



A RIPLEY® BRAND

# RP 560

## Optical Power Meter User Guide



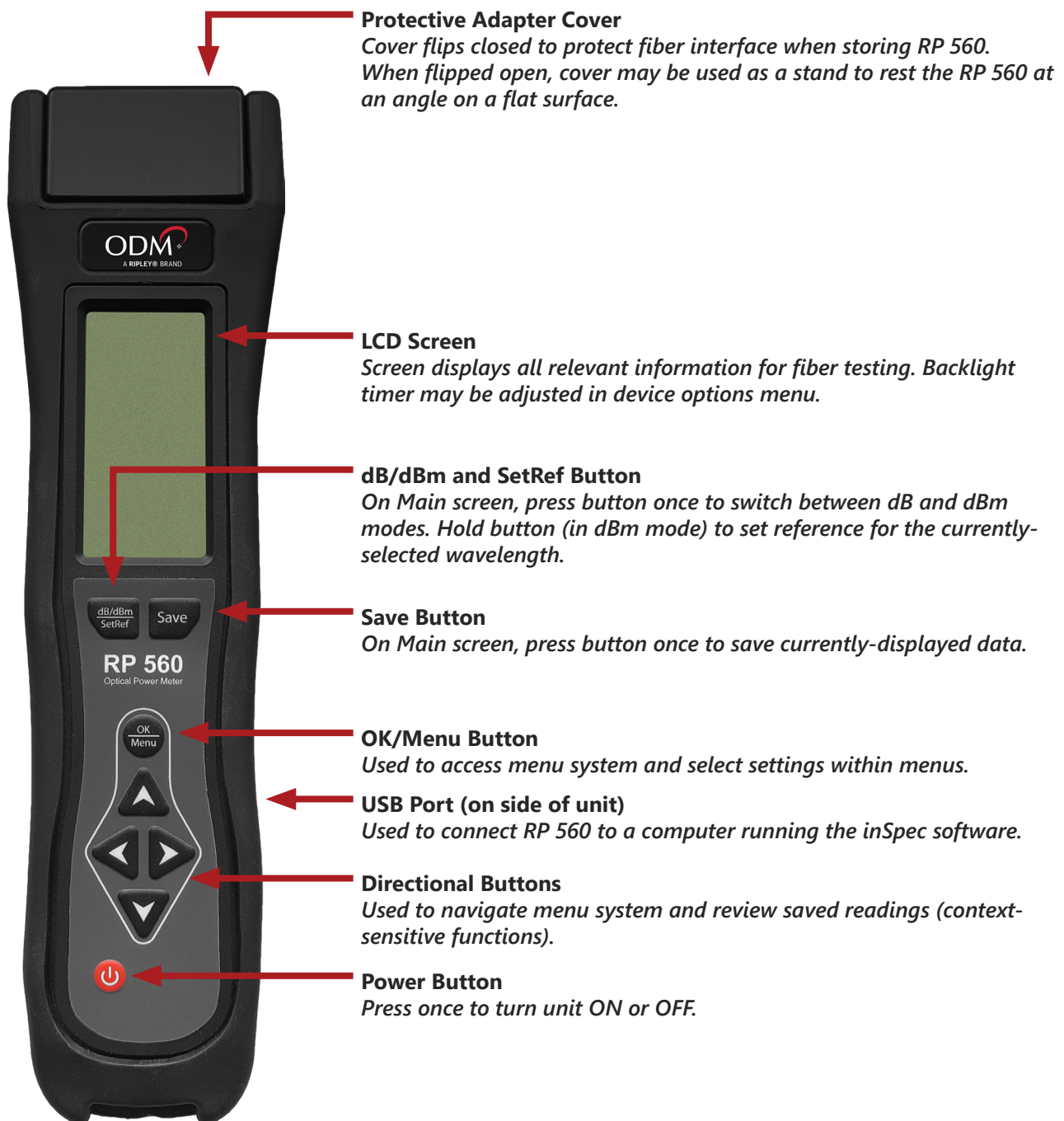
# Introduction

The RP 560 is an optical power meter used for verifying the proper function of fiber optic networks. This document will serve as an overview of the major functions and features of the device.



Read and understand all of the instructions and safety information in this manual before operating this tool.

## Device Overview



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# Important Safety Information



Read and understand all of the instructions and safety information in this manual before operating this tool.



## Electric Shock hazard

Contact with live circuits could result in severe injury or death.



## Laser Hazard

Avoid eye exposure to open fiber connectors and interfaces when working with fiber systems. They may be connected to a live laser source.

Do not look into the output port of a laser source.

Point fiber endfaces toward non-reflective surfaces to prevent reflection of laser.



## Electric Shock Hazard

Pay attention to proper battery polarity. Do not mix battery types or manufacturers.

Do not open the unit.

Use this unit only for its intended purpose as outlined in this document.



## Damage to Item Hazard

Do not leave item in direct sunlight or near heat sources, submerge in water, or subject unit to strong impact.

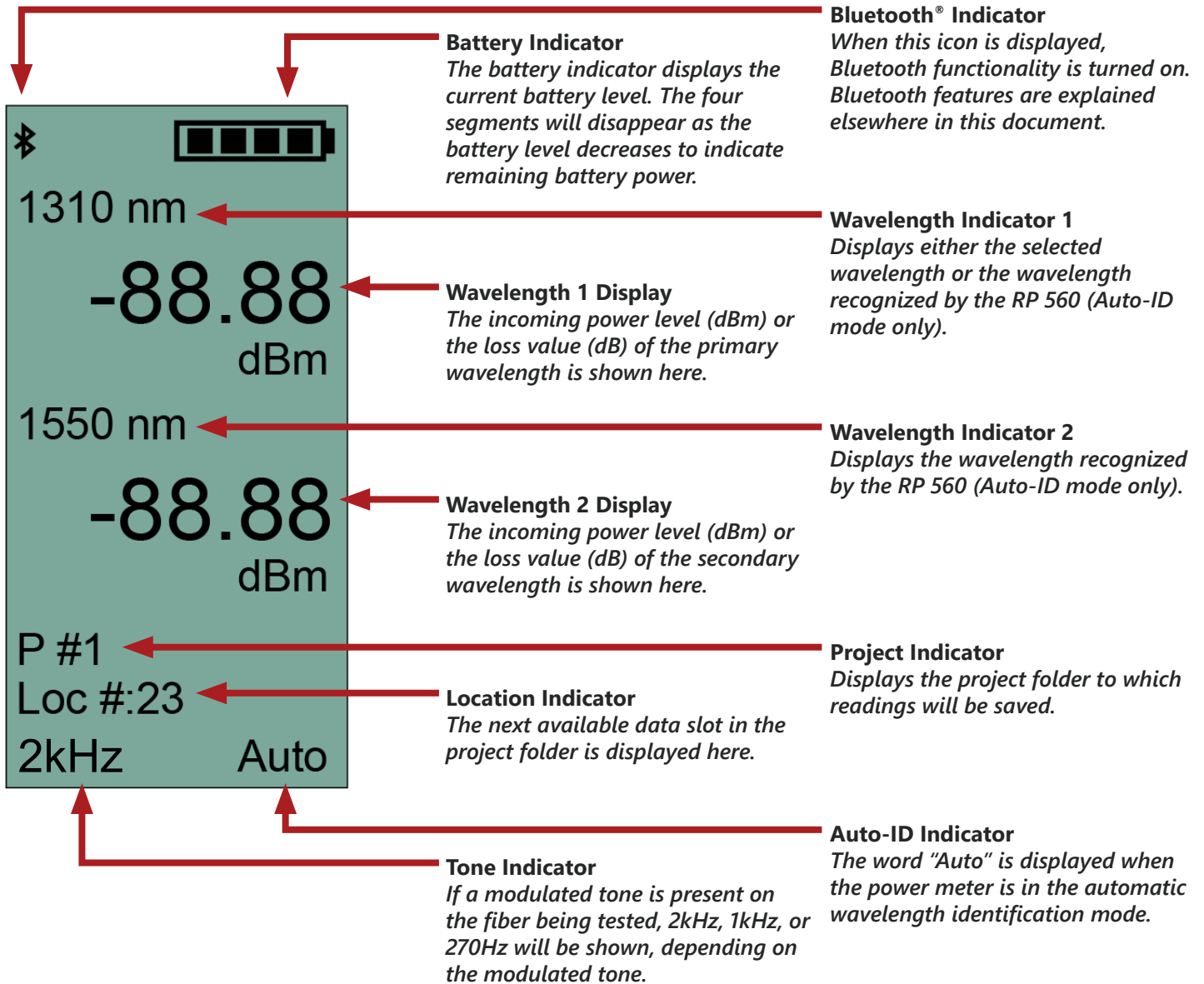
Cover the fiber interface with the flip-cap when not in use.



