Hillrom™

Welch Allyn® RScribe™

12-Lead Electrocardiograph System

User Manual

Manufactured by Welch Allyn, Inc., Skaneateles Falls, NY U.S.A.

CE 0459

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

Hillrom Technical Support
For information about any Hillrom product, contact Hillrom Technical Support at 1.888.667.8272, mor_tech.support@hillrom.com.

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901127 ELECTROCARDIOGRAPH

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Welch Allyn, Inc. is a subsidiary of Hill-Rom Holdings, Inc.

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1. NOTICES

Manufacturer's Responsibility

Welch Allyn, Inc. is responsible for the effects on safety and performance only if:

- Assembly operations, extensions, readjustments, modifications, or repairs are carried out only by persons authorized by Welch Allyn, Inc.
- The device is used in accordance with the instructions for use.

Responsibility of the Customer

The user of this device is responsible for ensuring the implementation of a satisfactory maintenance schedule. Failure to do so may cause undue failure and possible health hazards.

Equipment Identification

Welch Allyn, Inc. equipment is identified by a serial and reference number on the back of the device. Care should be taken so that these numbers are not defaced. Software equipment is accompanied by an identification card; carefully store this card as the information is needed for activation, upgrade and customer service.

Copyright and Trademark Notices

Other Important Information

The information in this document is subject to change without notice.

Welch Allyn, Inc. makes no warranty of any kind with regard to this material including, but not limited to, implied warranties of merchantability and fitness for a particular purpose. Welch Allyn, Inc. assumes no responsibility for any errors or omissions that may appear in this document. Welch Allyn, Inc. makes no commitment to update or to keep current the information contained in this document.

Notice to EU Users and/or Patients

Any serious incident that has occurred in relation to the device, should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

2. WARRANTY INFORMATION

Your Welch Allyn Warranty

WELCH ALLYN, INC. (hereafter referred to as "Welch Allyn") warrants that components within Welch Allyn products (hereafter referred to as "Product/s") will be free from defects in workmanship and materials for the number of years specified on documentation accompanying the product, or previously agreed to by the purchaser and Welch Allyn, or if not otherwise noted, for a period of twenty-four (24) months from the date of shipment.

Consumable, disposable or single use products such as, but not limited to, PAPER or ELECTRODES are warranted to be free from defects in workmanship and materials for a period of 90 days from the date of shipment or the date of first use, whichever is sooner.

Reusable product such as, but not limited to, BATTERIES, BLOOD PRESSURE CUFFS, BLOOD PRESSURE HOSES, TRANSDUCER CABLES, Y-CABLES, PATIENT CABLES, LEAD WIRES, MAGNETIC STORAGE MEDIUMS, CARRY CASES or MOUNTS, are warranted to be free from defects in workmanship and materials for a period of 90 days. This warranty does not apply to damage to the Product/s caused by any or all of the following circumstances or conditions:

a) Freight damage;

b) Parts and/or accessories of the Product/s not obtained from or approved by Welch Allyn;

c) Misapplication, misuse, abuse, and/or failure to follow the Product/s instruction sheets and/or information guides;

d) Accident; a disaster affecting the Product/s;

e) Alterations and/or modifications to the Product/s not authorized by Welch Allyn;

f) Other events outside of Welch Allyn's reasonable control or not arising under normal operating conditions.

THE REMEDY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT WITHOUT CHARGE FOR LABOR OR MATERIALS, OR ANY PRODUCT/S FOUND UPON EXAMINATION BY WELCH ALLYN TO HAVE BEEN DEFECTIVE. This remedy shall be conditioned upon receipt of notice by Welch Allyn of any alleged defects promptly after discovery thereof within the warranty period. Welch Allyn's obligations under the foregoing warranty will further be conditioned upon the assumption by the purchaser of the Product/s (i) of all carrier charges with respect to any Product/s returned to Welch Allyn's principal place or any other place as specifically designated by Welch Allyn or an authorized distributor or representative of Welch Allyn, and (ii) all risk of loss in transit. It is expressly agreed that the liability of Welch Allyn is limited and that Welch Allyn does not function as an insurer. A purchaser of a Product/s, by its acceptance and purchase thereof, acknowledges and agrees that Welch Allyn is not liable for loss, harm, or damage due directly or indirectly to an occurrence or consequence there from relating to the Product/s. If Welch Allyn should be found liable to anyone under any theory (except the expressed warranty set forth herein) for loss, harm, or damage, the liability of Welch Allyn shall be limited to the lesser of the actual loss, harm, or damage, or the original purchase price of the Product/s when sold.

EXCEPT AS SET FORTH HEREIN WITH RESPECT TO REIMBURSEMENT OF LABOR CHARGES, A PURCHASER'S SOLE EXCLUSIVE REMEDY AGAINST WELCH ALLYN FOR CLAIMS RELATING TO THE PRODUCT/S FOR ANY AND ALL LOSSES AND DAMAGES RESULTING FROM ANY CAUSE SHALL BE THE REPAIR OR REPLACEMENT OF DEFECTIVE PRODUCT/S TO THE EXTENT THAT THE DEFECT IS NOTICED AND WELCH ALLYN IS NOTIFIED WITHIN THE WARRANTY PERIOD. IN NO EVENT, INCLUDING THE CLAIM FOR NEGLIGENCE, SHALL WELCH ALLYN BE LIABLE FOR INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES, OR FOR ANY OTHER LOSS, DAMAGE, OR EXPENSE OF ANY KIND, INCLUDING LOSS OF PROFITS, WHETHER UNDER TORT, NEGLIGENCE OR STRICT LIABILITY THEORIES OF LAW, OR OTHERWISE. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

3. USER SAFETY INFORMATION

WARNING: Means there is the possibility of personal injury to you or others.

Caution: Means there is the possibility of damage to the device.

Note: Provides information to further assist in the use of the device.

***NOTE**: This manual may contain screen shots and pictures. Any screen shots and pictures are provided for reference only. Consult the actual screen in the host language for specific wording.*

WARNINGS

1. This manual gives important information about the use and safety of this device. Deviating from operating procedures, misuse or misapplication of the device, or ignoring specifications and recommendations could result in increased risk of harm to users, patients and bystanders, or damage to the device.

2. Device captures and presents data reflecting a patient's physiological condition that when reviewed by a trained physician or clinician can be useful in determining a diagnosis; however, the data should not be used as a sole means for determining a patient's diagnosis.

3. Users are expected to be licensed clinical professionals knowledgeable about medical procedures and patient care, and adequately trained in the use of this device. Before attempting to use this device for clinical applications, the operator must read and understand the contents of the user manual and other accompanying documents. Inadequate knowledge or training could result in increased risk of harm to users, patients and bystanders, or damage to the device. Contact Welch Allyn service for additional training options.

4. To maintain designed operator and patient safety, peripheral equipment and accessories used that can come in direct patient contact must be in compliance with UL 60601-1, IEC 60601-1, and IEC 60601-2-25. Only use parts and accessories supplied with the device and available through Welch Allyn, Inc.

5. Patient cables intended for use with the device include series resistance (9 Kohm minimum) in each lead for defibrillation protection. Patient cables should be checked for cracks or breakage prior to use.

6. Conductive parts of the patient cable, electrodes, and associated connections of type CF applied parts, including the neutral conductor of the patient cable and electrodes, should not come into contact with other conductive parts including earth ground.

7. Do not attempt to clean the patient cables by submersing into a liquid, autoclaving, or steam cleaning as this may damage equipment or reduce its usable life. Wipe the exterior surfaces with a warm water and mild detergent solution and then dry with a clean cloth. Use of unspecified cleaning/disinfecting agents, failure to follow recommended procedures, or contact with unspecified materials could result in increased risk of harm to users, patients and bystanders, or damage to the device.

8. The device is part of an integral personal computer-based diagnostic system. The user must adhere to all warnings in order to ensure safe and reliable performance.

9. If operated on AC (~) power, the personal computer must be connected with its original power cable to an electrical installation that complies with applicable regulations for environments where patients are treated.

10. The personal computer used and any peripheral devices connected to it must be approved to the appropriate safety standard for nonmedical information technology equipment per IEC 60950, or its national variants. The personal computer and any peripheral devices connected to it, being non-medical electrical equipment, must be situated outside the patient environment per IEC 60601-1–1. To ensure the safety of the patient it must not be possible for the operator to touch the patient and the computer at the same time. In general, at least 1.5 meters (5') of open area must surround the patient to achieve this.

11. If the personal computer is situated within the patient environment, ensure that its level of safety is that of medical electrical equipment per IEC 60601-1. This may be accomplished by powering the computer and any other equipment connected to it through an isolation transformer or by operating on battery power.

12. If the personal computer is situated within the patient environment, to maintain designed operator and patient safety when a LAN network connection is being used, the network cable must be connected to the device through an Ethernet isolator module that complies with IEC 60601-1-1 (available from Welch Allyn).

13. ECG electrodes could cause skin irritation; patients should be examined for signs of irritation or inflammation. Electrode materials and ingredients are specified on the packaging or are available from the vendor upon request.

14. To avoid the possibility of serious injury or death during patient defibrillation, do not come into contact with device or patient cables. Additionally, proper placement of defibrillator paddles in relation to the electrodes is required to minimize harm to the patient.

15. Proper clinical procedure must be employed to prep the electrode sites and to monitor the patient for excessive skin irritation, inflammation, or other adverse reactions. Electrodes are intended for short-term use and should be removed from the patient promptly following testing. Do not mix electrodes made of dissimilar metals.

16. To avoid potential for spread of disease or infection, single-use disposable components (e.g., electrodes) must not be reused. To maintain safety and effectiveness, electrodes must not be used beyond their expiration date.

17. A possible explosion hazard exists. Do not use the device in the presence of flammable anesthetic mixture.

18. Possible malfunction risks may be present when installing third-party software. Welch Allyn, Inc. cannot verify the compatibility of all possible hardware/software combinations.

19. The device has not been designed for use with high-frequency (HF) surgical equipment and does not provide a protective means against hazards to the patient.

20. When the 40 Hz filter is used, the frequency response requirement for diagnostic ECG equipment cannot be met. The 40 Hz filter significantly reduces high-frequency components of the ECG and pacemaker spike amplitudes, and is recommended only if high-frequency noise cannot be reduced by proper procedures.

21. The quality of the signal produced by the device may be adversely affected by the use of other medical equipment, including but not limited to defibrillation and ultrasound machines.

22. Use only recommended alkaline battery cells with WAM™. Use of other cells may present a risk of fire or explosion.

23. The WAM low battery warning function is designed for alkaline battery cells only. Use of other cells may result in failure of the low battery warning possibly resulting in a malfunction of the device.

24. When the RScribe application is optionally installed on the cardiac stress exercise system, refer to the stress system user manual for additional warnings.

25. Test RScribe functions after each Microsoft critical and security update with a simulator prior to patient use.

26. Damaged or suspected inoperative equipment must be immediately removed from use and must be checked/repaired by qualified service personnel prior to continued use.

27. To prevent emission of substances that may damage the environment, dispose of the device, its components and accessories (e.g., batteries, cables, electrodes), and/or packing materials that are past the shelf life in accordance with local regulations.

28. When necessary, dispose of the device, its components and accessories (e.g., batteries, cables, electrodes), and/or packing materials in accordance with local regulations.

29. Proper functioning backup items such as a spare patient cable, display monitor, and other equipment are recommended on hand to prevent delayed treatment due to an inoperable device.

FCC Compliance Statement for the WAM

In the United States use of this device is regulated by the Federal Communications Commission (FCC). The WAM with its antenna complies with FCC's RF exposure limits for general population/uncontrolled exposure.

FCC Warning (Part 15.21): Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the device.

WAM FCC ID: HJR-WAM2500
UTK FCC ID: HJR-UTK2500

These devices comply with Part 15 of the FCC rules. Operation is subject to the following 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.

Industry Canada Compliance Statement

These devices comply with RSS-210 of the Industry Canada rules. Operation is subject to the following two conditions:

1. This device may not cause interference, and

2. This device must accept any interference, including interference that may cause undesired operation of the device.

WAM IC: 3758B-WAM2500
UTK IC: 3758B-UTK2500

The term **"IC:"** before the certification/registration number only signifies that the Industry Canada technical specifications were met.

Cautions

1. Do not pull or stretch patient cables as this could result in mechanical and/or electrical failures. Patient cables should be stored after forming them into a loose loop.

2. Proper functioning backup items such as a spare patient cable, front-end device, display monitor, and other equipment are recommended on hand to prevent delayed treatment due to an inoperable device.

