

ResolutionMD® 6.1

User Guide for iOS

RMDI61-UG40USENUS

2017/05/15

Table of Contents

Table of Contents	2
Welcome to the ResolutionMD® for iOS User Guide	6
About this Release	6
Indications for Use and Regulatory Status	7
Indications for Use - USA	7
Regulatory Status	7
Manufacturer	7
Supported Mobile Devices and Operating Systems	9
Installing and Accessing the App	10
Installing the App	10
Configuring the App	11
Application Settings	11
Configuring the Server	12
Verifying the Installation	14
Updating the App	14
Uninstalling the App	14
Before You Begin	16
Warnings	16
Precautions	17
Data Limitations	18
User Profile	18

Patient Privacy	19
Risk of Potential Errors	19
Your Reading Environment	19
Assessing Ambient Light	20
Screen Adjustments	21
Training & User Familiarization	22
Expected Performance	22
About the ResolutionMD Interface	24
The Search Interface	24
The Menu	25
About the Search Features	26
Performing Searches	26
Sorting Search Results	26
Selecting Archives	27
Configuring Modalities	27
Toggling Thumbnails	27
The Study Tray	28
Returning to the Search Interface	28
About Studies and Series	29
Loading Studies, Series & Reports	29
Displaying Related Studies	31
Key Image Series	31

About View Modes	32
About 2D View Mode	33
Switching to 2D View	34
Touchscreen Interactions in 2D	34
Scrolling Through Slices	35
Cine (2D view)	35
Comparing Images Using the Split View Layout	36
Linked Scrolling	37
Working with Measurements	38
Making Measurements	39
Manipulating Measurements	40
Measurement Calipers	42
About MIP/MPR View Mode	43
Manipulating the MIP/MPR View	43
Working with Measurements in MIP/MPR	43
Touchscreen Interactions in MIP/MPR	44
About the 3D View	44
Switching to 3D View	45
Touchscreen Interactions in 3D Views	45
Magnifying Part of a Volume With the Lens Tool (iPad Only)	46
Selecting a Preset	47
Using Dictation	47

About Collaboration	49
Hosting Sessions	49
Audio/Video Sessions	50
Joining Sessions	51
Using Study Share	52
Help	53
Logging Out	54
Legal	55
Trademarks	55
Copyright	55

Welcome to the ResolutionMD® for iOS User Guide

ResolutionMD® is a medical image viewer. It supports image viewing for review of radiology images on iOS and Android mobile devices.

ResolutionMD features an easy-to-use search interface, collaboration, and advanced visualization.

Visualization features include 2D viewing, Maximum Intensity Projection (MIP) including slabbing up to 50 mm, Multi Planar Reformatting (MPR) for axial, sagittal and coronal views, and 3D volume rendering. Each view mode enables you to view and interact with images, data, and reports (i.e. split view, linked scrolling, cine, and pan and zoom).

You access functionality through the touch-screen interface on the mobile client software. This guide describes these functions in detail.



NOTE: This user guide is distributed with the ResolutionMD software in electronic form. You may request a paper copy by contacting technical support.

About this Release

Product: ResolutionMD® for iOS

Version: 6.1

Document Number: RMDI61-UG40USENUS

Date of Last Document Update: 2017/05/15

Confidential and Proprietary

Indications for Use and Regulatory Status

Product: ResolutionMD®

Version: 6.1

UDI: +B037RESMDC0/\$\$7VERSION612

Model #: RESMD-C

Year of Software Release: 2017

Indications for Use - USA

ResolutionMD® software is an enterprise medical image viewer used with off-the-shelf servers, web browsers, and specific mobile devices for the 2D display, Multi-planar reformatting and 3D visualization of medical image data and reports. It provides collaboration and integrated secure audio-video communication, and displays DICOM and non-DICOM medical images and reports.

ResolutionMD is intended for use as a diagnostic, review, and analysis tool by trained healthcare professionals to drive clinical management. When interpreted by a trained physician, reviewed images may be used to aid in diagnosis. When used on a mobile device, ResolutionMD is not intended to replace full radiology workstations.

ResolutionMD is not to be used for primary mammography diagnoses.

Regulatory Status

United States - 510(k) Clearance

Rx Only

Caution: Federal law restricts this device to sale by or on the order of a physician.

Manufacturer



Manufacturer

Calgary Scientific Inc.

Suite 208, 1210 20th Avenue SE

Calgary, Alberta, Canada T2G 1M8

Phone: +1.403.270.7159

Fax: +1.403.270.2771

Website: www.calgaryscientific.com

Supported Mobile Devices and Operating Systems

The ResolutionMD iOS client is accessed through an application that you must download and install on your mobile device. See [Installing and Accessing the App](#).

The following mobile devices running iOS 9 or 10 are validated for use with the ResolutionMD® software.

- iPhone 4S*, iPhone 5, iPhone 5S, iPhone 6, iPhone 6 Plus, iPhone 6S, iPhone 7, iPhone 7 Plus
- iPad 2*, iPad 3*, iPad 4, iPad Air, iPad Air 2, iPad Mini*, iPad Mini 2, iPad Mini 3, iPad Pro (9.7"), iPad Pro (12.9")

*iOS 9 only, as iOS 10 is not supported on these older devices

Please consult our web site at www.calgaryscientific.com/validated-devices for updates to the list of supported devices.

Installing and Accessing the App

ResolutionMD is accessible via connection from an Apple iPhone or iPad device over either a WiFi or cellular network. The application is available for download from the Apple App Store or iTunes store.

For installation and configuration instructions, please refer to the following topics:

- [Installing the App](#)
- [Configuring the App](#)
- [Configuring the Server](#)
- [Verifying the Installation](#)
- [Updating the App](#)
- [Uninstalling the App](#)

Installing the App

Before using ResolutionMD on your phone or tablet, you must install the application on your device.

Installation Requirements

- ResolutionMD requires a ResolutionMD server.
- You need an account with Apple's App Store.
- You need to have an authorized account on the ResolutionMD server or be a valid user on the database server.
- You need the IP address or hostname and the port number to connect to the ResolutionMD server.
- You need to know if SSL is being used. If yes, you need to enable a secure connection option on the mobile device.
- The mobile device requires network connectivity to the Internet in order to download ResolutionMD .
- The mobile device needs to be authorized and authenticated on the WiFi network at the using site.