**Do not throw this product away.**

Contact your local recycling station to dispose of properly.

# Understanding the Main screen



The Main screen of the RP 560 acts as the general user interface for fiber testing.

Up to two wavelengths may be displayed at one time, but it is important to note that the dual wavelength view only functions when the RP 560 is set to Auto-ID mode and it is currently receiving a signal from an ODM DLS 6XX-series light source that is **ALSO** set to Auto-ID mode and transmitting two wavelengths.

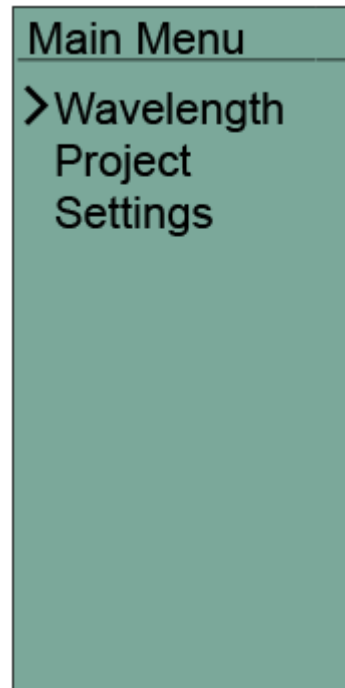
The Auto-ID mode allows users to automatically switch to the correct wavelength being transmitted on the fiber. Novice users may find this feature helpful if they do not understand the difference between wavelengths.

Similarly, the Auto-ID mode allows two wavelengths to be tested at once. When the compatible light source transmits both wavelengths, the RP 560 will recognize the output power of both wavelengths individually and provide a dBm power level or dB loss value for each wavelength.

In all other measurement modes, only one wavelength/measurement will be displayed.

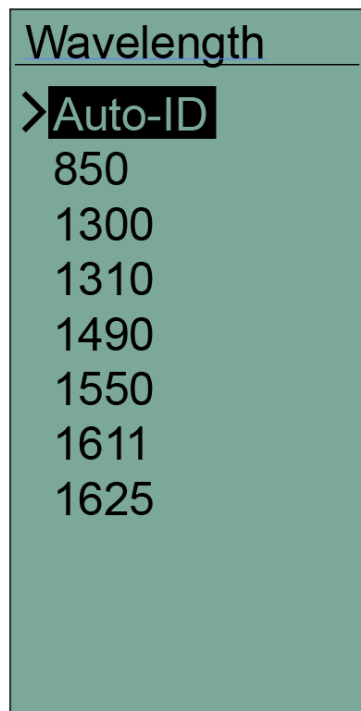
# Wavelengths

Press the OK/Menu button to access the Main Menu



Use the Up/Down arrow buttons to move the cursor to the option you would like to explore. Press the Left arrow button to go back to the Main screen. Press the OK/Menu button or the Right arrow button to select an option.

Press the OK or Right arrow button to select the Wavelength menu.



The Wavelength menu shows all measurable wavelengths.

The currently-selected option is highlighted. The cursor may be moved up and down the list with the Up/Down arrow buttons.

Press the OK button or the Right arrow button to select the wavelength that the cursor indicates.

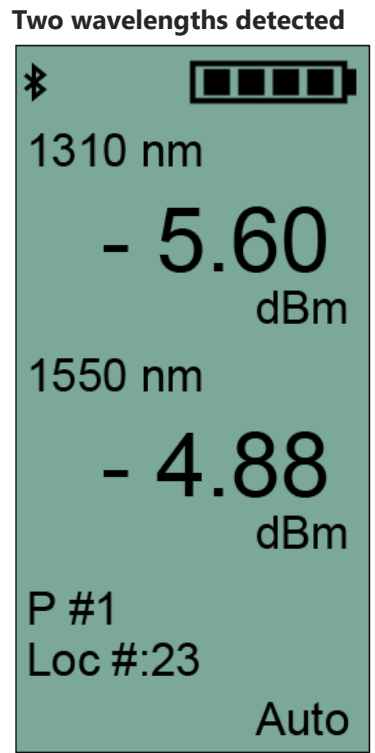
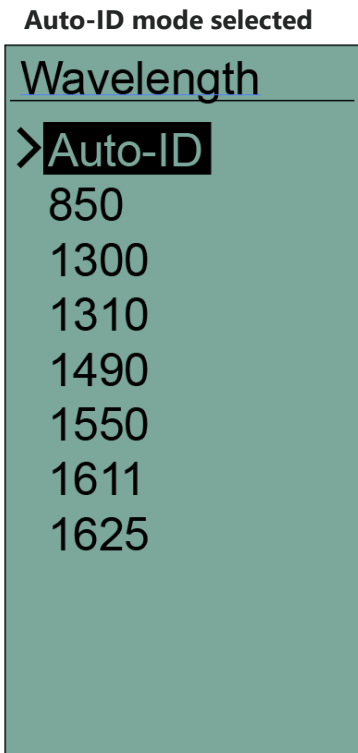
Press the Left arrow button to return to the Main Menu, and once again to return to the Main device screen.

The Main screen of the RP 560 will adjust based on the wavelength mode selected. See below for examples of different states the Main screen may display.

**Selection on Wavelength Menu**

**Main screen (no light detected)**

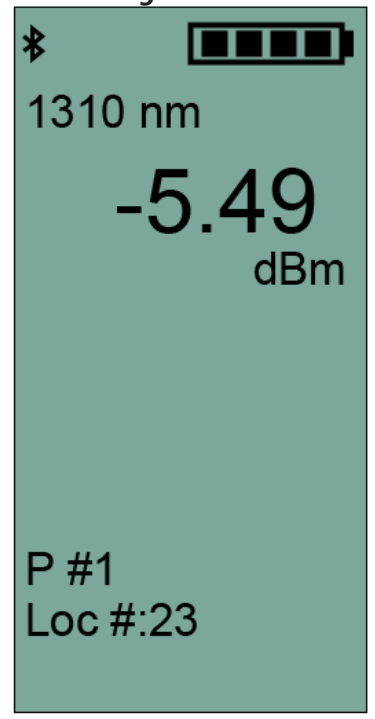
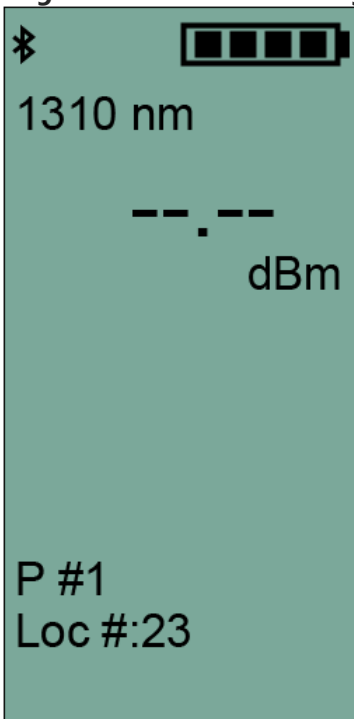
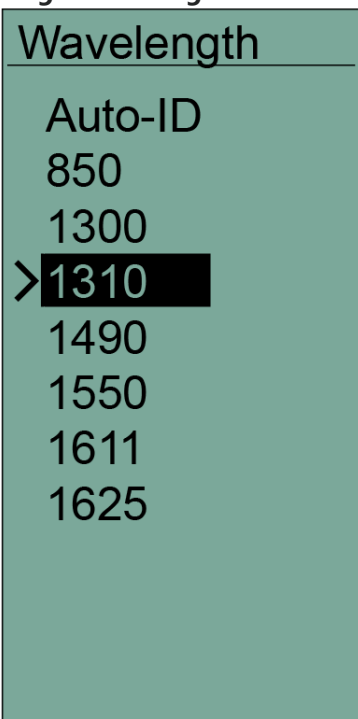
**Main screen (light detected)**



**Single wavelength selected**

**No light detected for wavelength**

**Laser signal detected**



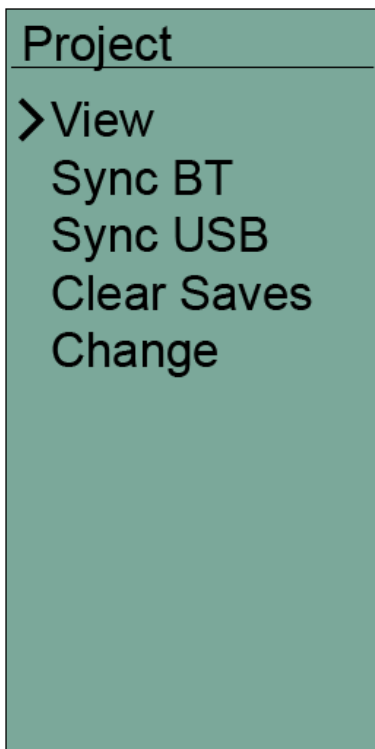
# Projects

Press the OK/Menu button to access the Main menu.