3. Windows updates and anti-virus policy: Although it is unlikely that Windows updates and security patches affect RScribe functionality, Welch Allyn recommends turning automatic Windows update off, and periodically running it manually. A functional test should be executed after update, which includes acquiring a recording, editing and printing a report, as well as importing an order and exporting results, if activated. Welch Allyn recommends excluding the RScribe database folder (normally C:\ProgramData\MiPgSqlData on a stand-alone system or the server) and main application folder (normally C:\Program Files (x86)\Mortara Instrument Inc\ModalityMgr) from the folders to be scanned. In addition, anti-virus patch updates and system scans should be scheduled for time periods when the system is not actively in use or performed manually.

4. No other non-recommended PC application software should be running while the RScribe application is being used.

5. It is recommended that all resting ECG workstations and review stations be periodically updated with Microsoft critical and security updates to protect from malware attacks and to fix critical Microsoft software issues.

6. To prevent delivery of malware into the system Welch Allyn recommends that institution operating procedures are written to prevent malware to be transmitted into the system from removable media.

7. The WAM will only work with receiving devices that are equipped with the appropriate option.

8. This WAM is not recommended for use in the presence of imaging equipment such as Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) devices, etc.

9. The following equipment may cause interference with the WAM RF channel: microwave ovens, diathermy units with LANs (spread spectrum), amateur radios, and government radar.

10. AA batteries are known to leak their contents when stored in unused equipment. Remove battery from WAM when not used for an extended period of time.

11. Be careful to insert the correct lead wire into the connector block with the appropriate input connector by matching the lead wire labels to the WAM or AM12 lead labels.

Notes

1. Local Administrator permissions are required for software installation, application configuration, and software activation. Local User privileges are required for application users. Roaming and temporary accounts are not supported.

2. 8-hour timeout expiration is automatically controlled by the system. Each operation that occurs (e.g. Exam Search, Patient Search, editing exams, starting an exam, etc.) will reset the timeout start time. When there is no interaction with the system for the timeout duration, the user is prompted to enter login information.

3. When the server is unavailable in a distributed configuration, the client workstation will notify the user with a prompt to proceed in Offline Mode or cancel. Scheduled orders are not available. An exam can be conducted with manually entered demographics and will be stored locally. When the server comes available, the user is prompted with a list of unsent exams and a selection to send exams to the modality manager database.

4. Patient movements may generate excessive noise that may affect the quality of the ECG traces and the proper analysis performed by the device.

5. Proper patient preparation is important to proper application of ECG electrodes and operation of the device.

6. There is no known safety hazard if other equipment, such as pacemakers or other stimulators, is used simultaneously with the device; however, disturbance to the signal may occur.

7. If an electrode is not properly connected to the patient, or one or more of the patient cable lead wires is damaged, the display will indicate a lead fault for the lead(s) where the condition is present.

8. A thick baseline presentation on the display while using the AM12 may be due to a calibration error. Review the LED indicator on the AM12 to ensure the unit is connected, or disconnect and reconnect to the PC USB port to re-calibrate.

9. The WAM will automatically start flashing LEDs if the batteries have been discharged below 1.0 volts.

10. During normal WAM/AM12 operation, the green LED will display continuously.

11. If the WAM battery cover is opened during transmission, the device will stop transmitting. The battery must be reinserted and the cover must be applied to resume operation.

12. The WAM will automatically turn off (LEDs off) if the battery has been severely discharged.

13. The WAM will automatically turn off when the electrocardiograph is powered down.

14. The WAM will automatically turn off after being disconnected from the patient. This will happen regardless of RScribe battery/AC power state.

15. A thick baseline presentation on the display while using the WAM may be due to the WAM being turned off, having no battery, not being paired correctly, operating out of range, or due to a calibration error. Review the LED indicator and auditory advisory on the WAM to ensure the unit is turned on, has proper battery level, is paired correctly, and is within recommended proximity of the electrocardiograph, or power cycle the WAM to re-calibrate.

16. As defined by IEC 60601-1 and IEC 60601-2-25, the device is classified as follows:
    - Type CF, defibrillation-proof applied parts.

17. If not specifically indicated otherwise, personal computer equipment used with the device can be regarded as:
    - Class I (if the computer has a three-prong power inlet) or class II (if it has a two-prong inlet)
    - Ordinary equipment.
    - Equipment not suitable for use in the presence of a flammable anesthetic mixture.
    - Continuous operation.

18. To prevent possible damage to the device during transport and storage (while in original packaging) the following environmental conditions must be adhered to:

    Ambient temperature: -20° C to 65° C (-4° F to 149° F)
    Relative humidity: 10% to 95%, non-condensing

19. Allow the device and any computer equipment used to stabilize within its intended operating environment for a minimum of two hours prior to use. Refer to the computer equipment user manual for allowable environmental conditions. The allowable environmental conditions for the AM12 and WAM acquisition modules are as follows:

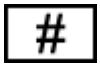
    Ambient temperature: 10° C to 40° C (50° F to 104° F)
    Relative humidity: 10% to 95%, non-condensing

20. The WAM is UL classified:

WITH RESPECT TO ELECTRIC SHOCK,
FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH
UL2601-1, IEC60601-1, CAN/CSA CC22.2 No. 601.1, IEC60601-2-25,

4. EQUIPMENT SYMBOLS AND MARKINGS

Symbol Delineation

	WARNING The warning statements in this manual identify conditions or practices that could lead to illness, injury, or death. In addition, when used on a patient applied part, this symbol indicates defibrillation protection is in the cables. Warning symbols will appear with a grey background in a black and white document.
	CAUTION The caution statements in this manual identify conditions or practices that could result in damage to the equipment or other property, or loss of data.
	Defibrillator-proof type CF applied part
	Refer to instruction manual / booklet.
PC 	USB connection to PC
	Do not dispose as unsorted municipal waste. Requires separate handling for waste disposal according to local requirements.
	Indicates compliance to applicable European Union directives
	Medical Device
	Reorder Number
	Model Identifier

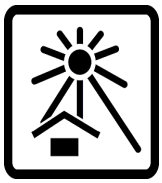
NOTE: *Refer to the manual(s) accompanying the device that pertain to the computer hardware for additional definitions of symbols that may be present.*

Package Symbol Delineation

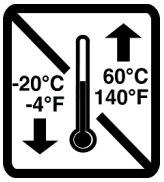
This side up

Fragile

Keep Dry



Keep Away from Heat



Acceptable Temperature Range

5. GENERAL CARE

Precautions

- Turn off the device before inspecting or cleaning.
- Do not immerse the device in water.
- Do not use organic solvents, ammonia based solutions, alcohol, or abrasive cleaning agents which may damage equipment surfaces.

Inspection

Inspect your equipment daily prior to operation. If you notice anything that requires repair, contact an authorized service person to make the repairs.

- Verify that all cords and connectors are securely seated.
- Check the case and chassis for any visible damage.
- Inspect cords and connectors for any visible damage.
- Inspect keys and controls for proper function and appearance.

Cleaning Exterior Surfaces and Patient Cables

1. Remove cables and lead wires from device before cleaning, remove battery (WAM).
2. For general cleaning of cables and lead wires use a soft, lint-free cloth lightly moistened with a mild soap and water solution. Wipe and air dry.
3. For disinfecting the cables and lead wires, wipe exterior with a soft, lint-free cloth using a solution of Sodium Hypochlorite (10% household bleach and water solution): minimum 1:500 dilution (minimum 100 ppm free chlorine) and maximum 1:10 dilution as recommended by the APIC Guidelines for Selection and Use of Disinfectants.
4. Use caution with excess liquid as contact with metal parts may cause corrosion.
5. Do not immerse cable ends or lead wires; immersion can cause metal corrosion.
6. Do not use excessive drying techniques such as forced heat.

***WARNING**: Do not attempt to clean/disinfect the device or patient cables by submerging into a liquid, autoclaving, or steam cleaning. Never expose cables to strong ultra-violet radiation.*

Cleaning the Device

Disconnect the power source. Clean the exterior surface of the device with a damp, soft, lint-free cloth using a solution of mild detergent diluted in water. After washing, thoroughly dry off the device with a clean, soft cloth or paper towel. Consult computer and peripheral equipment user manual for specific instructions and precautions.

Sterilization

EtO sterilization is not recommended but may be required for cables and lead wires. Frequent sterilization will reduce the useful life of cables and lead wires. If required, sterilize with ethylene oxide gas (EtO) at a maximum temperature of 50° C/122° F. After EtO sterilization, follow the recommendations from the sterilizer manufacturer for required aeration.

Cautions

Improper cleaning products and processes can damage the device, produce brittle lead wires and cables, corrode the metal, and void the warranty. Use care and proper procedure whenever cleaning or maintaining the device.

Disposal

This product and its accessories must be disposed of according to local laws and regulations. Do not dispose of this product as unsorted municipal waste. For more specific disposal information see www.welchallyn.com/weee.

6. ELECTROMAGNETIC COMPATIBILITY (EMC)

Electromagnetic compatibility with surrounding devices should be assessed when using the device.

An electronic device can either generate or receive electromagnetic interference. Testing for electromagnetic compatibility (EMC) has been performed on the device according to the international standard for EMC for medical devices (IEC 60601-1-2). This IEC standard has been adopted in Europe as the European Norm (EN 60601-1-2).

The device should not be used adjacent to, or stacked on top of other equipment. If the device must be used adjacent to or stacked on top of other equipment, verify that the device operates in an acceptable manner in the configuration in which it will be used.

Fixed, portable, and mobile radio frequency communications equipment can affect the performance of medical equipment. See the appropriate EMC table for recommended separation distances between the radio equipment and the device.

The use of accessories, transducers, and cables other than those specified by Welch Allyn may result in increased emissions or decreased immunity of the equipment.

Guidance and Manufacturer's Declaration: Electromagnetic Emissions

The equipment is intended for use in the electromagnetic environment specified in the table below. The customer or the user of the equipment should ensure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment: Guidance
RF Emissions CISPR 11	Group 1	The equipment uses RF energy only for its internal function. Therefore, its RF emissions are very low and not likely to cause any interference in nearby electronic equipment.
RF Emissions CISPR 11	Class A	The equipment is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic Emissions IEC 61000-3-2	Complies	
Voltage Fluctuations/ Flicker Emissions IEC 61000-3-3	Complies	

Guidance and Manufacturer's Declaration: Electromagnetic Immunity

The equipment is intended for use in the electromagnetic environment specified in the table below. The customer or the user of the equipment should ensure that it is used in such an environment.

Emissions Test	Compliance	Compliance Level	Electromagnetic Environment: Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	+/- 6 kV contact +/- 8 kV air	+/- 6 kV contact +/- 8 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	+/- 2 kV for power supply lines +/- 1 kV for input/output lines	+/- 2 kV for power supply lines +/- 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	+/- 1 kV differential mode +/- 2 kV common mode	+/- 1 kV differential mode +/- 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions, and voltage variations on power supply input lines IEC 61000-4-11	<5% UT (>95% dip in UT) for 0.5 cycle 40% UT (60% dip in UT) for 5 cycles	<5% UT (>95% dip in UT) for 0.5 cycle 40% UT (60% dip in UT) for 5 cycles	Mains power quality should be that of a typical commercial or hospital environment.
Power frequency (50/60 Hz) magnetic field	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE: *UT is the AC Mains voltage prior to application of the test level.*

Guidance and Manufacturer's Declaration: Electromagnetic Immunity

The equipment is intended for use in the electromagnetic environment specified in the table below. The customer or the user of the equipment should ensure that it is used in such an environment.

<table>
<tr><th>Emissions Test</th><th>IEC 60601 Test Level</th><th>Compliance Level</th><th>Electromagnetic Environment: Guidance</th></tr>
<tr><td>Conducted RF
IEC 61000-4-6</td><td>3 Vrms
150 kHz to
80 MHz</td><td>3 Vrms
150 kHz to
80 MHz</td><td rowspan="2">Portable and mobile RF communications equipment should be used no closer to any part of the equipment, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

Recommended separation distance

$d = \left[\frac{3.5}{3Vrms}\right]\sqrt{P}$

$d = \left[\frac{3.5}{3V/m}\right]\sqrt{P}$ 80 MHz to 800 MHz

$d = \left[\frac{7}{3V/m}\right]\sqrt{P}$ 800 MHz to 2.5 GHz

Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).

Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey[a], should be less than the compliance level in each frequency range[b].

Interference may occur in the vicinity of equipment marked with the following symbol:

  </td></tr>
<tr><td>Radiated RF
IEC 61000-4-3</td><td>3 V/m
80 MHz to
2.5 GHz</td><td>3 V/m
80 MHz to
2.5 GHz</td></tr>
</table>

a. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radios, AM and FM radio broadcast, and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the equipment is used exceeds the applicable RF compliance level above, the equipment should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the equipment.

b. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [3] V/m.

Recommended Separation Distances Between Portable and Mobile RF Communications Equipment and the Equipment

The equipment is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the equipment can help to prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the equipment as recommended in the table below, according to the maximum output power of the communications equipment.

