



OV350-MPO-VFL  
MPO Visual Fault Locator  
Users Guide



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Revision A

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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 Connector Damage

Fiber-optic connectors are easily contaminated or damaged. The connections to the OV350-MPO-VFL 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.

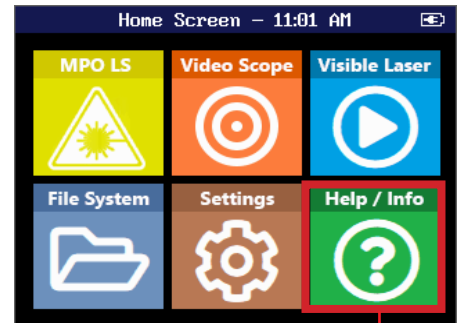
The OV350-MPO-VFL is shipped with a SM/APC Male MPO Connector. Ensure the proper connector is used to interface with the unit. It is suggested a reference patch cord be used to minimize multiple connections and disconnections and to ensure proper testing practices while using the OV350 MPO VFL. Please contact your FIS sales representative to assist with required adapter or cables.

## Section 2 Quick Start Guide

### Power Up

Press the  button to power on the both PM and LS, the home screen will be displayed.

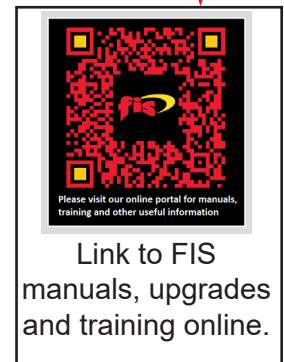
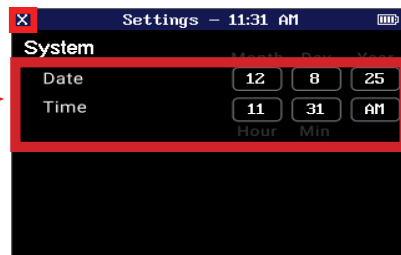
The home screen offers two buttons with direct access to the Visible Light Source, The MPO LS button opens a fully operational version, while repeatedly selecting the Visible Laser button cycles through all channels active in CW mode, all channels active in modulation mode, and lasers off. The video scope module is also available from the home screen for use with the VIS300 video probe. The File System button opens the file management system for saved video scope files. The settings icon opens the settings page to set the real time clock for date and time associated with the video scope files. 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.

Date and Time  
Settings →



### Setup

Follow the steps below for initial setup and periodic adjustments

- From the Home screen, select the Settings icon to enter the settings screen.
- Set the date and time for accurate time stamps on saved files.