Use the Up/Down arrow buttons to move the cursor to the option you would like to explore. Press the Left arrow button to go back to the Main screen. Press the OK/Menu button or the Right arrow button to select an option.

Press the OK or Right arrow button to select the Project menu.



The Project menu allows you to view and edit all readings saved to the various project folders on the RP 560.

The cursor may be moved up and down the list with the Up/Down arrow buttons.

Press the OK button or the Right arrow button to select the option that the cursor indicates.

Press the Left arrow button to return to the Main Menu, and once again to return to the Main device screen.

The "View" option allows you to view and delete readings in the current project folder.

"Sync BT" and "Sync USB" will transfer all readings in the project folder to the inSpec software (Android™, Apple® iOS, Windows®).

"Clear Saves" deletes ALL readings in the current folder.

"Change" allows you to select a different project folder for testing and/or editing.



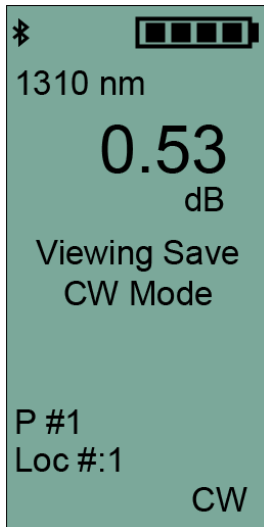
Select "View" to see all saved readings in the current folder.

Project	Readings
>View	>1 0.53
Sync BT	2 1.24
Sync USB	3 0.89
Clear Saves	4 6.20
Change	5 0.57

The readings will be displayed in numerical order. The numbers in the left column are automatically assigned as the Save button is pressed on the Main screen of the RP 560. In the example at left, 5 readings have been saved.

Use the Up/Down arrow buttons to navigate through the list. Over 500 readings may be saved in each project folder.

Press the OK/Menu button or the Right arrow button to see a detailed view of the currently-selected reading.



In the detailed view, all information relevant to the reading is displayed onscreen.

The wavelength, measurement, measurement mode (dB/dBm), project folder, save location, and wavelength mode (CW or Auto) are all shown.

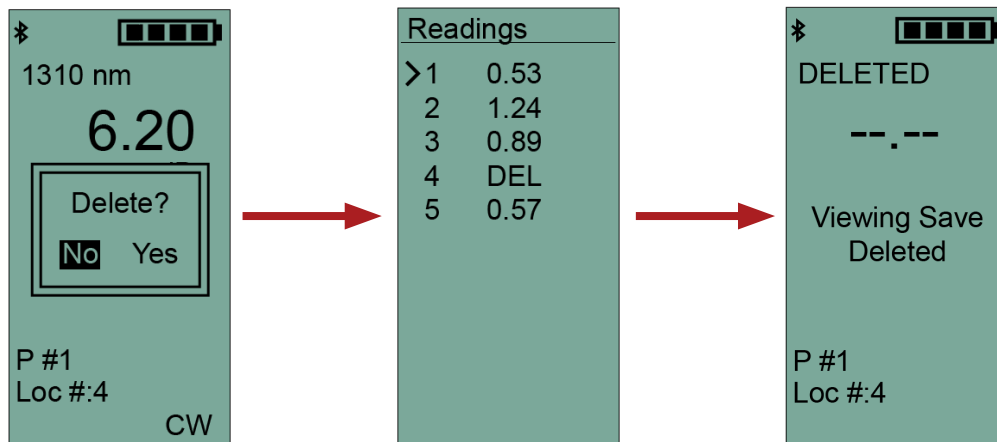
Use the Up/Down arrow buttons to cycle through the saved readings.

Use the Left arrow button to return to the list view.

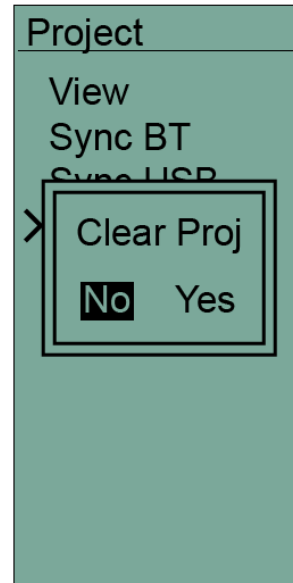
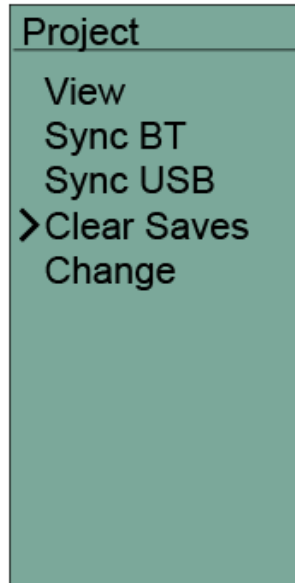
Press the OK/Menu or Right arrow button when viewing a saved reading to delete the reading. A confirmation dialog will pop up to ensure readings are not deleted accidentally.

Use the arrow buttons to select Yes or No. The reading will be deleted if Yes is selected using the OK/Menu button.

Deleted readings will be indicated in the list and in the detailed view.

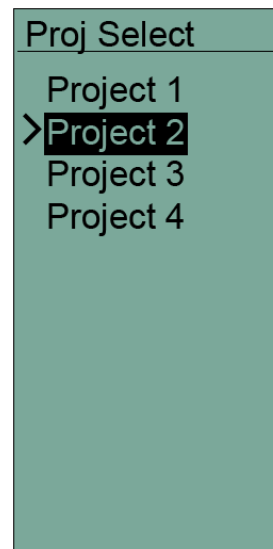
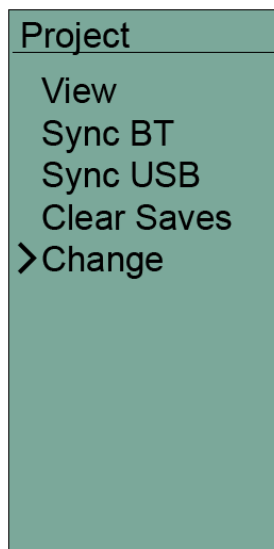


Move the cursor to the "Clear Saves" option. Press the OK/Menu button or the Right arrow button to bring up the confirmation dialog. Selecting "Yes" will delete all readings in the project folder.



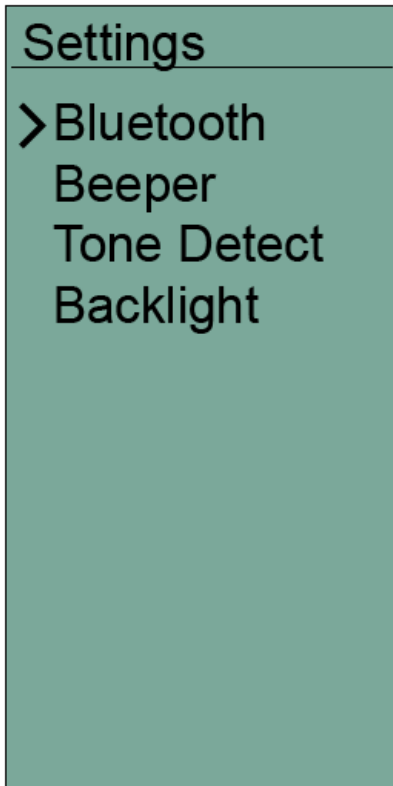
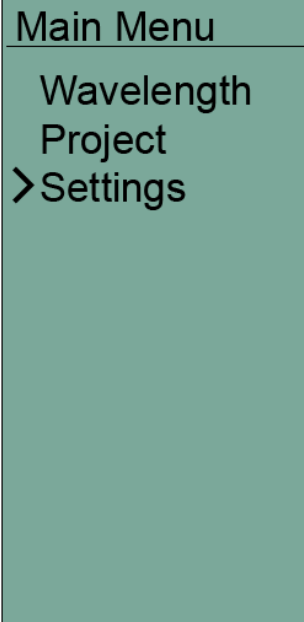
Move the cursor to the "Change" option. Press the OK/Menu button or the Right arrow button to bring up the Project Selection menu. Select a project from the list using the OK/Menu or Right arrow button to change the folder where readings are saved.

The selected project will be highlighted.



# Settings

Press the OK/Menu button to access the Main menu. Then select Settings.



The Settings menu allows you to change several user settings on the RP 560.

The cursor may be moved up and down the list with the Up/Down arrow buttons.

Press the OK button or the Right arrow button to select the option that the cursor indicates.

Press the Left arrow button to return to the Main Menu, and once again to return to the Main device screen.

The "Bluetooth" option allows you to turn Bluetooth functionality ON or OFF. Factory default setting is OFF.