Rated Maximum Output Power of Transmitter W	Separation Distance According to Frequency of Transmitter (m)	
	150 KHz to 800 MHz	800 MHz to 2.5 GHz
	$d = 1.2\sqrt{P}$	$d = 2.3\sqrt{P}$
0.01	0.1 m	0.2 m
0.1	0.4 m	0.7 m
1	1.2 m	2.3 m
10	4.0 m	7.0 m
100	12.0 m	23.0 m

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: *At 800 MHz, the separation distance for the higher frequency range applies.*

NOTE 2: *These guidelines may not apply in all situations. Electromagnetic propagation is affected by the absorption and reflection from structures, objects, and people.*

7. INTRODUCTION

Manual Purpose

This manual is intended to provide the user with information about the RScribe resting electrocardiograph's display screen, menu structure, icons, and navigation tools pertaining in the following sections:

- Using RScribe
- Using MWL/Patients
- Record an ECG
- Context menus
- Exam Search
- System Settings
- Data Exchange Configuration

> ***NOTE**: This manual contains screen images that are for illustration, and might be different in the actual product. Consult the actual screen in the host language for specific wording.*

Audience

This manual is written for clinical professionals with a working knowledge of medical procedures and terminology as required for monitoring cardiac patients.

Intended Use

The RScribe Electrocardiograph is a multi-channel electrocardiograph product used for acquiring, analyzing, displaying and printing resting ECG's. The RScribe is a 12-channel diagnostic electrocardiograph intended for recording and printing ECG's of adult and pediatric patients. The acquired ECG will be displayed for quality check purpose, analyzed using the Welch Allyn VERITAS resting interpretation, optionally printed, stored and/or transmitted to a ECG Management System or Hospital Information System. The device is not intended to be used as a vital signs physiological monitor.

It is a system comprised of a Welch Allyn ECG amplifier (Wireless Acquisition Module [WAM] or AM12 Patient Cable) and an off-the-shelf personal computer with Welch Allyn software application that allows clinicians to collect ECGs on patients during routine visits. The patient populations for which the device will be used may be healthy or diseased of any age. ECG's are taken with the patient in the supine position. The RScribe is intended to be used by a licensed health care practitioner in a hospital, medical clinic and offices of any size, including Clinical Research Organizations.

Indications for Use

The RScribe electrocardiograph is a non-invasive prescription device.

- The device is indicated for use to acquire, analyze, display, transmit and print electrocardiograms.
- The device is indicated for use to provide interpretation of the data for consideration by a physician.
- The device is indicated for use in a clinical setting, by a physician or by trained personnel who are acting on the orders of a licensed physician. It is not intended as a sole means of diagnosis.
- The interpretations of ECG offered by the device are only significant when used in conjunction with a physician over-read as well as consideration of all other relevant patient data.
- The device is indicated for use on adult and pediatric populations.
- The device is not intended to be used as a vital signs physiological monitor.
- The device is not designed for out of hospital transport.
- The device is not designed for use in highly invasive environments, such as an operating theatre.

System Description

RScribe is a multi-lead, diagnostic, computer-based resting electrocardiograph capable of acquiring, viewing, transmitting, printing, and storing ECG data.

RScribe models ordered with the VERITAS™ resting ECG interpretation algorithm option are capable of specific age and gender interpretation criteria. The VERITAS algorithm provides an over-reading physician with a silent second opinion through diagnostic statements displayed on the ECG report. For additional information on the VERITAS algorithm, please refer to the *Physician's Guide to VERITAS with Adult and Pediatric Resting ECG Interpretation* (see Accessories).

RScribe can be configured with bidirectional connectivity and DICOM® protocol support.

RScribe is integrated with a multi-modality patient and exam management system called Modality Manager. Modality Manager handles the scheduling of exams, database storage and maintenance, exam and patient search, printing, communication with external systems and dispatches the modality dependent acquisition and review functions. RScribe can be configured for data distribution. When so configured, the database resides on a server supporting a number of networked client workstations.

The RScribe Review software offers authorized users with the ability to schedule new exams when not linked to an external scheduling system, view reports, enter conclusions, and generate printed or electronic reports for completed exams.

The RScribe supports print formats that include:

- Standard or Cabrera,
- 3+1,
- 3+3,
- 12,
- 6+6 channel in automatic mode;
- Single channel on one page (60 min of acquired ECG for rhythm strip (Full Disclosure) printing.

The RScribe packing list includes:

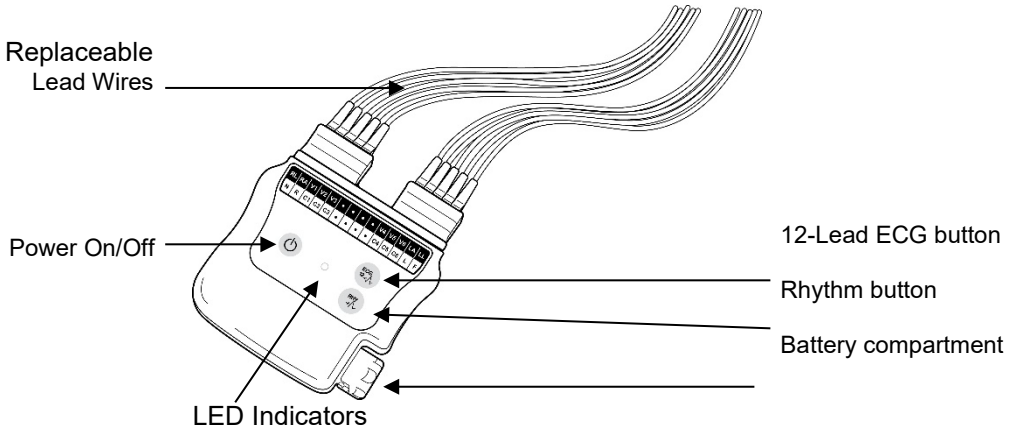
- Acquisition module with lead wire set
- Software CD
- Physician's Guide to VERITAS with Adult and Pediatric Resting ECG Interpretation
- User manual CD
- Accessory starter kit

Acquisition Module Types

Two acquisition module types, the Wireless Acquisition Module (WAM) or AM12 patient cable, for ECG acquisition are used with RScribe.

WAM with Lead Wires

Figure 1 WAM with Lead Wires



The WAM incorporates frequency-hopping technology in the 2500 MHz frequency range with 40,000 Hz ECG acquisition and is operated by two buttons located on the front of the device when used with RScribe:

1. Power On/Off
2. Acquiring a 12-lead ECG

NOTE: *Rhythm button is non-functional.*

The WAM uses one AA alkaline, 1.5V battery for approximately 8-hours of continuous operation.

WARNING: *Use of other cells may present a risk of fire or explosion.*

USB Transceiver Key (UTK)

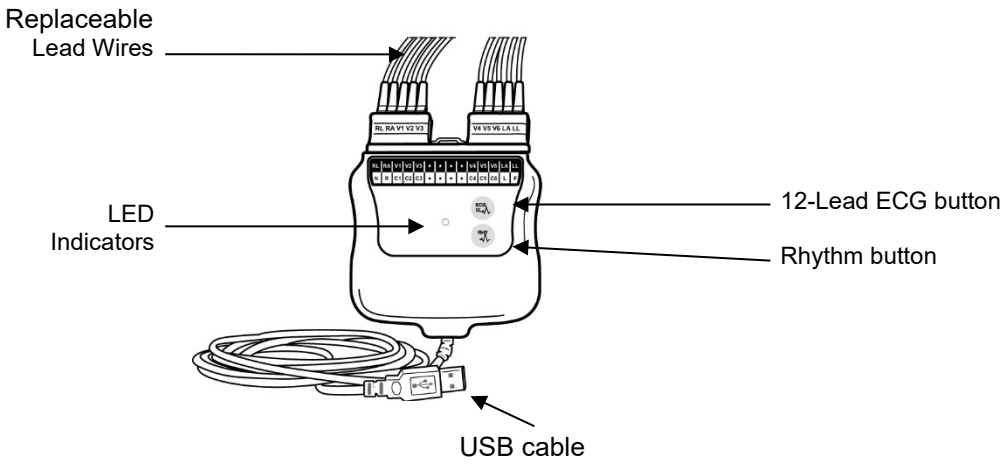
The UTK connected to the RScribe USB port receives ECG signals from the paired WAM for presentation of the electrocardiogram. The UTK connected to USB cable (6400-015) from the PC port is positioned in an unobstructed location.

WAM LED Indicators

LED	+ Audio	MODE
GREEN off YELLOW off	Intermittent beeping	WAM is on but not paired to an electrocardiograph, is out of range of the paired electrocardiograph.
YELLOW solid or flashing GREEN off		One or more leads are not connected properly.
GREEN solid YELLOW off		No lead fail condition is detected; battery is OK.
GREEN solid YELLOW off	Intermittent beeping	WAM is collecting a 10-second ECG.
Blinking LED (yellow or green depending on lead fault status)		WAM has detected a low battery condition. Replace the battery within 15 minutes.
GREEN off YELLOW off	1 second audio on, then device turns off.	WAM has detected a very low battery status and powered off.

AM12 with Lead Wires

Figure 2 AM12 with Lead Wires



The AM12 is available for a traditional wired connection with direct USB connection and 40,000 Hz ECG acquisition. The 12-Lead ECG button can be used to acquire a 12-lead ECG at the patient's side.

NOTE: *Rhythm button is non-functional.*

Lead Fail

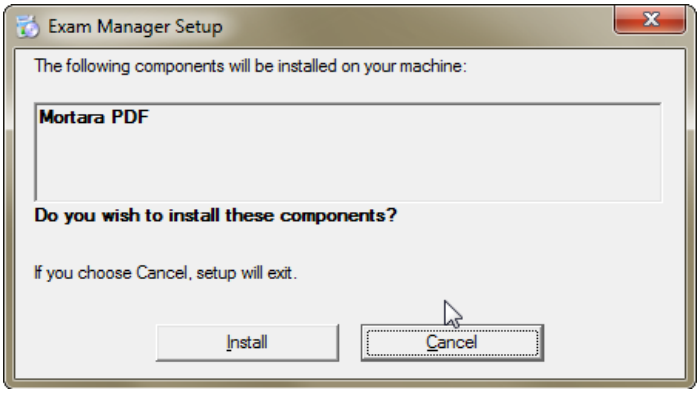
Lead fail is done automatically through visual communication with the LEDs located on the front of the WAM and AM12. A yellow LED (solid or flashing) indicates a lead fail condition is present. A solid green LED indicates proper lead connection as well as adequate WAM battery voltage for ECG acquisition.

RScribe Software Installation Process

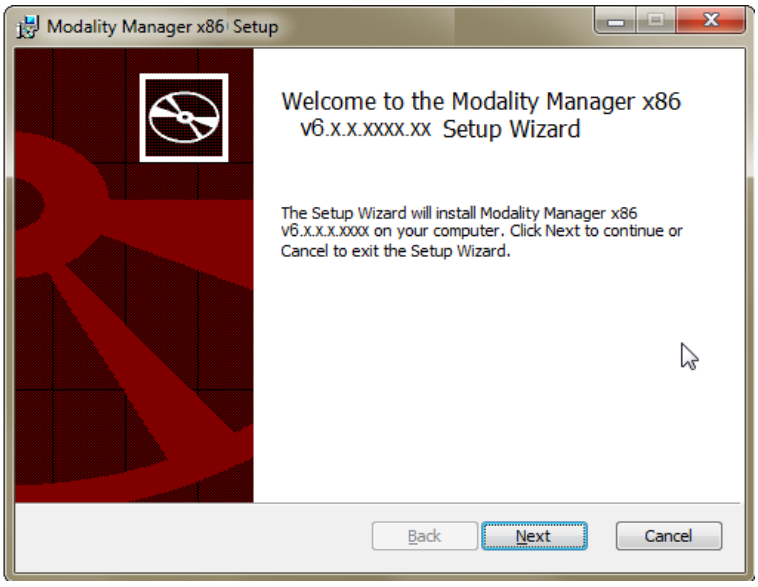
Navigate to the location of the software to be installed and double click on the “Setup” application file.

If asked, allow the program to make changes to the computer by clicking **Yes.**

The Exam setup window will appear prompting you to install Mortara PDF, click **Install**.



The Modality Manager V6.x.x Setup window will appear, click **Next** to continue.