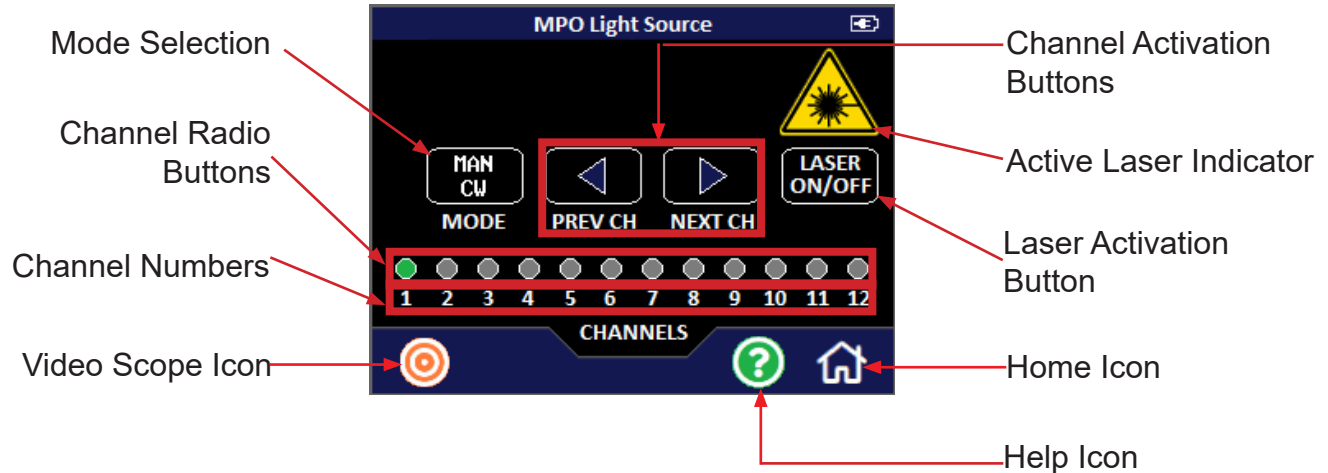
### MPO-VFL Optical Polarity Verifier

The FIS OV350-MPO-VFL also comes equipped with an MPO-VFL Optical Polarity Verifier and an MPO APC to UPC adapter cable, APC end to be connected to the OV350 panel. The OPV can be used for simple testing of an MPO network for VFL throughput and correct polarity connections. For more comprehensive loss and automatic polarity detection consider using the OV350-MPO Test Set.



## Section 2 Quick Start Guide

### MPO LS Operation



### MPO-LS (VFL) Screen Functions

#### Mode Button

This button cycles through;

- Man CW - Used to select the desired channel in CW mode via the Channel Selection buttons or the radio buttons above the channel number.
- Pick - Used to select the desired channels to be active in CW mode via the radio buttons above the channel number.
- Seq - Used to select a sequential modulated activation of all 12 channels.

#### Channel Radio Buttons

May be used to select channels and indicate selected/active channels.

#### Channel Numbers

Indicated channels 1-12.

#### Channel Activation Buttons

Used to move up or down through the channels.

#### Active Laser Indicator

A yellow laser indicator indicates the laser/s are active.

#### Laser Activation Button

Activates and deactivates the laser/s

#### Video Scope Icon

Used to open the Video Scope feature

#### Help Icon

Used to retrieve QR code for FIS manuals, upgrades and training online.

#### Home Icon

Returns the user to the Home Screen

## Section 2 Quick Start Guide

### Video Microscope

#### Video Microscope Icons



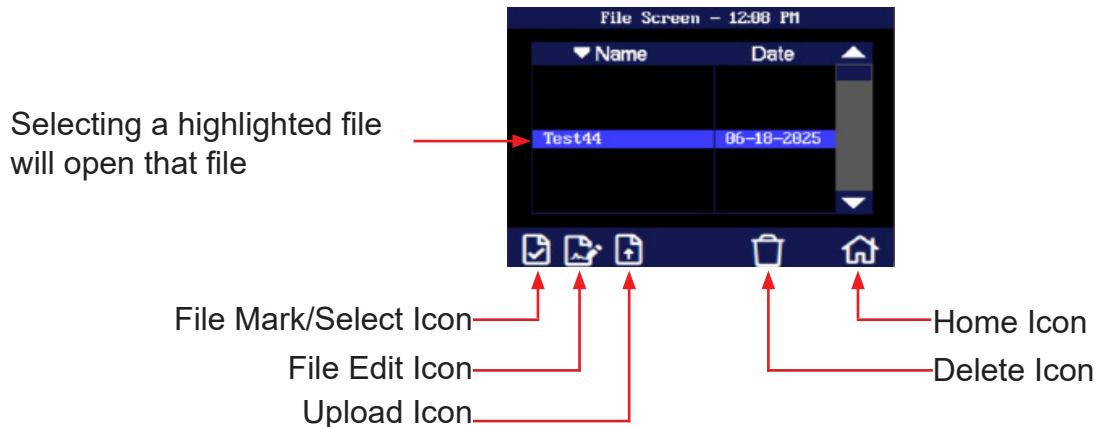
#### Video Scope Icon Function

- Live Icon Selecting the live icon turns on live or running mode. This is a real time reading of the connector face.
- Pause 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.
- Zoom In Selecting Zoom In increases the image to 250x
- Zoom Out Selecting Zoom Out returns the image to 125X
- Save Icon Selecting the Save Icon opens the file save/naming screen with QWERTY keyboard
- Pass/Fail 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.)
- 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. These pass/fail grading rings are used to assist with manually grading a connector. The rings represent 25um, 120um, 130um and 250um.
- Edit Icon 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.
- Home Icon 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.
- 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 350 MPO 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 channel to be located with visible radiation.