"Beeper" turns the audible alert ON and OFF. Factory default setting is ON.

"Tone Detect" turns the detector for 2kHz, 1kHz, and 270Hz ON or OFF. When set to OFF, the RP 560 will not indicate if a modulated signal is received. Factory default setting is ON.

"Backlight" allows you to set the timeout for the screen backlight. Options include OFF (never turns on), 5 seconds, 15 seconds, and 30 seconds. The selected option will be highlighted. Factory default setting is 15 seconds.

# Integration with inSpec Software

Plug the RP 560 into a Windows PC running the new inSpec software to offload saved data and create reports.

**Data Display**  
*Readings from the RP 560 are displayed in this area. Deleted readings do not appear.*

**OPM Display**  
*All test data from the RP 560 is displayed LIVE in this area. One or two wavelengths may be shown.*

**Editing Controls**  
*These buttons allow saving and editing of the data in this window.*

ID	Reading	dB/dBm	λ	Pass/Fail
1-AB	-1.49		1550	
2-AB	-0.68		1550	
3-AB	-0.42		1550	
4-AB	-0.42		1550	
5-AB	-1.69		1550	
6-AB	6.32		1550	

The RP 560 may be used in either the LIVE mode (saving readings as you go) or in the SYNC mode (syncing all saved readings).

To sync readings saved on the RP 560 into the inSpec software, navigate to the Menu>Projects and select Sync USB on the RP 560 unit.

Incoming RP-560 Readings:

ID	Reading	λ	dB/dBm
1-AB	-1.49	1550	dB
2-AB	-0.68	1550	dB
3-AB	-0.42	1550	dB
4-AB	-0.42	1550	dB
5-AB	-1.69	1550	dB
6-AB	6.32	1550	dB

Cancel Import

The dialog box shown here will appear in the inSpec window on your computer. By default, all readings will be imported. To import only selected readings, hold CTRL on the keyboard and click the readings to be imported: they will be highlighted. Users can also hold the Shift key and click the first and last reading in a range to select the entire range. Click Import when ready to sync readings into inSpec.

ID	Reading	dB/dBm	$\lambda$	Pass/Fail
1-AB	-1.49	dB	1550	FAIL
2-AB	-0.68	dB	1550	FAIL
3-AB	-0.42	dB	1550	FAIL
4-AB	-0.42	dB	1550	FAIL
5-AB	-1.69	dB	1550	FAIL
6-AB	6.32	dB	1550	FAIL

The left side of the window displays the readings from the RP 560 after they have been synced into the software. Any readings that were Deleted from the RP 560 will be omitted from the synced data.

If the software is being used to save data during the fiber test, the buttons onscreen can be used to perform the tests. Note that the live information from the RP 560 Main screen is displayed on the right side of the window.

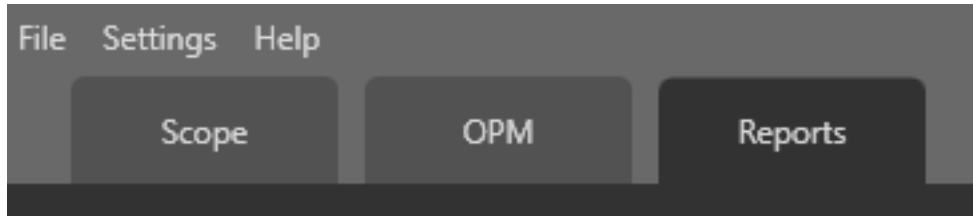
**Wavelength**  
Click here to change the measured wavelength. Changes will be mirrored on the RP 560.

**dB/dBm**  
Click here to switch between dB and dBm measurement modes. Click-and-hold for 2 seconds to set reference when in dBm mode (or click Set Ref button below). Changes will be mirrored on the RP 560.

**Delete**  
Click to delete selected reading(s). They cannot be recovered. This does not affect readings saved to the RP 560 internal memory.

**Save**  
Click to save the current reading. The reading will appear in the data window on the left side of the screen.

The saved data that is synced into the software or saved live can be edited for final reporting in the Reports tab.



The screenshot shows a window titled 'OPM Readings' containing a table with the following data:

ID	Reading	dB/dBm	$\lambda$	Pass/Fail
1-AB	-1.49	dB	1550	FAIL
2-AB	-0.68	dB	1550	FAIL
3-AB	-0.42	dB	1550	FAIL
4-AB	-0.42	dB	1550	FAIL
5-AB	-1.69	dB	1550	FAIL
6-AB	6.32	dB	1550	FAIL

Below the table are three buttons: 'Edit Selected', 'Delete Selected', and 'Make OPM Report'.



**Edit**  
*Edit multiple readings.*

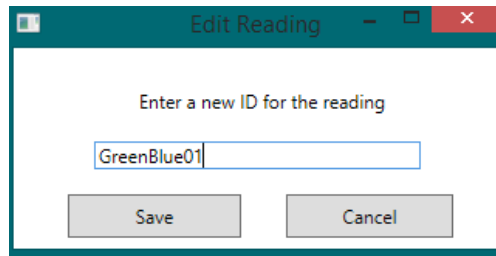


**Delete**  
*Delete selected reading(s).*



**Make Report**  
*Creates report with all data and report information included.*

Double-click on any one reading to edit the "ID" column for that reading. Or select the reading and click "Edit Selected".



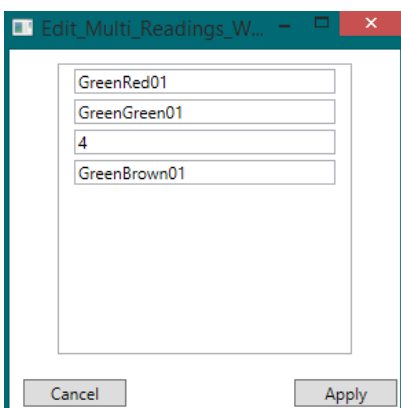
The ID column changes are shown immediately.

ID	Reading	dB/dBm	λ	Pass/Fail
GreenBlue01	- 0.03	dB	1310	N/A
2	50.26	dB	1310	N/A
3	1.99	dB	1310	N/A
4	5.87	dB	1310	N/A
5	6.15	dB	1310	N/A

Use the CTRL key on the computer keyboard and click multiple readings to select multiple readings for editing. To select a range of readings, click the first reading in the range, hold the Shift key on the computer keyboard, and click the last reading in the range.

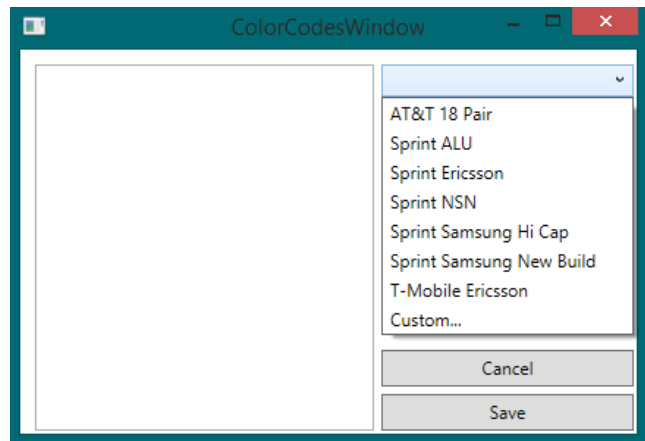
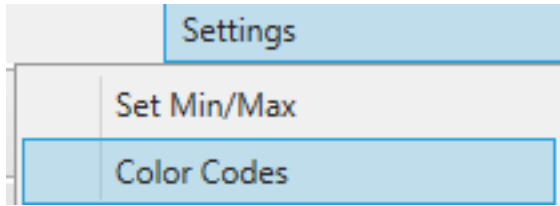
ID	Reading	dB/dBm	λ	Pass/Fail
GreenBlue01	- 0.03	dB	1310	N/A
2	50.26	dB	1310	N/A
3	1.99	dB	1310	N/A
4	5.87	dB	1310	N/A
5	6.15	dB	1310	N/A

With multiple readings selected, click the Edit button to bring up the multi-editor. Edit the information and click "Apply" to change the ID for multiple items.