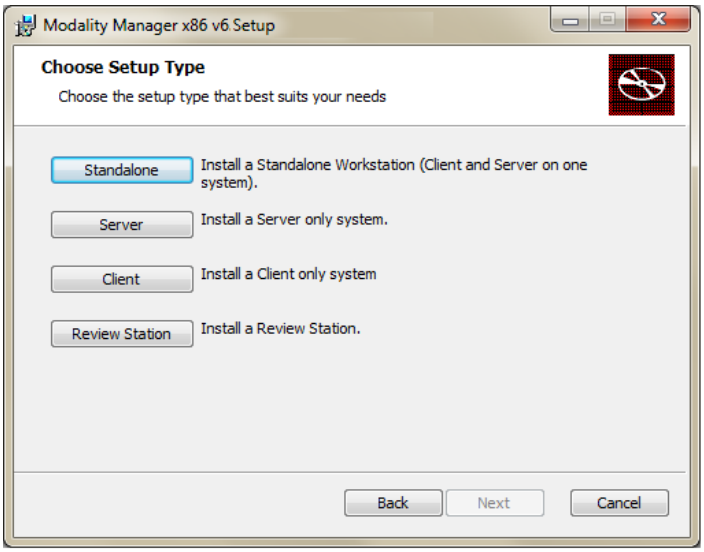


Select the appropriate Setup Type for the installation:

There are four installation choices that simplify the installation process.

Standalone: Choose the standalone option if you are loading a single RScribe application with the Database Server functionality included on a single computer.

> ***NOTE**: You will also choose the Standalone option when loading cardiac stress application and RScribe with the Database Server functionality onto a single computer.*

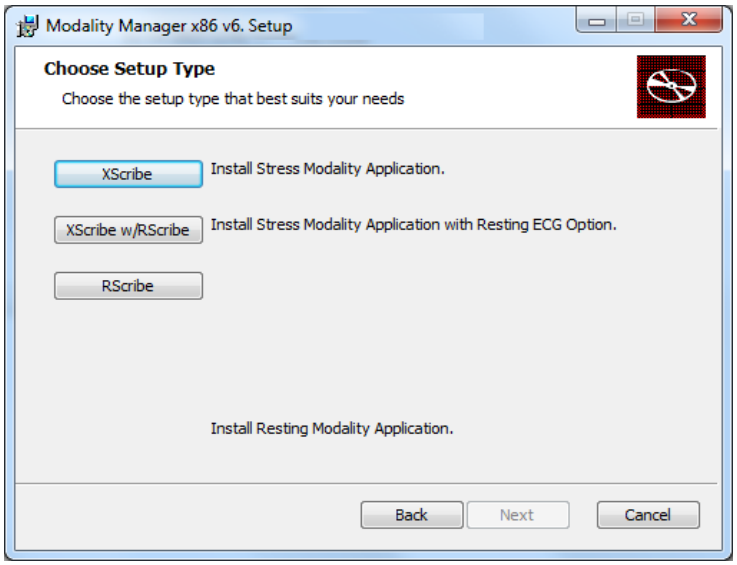


Server: This option allows for installations using multiple networked computers with the Database Server functionality loaded onto a separate computer or a Server hardware platform.

Client: Choose this option if you are loading the RScribe application on a computer that will be networked to the Database Server functionality on a different computer.

Review Station: Choose this option when loading the ability to review exams that are acquired on a networked computer, with the Database Server functionality already loaded onto a separate networked computer.

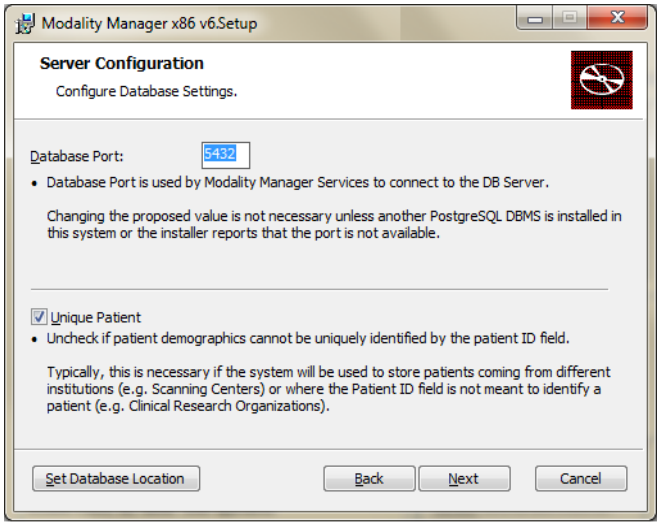
Select **Next** after the installation type has been selected and then select **RScribe.**



The Server Configuration window displays the default DB Port number (5432) and an option to enable or disable the Unique Patient ID option.

DB Port: It is recommended that you use the default port number for the installation. If the port is already in use the installation tool will alert the user that the port is already taken and that a new port number will need to be entered to continue with the installation.

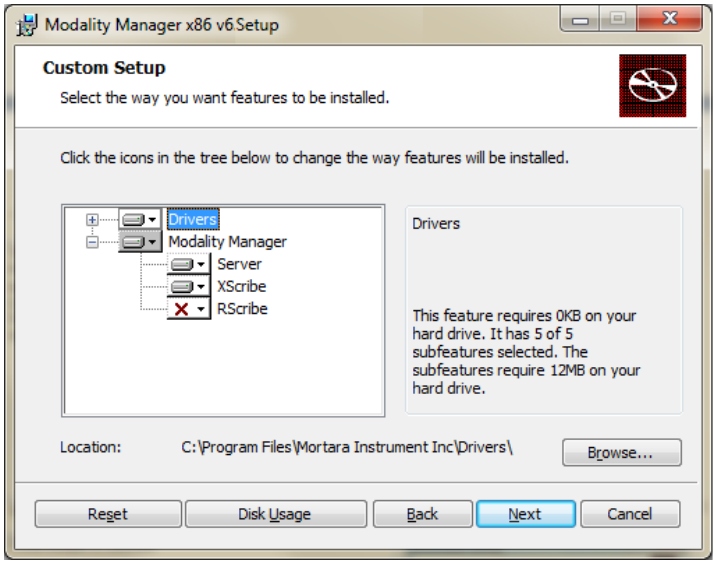
Unique Patient ID: This option defaults to a YES (checked) condition to configure the system to utilize the Patient ID field as a unique identifier for patient demographic information. This is the system configuration most typically used.



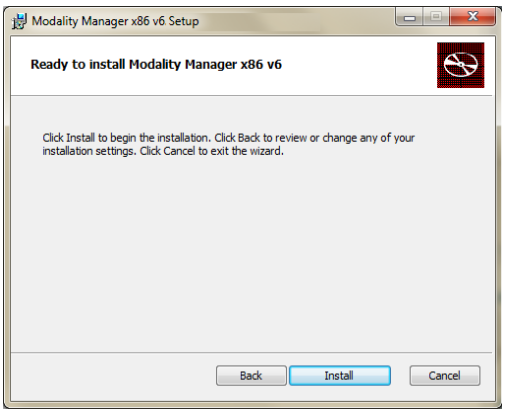
The option box can be UNCHECKED to NOT use the Patient ID field as a unique identifier for patient demographics. Choose to uncheck the Unique Patient ID when patients can be entered from different institutions (such as scanning centers) that use different ID schemes. Choose to uncheck the Unique Patient ID when the Patient ID field is not used to identify a patient, such as with clinical research studies.

Set Database Location: Selection of this button allows you to Browse to a location for the RScribe application and database other than the local default (C:) directory, beneficial when it is necessary to define the application and database locations on a different data drive.

- This selection allows a preview of Disk Usage to ensure requirements are met.
- The Reset selection will return all changes to default settings.
- Select Next to return to the Server Configuration window to continue the installation steps.
- Select Cancel to exit the installation process.



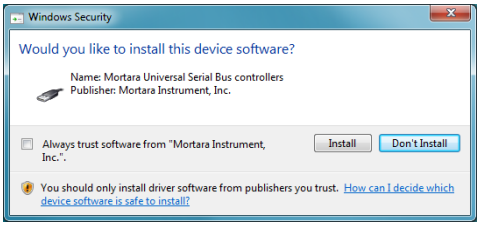
Select **Next** and the Installation window below will appear.



Click **Install** to load the software files to the defined location and then present the Modality Manager Configuration window.

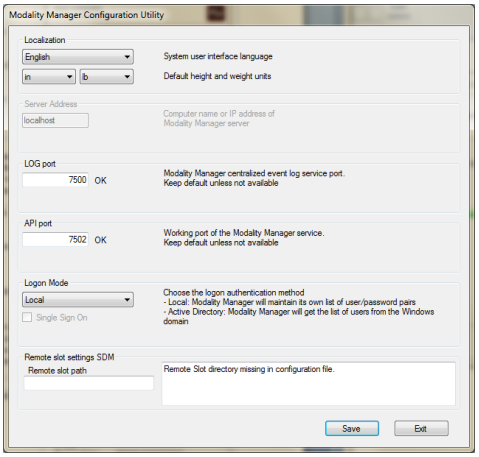
The wizard will now load the software files to the defined location and then present the Modality Manager Configuration window.

After the software installation is complete, you may be prompted to install device driver software.



Enable **Always trust software from Welch Allyn, Inc.** and then select **Install.**

The Modality Manager Configuration window is presented.



> ***NOTE**: If any changes are needed, the Modality Manager Configuration Utility can also be accessed after the installation process is completed by selecting the Modality Configuration settings from the Windows START menu → All Programs → Mortara Instrument.*

Language: This setting is always available to select the desired language.

Server Address: This setting is grayed out when the Database Server functionality is installed on the local computer, but is an active selection when the modality(s) access a remote Database Server.

Log Port: This setting is always available to select the port to be used for the event log service. Leave on the default if the port is not occupied for other purposes.

API Port: This setting is always available to select the port to be used for Modality Manager service. Leave on the default if the port is not occupied for other purposes

Note: If ports are changed, ensure ports are enabled in firewall.

Remote slot settings SDM (Single Directory Management): This setting is only intended for Server systems. Normally, when an exam is active (selected), all data will be copied from the system database to the local client workstation. If a path is entered here, the temporary data will be copied to a central (local) folder on the server. This method can only be used for Holter workstations and is not applicable to RScribe.

Logon Mode: This setting is available on the server (not the client) and can be set to either Local or Active Directory depending on the user preference.

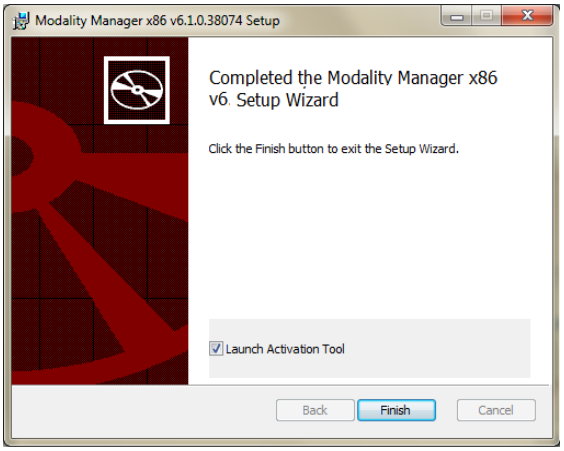
- If Local is selected, the Modality Manager Service will maintain its own local listing of users and passwords for logging onto the system.
- If Active Directory is selected, the Modality Manager service will maintain a listing of authorized users, while user logins are authenticated with the Windows domain.

Note: Single Sign On is grayed out except when Active Directory logon is enabled.

Once the settings are correct, select **Save** (if you changed anything), then select **Exit** to continue.

If you exit without saving modified settings, a warning message will appear.

Click **Finish** to complete the installation process.



Feature Activation

An activation code is required to permanently operate full RScribe software functions such as start an exam, access stored exams, schedule patients, review exams, store exams, archive exams, export results and other tasks. Without activation, the system will function for a period of fourteen days and will then become invalid.

To prepare for activation, run the Modality Manager Activation Tool accessed from the following menus:

- Start menu
- All Programs
- Mortara Instrument
- Modality Manager Activation Tool (click **Yes** when prompted to allow changes to the computer)

Once your system serial number is entered, this utility generates the site code that is needed for activation by Welch Allyn Technical Support personnel. You can click on the Copy to Desktop or the Copy to Clipboard button to generate a file to be e-mailed to mor_tech.support@hillrom.com.

Welch Allyn Technical Support will return an activation code that can be typed or copied and pasted into the white space above the "Activate License" button. Select the Activate License button to activate the software. You can activate the software at any time after installation with the Modality Manager Activation Tool. Contact Welch Allyn Technical Support personnel for further information.

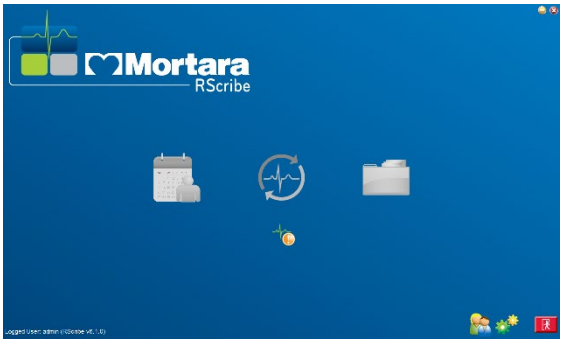
RScribe Login and Main Display

Use the  icon on the desktop to start the RScribe application.