To install ResolutionMD from the iTunes App Store

1. From the home screen, tap to open the App Store app.
2. Select **Search** from the menu at the bottom of the screen.
3. Enter "**ResolutionMD**" in the search bar.
4. Select **ResolutionMD** from the results list.
5. Tap **Free**.

6. Tap **OK**.
7. Enter iTunes account credentials, if required.

To install ResolutionMD from iTunes

1. Select **iTunes Store** from the source pane.
2. Enter "ResolutionMD" in the search bar.
3. Select ResolutionMD from the results list.
4. Tap **Free**.
5. Tap **OK**.
6. Enter iTunes account credentials, if required.

Configuring the App

You can configure ResolutionMD in iPhone Settings. The app appears in the list as ResolutionMD .

Application Settings

Setting	Description
Microphone	Allow the app to access the microphone. Enable this setting to use dictation features.
Use Cellular Data	Allow the app to use cellular data.
Version	Version number for the app.
Prompt for Server	Off by default. The app will access the default server when this setting is off. Enable this setting to be prompted for servers every time you launch the app.
Use Demo Servers	On by default. Populates the server list with demo servers. Turn off to use other servers.

Setting	Description
Show Recent Studies	Off by default. For most cases, search is the recommended and more desirable method. Enable this setting to display a list of the most recent studies every time you launch the app.
# Days in Recent Studies	Sets the number of days of recent studies to display. This shows all results from midnight of the last day. For example, 1d shows all results since midnight of the current day.
Show Thumbnails	Display thumbnail images in the study contents list.
Nuance Dictation User Info	A Nuance Dictation username is required to use dictation features.

Configuring the Server

On first load, ResolutionMD will prompt you to add a server.

To display the server list

1. Enable **Prompt for Server** in iPhone or iPad Settings.
2. Do one of the following:
 - iPhone: Tap **Cancel** in the search interface.
 - iPad: Tap **Servers**.

From the server list, you can edit and add servers as well as set the default server. You can also access help (instructions, user guide, indications for use) from here.

To add a server

1. Display the server list.
2. Tap **+**.
3. Fill in the server information.
4. Tap **Done**.

To edit a server

1. Display the server list.
2. Tap **Edit**.
3. Tap the server you want to edit.
4. Edit the server information.
5. Tap **Done**.

To set a default server

1. Display the server list.
2. Tap **Set Default Server**.
3. Tap the server you wish to set as default.

To delete a server

1. Tap **Edit**
2. Tap the **-** tool to the left of the server you wish to delete in the server list.
3. Tap **Delete**.

Server Settings

Setting	Description
Server Name	User-selected "friendly" name provided by your system administrator.
Address	Server address and port number.

Setting	Description
Secure Connection	Ask your system administrator if you will be using a secure connection.

Verifying the Installation

To verify the installation

1. Ensure that you can successfully connect to the ResolutionMD server, either from the site WiFi network or from the Internet via SSL or VPN connection.
2. Ensure that you can successfully authenticate against a user database system.
3. Ensure that you can successfully query for studies.
4. Ensure that you can successfully view thumbnails.
5. Ensure that you are able to successfully open a study/series to view the images.
6. Ensure that you are able to successfully interact with images.

Updating the App

Updates will appear in the App Store when they are available.

To update ResolutionMD from the iTunes App Store

1. From the home screen, tap to open the App Store app.
2. Select **Updates** from the menu at the bottom of the screen.
3. Select **ResolutionMD** from the list of updates.
4. Tap **Update**.
5. Enter iTunes account credentials, if required.

Uninstalling the App

You can remove the ResolutionMD app from your device like you would any other app.

To uninstall the app from your iOS device

1. Hold your finger on the ResolutionMD icon.
2. While the icons are jiggling, tap the **x** on the ResolutionMD icon.

Before You Begin

The topics in this section provide important information about the software's intended use, capabilities and limitations, as well as instructions to help you set up your device and your reading environment for optimal results.

Because ResolutionMD is a medical device, it is imperative that you fully understand this information before you begin using the product.

This section contains the following topics:

- [Warnings](#)
- [Precautions](#)
- [Data Limitations](#)
- [User Profile](#)
- [Patient Privacy](#)
- [Risk of Potential Errors](#)
- [Your Reading Environment](#)
- [Screen Adjustments](#)
- [Training & User Familiarization](#)
- [Expected Performance](#)

Warnings

ResolutionMD should only be used by qualified professionals to review the pathology relevant to the diagnosis. It must be used only in the context of the approved Intended Use.

ResolutionMD is not intended to replace the skill and judgment of a qualified medical practitioner and should only be used by people who have been appropriately trained in the software's functions, capabilities and limitations.

When used on a mobile device, ResolutionMD is not intended to replace full workstations and should be used only when there is no access to a workstation.

ResolutionMD is intended to be used with specific validated mobile devices as listed in the [Supported Mobile Devices and Operating Systems](#) section of this User Guide.

ResolutionMD is not to be used for primary mammography diagnoses.

Precautions

To ensure the best use of ResolutionMD® and its features, you should always take the following precautions into consideration.

Software features

You should ensure that the software features available on the device are appropriate prior to actual use.

Lighting

ResolutionMD® should not be used in outdoor lighting or other high ambient light conditions. You should familiarize yourself with the viewing characteristics of the device under various lighting conditions prior to actual use.

For more information on optimal viewing conditions and how to assess ambient light, see [Your Reading Environment](#).

Screen size and resolution

You should ensure that the screen size and resolution of the device are appropriate prior to actual use.

Brightness settings

You should be aware that other applications can change the screen brightness setting and ensure the recommended settings are in place prior to each use.

Instructions on how to adjust brightness settings are provided in [Screen Adjustments](#).

Battery life

You should be aware of expected battery life of the mobile device under wireless usage conditions relative to the anticipated duration of usage of the ResolutionMD® application and ensure that the mobile device is adequately charged.

You should review information in this user guide prior to using ResolutionMD® in order to understand the features, capabilities and limitations of the solution. If you have any questions on how to connect to the solution or requirements for additional training, you should contact your User Administrator.

Data Limitations

You should be aware of the limitations in the accuracy and correctness of the output data displayed on the screen, printed, or exported from ResolutionMD. The quality of the data is dependent on the correctness of the input data, your interaction with the data, the quality, characteristics, and settings of the display device or printer, the amount of ambient light in the vicinity and the necessity to interpolate the data for display purposes. For example, measurement values in ResolutionMD are dependent on the calibration information provided by the modality in the DICOM header.