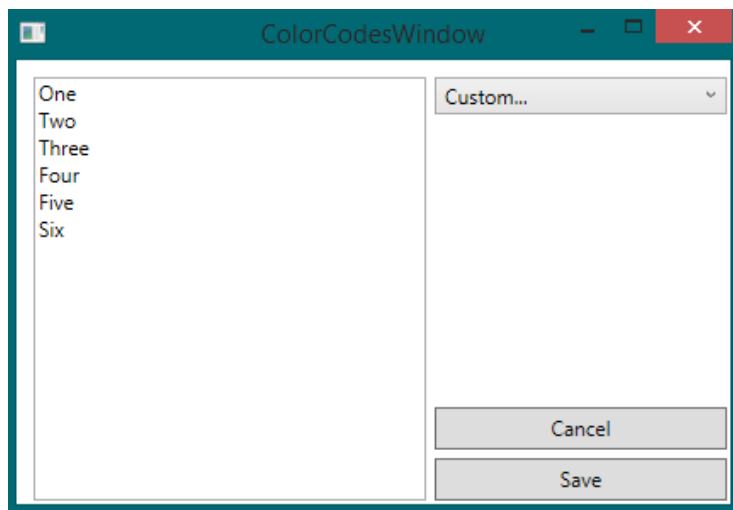
ID	Reading	dB/dBm	λ	Pass/Fail
GreenBlue01	- 0.03	dB	1310	N/A
GreenRed01	50.26	dB	1310	N/A
GreenGreen01	1.99	dB	1310	N/A
4	5.87	dB	1310	N/A
GreenBrown01	6.15	dB	1310	N/A

To choose preset color codes, click **Settings>Color Codes**.



Click the dropdown box to select from preset color codes, or click "Custom" to set your own color codes which can be used in the future.

When using the Custom option, enter the color codes in the white space on the left side of the window. Each line represents an indexed location. Click "Save" when finished.

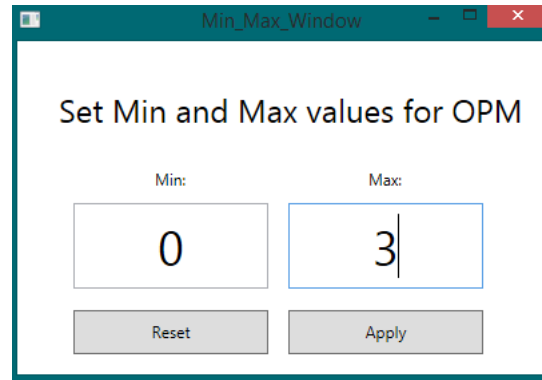
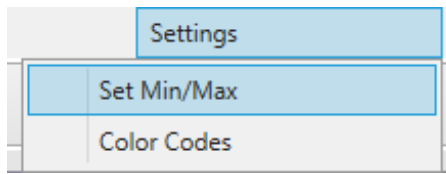


The color codes entered or selected will fill the available readings. For example, the Custom setting has 6 entries, but only 5 readings are saved. Only the 5 readings will receive a new ID.

ID	Reading	dB/dBm	$\lambda$	Pass/Fail
One	- 0.03	dB	1310	N/A
Two	50.26	dB	1310	N/A
Three	1.99	dB	1310	N/A
Four	6.15	dB	1310	N/A
Five	5.86	dB	1310	N/A



To change the Pass/Fail column, click **Settings>Set Min/Max**.




Loss minimum is usually set to 0. A maximum of 3 is standard for most fiber tests. Set Min and Max to any values as needed, then click "Apply".

ID	Reading	dB/dBm	$\lambda$	Pass/Fail
GreenBlue01	- 0.03	dB	1310	FAIL
GreenRed01	50.26	dB	1310	FAIL
GreenGreen01	1.99	dB	1310	PASS
4	6.15	dB	1310	FAIL
GreenBrown01	5.86	dB	1310	FAIL

Any readings which fall within the Min/Max range provided will be given a PASS designation. Readings that do not fall within the range will be given a FAIL designation.

To change the Report Settings, click **Settings>Report Settings**.

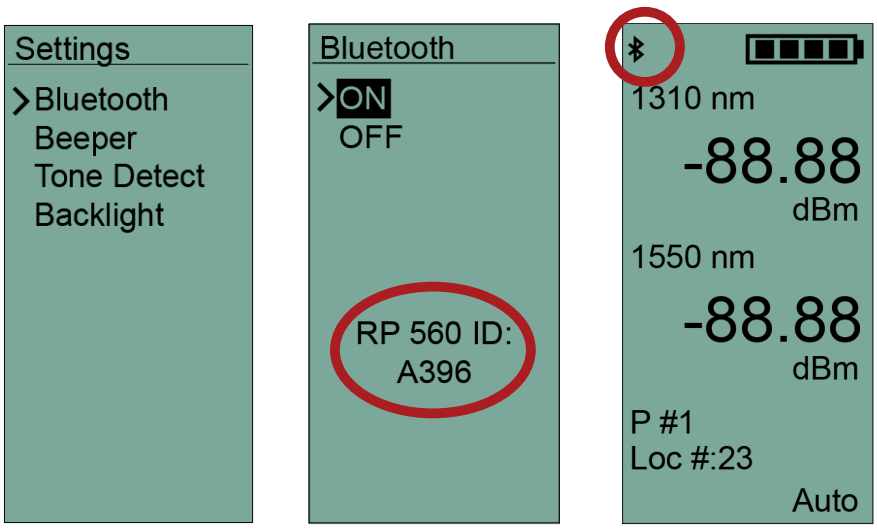
<input type="button" value="Clear Headers"/>		<input type="button" value="Clear Information"/>	<input type="button" value="Reset to Defaults"/>		
<b>Customer Name</b>		<b>Contact Name</b>			
<b>Testing Company</b>		<b>Tester Name</b>			
<b>Test Location</b>		<b>Equipment ID</b>			
<b>Fibers To/From</b>		<b>Comments</b>		<input type="button" value="Browse..."/>	
			<input type="button" value="Save"/>	<input type="button" value="Close"/>	

ALL information in the gray and white boxes is editable. The default settings are shown above. Click "Reset to Defaults" to return to this arrangement of information. Enter all info as needed and click Save to have the information appear on reports.

The Ripley ODM logo will appear on reports. Click Browse to choose a different logo to place on the report, if desired.

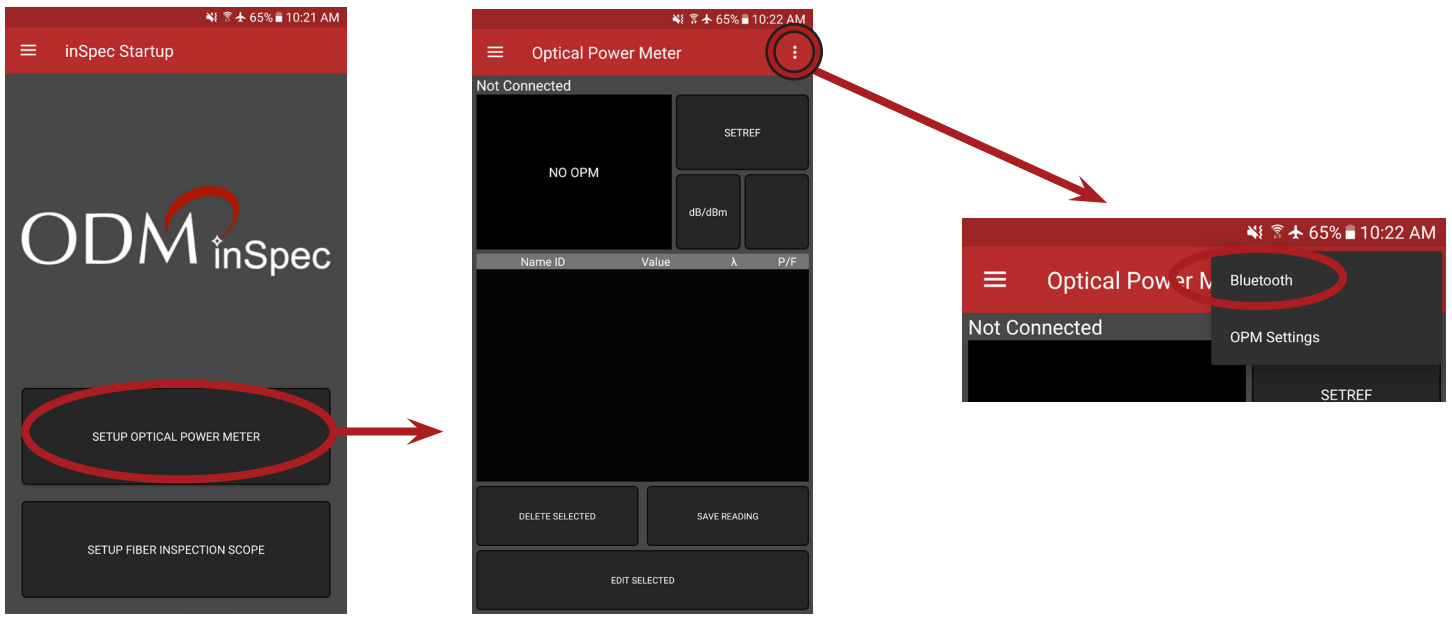
# Integration with inSpec for Android Devices

