factory for battery replacement
- Do not use the charger without the batteries installed
- Do not expose the battery charger to rain or excessive moisture
- Do not use the AC adapter when there are signs of damage to the enclosure or cord
- Ensure that you are using the correct charger for the local line voltage

11.2 Calibration and Verification

Periodic verification of the OV350-PM-VIS is recommended to ensure that your instrument remains within specification. Although not imperative, we recommend a calibration and verification once a year to make certain the instrument is functioning properly and performing to its rated specifications. Consult the factory for service.

Section 12 Specifications

SPECIFICATIONS	
Power Meter	
Detector Type	InGaAs)
Connector Type	2.5mm Interchangeable
Dynamic Range	+5dB to -77dB (CATV- +25to -57dB)
Calibrated Wavelengths	850nm, 300nm, 1310nm, 1490nm, 1550nm and 1625nm
Power Meter Uncertainty	± 0.18 dB under reference conditions, ± 0.25 dB from 0 to -65 dBm, ± 0.35 dB from 0 to +5 dBm and from -65 to -77 dBm
Unit of Measure	dBm, dB
Resolution	0.01dB
Data Transfer	USB Serial Cable (Via USB C)
Visible Fault Locator	
Emitter Type	Laser
Wavelength	650nm $\pm$ 5nm
Laser Safety Class	Class II FDA21 CFR1040.10 & 1040.11 IEC 825-1: 1993)
Connector Type	2.5mm Universa
Output Power	1mW Max.
Unit Specifications	
Power Requirement	USB 5V, 2A
Battery	Li-pol
Battery Life	10hr.
Battery Charge Time	4hr typ.
Dimensions	5.25" H x 6.125" W x 2.5" D (133mm H x 156mm W x 64mm D)
Weight	1.5 lbs (0.7 kg)

Section 13 Warranty and Repair

13.1 Warranty Information

This product, including all mechanical, electrical, and optical parts and assemblies are unconditionally warranted to be free of defects in workmanship and material for a period of two (2) years from the date of delivery.

This warranty does not apply to expendable parts such as batteries or optical panel connectors, nor to any instrument or component which has been subjected to misuse, alteration, or fiber connector damage. It is the customer's responsibility to understand all the instructions and specifications prior to operating this instrument. This warranty does not extend to any loss or damage consequent to the failure of the warranted product.

13.2 Repair Information

If repair is required, simply call the factory for return instructions and a return authorization number (RMA).

Section 14 Trouble Shooting Guide

Symptom	Possible Cause	Solution
LCD dark	Power not on	Press ON/OFF key
	Batteries require recharging	Recharge batteries
LCD white	Power cycled too quickly	Turn off wait 10 seconds – turn on
Instrument locked Up	Unexpected Operational Mode	Turn off (hold ON/OFF button in for 1 second) wait 10 seconds – then depress On/Off to turn the unit on.
Low or no power being displayed	Defective cord or dirty connector	Replace or clean cord
	mismatch in connector Polish	Examine connector ends for damage. Use UPC Connectors ONLY!
USB hookup to PC not functioning properly	USB connection fault between unit and PC	Reset FIS Connect
	PC drivers not set properly	Un-install & re-install FIS Connect software and drivers

Section 15 Version Control

Through a program of continuous improvement, we upgrade the features and performance of the instrument in an on going process. The instrument firmware version is accessible at “turn-in the bottom right-hand corner of the display. The version changes and approximate release dates are as follows.

OV350-PM-VIS

V1.0.0.0 – Original Release

NOTES

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