The RScribe application requires user credentials on startup when not set up for SSO, when the current Windows user account is not provisioned in RScribe, or when SSO is setup but not currently available.

Note: The default Username and Password are "admin" (password is case-sensitive).

Upon successful login, the RScribe application screen will appear displaying the user name and software version in the bottom left corner.



The icons in the center of the screen indicate workflow tasks in presumed order left to right. Click the icon representing workflow task you wish to perform.

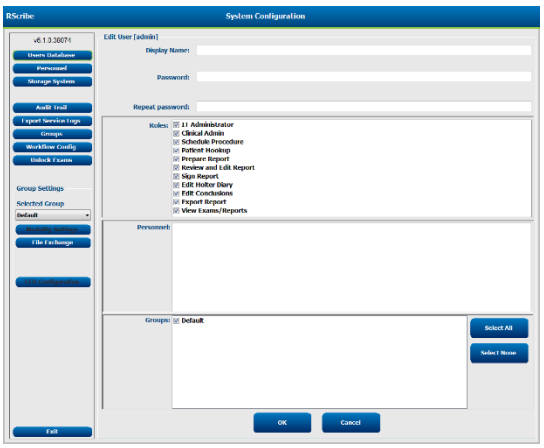
Hover the mouse over an icon to display its function.

Grayed out icons indicate functions that are not available to the user without prior authorization set up previously in system configuration.

The first time you login, select the **System Configuration**  icon to setup your access to all functions.

1. Select the **User's Database** button and you will see the" IT Admin" user. Double-click on the name to open the role privileges and check all functions.

2. Click **OK → Exit → Exit** and start up RScribe again. If you don't do this, most icons are grayed and unavailable.



RScribe Program Icons and Descriptions

Icon and Hover Text	Description
	Desktop shortcut icon to launch the Resting ECG application.
 Schedule/Orders	Opens a window with two selectable tabs. A MWL (Modality Work List) tab allows exam scheduling (when no orders interface exists) and schedule review. A Patients tab allows addition of new patient information and editing of existing patient information.
 STAT ECG Test	Use to bypass Exam Data Entry and proceed directly to real-time ECG for immediate acquisition
 Start a Resting Exam	Use to enter exam data and begin real-time ECG acquisition
 Exam Search	Use to search for exams in the database using filters.
 User Preferences	Use to configure user preferences for the Worklist and to change the password.
 System Configuration	For administrative users to configure system settings such as creating/modifying users, changing the RScribe default acquisition criteria, defining archive directories, and so on.
 Exit	Use to close the RScribe application and return to the desktop.
	Use to minimize or exit the application and return to the desktop.

User Roles and Permissions

RScribe supports a workflow-oriented setup for defining user roles and controlling user access to the various operations. Role assignments are comprised of a set of permissions for each user type (e.g. IT administrator, clinical administrator, ECG Tech, and so on).

Each user can be assigned a single role or a combination of roles. Some roles will include permissions assigned to other roles where applicable. After installation, a single user is created, with the role of "IT Administrator". Before using RScribe, this user should log in and create required users and roles.

Roles	Permission Assignment
IT Administrator	Manage user permissions; manage personnel lists; export settings; archive settings; workflow configuration; storage system configuration; unlock exams; view audit trail reports; export service logs; create and modify groups.
Clinical Administrator	Manage database exams (delete, archive, and restore); copy exams offline to share with Welch Allyn personnel or other sites; view audit trail reports; modify modality settings (profiles, protocols, and other resting ECG specific settings); reconcile; export service logs.
Schedule Procedure	Create new patient orders; associate an order with an existing patient; modify demographics of an existing patient; export service logs. *Scheduling and order entry is only available when RScribe is not linked to an external scheduling system.*
Patient Hookup (Start a Resting Exam)	Ability to start a test using Start a Resting Exam icon. Includes the ability to create a new patient; associate an order with an existing patient; export service logs.
Edit Holter Diary	Not applicable to the RScribe application.
View Exams/Reports	Review exams and final reports only. Includes the ability to search exams, view and print reports; export service logs.
Prepare Report	Review and edit exams to move them from an acquired state to the edited state. Includes ability to search exams and view and print reports; export service logs.
Review and Edit Report	Review and edit exams to move them to the reviewed state. Includes ability to search exams and view and print reports; modify and create conclusions; export service logs.
Edit Conclusions	Create and modify conclusions. Includes ability to review exams and final reports only; search exams and view and print reports; export service logs.
Sign Report	Ability to move exams to a signed state. Includes ability to review exams and final reports; search exams and view and print reports; export service logs. May require user authentication.
Export Report	Ability to export a PDF and XML file when features are enabled. Must be assigned in conjunction with another role (e.g. Review, View, or Conclusions).

Refer to *User Role* assignment details.

RScribe Specifications

Feature	Specification*
Input Channels	Simultaneous acquisition of all 12 leads
Standard Leads Acquired	I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6
Waveform Display	Compatible with 1366 x 768, 1280 x 800, 1680 x 1050, 1920 x 1080, or 1920 x 1200
Operating System	Microsoft Windows 10 Pro 64-bit
Storage Capacity	100 GB SATA hard disk drive minimum Memory 2 Gb minimum USB ports 3 minimum
Archive	Network or external USB disks (standalone installation)
Input devices	Standard keyboard and 2-button scroll mouse
Software Installation	Built-in or external DVD-ROM drive
Network Support	Option to utilize industry-standard database server
Network Infrastructure	100 Mbps connection or better required for use with server
Printing Device	HP M501dn Windows printer with HPUPD PCL 5 driver or equivalent
Optional Function	Welch Allyn VERITAS resting ECG interpretation algorithm with age and gender specific criteria; connectivity with bidirectional communication
On-Screen Tools	Time and amplitude calipers; 40 Hz and 150 Hz noise filters; various lead layouts and grid
Digital Sampling Rate	40,000 s/sec/channel used for pacemaker spike detection; 1000 s/sec/channel used for recording and analysis
Gain Setting	2.5, 5, 10, 20
Report Formats	Standard or Cabrera; 3+1, 3+3, 6, 6+6, or 12 channel
Rhythm Print Format	Single lead of up to 60 minutes of data
Frequency Response	0.05 – 300 Hz
Filters	High-performance baseline filter; AC interference filter 50/60 Hz; low-pass filters 40 Hz, 150 Hz, 300 Hz
Power Requirements	Depending on computer, 100 – 240 VAC at 50/60 Hz

** Specifications subject to change without notice.*

WAM Specifications

Feature	Specification*
Instrument Type	12-lead wireless acquisition module for resting ECG
Input Channels	12-lead signal acquisition and transmission
ECG Leads Transmitted	I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, and V6
WAM Transmission Protocol	Bidirectional and frequency hopping; beacon and response method links a single acquisition module to a single electrocardiograph
Frequency Range	2400.96 MHz to 2482.56 MHz
WAM and Receiver Distance	Approximately 10 feet (3 meters)
Lead Set	RA, LA, RL, LL, V1, V2, V3, V4, V5, and V6 (R, L, N, F, C1, C2, C3, C4, C5, and C6) with detachable lead wires
Sampling Rate	40,000 samples/second/channel acquisition; 1,000 samples/second/channel transmitted for analysis
Resolution	1.875µV reduced to 2.5µV for analysis
User Interface	Two-button operation: ON/OFF and 12-lead ECG acquisition; Rhythm button is non-functional
Defibrillator Protection	Complies with AAMI standards and IEC 60601-2-25
Special Functions	LED indication of power status, operating mode, lead fail, and remaining battery charge
Device Classification	Type CF, battery operated
Weight	6.7 oz. (190 g) with battery
Dimensions	4.45 x 4.25 x 1.1” (11.3 x 10.8 x 2.79 cm)
Battery	1 AA alkaline battery typically powers WAM for acquisition of 250 resting ECGs

** Specifications subject to change without notice.*

WAM / UTK

Radio specifications and certification information for the Wireless Acquisition Module (WAM) and USB Transceiver Key (UTK), can be found in the WAM user manual.

Requirements for the server system in an advanced installation with separate secure server:

Feature	Server Minimum Specifications*
Processor	Performance equivalent to an Intel Xeon class; Quad-core with hyperthreading
Graphics	1024 x 768
RAM	4 GB
Operating System	Microsoft Windows Server 2012 R2 Microsoft Windows Server 2016 Microsoft Windows Server 2019 Microsoft Windows Server 2022
System Disk	100 GB for OS and product installation (RAID recommended for data redundancy)
Data Disks	550 GB hard drive space available HD controller with 128 MB read/write cache RAID recommended for data redundancy
Archive	Network or external USB drive
Software Installation	Built-in or external DVD-ROM drive
Network	100 Mbps connection or better
Input Devices	Standard keyboard and mouse

*Specifications subject to change without notice.

Accessories

Part Number	Description
9293-046-07	COMBINER WAM LEADS 10 POS GRAY
9293-046-60	LEAD SET WAM 10 WIRE BANANA AHA GRAY
9293-046-61	LEAD SET WAM 10 WIRE BANANA IEC GRAY
9293-046-62	RPLCE LD SET WAM/AM12 LIMBS BANA AHA GRY
9293-046-63	RPLCE LD SET WAM/AM12 LIMBS BANA IEC GRY
9293-046-64	RPLCE LD SET WAM/AM12 V1-V3 BANA AHA GRY
9293-046-65	RPLCE LD SET WAM/AM12 C1-C3 BANA IEC GRY
9293-046-66	RPLCE LD SET WAM/AM12 V4-V6 BANA AHA GRY
9293-046-67	RPLCE LD SET WAM/AM12 C4-C6 BANA IEC GRY
9293-047-60	LEAD SET WAM 10 WIRE CLIPS AHA GRAY
9293-047-61	LEAD SET WAM 10 WIRE CLIPS IEC GRAY
9293-047-62	RPLCE LD SET WAM/AM12 LIMBS CLIP AHA GRY
9293-047-63	RPLCE LD SET WAM/AM12 LIMBS CLIP IEC GRY
9293-047-64	RPLCE LD SET WAM/AM12 V1-V3 CLIP AHA GRY
9293-047-65	RPLCE LD SET WAM/AM12 C1-C3 CLIP IEC GRY
9293-047-66	RPLCE LD SET WAM/AM12 V4-V6 CLIP AHA GRY
9293-047-67	RPLCE LD SET WAM/AM12 C4-C6 CLIP IEC GRY

Electrodes

Part Number	Description
108070	ECG MONITORING ELECTRODES CASE 300
108071	ELECTRODE RESTING TAB CASE/5000

Acquisition Modules

Part Number	Description
9293-048-54	WIRED PATIENT CABLE (AM12)
30012-019-56	WIRELESS ACQUISITION MODULE (WAM)
30012-021-51	UTK (Wireless receiver / transceiver)
9293-065-50	WIRED PATIENT CABLE (AM12M) W/O LEAD WIRES
6400-015	Cable Extension USB Type A-TO-A 6FT

Contact your distributor or go to www.hillrom.com for more information.

RScribe Network Operation in a Distributed Configuration

The RScribe network capabilities leverage a common database across multiple networked RScribe workstations where exams will be conducted and RScribe Review stations where acquired exams can be reviewed and edited.

A distributed configuration is comprised of a dedicated server and a number of networked client RScribe workstations and RScribe Review Stations sharing the same database.

A distributed configuration supports efficient operation for a busy department to:

- Create logins for all users at a single location who can log into any networked station.
- Define system settings at a single location for all networked workstations and review stations.
- Manually schedule exam orders, when no orders interface exists, that are available to all RScribe workstations regardless of the lab location.
- Access and update Patient Information, exam data, and final reports from multiple locations.
- Start exams utilizing scheduled orders received from the institution information system with a single DICOM or HL7 interface to the shared database. Refer to the Data Exchange section in this user manual for network interface configuration instructions.
- Selectively search the database to review any completed exam's full disclosure data. This includes the ability to edit, sign, print, and export the final report from multiple RScribe workstations and review stations on your network, dependent on the user permissions.
- Manage the stored data for all exams with ability to view audit trails, create groups, configure workflow, troubleshoot issues, and archive/restore/delete exams at a single location according to user permissions.

Microsoft Updates

Welch Allyn recommends that all RScribe workstations and review stations be periodically updated with Microsoft critical and security updates to protect from malware attacks and to fix critical Microsoft software issues. The following guidelines apply for Microsoft updates:

- Customer is responsible for applying Microsoft updates.
- Configure Microsoft updates to be manually applied.
    - Turn automatic Windows update off and run it periodically as a manual action.
- Do not install Microsoft updates during active use of the product.
- Run a functional test after any update which includes conducting a test exam as well as importing an order and exporting results (if activated) before running patient exams.