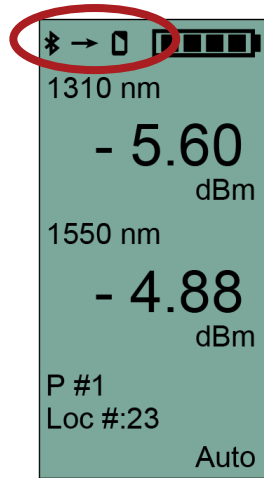
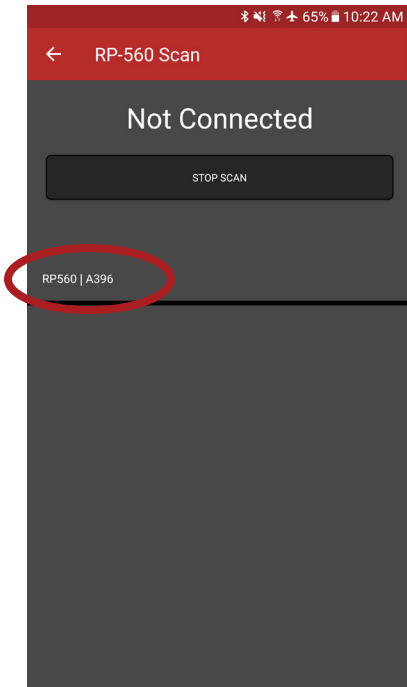
ODM's inSpec application can be downloaded from the Google Play store. Connect the RP 560 to a smartphone via Bluetooth to perform live testing or to share data for fast reporting.



To turn the Bluetooth feature ON, navigate to the Settings menu, select Bluetooth, and Select ON. The RP 560 device ID is shown on this screen; take note of it. The Bluetooth icon will be shown on the main screen of the RP 560.

Open the inSpec app on your Android device. Touch the "Setup Optical Power Meter" button to access the OPM page of the app. Touch the icon in the top right corner of the screen and select "Bluetooth" to access Bluetooth settings.





Touch the Scan button, and select your RP 560 unit when it appears in the list. When the RP 560 is connected to the Android device via Bluetooth, a connection icon will appear on the RP 560 screen.

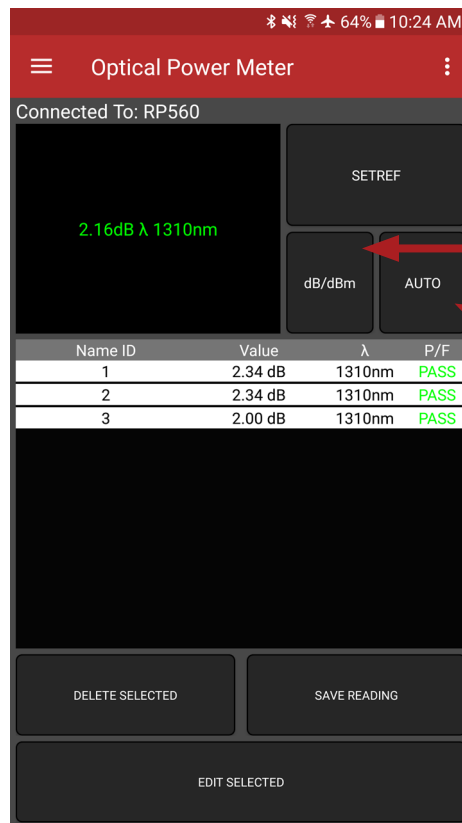
The diagram below shows the features of the main screen of the inSpec app. All changes to the RP 560 streamed data will be mirrored on the physical RP 560 unit.

**Reading Display**  
All info from the RP 560 is displayed in this area.

**Saved Data**  
Data is saved in this list whenever the Save Reading button is touched. Data is NOT saved on the RP 560.

**Delete Selected**  
Delete the selected data row.

**Edit Selected**  
Change the Name ID of the selected data row.



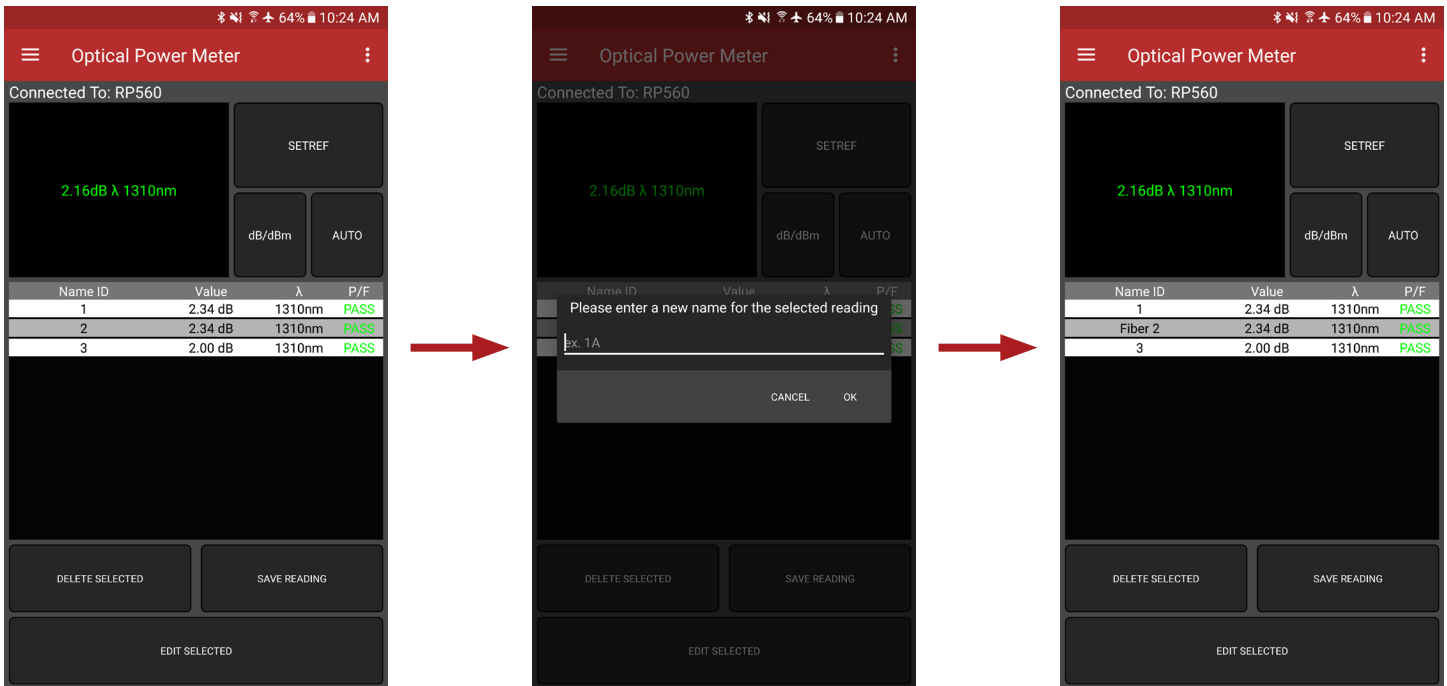
**SetRef**  
Touch this button to set the reference when in dBm mode.