The FIS OV350 MPO Visual Fault Locator is supplied with a 12 fiber SM APC male MPO connector. Please contact your FIS sales representative for adapters and cables to facilitate UPC interfaces. This VFL offers the user a variety of operational options when the need for a visible laser arises while inspecting MPO fiber systems. It operates in CW, modulated or sequential modes, or a simple on/off mode with all channels active. The FIS OV350 MPO VFL includes a Video Inspection Scope for use with the VIS300 video inspection probe and an MPO inspection tip. This unit can store video scope images for later use if required.

The FIS OV350-MPO-VFL also comes equipped with an MPO-VFL Optical Polarity Verifier and an MPO APC to UPC adapter cable, APC end to be connected to the OV350 panel. The OPV can be used for simple testing of an MPO network for VFL throughput and correct polarity connections. For more comprehensive loss and automatic polarity detection consider using the OV350-MPO Test Set.



MPO-VFL Optical Polarity Verifier  
F1-OPV

## 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 MPO VFL
2. USB 5V, 3.4A chargers
3. USB C cable
4. Quick Reference Guide
5. MPO-VFL Optical Polarity Verifier
6. MPO APC-F to UPC-F Jumper
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-MPO Lost Test Set 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

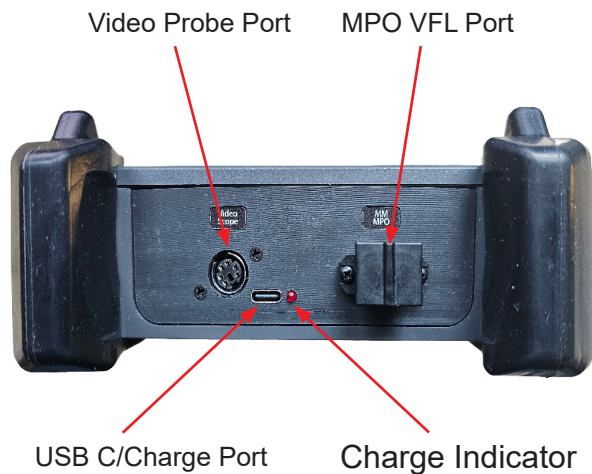
The MPO VFL is packaged in a rugged housing which is further protected with a rubberized boot. Although the front panel is weather resistant, care must be taken to avoid liquids and contaminants around the fragile optical and electrical connectors, and the glass display. Use a mild cleaning agent and 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 MPO-VFL



### Top Plate

#### OV350 VFL



## Section 6 MPO VFL Operation

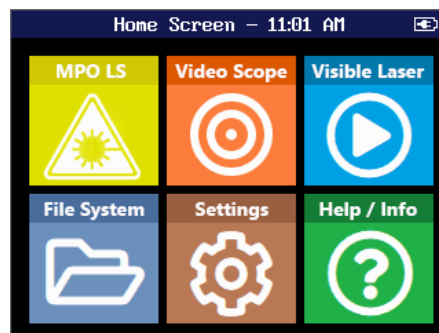
### 6.1 VFL Safety



### 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. If it is desired to see the light spot being produced, place a white piece of paper at the end of the fiber and look for the presence of a red spot on the paper.

### 6.2 Home Screen



#### Home Page Icons



MPO Light Source button opens the MPO VFL operation Screen.



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



Visible Laser button simply activates the VFL, cycling through all channels CW, all channels modulated and off.