Medical images are susceptible to magnification errors caused by differing patient sizes and projection distances. If not corrected by the modality, these errors can affect the accuracy of the calibration information contained in the image's DICOM header. Measurement values in ResolutionMD are dependent on the calibration information provided by the modality in the DICOM header. Accuracy also depends on the pixel spacing and slice interval values that are provided in the DICOM header for the data set. Because of this, ResolutionMD's measurements should be used for reference only until the accuracy of the DICOM header information can be verified or the image information has been calibrated through the use of a measurement instrument in the image.

When working with the work list / study list, you should be aware that while you are viewing any images and reports, any real-time updates on image information or availability will not automatically be seen in your current viewing session. These updates can only be viewed if you perform a new search and re-access the updated study.

User Profile

There are two profiles for intended users of the ResolutionMD® solution:

1. Referring physicians who refer their patients to the institution or organization controlling the ResolutionMD® solution for imaging studies. Referring physicians who wish to review images in addition to reviewing the radiologists' final report of findings to enable them to confirm their treatment plans and communicate with the patient.
2. Diagnostic imaging specialists and radiologists at the institution or organization controlling the ResolutionMD® solution. ResolutionMD® must be used in only the context of the approved Intended Use outlined in this User Guide.

Patient Privacy

ResolutionMD accesses images together with patient information. It is important to protect this data from access by unauthorized persons.

It is recommended that when connecting to ResolutionMD via a remote wireless connection you should ensure that secure transmissions are enabled in order to protect private patient information.

This can be facilitated via a VPN connection to a corporate network or SSL directly into the ResolutionMD server.

Risk of Potential Errors

While ResolutionMD has been tested extensively, it is impossible to completely test any piece of software, and errors may remain in the software. It is possible that an error could manifest as an incorrect measurement or image. You must be aware of the potential for errors.

Certain views make use of interpolated data. This is data that is created by ResolutionMD based on the original data set. Interpolated data may give the appearance of healthy tissue in situations where pathology that is near or smaller than the scanning resolution may be present.

Your Reading Environment

It is essential that you use ResolutionMD under appropriate lighting conditions.

ResolutionMD should not be used in outdoor lighting or high ambient light conditions. Position yourself and the device so that there are no visible reflections of objects or light sources on the screen.

You should familiarize yourself with the viewing characteristics of the device under various lighting conditions prior to actual use. To ensure optimal viewing conditions, you must set the display brightness to the maximum value and disable any automatic brightness features on the viewing device (see [Setting Screen Brightness](#)). Be aware that other applications can change the screen brightness setting and you must ensure the recommended settings are in place prior to each use.


You should also perform a light test as described below to ensure that ambient light conditions are appropriate for use.

Assessing Ambient Light

The validated devices have been tested for diagnostic use at light levels up to 300 lux which is the maximum recommended light level.

Perform ambient light user assessment to ensure appropriate lighting conditions prior to use.

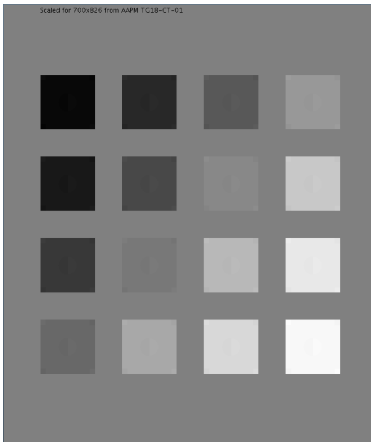
To perform ambient light user assessment

1. Set your device's display to maximum brightness and disable Auto-Brightness (see [Setting Screen Brightness](#)).
2. Tap **Help**.
3. Tap **Light Test** .
4. Tap **Perform Light Test**.

There are two patterns for assessing ambient light: TG18-CT and TG18-MP.

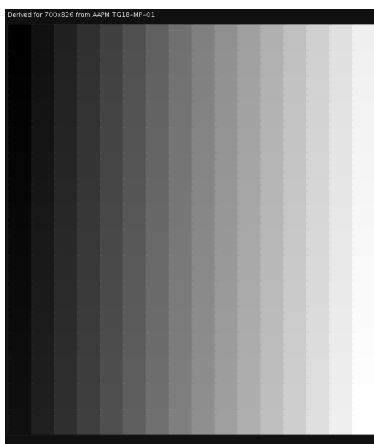
TG18-CT

This pattern is intended to support visual inspection of the luminance response of a display device. It should be evaluated for visibility of the central half-moon targets and the four low-contrast objects at the corners of each of the 16 different luminance regions.



TG18-MP

This pattern is intended to support visual inspection of the bit-depth resolution of a display device. It should be evaluated to ascertain the horizontal contouring bands, their relative locations, and grayscale reversals.



To assess the suitability of environmental lighting, you should review these patterns and determine whether your ability to discern the above information is comparable to ideal lighting conditions. If the you are not able to perform this task, find a more appropriate environment before proceeding.

These patterns were developed by the American Association of Physicists in Medicine (AAPM) Task Group 18¹, whose purpose is to generate a document that provides guidelines to practicing medical physicists and engineers for in-field performance evaluation of electronic display devices intended for medical use.

1

Reference: AAPM ON-LINE REPORT NO. 03: ASSESSMENT OF DISPLAY PERFORMANCE FOR MEDICAL IMAGING SYSTEMS, American Association of Physicists in Medicine, 2005.

Screen Adjustments

Always ensure that your screen and environment is optimal for using ResolutionMD .

Your Device's Screen

Your device's screen should be clean and free of dirt, smudges and fingerprints prior to viewing medical images.

View the screen straight on (perpendicularly) because image accuracy degrades with viewing angle.

To avoid specular reflections, take special care to move to a location without bright light sources such as windows, light boxes, bright walls, and overhead lighting. Examine the display in your device's Sleep or Off mode for visible reflections and reorient yourself or the display until they are not present.

Screen Brightness

For optimal viewing performance and image quality, ensure the Automatic Brightness feature is turned OFF and the brightness of the screen display is set to maximum. The ambient lighting environment should be assessed such that illumination is equivalent to radiology reading rooms.

To set maximum brightness on your iOS device:

1. From the iOS home screen, tap to launch the **Settings** app.
2. Tap **Brightness** (or **Brightness & Wallpaper** on iPad).
3. Drag the brightness slider all the way to the right.
4. Toggle **Auto-Brightness** to **OFF**.