**dB/dBm**  
Touch this button to switch between dB and dBm modes.

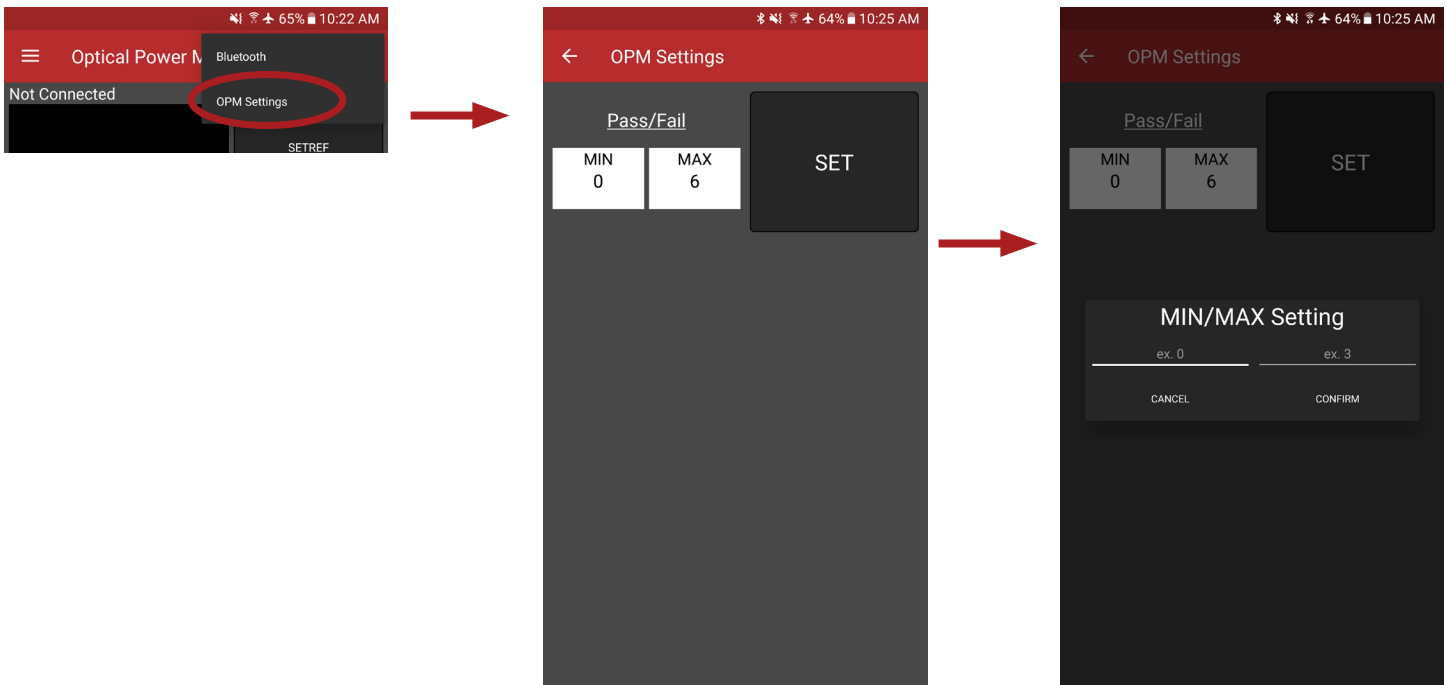
**Wavelength Selector**  
Touch this button to choose the measured wavelength, or use Auto mode.

**Save Reading**  
Save the data from the Display section as a new row in the Saved Data list. In Dual measurement mode, two rows will be saved.

Touch a saved reading to select it from the list; it will be highlighted. Touch Edit Selected to edit that reading. Use the onscreen keyboard to enter a new name, then select OK. The new name will appear in the "Name ID" column. Any reading in the list can be deleted by selecting it and touching Delete Selected.



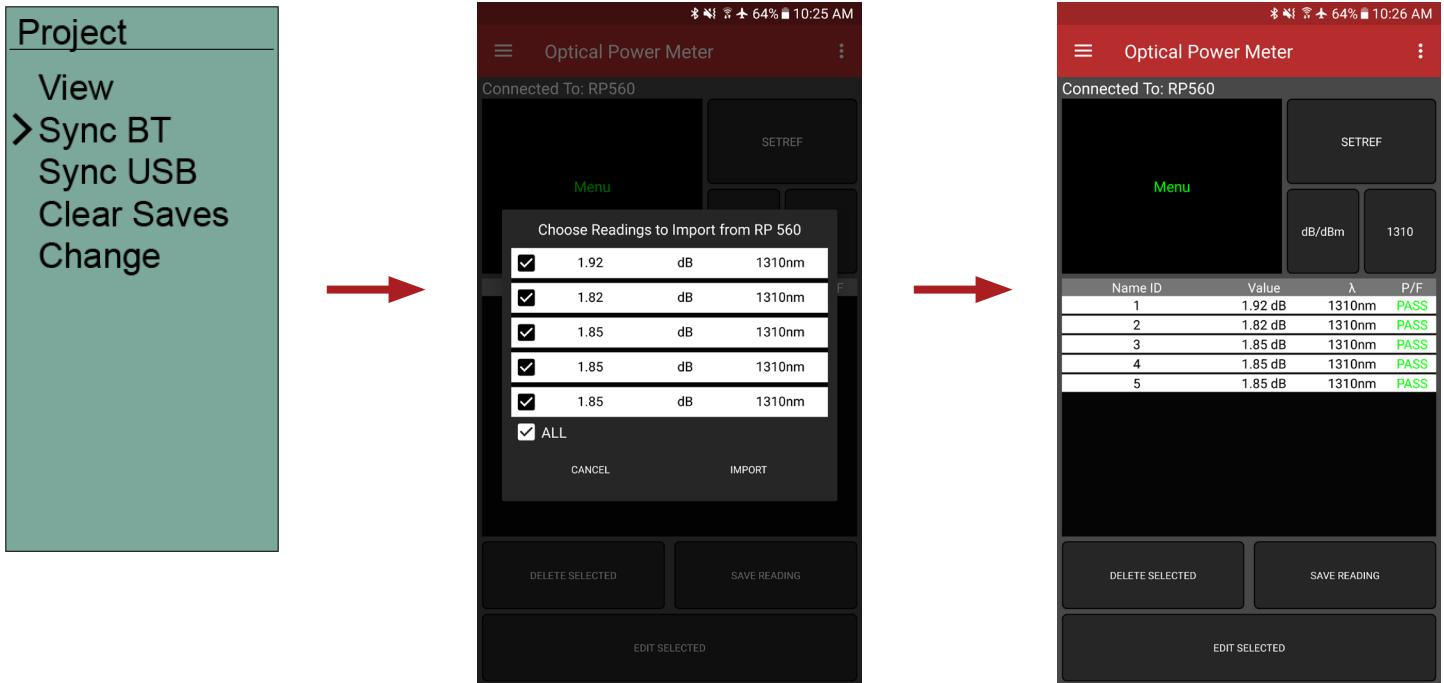
To set PASS/FAIL limits for testing, touch the icon in the top right corner of the screen, and select OPM Settings. The currently-set Min and Max will be displayed. Touch the Set button to set the Min and Max, then touch Confirm. If no values are set, PASS/FAIL is disabled.



2.16dB λ 1310nm

Any readings which fall between the Min and Max values will be displayed in green in the display and the saved data field. Readings which fall outside this range will be displayed in red.

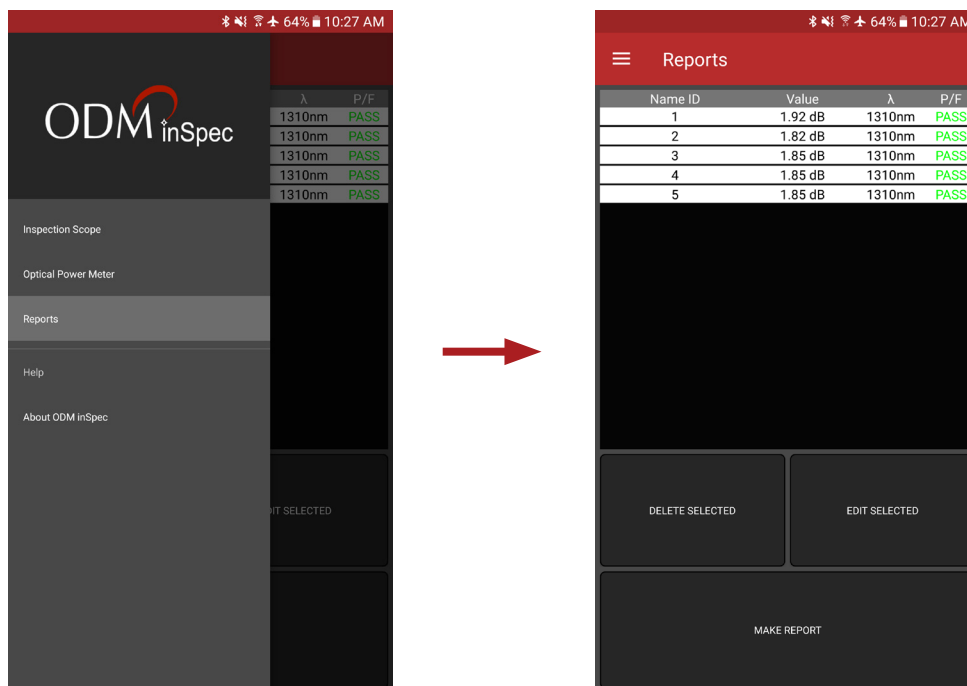
Data which has been saved on the RP 560 can also be imported into the inSpec app. Navigate to the Project folder with readings saved in it on the RP 560 and select Sync BT. The readings will appear in a list on the inSpec app. Choose the readings to import using the checkboxes, then touch Import to bring the data into the app.



To make and send a report from the inSpec app, touch the icon in the top left of the screen and select Reports from the flyout menu.

**NOTE:** the RP560 data stream will disconnect automatically when the Reports screen is accessed. To restart the data stream and continue testing, follow the connection instructions on page 19.

Delete and/or edit any readings as needed using the buttons onscreen, then touch Make Report. There will be many options to share the HTML file. Share the report using whichever method you prefer.



# Common Test Procedures

This section provides an overview of common tests and procedures which may be performed with the RP 560 optical power meter.

## Protective Adapter Cover

The power meter input adapter is covered by a protective cap. Flip the cap open to reveal the input adapter.