Each RScribe product release is tested against the cumulative Microsoft updates at the time of product release. There are no known Microsoft update conflicts with the RScribe application. Please contact Welch Allyn Technical support if conflicts are identified.

Anti-Virus Software

Welch Allyn recommends the use of anti-virus (AV) software on computers hosting the RScribe application. The following guidelines apply in the use of AV software:

- Customer is responsible for installation and maintenance of AV software.
- AV software updates (software and definition files) should not be applied during active use of the RScribe application.
    - AV patch updates and system scans should be scheduled for time periods when the system is not actively in use or should be performed manually.
- AV software must be configured to exclude files/folders as defined in *Cautions* in User Safety Information and below:
    - Welch Allyn recommends excluding the RScribe database folder (typically *C:\ProgramData\MiPgSqlData*) from the folders to be scanned.
    - Welch Allyn recommends excluding the main application folder (typically C:\Program Files (x86)\Mortara Instrument Inc\ModalityMgr) from folders to be scanned.

If a technical support issue is reported, you may be asked to remove the virus scanning software to allow investigation of the issue.

Encrypt Protected Health Information (PHI) Stored in RScribe

The RScribe database may be configured for Windows Encrypted File System (EFS) for protection of patient data security. EFS encrypts individual files with a key stored with the Windows user account. Only the Windows user that encrypts or creates new files in an EFS-enabled folder can decrypt the files. Additional users can be granted access to individual files by the original account that encrypted the files.

> ***NOTE:*** *The RScribe system database must be unencrypted prior to performance of any software upgrades.*

Contact Welch Allyn technical support if your facility requires this security feature.

8. USING RSCRIBE

A typical workflow on RScribe consists of the following actions:

Schedule an exam

An exam is scheduled for a patient; exam data such as referring physician and requested date and time are entered. If the patient does not exist in the database, patient demographic data is entered. Orders may be managed through the RScribe Schedule Orders function, or through an external scheduling system.

Start a resting exam

The patient is connected to the RScribe through the data acquisition module, data is collected and one or more 10 second ECGs are saved for analysis and further processing. An exam may fulfill an order or be an ad-hoc exam, in which case a patient must be selected from the database or a new patient created and demographic data entered. RScribe can collect multiple ECGs in a single acquisition session that may last for up to one hour, dependent on system settings. ECGs and a full disclosure rhythm page may be previewed and printed on the Windows default printer during an acquisition session. The records can be modified upon Exit with appropriate user permissions.

Acquiring a STAT ECG exam

The STAT ECG icon can be selected when there is an immediate need to acquire an ECG without prior demographic data entry. The patient is connected to the RScribe through the data acquisition module, data is collected and one or more 10 second ECGs are saved for analysis and further processing. Patient Information can be accessed after the ECG is acquired where the Last Name field has been automatically populated with STAT ECG. Saved exams can be found in the Worklist or through exam search to update patient information at a later time.

Reviewing and signing an exam and printing a report

In order to edit an exam and electronically sign it, you must have the necessary permission to do so. The program will automatically start the Review mode after exiting the acquisition session with the first ECG that was collected in the session. Other acquired ECGs are saved and can be found in the Worklist or through exam search.

Real-time Display

Real-time ECG may be displayed in one of two full-screen views. The standard (12x1) full-screen view displays 10 or more seconds of continuous waveform data for each of the 12 leads. The split-screen (6x2) view displays 5 or more seconds of continuous waveform data for each of the 12 leads. The six (6) limb leads appear on the left and the six (6) precordial leads appear on the right side of the screen.

To change the default display format for the real-time ECG view, see the *Settings* section in this manual.

***NOTE**: The amount of data displayed may vary and depends on display speed and display size.*

Preview Acquisition Screen

The Preview screen presents an ECG report exactly as it will print. Use  (Last 10) or  (Best 10) to view a full-screen preview of the selected acquired ECG. The operator may select **LAST10** or **BEST10** from the choices.

> ***NOTE:*** *LAST 10 and BEST 10 are each selections for ECG data placed on the final report. LAST 10 captures and presents the most recently acquired 10 seconds of ECG waveform data. BEST 10 captures the cleanest, most noise-free 10 seconds of ECG data accumulated from the acquired full disclosure data.*

Select the **ECG** button on the Wireless Acquisition Module (WAM™) or on the Acquisition Module (AM12™) to see a preview of the most recent (LAST) 10 seconds of waveform data.

Recording an ECG

RScribe can acquire single or multiple ECGs in real time, in a timed sequence, or retrospectively. To acquire a real-time ECG:

- Prepare the patient for best conductivity between the skin surface and the electrode. Place the electrodes on the patient as per the placement guidelines. Ensure that the proper lead wire is firmly and correctly attached to each lead.
- Select ID and obtain the patient's name through the orders Worklist or by manually entering the patient demographics.

To acquire a retrospective ECG:

- Use a left mouse click anywhere in the full disclosure ECG buffer.
- To initiate an interpretation, press select at the right of the full disclosure window.

> ***NOTE:*** *The operator may select as many ECGs as necessary.*

Timed ECG Recording

RScribe can automatically acquire ECGs at preset time intervals for future review and processing on the full disclosure screen. Automatic acquisition may be as frequent as every 20 seconds or once per a 60-minute period (or the amount of full disclosure time set by the administrator). To acquire timed ECGs:

- Prep the patient and place the electrodes in the correct location (ensure the lead wires are properly attached).
- Select **ECG Time Capture** from the upper left of the display.
- Select **On**.
- Select **Set Capture Time**.
- Enter the frequency in which ECGs are to be acquired (up to 20 seconds or greater).
- "Capture an ECG to start timed capture" will display. Manually acquire the ECG to begin the timed ECG capture.

Applying Anti-aliasing

An ECG signal viewed on the monitor may appear jagged or rough when viewed at a zoomed setting or with increased gain. Use the anti-aliasing setting to improve the appearance of the ECG signal.

> ***NOTE**: Anti-aliasing does not improve the quality of the ECG signal. It only affects the signal's appearance on the monitor.*

To apply:

- Right mouse click in the real-time acquisition display.
- Left mouse click to select **Waveform.**
- Left mouse click to select **Anti-aliasing.**

Using the Acquisition Module

ECG acquisition can also be performed at the WAM or AM12 acquisition modules. Refer to the AM12 short-form instruction card when using the AM12.

> ***NOTE**: The WAM must be synchronized to the UTK before RScribe operation. The Universal Transmitter/receiver Key (UTK) is a bidirectional device that links the PC's USB port to the WAM.*

Connecting the Acquisition Module

The AM12 connects to a USB port on the PC for signal acquisition. The RScribe will automatically detect the AM12 once it's connected to the USB port.

The WAM communicates via the UTK (Universal Transmitter/receiver Key) connected to an active USB port on the PC. The WAM is synchronized with the UTK making them a matched pair. Using the same UTK that was last paired to the WAM maintains their synchronization.

Pairing WAM with RScribe

Start the RScribe application. Navigate to the real-time display and:

- Select **WAM Pairing**.
- Place the WAM (powered off) in close proximity to the UTK receiver connected to an RScribe USB port.
- Select **Start**.
- Select **Yes**.
- Turn WAM on**.**
- A successfully paired message will display.
- Select **DONE**.

> ***NOTE**: Disconnecting the UTK and connecting the AM12 will automatically cause the RScribe to switch to the AM12. It is not necessary to pair the WAM with the same UTK to use it again.*

The operator may acquire an ECG by connecting either the AM12 directly to the USB port or, may use a paired WAM and UTK. The RScribe automatically detects when the AM12 and/or the UTK are connected to USB ports on the PC. If both are connected at the same time the AM12 will take priority over the UTK (WAM). If the AM12 is removed while the UTK (WAM) remains connected to the PC, signal acquisition reverts to the WAM.

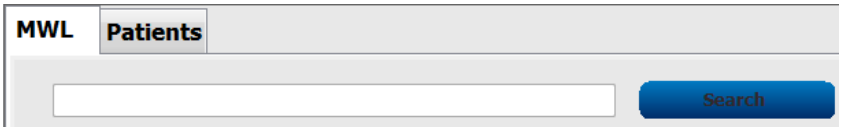
9. MWL/PATIENTS

The MWL/Patients icon  allows you to schedule exams and enter patient demographics information. Point and left-click the mouse over this icon to open a window for scheduling resting ECG exams and to view the existing schedule.

When the modality is linked to an external scheduling system, this information arrives from institution entered orders.

When the icon is selected, a split window appears with two selectable tabs (MWL and Patients) on the left and Patient or Order Information fields on the right, dependent on the selected tab.

A Search field and button are present below the tab selections.



MWL

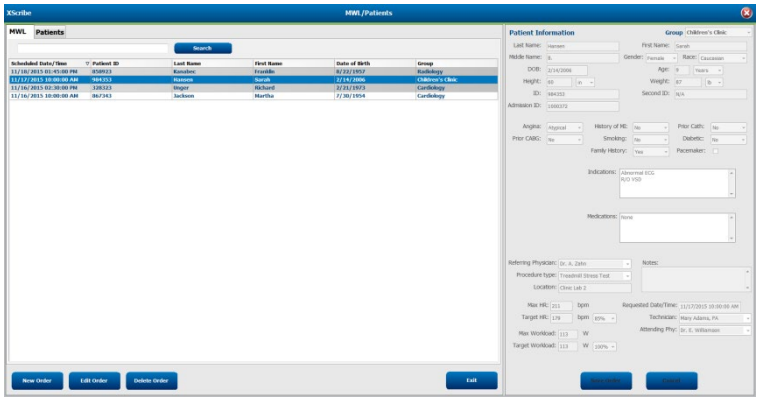
Text that is entered in the search field will be used to search through the Modality Worklist (MWL) to display orders that start with matching text in the Last Name, First Name, or Patient ID. A blank search field will list all orders.

MWL columns include Scheduled Date/Time, Patient ID, Last Name, First Name, Date of Birth, and Group. The list can be sorted by selecting the column headers. A second selection on the same header will reverse the column order.

Edit Order

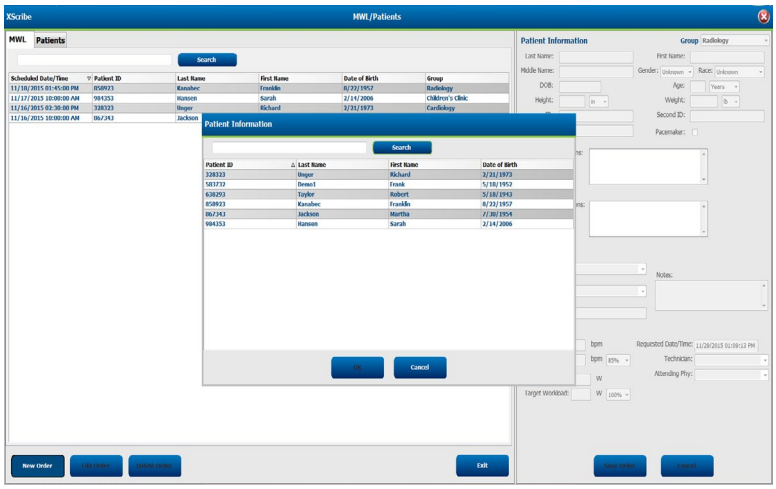
Selection of an entry in the list will display the Order Information as read-only. Select the **Edit** buttons to modify the order. Select the **Save Order** button to save changes or **Cancel** to cancel all changes.

NOTE: *This function is not available when the DICOM feature is enabled.*



New Order

A **New Order** button allows a Patient ID or name search of patient information in the database allowing addition of a new order in the MWL list. A blank search field will list all patients in the database.

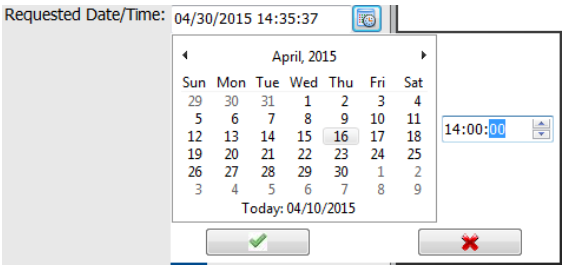


When the patient does not already exist in the database, **Cancel** the Patient Information search and select the **Patients** tab to enter a new patient. Instructions are on the following page.

The patient information populates the Order Information at the right of the display. Additional order information can be entered and the order saved. The **Cancel** button will close the order without saving.

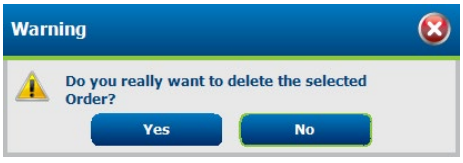
When entering an order, use the **Group** drop-down list to assign the order to a specific group that has been configured in the system settings.

Select the calendar icon in the bottom right corner of the **Order Information** section to open a calendar for selection of the scheduled order date and time. Date and time may also be entered by typing in the **Requested Date/Time** field.