Training & User Familiarization

It is strongly recommended that user training be conducted by each institution implementing the device. This training should include:

1. Institutional on-call process for reviews to be performed using the mobile technology.
2. Log-in protocols and security for mobile access to the ResolutionMD server.
3. Operation of the software and practice on various uses cases including use of the mobile device under various lighting conditions.
4. Review of labeling including Intended Use, directions for use, warnings and precautions.
5. Criteria for activation of fall-back procedures should mobile access to imaging data not be available or fail during attempts to access it.
6. How to access user and product support through their institution.
7. Review of criteria and procedures for reporting adverse events to technical support.

Expected Performance

Due to performance characteristics of remote and shared wireless data connections, you may experience variable response times to searches and image interaction requests.

The ResolutionMD® software does not require full DICOM images to be downloaded to your mobile/desktop viewing device as studies/datasets are transferred between the PACS/VNA and the ResolutionMD® server within the hospital network. The delivery of rendered images from the server to devices over wireless networks will vary somewhat over different network types depending on bandwidth availability (i.e. raw speed of the network, either Wi-Fi or 3G cellular, and network latency,

i.e. inherent delays on the network). In any case, we have observed that once communication is established to the server, typical data sets are fully loaded on the server and available for initial viewing on the mobile device in 8 to 15 seconds.

The following table characterizes the loading time in seconds for a “small” (38-slice, ~19MB) and “medium” (426-slice, ~213MB) CT data sets under 3 network conditions: Wi-Fi, “Good” 3G and “Poor” 3G. 2 to 3 bars signal strength is considered “Poor” 3G connection. The loading times are calculated by averaging the time taken by 3 consecutive loads of the data set.

Data Set	Wi-Fi	“Good” 3G	“Poor” 3G
Small (38 slices)	8.3	9.7	13.5
Medium (426 slices)	11.3	13.2	15.0

A progress bar is displayed across the screen as the data set is loading. If the connection is lost during transmission, an error message is displayed.

About the ResolutionMD Interface

The ResolutionMD solution is designed to view and analyze medical images. Its various features enables professionals – such as radiologists, physicians and technologists – to view and interact with medical images and reports using their mobile device.

This module introduces the ResolutionMD interface and provides you with an overview of its features. Each topic within this module provides information that explains the main elements within the solution.

User Interface Feature	Description
The Search Interface	The Search Interface is the first view you will see after you log in to the ResolutionMD solution. You use the Search Interface to search for studies.
The Menu	Once you have opened a data set, you can perform various functions (like changing views and selecting a layout) using the menu. The menu options available depend on the screen you are currently on and the task you are currently performing.


To learn more about each of these elements, refer to the links below or navigate to each of these topics in the Table of Contents pane.

The Search Interface

The Search Interface is the first view you see upon logging in on your mobile device. You use it to search for studies.



NOTE: Tap **Search** to display the search interface on iPad in portrait orientation.

Within the Search Interface, you can perform a search for studies using the Search Fields, by Modality and by Date. You can choose from a list of additional modalities using the Modality Options Tool *** and additional dates using the Calendar Tool . Once you have identified your search criteria, you can execute the search by tapping **Search**.

Multi-PACS functionality queries multiple PACS systems and integrates the query results together into a single unified worklist.

The Menu

The menu is accessible in the Viewer. It provides quick and easy access to the tools and features of ResolutionMD .

Once you have opened a data set, you can perform various functions (like changing views and selecting a layout) using the menu. The menu options available depend on the screen you are currently on and the task you are currently performing.

Information on specific menu options can be found in the relevant topics throughout this guide. For example, the **Cine** menu option is described in the topic [Scroll Through Slices](#), and the **Presets** menu option is described in the topic [Select a Preset](#).

To display the menu

- Tap the **Menu Tool** .

To hide the menu

- Tap anywhere outside of the menu.

To select an option from the menu

1. Display the menu.
2. Select the desired option from the menu.

About the Search Features

In ResolutionMD , the search interface appears after you log in. It allows you to quickly find studies by patient name, narrow your search by date range and modality, select archives and sort the results.

Performing Searches

The search interface appears after you log in.

By default, the search interface displays three modalities. You can change these defaults, and add more. For more information, see [Configure Modalities](#).

To perform a search

1. Enter one or more search criteria.
2. Tap **Search**.

You can also limit your search to one or more archives. See [Select Archives](#).



NOTE: **Date within last** shows all results from midnight of the last day (E.g. 1d shows all results since midnight of the current day).

To reset a search

- Tap the **Reset** tool .

Sorting Search Results

You can sort the search results by Name, ID, Date, or Modality by tapping on the respective column headings.

To sort results

- Tap the column heading that you wish to sort by.

Selecting Archives

If you have access to multiple archives, you can choose which archives to search.

To select archives

1. Tap **Archives *****.
2. Tap to toggle preferred archives in the archive list.
3. Tap **Close**.



NOTE: The Archives field in the Search Interface indicates the number of active archives.

Configuring Modalities

You can choose up to five different modalities to be visible in the Search Interface.

To choose modalities

1. In the Search Interface, tap the **Modality Options** tool ***.
2. Toggle selected modalities by tapping them.
3. Reorder the modalities (by dragging from the handles ≡) up and down the list.
4. Tap **Close**.

Toggling Thumbnails

Thumbnail images in the Search Interface are enabled by default.

To toggle thumbnails

1. At the Home screen, tap to open the Settings app.
2. Tap ResolutionMD.
3. Tap to toggle thumbnail images **ON** or **OFF**.

The Study Tray

The Study Tray provides access to series, studies, and the Search Interface. You can also access previously loaded studies from the Study Tray.

To show/hide the study tray

- Tap the **Study Tray Tool** .

The study tray contains the series list for the currently open study.

To navigate to the search results list

1. Show the Study Tray.
2. Tap the **Studies** button.

To navigate to the search interface

1. Navigate to the Search Results list.
2. Tap the **Search** tool.

Returning to the Search Interface

You must return to the Search Interface if you wish to perform another search.

Phone

You can display the Search Interface from the search results or the recent studies list by tapping the

Search tool .

Tablet

In portrait orientation, you can display the Search Interface from the search results or recent studies list by tapping **Search**.

About Studies and Series

The Search Interface is used to search for studies. Once you have completed a search, the search results display a list of studies based on your search criteria. From the results list, you can select a study to view in more detail.

Once the study is opened (loaded), all of the contents of the study including reports, the most recent series are displayed. From the study, you can then load a report or series to view in more detail.

By default, ResolutionMD displays data sets in the 2D view. You can then choose to display the data set in a different view mode. To learn more about view modes, see [About View Modes](#).