## Adapters

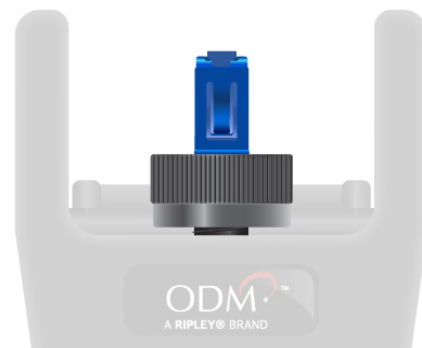
The RP 560 comes with a 2.5mm universal adapter. The adapter accepts all fiber connectors with 2.5mm ferrules. Common connectors with 2.5mm ferrules include SC, FC, and ST.



To remove the 2.5mm adapter, unscrew it from the adapter post on the top of the RP 560.



Additional adapters are available from ODM. All adapters attach to the RP 560 by screwing on to the adapter post.



## Checking Light Source Output Power - dBm Measurement Mode

The dBm measurement mode is used to evaluate the output power of a laser or LED signal being transmitted on the fiber.

Switch between dB and dBm mode by pressing the dB/dBm/SetRef button.



The dBm measurement mode may be used to check the output power of a light source at a specific location in the optical link.



In the example shown here, the fiber has been unplugged from the optical system (transmitting data on the 1310nm wavelength) and plugged into the RP 560 power meter. The optical system is still transmitting light on the fiber to the point where it has been unplugged. The RP 560 is in the dBm measurement mode and is set to measure the 1310nm wavelength.

The dBm measurement indicates the absolute power of the optical signal. This information is helpful when determining if a piece of equipment will function with the current light input.

For example, if the fiber was unplugged from a network terminal requiring a -7dBm or higher power level to function, it could be deduced that the network terminal in the example shown above will function appropriately because the optical power is higher than -7dBm.



## Setting a Reference and Testing for Loss - dB Measurement Mode

If a length of fiber should be tested for Insertion Loss (also commonly called Attenuation or dB Loss), the RP 560 can be used to set a reference using the input power from a laser source.

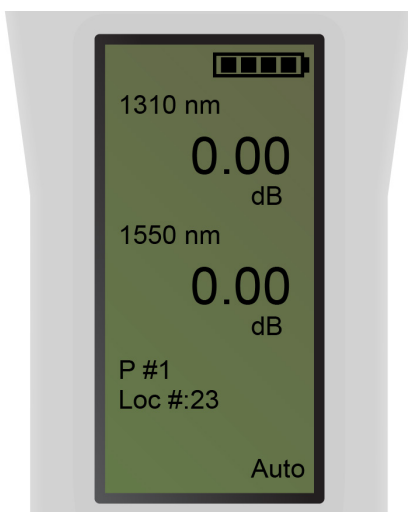


In the example shown here, a DLS 655 dual laser source is being used to set the reference on the RP 560 optical power meter. Any singlemode test jumper can be used, provided the adapters on the DLS 655 and RP 560 match the connectors on the test jumper.

The DLS 655 is in the dual wavelength mode. If the RP 560 is set to the Auto-ID mode [**Menu>Wavelength>Auto-ID**] then it will recognize both wavelengths at once.

In the dBm mode, the RP 560 indicates the output power of the laser source for each wavelength. The DLS 655 is calibrated to put out a -8.0dBm ( $\pm 2.0$ dB) signal in the dual wavelength mode. If the signal is in that range, the reference can be set.

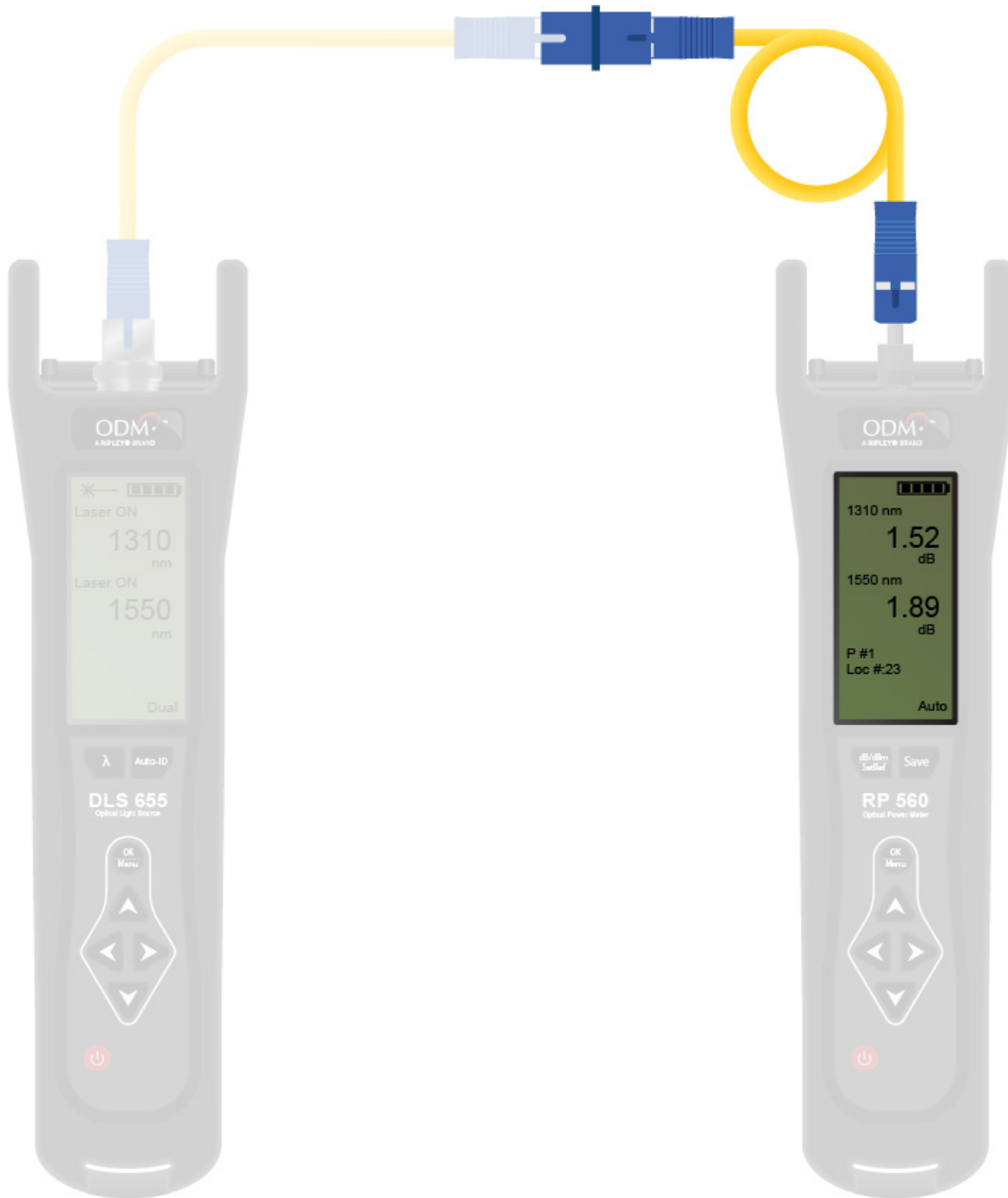
Press and **HOLD** the dB/dBm/SetRef button to set the reference for both wavelengths simultaneously.



The RP 560 will switch to the dB mode for each wavelength, and the readout will display 0.00dB ( $\pm 0.05$ dB).

The readout will display the 0.00dB reading any time the DLS 655 and RP 560 are connected with no changes to the test jumper. This is the "reference point" for the Insertion Loss Test.

When the fiber being tested (highlighted below) is added into the link between the test jumper and RP 560, the **LOSS** on the fiber is shown on the RP 560 screen. The loss for each wavelength may be different.



Press the Save button to save both readings.

NOTE that the loss readings will be saved individually if two wavelengths are being tested. The Location indicator will increase by 2 each time the Save button is pressed.

# Certifications and Contact Information



This product conforms with health, safety, and environmental protection standards for products sold within the European Economic Area (EEA). This product was tested by an ISO 17025 accredited laboratory and complies with the following CE directives and standards listed below:

Directives:

Electromagnetic Compatibility (2014/30/EU)

Low-Voltage (2014/35/EU)

Standards:

EMC: EN 61326-1:2013 Industrial

Safety: EN/IEC61010-1:2010+A1:2016

Contains FCC ID: T9JRN4020

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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Contact us with any questions pertaining to this or any other ODM product.

Call 603-524-8350

Email [tech.support@odm.ripley-tools.com](mailto:tech.support@odm.ripley-tools.com)

Visit us online at [www.odm-inc.com](http://www.odm-inc.com)