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



Settings icon opens the settings page to set the system date and time.

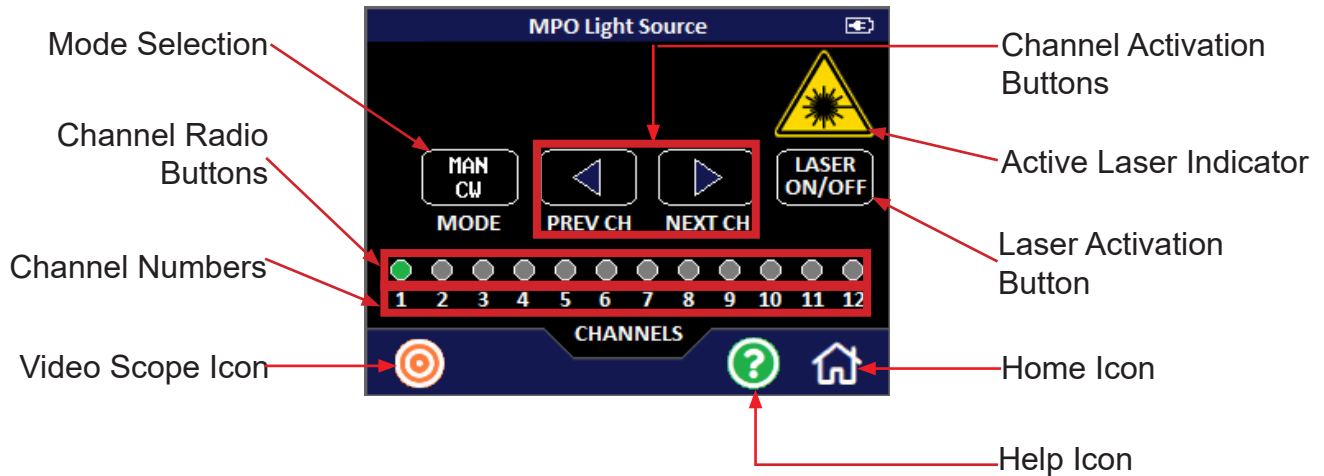


The Help icon offers the user a link to Fiber Instrument Sales manuals and training online.

## Section 11 MPO VFL Operation

### 6.3 MPO LS (VFL) Operation

#### Main VFL Screen/Functions



#### VFL Screen Button/Icon Operation

##### Mode Button

This button cycles through;

- Man CW - Used to select one desired channel in CW mode via the Channel Selection buttons or the radio buttons above the channel number.
- Pick - Used to select any or all desired channels to be active in CW mode via the radio buttons above the channel number.
- Seq - Used to select a sequential modulated activation of all 12 channels.

##### Channel Radio Buttons

May be used to select channels and indicate selected/active channels.

##### Channel Numbers

Indicated channels 1-12.

##### Channel Activation Buttons

Used to move up or down through the channels.

##### Active Laser Indicator

A yellow laser indicator indicates the laser/s are active.

##### Laser Activation Button

Activates and deactivates the laser/s

##### Video Scope Icon

Used to open the Video Scope feature

##### Help Icon

Used to retrieve QR code for FIS manuals, upgrades and training online.

##### Home Icon

Returns the user to the Home Screen

## Section 6 MPO VFL Operation

### VFL Operation

#### Basic VFL Operation

Basic VFL operation is performed from the Home Screen. Repeatedly selecting the Visible Laser button cycles through all channels active in CW mode, all channels active in modulation mode, and lasers off.

#### Advanced VFL Operation

There are three advanced methods of operation for the VFL. These are all controlled from the VFL Operation Screen via the Mode Selection button. The Mode Selection Button which cycles through the following operational modes:

- Man CW - Manual CW is used when a single channel is required to be fired in a CW mode. The Channel Activation buttons or the Channel Radio buttons may be used to cycle through or directly select a channel.
- Pick - Pick Mode is used to select any number of channels to be active at one time. As few as one or all the channels may be selected in this mode. To select the channels, touch the Radio Buttons above each channel. The Channel Activation Buttons will be grayed out and not available.
- Seq - Sequential Mode is used to have a sequential activation of each channel. One channel will be active at a time, at approximately a 1Hz modulation rate. The Channel Activation Buttons will be grayed out and not available.