When trying to load a study, warnings may be displayed or additional information may be required before it successfully loads.

Loading Unsupported Data

ResolutionMD will notify you if you attempt to load unsupported data. You will be able to view the data, but there will be a persistent warning in red that you are viewing unsupported data.

The Stack List

If there is more than one stack in the series, you will be presented with a list from which you must choose before proceeding.


Loading Studies, Series & Reports

After performing your search, you can load the study to view details (its data set). In the study, you will see its series, images, and reports.

To load a study






iPhone: Tap the desired study in the Search Results list. The contents of the study are displayed.

Patient Name	CARDIAC, VCT...	04/07/2006 8:13 AM	Acquisition Date
	ID: 001S01D001201...	DOB: 01/01/1949 Sex: U	
	(K\CT\PR)CTA CORONA...	PACS2_Cardiology	
		11/11/2011 9:44 AM	
	ID: 3333333	DOB: 04/13/2010 Sex: M	Patient Sex
	(CT\OT\SR)CTA AORTA	PACS2_Cardiology	
		11/22/2011 3:11 PM	
Patient ID	ID: 1111111	DOB: 07/18/1950 Sex: F	Patient Date of Birth
	(CT\OT\SR)CT ANGIO AB...	PACS1_Radiology	
		11/23/2010 10:15 AM	
	ID: 59949303	DOB: 07/13/1962 Sex: M	
	(CT)CT ABDOMEN-KUB	PACS3_VNA_CLOUD	
		11/05/2010 12:00 PM	
	ID: 73366789	DOB: 03/10/1952 Sex: M	
	(CT)CT ANGIO RUNOF...	PACS3_VNA_CLOUD	
		10/16/2008 3:12 PM	

iPad: Tap the **Study Contents** button  in the desired study. The Study Contents popover is displayed.

To load a series

iPhone: Tap the desired series in the Study Contents list.

Structured Reports		
	ABC Hospital RADIOLOGY REPORT	SR
Reports		
	ABC Hospital SR RADIOLOGY REPORT	
Series		
	03/14/2014 2:04 AM ABC Hospital Screen Shot	SC (1)
	ABC Hospital 3 PLANE LOC	MR (26)
	ABC Hospital AX PD FAT SAT	MR (22)

iPad: Tap the desired series in the Study Contents popover.

To load a report

- Tap the report in the Study Contents list/popover.

Displaying Related Studies

When you retrieve related studies, any studies with the same Patient ID as the study you are viewing will appear in the Study Tray. This is useful when choosing series to display in split view layouts.

To retrieve related studies

- Select **Related Studies** from the menu.

Key Image Series

Studies containing key images (images of particular interest) appear in the Study Contents list as a large key preview icon. Series that contain key images are marked with small key symbols beside the series name.

About View Modes

Once a study and its series are selected for viewing, its contents (data sets) are displayed in the Viewer. There are three different modes to view data – 2D, MIP/MPR, and 3D. Initially, data sets are displayed in the 2D View Mode. You can switch modes at anytime while viewing the data in the Viewer.

Each view mode allows you to interact with images, data, and reports using various features. Some of these features are only available in specific modes. Each view mode allows you to view the data set with a different perspective. The 2D View Mode displays data in a two-dimensional format, MIP/MPR View Mode enables you to display data in different orientations, and the 3D View Mode displays data in a three-dimensional format.

There are some visual cues and settings that are applicable to all view modes:

Image Quality Settings

Depending on the quality of your network connection, you can adjust the image quality to fine tune performance. Your adjustments are saved on your device and will be used in the future.

The interactive quality slider adjusts the image quality during interaction with the volume and reduces the amount of network bandwidth used. The final quality slider adjusts the quality of the image after interaction.



Note: User-selected quality settings may result in information loss from the original imagery. For diagnostic reading, the final quality settings should be set to 100. Diagnostic interpretation should not be formed from the interactive images but only from the static, final-quality resulting image.

To adjust image quality

1. Select **JPEG Quality** from the menu.
2. Adjust the quality sliders.

Source Image Compression

A persistent indication appears in all views if source images are compressed. In 2D view mode, the compression ratio is also displayed.

Measurements and Annotations saved as GSPS

Some data sets may contain measurements and annotations saved from another viewing system as GSPS (Greyscale Softcopy Presentation State) information. GSPS is displayed by default.

To toggle GSPS display

1. Select **GSPS** from the menu.
2. Select **GSPS ON** or **GSPS OFF**.

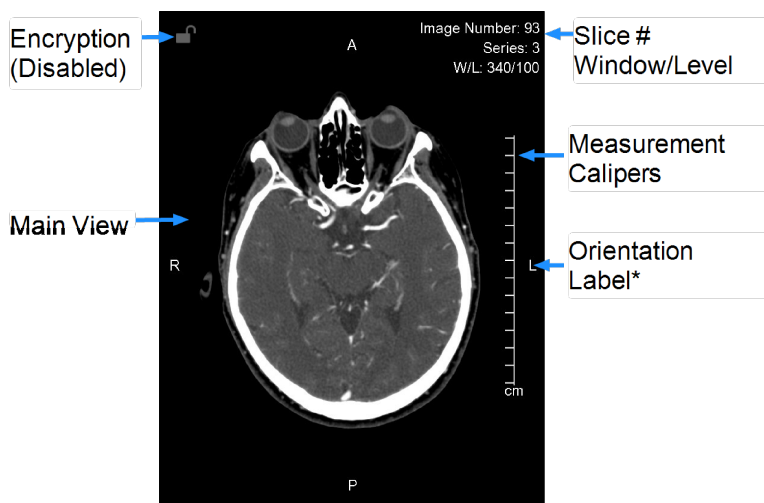
Configuring Metadata Display (2D and MIP/MPR Only)

1. Select **Metadata Display** from the menu.
2. Select the desired level of metadata detail.

About 2D View Mode

Once a study and its series are selected for viewing, its contents (data sets) are automatically listed and displayed in 2D View Mode. In this mode, you can interact with images in a two-dimensional format (see [Touchscreen Interactions in 2D Views](#)). At any time, you can switch to other modes.

To learn more about the different view modes, see [About View Modes](#).





INFO: *Superior, Inferior, Anterior, Posterior, Left, Right




NOTE: A small key symbol on the left side in the main view indicates a key image.

Switching to 2D View

Data sets are automatically displayed in 2D View Mode. However, if you switched to an alternative view, you can switch back to the 2D view at any time.