Delete an Existing Order

Select an existing patient order by highlighting the line and then select **Delete Order**.



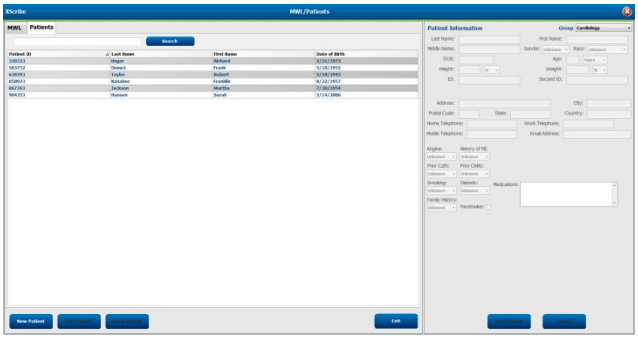
A warning message prompting delete confirmation will appear. Select **Yes** to delete the order or **No** to cancel and return to the MWL listing.

Exit MWL/Patients

Select the **Exit** button when finished to return to the main menu.

Patients

Text that is entered in the search field will be used to search through the patient demographics in the database to display any patients that start with matching text in the Last Name, First Name, or Patient ID.



Patients' columns include Patient ID, Last Name, First Name, and Date of Birth. The list can be sorted by selecting the column headers. A second selection on the same header will reverse the column order.

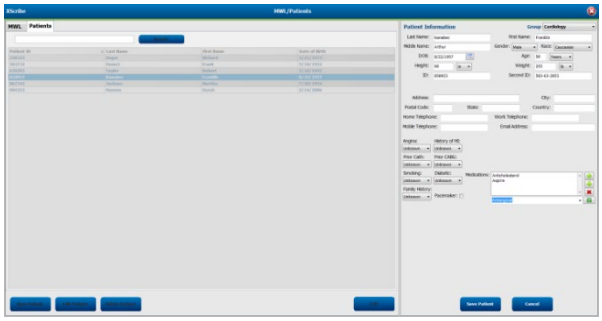
Edit Patient

Selection of an entry in the list will display the Patient Information as read-only. Select the **Edit** button to enable and modify the patient demographics fields.

Select the **Save Patient** button when finished to save changes or the **Cancel** button to return to read-only demographics without saving changes.

New Patient

A **New Patient** button clears any selected patient information allowing addition of a new patient in the list. The new patient information can be entered in the demographic fields and the **Save Patient** button selected to save it to the database. The **Cancel** button will close the patient information without saving.

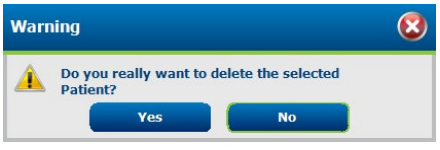


Delete Patient

Select the **Delete** button to remove patient demographics from the database.

> ***NOTE**: The Delete button is disabled when the patient demographics are associated with an existing order or exam. All orders and exams for that patient must first be deleted before the patient demographics can be deleted.*

A warning message prompting delete confirmation will appear. Select **Yes** to delete the patient demographics or **No** to cancel and return to the Patients listing.



Exit MWL/Patient

Select the **Exit** button when finished to return to the main menu.

10. RECORD AN ECG

Patient Preparation

Before attaching the electrodes, assure the patient fully understands the procedure and what to expect.

- Privacy is very important in assuring the patient is relaxed.
- Reassure the patient that the procedure is painless and that the electrodes on their skin are all that they will feel.
- Make sure the patient is lying down and is comfortable. If the table is narrow, tuck the patient's hands under his/her buttocks to ensure their muscles are relaxed.
- Once all the electrodes are attached, ask the patient to lie still and to not talk. Explain this will assist you in acquiring a good ECG.

Preparing Patient Skin

Thorough skin preparation is very important. There is natural resistance on the skin surface from various sources such as hair, oil, and dry, dead skin. Skin preparation is intended to reduce resistance and maximize the quality of the ECG signal.

To prepare the skin:

- Shave hair from electrode sites if necessary.
- Wash area with warm, soapy water if dirty or oily, or wipe with a de-greasing pad.
- Dry skin vigorously with a pad such as 2 x 2 or 4 x 4 gauze to remove dead skin cells and oil, and to increase capillary blood flow.

***NOTE**: With elderly or frail patients take care to not abrade the skin causing discomfort or bruising.*

Patient Hookup

Correct electrode placement is essential for acquiring a diagnostically valid ECG.

A low resistance highly conductive pathway from the skin surface to the electrocardiograph provides superior noise-free waveforms. Good quality silver-silver chloride (Ag/AgCl) electrodes within their expiration date should be used whenever taking an ECG.

***TIP**: Electrodes should be stored in an air-tight container. Electrodes will dry out if not stored properly causing reduced adhesion and conductivity, leading to poor trace quality.*

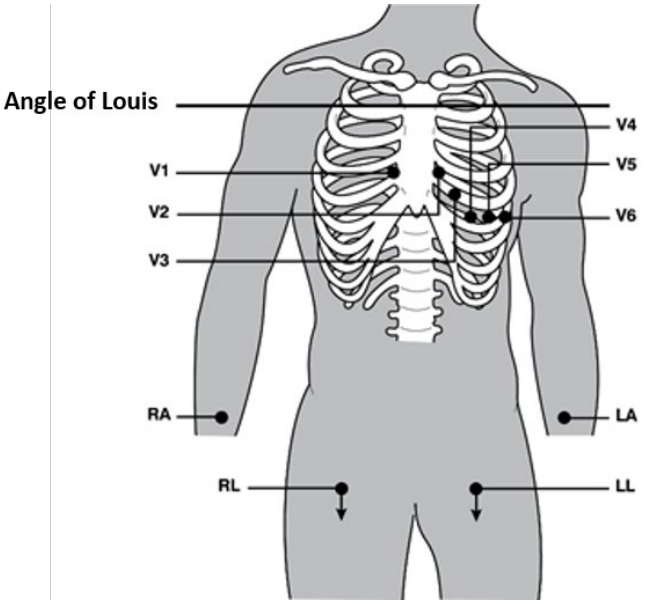
To Attach the Electrodes

1. Expose the arms and legs of the patient to attach the limb leads.
2. Place the electrodes on flat, fleshy parts of the arms and legs.
3. If a limb site is not available, place the electrodes on a perfused area of the stump.
4. Attach the electrodes to the skin. A good test for firm electrode contact is to slightly tug on the electrode to check adhesion. If the electrode moves freely, it needs to be changed. If the electrode does not move easily, a good connection has been obtained.

For accurate V-lead placement, it is important to locate the 4th intercostal space Because patients vary with respect to body shape, it is difficult to palpate the 1st intercostal space with accuracy. Thus, locate the 2nd intercostal space by first palpating the little bony prominence called the **Angle of Louis**, where the body of the sternum joins the manubrium. This rise in the sternum identifies where the second rib is attached, and the space just below it is the 2nd intercostal space. Palpate and count down on the chest until you locate the 4th intercostal space.

Patient Hookup Summary Table

AAMI Lead	IEC Lead	Electrode Position
V1 Red	C1 Red	On the 4th intercostal space at the right sternal border.
V2 Yellow	C2 Yellow	On the 4th intercostal space at the left sternal border.
V3 Green	C3 Green	Midway between V2/C2 and V4/C4 electrodes.
V4 Blue	C4 Brown	On the 5th intercostal space at the left midclavicular line.
V5 Orange	C5 Black	Midway between V4/C4 and V6/C6 electrodes.
V6 Violet	C6 Violet	On the left midaxillary line, horizontal with V4/C4 electrode.
LA Black RA White	L Yellow R Red	On the deltoid, forearm, or wrist.
LL Red RL Green	F Green N Black	On the thigh or ankle.



Patient Demographic Entry

Patient demographic information can be entered before, during or after acquisition. The entered patient ID fields will remain populated until you acquire the ECG; however, if you turn off the device before exiting the patient information will be cleared.

In addition to the default patient ID format, RScribe also supports custom ID formats for each group with various format structures. Welch Allyn Technical Support personnel are available to assist you in customizing the ID format.

STAT ECG

To begin STAT ECG acquisition without patient demographic entry, select the STAT ECG icon  from the main display to directly start continuous ECG display. Skip to ECG, Acquisition, and Storage on the following pages. Patient demographics may be entered during ECG collection or after ending ECG acquisition by retrieval of the STAT ECG from the database.

Start a Resting Exam

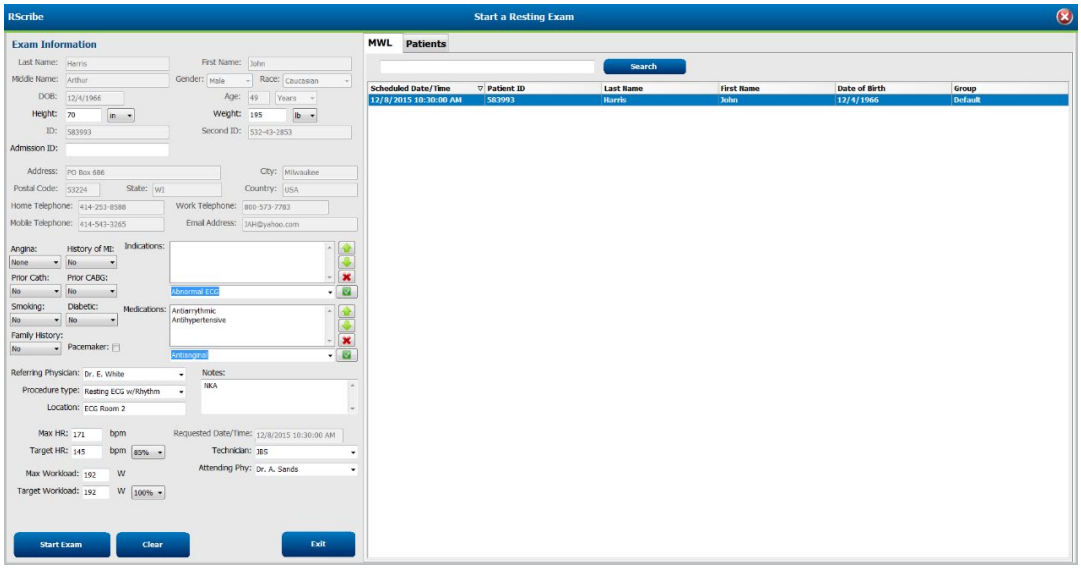
Select the Start a Resting Exam icon to open the MWL/Patients window.

- When scheduled orders exist, the MWL tab is automatically selected.
- When no scheduled orders exist, the Patients tab is automatically selected.

Scheduled Order(s)

1. When there is an existing order for the patient, highlight the patient in the MWL list.

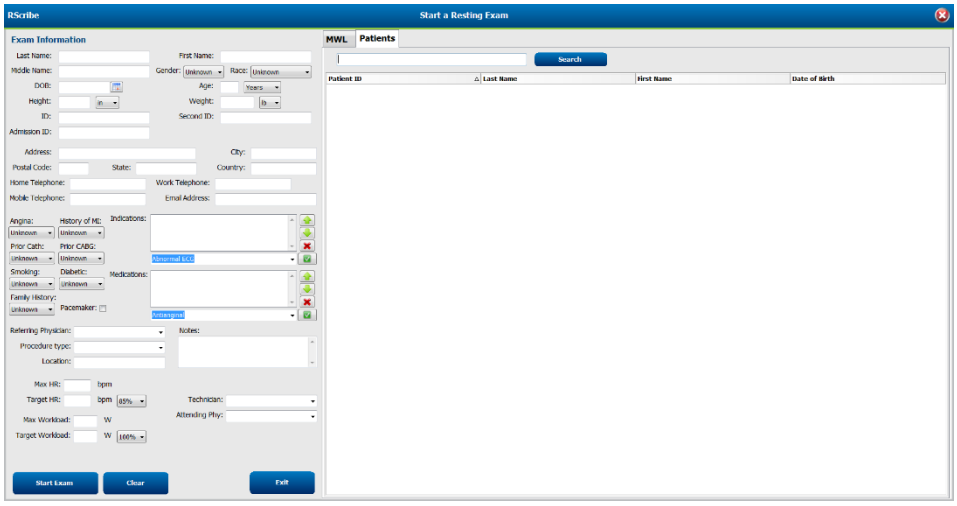
   The Exam Information section on the left side of the display is populated by the previously entered patient demographics.



2. Enter any desired exam information on the left panel and select **Start Exam**.

No Scheduled Order(s)

When no scheduled orders exist, the Patient tab is automatically selected.