Once the desired operation method is selected touch the Laser Activation button, (Marked Laser On/Off) to activate the laser/s. When the laser/s are active, the Laser Activity indicator will be illuminated in yellow.

## Section 7 Video Scope Operation

Select Video Scope icon from the home screen.

### 7.1 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 7 Video Scope Operation

### 7.2 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.

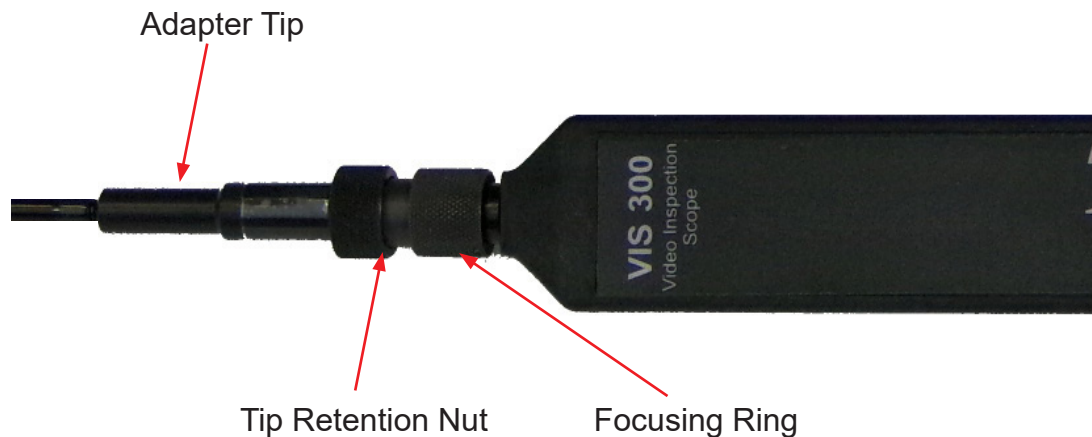


Fig 11.1

#### 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.

## 7.3 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 (Auto to be used on single connectors)

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 10 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.

## 7.4 Pass/Fail Criteria Tables

### Fiber End Face Criteria Table

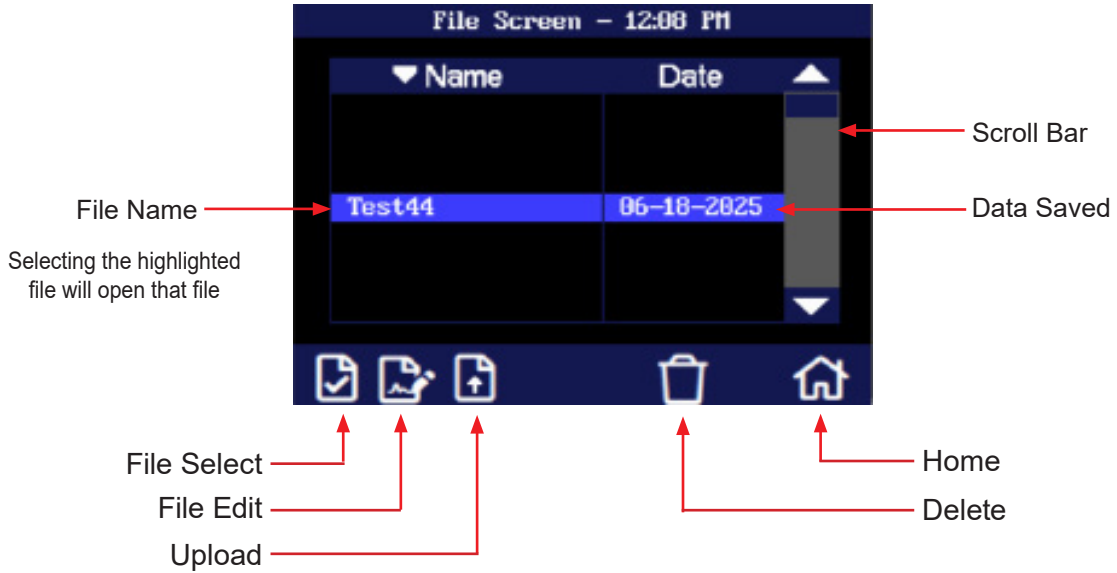
Zone	Description	Diameter	Allowable Scratches (Width)	Allowable Defects (Diameter)
A	Critical Zone	0 $\mu$ m to 25 $\mu$ m	None	None
B	Cladding Zone	25 $\mu$ m to 120 $\mu$ m	No limit $\leq$ 3 $\mu$ m None > 3 $\mu$ m	No Limit < 2 $\mu$ m 5 from 2 $\mu$ m to 5 $\mu$ m None > 5 $\mu$ m
C	Adhesive Zone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