To switch to the 2D View Mode

1. Tap the **Menu Tool** .
2. Select **2D**.

Touchscreen Interactions in 2D

The following table describes the touchscreen interactions for manipulating 2D views.

Functionality	Touchscreen Interaction
Slice Scrolling	Drag up/down
Single Slice Scrolling	Tap near the top or bottom of the view

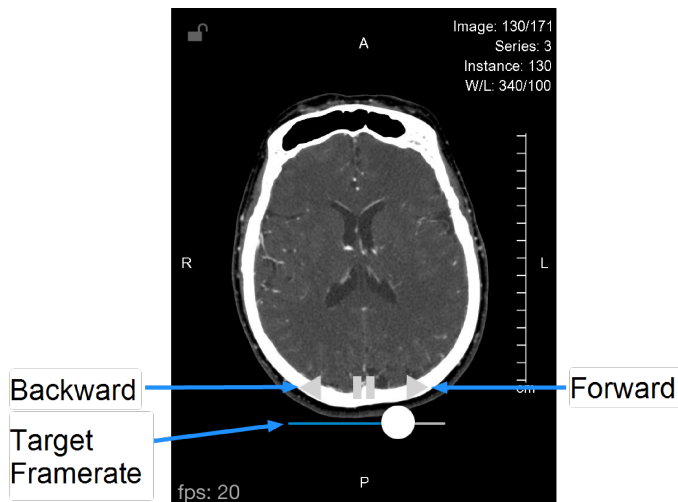
Functionality	Touchscreen Interaction
Next/Previous Image Stack	Swipe left/right
Window/Level	Tap, then drag
Panning	Drag with two fingers
Zooming	Pinch
Reset	Shake

Scrolling Through Slices

You can scroll through slices manually or by using Cine. To learn about manual slice scrolling, see [Touchscreen Interactions in 2D Views](#).

Cine (2D view)

Cine mode automatically scrolls through slices once all are loaded at the current window/level and zoom settings.



To enter cine mode

- Select **Cine** from the menu.

To start scrolling

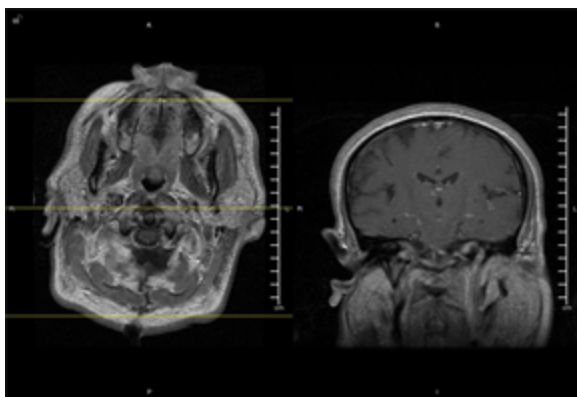
- Click the **Forward** or **Backward** button. (You may start scrolling even while the data set is being buffered.)

To pause scrolling

- Tap **Pause**.

Comparing Images Using the Split View Layout

On a tablet, you can view the data set in single or split view layouts.



To choose a layout

1. Select **Layouts** from the menu.
2. Select the desired layout.

If you selected Split View layout, the currently loaded series will appear in a view position and you will need to assign another series to the empty view position.

To assign a series to a view position

1. Open the Study Tray and navigate to your desired series.
2. Tap to select the series.
3. Select the view position in the Study Tray. The series will appear in the selected view position.

Yellow reference lines appear when viewing and interacting with orthogonal reconstructions in other views.



NOTE: Reference lines are to be used for clinical reference only.

To quickly toggle between split view and a 1x1 single layout

- Double-tap the view you wish to see in 1x1 single layout. Double-tap the view again to toggle back to the split view layout.



NOTE: You can always load and assign new series to view positions of your choice by selecting them from the study contents.

Linked Scrolling

When scrolling is linked, scrolling interactions will apply to both sides of the split view.

To toggle linked scrolling

1. Select **Linked Scrolling** from the menu.
2. Choose **Link On** or **Link Off**.

To manually link scrolling by slice

Sometimes the data set does not contain slice position information and you must manually align the views visually by scrolling to the desired parts of the anatomy before linking the views.

1. Scroll each of the views to the respectively desired slices.
2. Select **Linked Scrolling** from the menu.
3. Choose **Link Scrolling by Slice Number**.

Working with Measurements

ResolutionMD®'s measurement mode provides several tools to perform various measurements in 2D view mode such as pixel values, object size and angles.



NOTE: Slice scrolling and window/level adjustment are disabled in measurement mode.

To enter measurement mode




- Select **Measure** from the menu.



To exit measurement mode

- Tap **Done**.

Measurement tools

The following measurement tools are available in the 2D view mode.

Measurement Tool		Description
Linear		Measures the distance between two points in the view
ROI		Measures the area, mean signal intensity, and standard deviation within an ellipsoid region of interest (ROI)
Point		Measures the signal intensity of a selected pixel in the view

Measurement Tool		Description
Angle		Measures the angle between definable segments
Cobb Angle		Measures the Cobb angle between definable segments

Making Measurements

To make linear measurements

1. Tap to select the **Linear** measurement tool.
2. Drag your finger over the image and use the magnified view to precisely position the first endpoint of the measurement. The first endpoint will be placed when you stop moving your finger.
3. Drag your finger to the second endpoint of the measurement. The second endpoint will be placed when you take your finger off the screen.

To make ROI measurements

1. Tap to select the **ROI** measurement tool.
2. Drag your finger over the image and use the magnified view to precisely position the first corner of the ROI. The corner will be placed when you stop moving your finger.
3. Drag your finger to the opposing corner of the ROI. The corner will be placed when you take your finger off the screen.

To make point measurements

1. Tap to select the **Point** measurement tool.
2. Drag your finger over the image and use the magnified view to precisely position the first corner of the ROI. The point will be placed when you stop moving your finger.

To make angle measurements

1. Tap to select the **Angle** measurement tool.
2. Drag your finger over the image and use the magnified view to precisely position the vertex of the angle. The vertex will be placed when you stop moving your finger.

3. Select and move the handles to adjust the angle as required. (See [Manipulating Measurements](#))

To make Cobb angle measurements

1. Select **Cobb** from the measurement panel.
2. Drag your finger to define the first line. (See [To make linear measurements](#))
3. Drag your finger to define the second line.
4. Drag the endpoints to adjust the angle as required. (See [Manipulating Measurements](#))

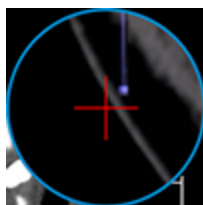


Manipulating Measurements

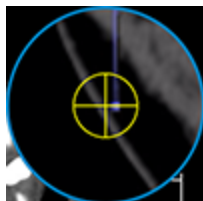
To select a measurement

- Drag your finger over the image and use the magnified view to position the red cross hairs over an endpoint or label. The cross hairs will turn yellow when they are within range of a selectable

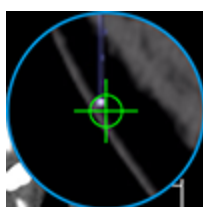
element. Hold the yellow cross hairs over the endpoint or label until they turn green (selected).



No endpoint selected (red)



Endpoint in selectable range (yellow)



Selected endpoint (green)

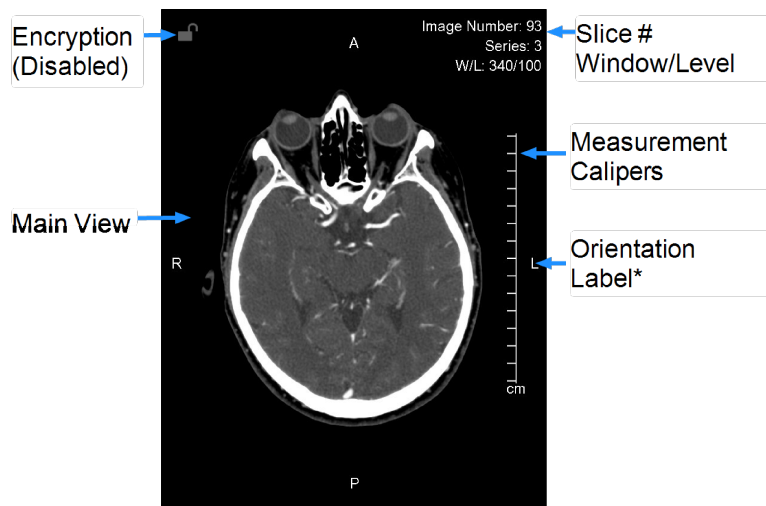
To move a measurement

1. Select an endpoint or label using the above procedure. Do not take your finger off the screen.
2. Drag the now-selected endpoint or label with the green cross hairs to the desired location and take your finger off the screen.

To delete a measurement

1. Select an endpoint or label using the above procedure.
2. Tap the **Delete** tool  .

Measurement Calipers



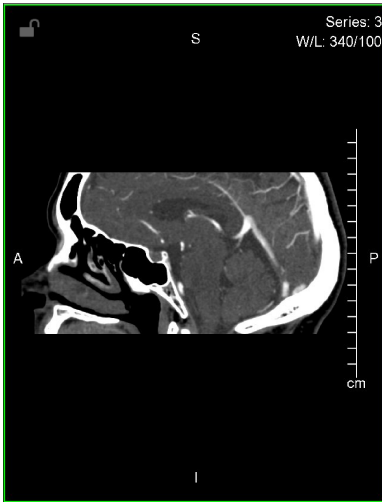
The measurement calipers are visible in the 2D and MIP/MPR views. The calipers are a series of marks indicating millimeters or centimeters, depending on the current zoom factor of the image. The spacing of the calipers will adapt to the zoom factor of the image so that measurements are always accurate.



NOTE: Medical images are susceptible to magnification errors caused by differing patient sizes and projection distances. If not corrected by the modality, these errors can affect the accuracy of the calibration information contained in the image's DICOM header. Measurement values in ResolutionMD are dependent on the calibration information provided by the modality in the DICOM header. Accuracy also depends on the pixel spacing and slice interval values that are provided in the DICOM header for the data set. Because of this, ResolutionMD's measurements should be used for reference only until the accuracy of the DICOM header information can be verified or the image information has been calibrated through the use of a measurement instrument in the image.

About MIP/MPR View Mode

From the Viewer, you can choose to view a study and its contents in the MIP/MPR View Mode. In this mode, you can interact with images and display them in different orientations.



At any time, you can switch to other modes. To learn more about the different view modes, see [About View Modes](#).

Manipulating the MIP/MPR View

The following procedures describe ways you can manipulate the MIP/MPR View Mode.

To change thickness

1. When in MIP/MPR view mode, select **Slab Thickness** from the menu.
2. Select the desired thickness.

To change orthogonal view

- Swipe left or right in the main view.

Working with Measurements in MIP/MPR

Please see [Working with Measurements](#).

Touchscreen Interactions in MIP/MPR

The following table describes the touchscreen interactions for manipulating the views in MIP/MPR.

Functionality	Touchscreen Interaction
Slice Scrolling	Drag up/down
Single Slice Scrolling	Tap in the top or bottom third of the screen
Change Orthogonal View	Swipe left/right
Window/Level	Tap, then drag
Panning	Drag with two fingers
Zooming	Pinch
Reset	Shake

About the 3D View

From the Viewer, you can choose to view a study and its contents in the 3D View Mode. In this mode, you can interact with images in a three-dimensional format.



At any time, you can switch to other modes. To learn more about the different view modes, see [About View Modes](#).

Switching to 3D View

Data sets are automatically displayed in 2D View Mode. However, you can switch to other view modes at any time.

To switch to the 3D view mode

- 1. Select **Layouts** from the menu.
- 2. Select **3D**.

Touchscreen Interactions in 3D Views

The following table describes the touchscreen interactions for manipulating 3D views.