## Section 8 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.

### 8.1 File Management Screen

#### Main File Management Screen

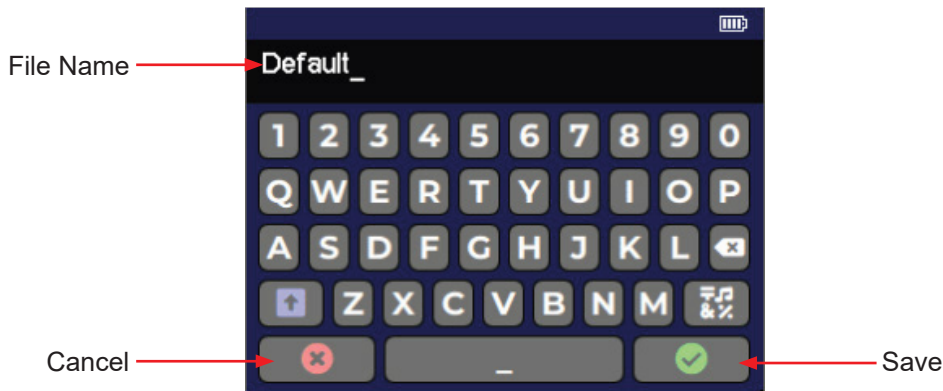


#### File Management Menu Icons

	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
	Delete	Deletes marked files
	Home	Returns to the home screen

## Section 8 File Management

### File Naming and Editing Screen (QWERTY Keyboard)



## 8.2 Saving files

To save a file while in the 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”.

## 8.3 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 8 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 OV350-MPO-VFL 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.

### **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.

## 9.1 Battery Replacement

The battery of the OV350-MPO-VFL 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

## 9.2 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.

## 9.3 Repair Information

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

## Section 10 Specifications

SPECIFICATIONS continued	
<b>MPO Visible Fault Locator</b>	
Emitter Type	Laser
Wavelength	650nm ± 5nm
Laser Safety Class	Class II FDA21 CFR1040.10 & 1040.11 IEC 825-1: 1993)
Output Power	1mW Max.(-1dBm typ.)
Test Port	MPO Male APC (With Pins)
<b>Unit Specifications</b>	
Power Requirement	USB 5V, 2A
Battery	Li-pol
Battery Life	10hr.
Battery Charge Time	3hr 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)
Operating Temperature	-10°C to 40°C
Storage Temperature	-20°C to 60°Cs
Accessories Included	5 Volt, USB Wall Charge with USB cable, 2 stylus carry case and user guide and Optical Polarity Verifier (F1-OPV)

## Section 11    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 appropriate APC or UPC connector
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 12 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-MPO-VFL

V1.0.0.0 – Original Release

# ***NOTES***

# ***NOTES***

## Fiber Instrument Sales Inc.

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