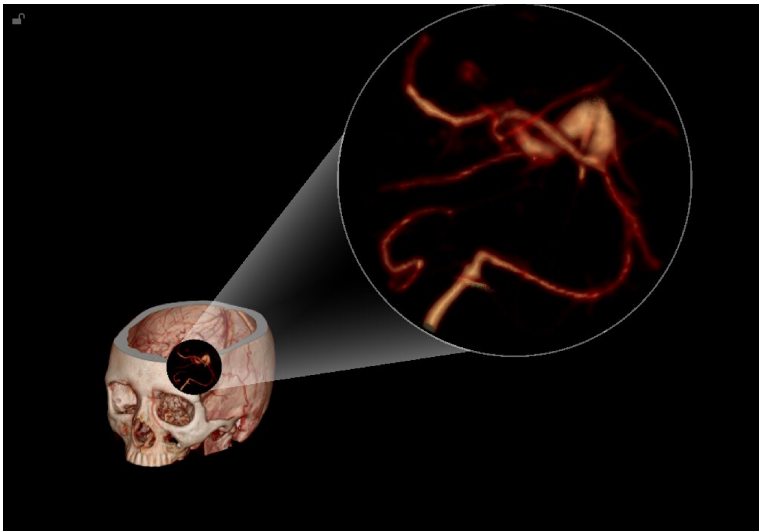
Functionality	Touchscreen Interaction
Rotation	Drag
Window/Level	Tap, then drag

Functionality	Touchscreen Interaction
Panning	Drag with two fingers
Zooming	Pinch
Reset	Shake

Magnifying Part of a Volume With the Lens Tool (iPad Only)

You can use the lens tool to magnify a select portion of the volume in the 3D View Mode while keeping the entire volume in the main view. A magnified view is displayed in the upper-right corner.

The lens tool is made up of a lens and a magnified view. The magnified view shows a close-up of the area covered by the lens.



To enable the lens tool

- Select **Lens** from the menu.



NOTE: The lens tool is only available in 3D View Mode.

To move the lens over the volume

- Drag the lens.

To adjust the magnification of the lens view

- Pinch or spread two fingers on the magnified view.

Selecting a Preset

You can quickly apply window/level optimized for certain anatomy with presets.

To select a preset


1. Select **Presets** from the menu.
2. Select the desired preset.

Using Dictation

ResolutionMD® provides the ability to dictate a report while viewing studies. The ResolutionMD software currently supports Nuance Dictation.

Dictation requires microphone access, a Nuance Dictation account and the username and password for the Nuance dictation service. Be sure to correctly configure these settings before using dictation. (See [Configuring the App](#))

To enable dictation

- Select **Dictation** from the menu and begin speaking. The **Dictation** tool  will appear above the view.

To pause and resume dictation

1. Tap the **Dictation** tool to pause dictation. The **Dictation** tool will flash when dictation is paused.
2. Tap the **Dictation** tool again to resume dictation.

To view the report

- Tap and hold the **Dictation** tool to open the report.




NOTE: You can edit the report with the keyboard.

To submit the report

- Tap **Submit**. The report will be saved to PACS with the original study as a structured report (DICOM SR).

To delete the report

- While viewing the report, tap the **Delete** tool  .

The **Dictation** tool will disappear from above the view when you submit or delete the report.

About Collaboration

Collaboration functionality enables you to share the current viewing session with other users on the web or on mobile devices.



IMPORTANT: In a collaboration session, only the host's view is of diagnostic quality.

Hosting Sessions

The host controls the layout and permissions for all participants of the collaboration session.

The Collaboration panel contains all the permissions and status of the participants in the session.


To invite a user to a session via email

1. Select **Collaboration** from the menu.
2. Click **+**. This will create a message in your default email client.
3. Enter the recipient's email address in the **To:** field of the message.
4. Send the message.

The list of participants will be visible in the Collaboration panel. Participants will be able to see all your interactions with the image view as long as the session is active.


The host can grant permission for participants to interact with the session.

To grant or revoke a participant's ability to interact with the session



- Fill or clear the **Interact** check box in the Collaboration panel. Tap the **Interaction Tool**  in the Collaboration panel.

The host and participants can see each others uniquely colored cursors if they are enabled by the host.

To show or hide the host's or participant's cursor

- Tap the **Cursor Tool**  in the Collaboration panel. The participant's cursor will be the same color as the square next to the participant's name.

To use your cursor as a pointer without interacting with the image

- Toggle the **Pointer Tool**  by tapping it. (The tool changes to  when enabled.)

Confidential patient information is hidden by default.


To remove a participant from the session

1. Swipe horizontally across the participant's name in the Collaboration panel.
2. Tap **Remove**.


Audio/Video Sessions

While collaborating, it is possible to communicate with a participant in a real-time audio/video (A/V) session.

To initiate an A/V session

- From the collaboration panel, tap the **Audio/Video** tool to request an A/V session. Once the session is initiated, participants may click or tap the **Share**  button on their device to broadcast from their own camera.

To resize an A/V window

- Tap the **Resize**  button to toggle between window sizes.

You can adjust the opacity of obtrusive or distracting A/V windows.

To adjust the opacity of an A/V window

- Drag along the bottom edge of the window.

Joining Sessions



IMPORTANT: In a collaboration session, only the host's view is of diagnostic quality.

To join a collaboration session

1. Click or tap the link in the invitation email or otherwise provided by the session's host.
2. Enter your name and email address to identify yourself to the host.

If the host has already loaded images, participants will see the image view and the host's mouse cursor. If the host is in the search interface, participants will see an empty image view and a message that the host is not currently viewing images. Participants can interact with the view if the host grants them the ability.



NOTE: The aspect ratio seen by participants is determined by the host's own display.

Using Study Share

The study share feature facilitates sharing studies with other clinicians. The Share Study action enables you to share study information through third-party services, like BEAM or DatCard. You can access this feature by clicking on the Share Study button in the study list menu for the desired study in the study list.



NOTE: The Share Study action will only be available if sharing study actions have been configured.

To open the Share Study panel

- Select **Share Study** from the menu.

To share a study

- Open the Share Study panel and select the desired sharing action. A new browser tab will be opened where you can specify the required information to share from the selected study.



NOTE: Only one study can be shared at a time.

Help

Information is available in ResolutionMD by selecting **Help** from the menu, which also includes this user guide, Ambient Light User Assessment ("Light Test"), and the indications for use.

To learn more about how to perform a light test on your mobile device, see [Assessing Ambient Light](#).

Logging Out

If you do not explicitly log out using the procedure below, your viewing session will automatically close if you do not interact with the application for a period of time (the default is 10 minutes).

To close a viewing session

- Select **Logout** from the menu.

Legal

Trademarks

The following are trademarks and/or registered trademarks of Calgary Scientific Inc. or its subsidiaries in the United States or other countries: Calgary Scientific and the Calgary Scientific logo, ResolutionMD and the ResolutionMD logo, ResMD, ResolutionVET, ResVET, PureWeb and the PureWeb logo. Any third-party company names and products are for identification purposes only and may be trademarks of their respective owners.

Copyright

© 2006-2017 Calgary Scientific Inc.
Suite 208, 1210 20th Avenue SE
Calgary, Alberta, Canada T2G 1M8
Phone: +1.403.270.7159
Fax: +1.403.270.2771