1. Search for existing patients in the database by entering a name or ID number, and then select the **Search** button.

2. When the patient is not found, enter any desired patient and exam information on the left panel.

   ***NOTE**: If the entered ID number already exists in the database, a warning will appear informing you to click OK to continue or Cancel to correct the entered demographics.*

   Enter date of birth by typing MM/DD/YY or DD-MM-YY according to the computer regional settings, or by clicking on the calendar icon. Select the decade and the year; use the left/right arrows to scroll the year, the month, and the day to populate the field. Age will be automatically calculated.

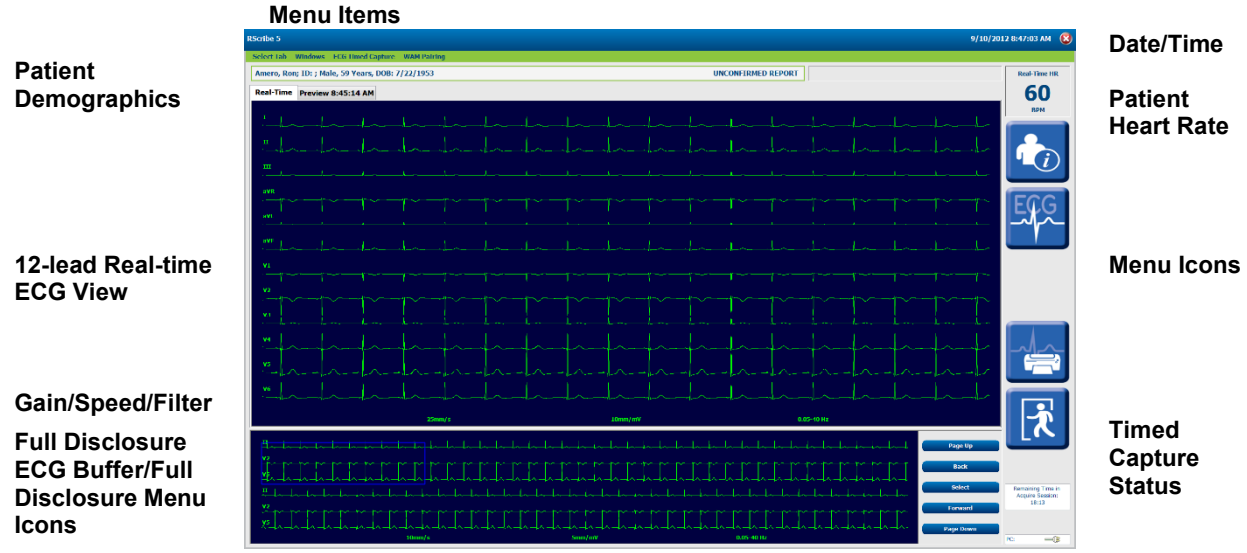
   RScribe will remember list items such as Indications, Medications, Procedure Type, and Referring Physician as they are entered. The added items will be available for future selection. Enter text or choose items from the drop-down menu and then click on the green checkmark to enter. Use the red **X** to delete the selected item. When there are multiple entries, items can be moved up or down by using the green arrow keys.

   Some fields are not available (grayed) when patient demographics are attached to existing exams in the database or are ordered by an external system.

ECG Acquisition, Printing, and Storage

Once the patient is connected, RScribe continuously captures and displays ECG data. The patient should be in a supine position and encouraged to relax to ensure that the ECG is free from artifact (noise) due to patient activity.

Display Overview



Menu Items

- Use **Select Tab** or click on the desired Tab to display real-time ECG data or a previously acquired ECG.
- Use **Windows** to display real-time ECG data, real-time ECG data with full disclosure, global measurements, interpretation, median beats, and median zoom window.
- Use **ECG Timed Capture** to automatically acquire ECGs at preset time intervals.
    - ***Off*** requires the clinician to manually acquire the ECG.
    - ***On*** will allow automatically capture ECGs at intervals defined by "Set Capture Time" starting when the ECG button is pressed for the first time.
    - ***Set Capture Time*** permits the clinician to preset the time intervals in which the ECG will automatically be captured once On has been selected. Automatic acquisition may be as frequent as every 20 seconds, or once per a 60-minute period.
- Use **WAM Pairing** to pair the WAM acquisition module. (Required with initial use of the WAM with RScribe.)

***NOTE**: The wireless acquisition module (WAM) must be configured for compatibility to a specific RScribe prior to signal acquisition. See the WAM user manual for WAM pairing instructions. If the AM12 is connected and no WAM is detected, the AM12 will automatically be used for ECG acquisition.*

Date/Time

Current date/time is displayed in the upper right-hand corner of the display.

Patient Heart Rate (HR)

When a patient is connected to the RScribe, his/her HR is displayed in real time. The HR is the average ventricular rate measured over an average of the patient's last five beats.

NOTE: *If a lead fail occurs or swapped leads are suspected, a red message is visible next to the HR, indicating the leads off or possibly misplaced, for both limb lead and chest lead fault conditions.*

Timed Capture Status

This value indicates the time remaining until the next timed ECG capture.

Full Disclosure ECG Buffer

Single lead ECG or three (3) lead ECG (configurable) is accumulated and displayed along the bottom edge of the screen. Twelve (12) leads of ECG are accumulated and stored, up to 60 minutes of full disclosure, which can be reviewed or printed as a single lead or as acquired ECG.

The full disclosure buffer provides a single or three-lead detailed view of the beats surrounding the ECG display focal point. A rectangle superimposed over the ECG indicates the time range of the data in the ECG view. Clicking the left mouse button while in Context view, moves the box to the start of the ten seconds of data required for analysis or review.

Menu Icons

Icon	Description
	Patient Demographics allows editing of existing and entry of new demographics.
	ECG button permits the capture of an ECG at any time the patient is connected.
	10 appears in the place of ECG when Best 10 is selected; selects the best 10 seconds of the buffer as the captured ECG.
	Prints the selected ECG
	Prints a single lead rhythm page of the Full Disclosure buffer
	Ends ECG acquisition session

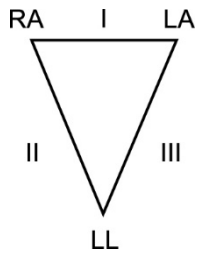
Full Disclosure Menu Icons

Icon	Description
Page Up	Page Up advances the cursor one page back. Page size is determined by the format, speed, and computer screen size.
Back	Back advances the cursor selection backwards one second at a time allowing for selection of a specific 10 seconds of data to be reviewed and selected for analysis.
Select	Select allows for the selection of the data in the cursor to be analyzed.
Forward	Forward advances the cursor selection one second at a time allowing for selection of a specific 10 seconds of data to be reviewed and selected for analysis.
Page Down	Page Down advances the cursor one page forward. Page size is determined by the format, speed, and computer screen size.

Acquire ECGs

Examine the display for artifact or baseline drift. Re-prep and replace electrodes if necessary to obtain satisfactory waveforms. (See *Patient Preparation*.)

Please refer to the following troubleshooting guide based on Einthoven's Triangle:



Artifact	Check Electrode
Lead II and III artifact	Poor LL electrode or left leg tremor
Lead I and II artifact	Poor RA electrode or right arm tremor
Lead I and III artifact	Poor LA electrode or left arm tremor
V Leads	Re-prep site & replace electrode

If a lead fault occurs, square waves appear on the display for that lead and the lead(s) that are faulty will display in the upper left corner of the screen one at a time. After the leads are reattached correctly at least 10 seconds must be acquired before an ECG can be captured.

The program monitors the ECG waveform for unusual configurations that could be caused by misplaced (swapped) electrode positions. If the program detects a high probability of electrode swap, it will display a message like "RA or LA misplaced?" in the same message area as used for lead fault. Check the electrode connections for any misplacement.

> ***NOTE:*** *Although the majority of lead wire swaps are correctly detected, some real ECG configurations may give rise to an inappropriate "misplaced" message, and some real swaps may not be detected due to patient specific ECG morphologies. The automatic detection helps you to prevent lead wire swaps but do not rely completely on the automatic detection.*

Manual ECG Capture

Use the Capture ECG  icon to capture the last 10 seconds of the real time ECG. The captured ECG will appear on the screen in a format similar to a printout and identified by a Tab with the acquisition time. An average beat can also be viewed if selected. The print icon  can now be used to print the unconfirmed report; if set in the configuration, the ECG will print automatically. ECG acquisition can also be performed by pressing the ECG button on the WAM orAM12 acquisition modules.

Best 10 Seconds Selection

If the ECG is not satisfactory, use the BEST 10  icon. When selected, RScribe automatically selects the cleanest 10 seconds of acquired ECG available from within the ECG buffer. If the BEST 10 mode is set as the default the functions of the Capture ECG button are reversed.

Capturing ECGs from the Full Disclosure Buffer

Click anywhere in the full disclosure display at the bottom of the screen to capture an ECG retrospectively from the buffer. A 10 second blue rectangle will appear in the buffer, and a preview of the ECG is displayed. You can navigate through the window with the mouse, or use the buttons on the side. Use **Select** to confirm the capture of the 10-second ECG. All captured ECGs are visible as white rectangles in the full disclosure window. The complete full disclosure data can be printed as a single lead by using the Print Full Disclosure  icon. Waveform data reviewed on the screen can be selected and printed as a single lead of up to 60 minutes of data, depending on the amount of ECG data that has been acquired.

> ***NOTE:*** *ECG size and gain will automatically adjust to allow all data to fit on one page.*

> ***NOTE:*** *The full disclosure data cannot be accessed anymore once the acquisition session has been ended.*

Timed ECG Recording

RScribe automatically acquires ECGs at preset time intervals for future review and processing on the full disclosure screen. Automatic acquisition is based on the amount of full disclosure time set by the administrator. It may be set as frequent as every 20 seconds or as infrequently as once per a 60-minute period.

The ECGs captured for the current patient are presented as Tab at the top of the real-time display, identified as a sequential number and the acquisition time. The number also displays in the full disclosure ECG buffer next to a white box identifying the captured 10 seconds. As the waveform data on the screen refreshes, additional ECGs can be acquired as necessary. Previously acquired data will be retained in the buffer until the full disclosure buffer has been filled. A new Tab will be added each new ECG is acquired.

See the description of the Menu Item "ECG Timed Capture" above for instructions how to initiate and set up timed capture of ECGs.

> ***NOTE****: When the acquisition period is complete, RScribe automatically ends acquisition.*

> ***NOTE****: Multiple ECGs can only be captured if set in the configuration. If not set, each ECG selection will override any previously captured ECG.*

Captured ECG Display

Once captured, the ECG is displayed with measurements and VERITAS automatic interpretation (if enabled). Display parameters can be changed as described below. Multiple captured ECGs can be deleted by selecting the "X" in the Tab identifying it. Average complexes can also be displayed using the top menu or the relevant buttons on the upper right of the captured view.

> ***NOTE****: If no patient age is entered prior to acquiring an ECG, the interpretation algorithm assumes a 40-year old male. The statement "INTERPRETATION BASED ON A DEFAULT AGE OF 40 YEARS" will be added to the Interpretation text.*

> ***NOTE****: If a patient age of zero (0) is used the interpretation algorithm will assume a 6-month old infant. The statement "INTERPRETATION BASED ON A DEFAULT AGE OF 6 MONTHS" will be added to the interpretation text.*

> ***NOTE****: Where global measurement values are not available (i.e., rate, interval, axis), text such as '- - 'or '*' or similar will display/print for the unavailable value.*

Printing

If Auto-Print is enabled in the configuration, an ECG is printed following capturing, both for manual or timed capture.

For manual printing, select  . If the Auto-Print configuration is disabled, a 10-second preview window will assist in ensuring a quality ECG acquisition prior to printing. The view on the display is what will print out.

To change the speed, gain, filter, or print format (regardless of the plot format configuration setting) of the acquired ECG, use a right mouse click over the acquired ECG (see below).

The complete full disclosure data can be printed as a single lead by selecting the Print Full Disclosure  icon. Waveform data reviewed on the screen can be selected and printed as a single lead of up to 60 minutes of data, depending on the amount of ECG data that has been acquired.

Storage

ECGs are automatically saved to the database upon acquisition. If the current user has permission to review (edit the interpretation), the RScribe program will automatically restart in Review mode after ending the ECG acquisition session, with the first ECG captured in the session selected. If multiple ECGs were captured, they can be edited using the worklist or exam search functions.

Change Settings

Many settings can be changed by clicking with the right mouse button on areas of the screen. A so-called "context menu" will be displayed as seen in the example below. The context menus will be different depending on the area where you click. Some specific context menus are available for display speed, gain, filter settings and lead layout in the area of the window where that parameter is displayed. The mouse indicator will change into a "pointing finger" when you hover over those areas. The context menu is also specific to the display area where you are (e.g. the full disclosure window or the captured ECG window), but where appropriate, the settings may apply to all windows; for example, if you change the gain through the menu in the full disclosure window, the gain in the real time window is also changed. See Section 5 of this manual for a detailed description of the context menus.

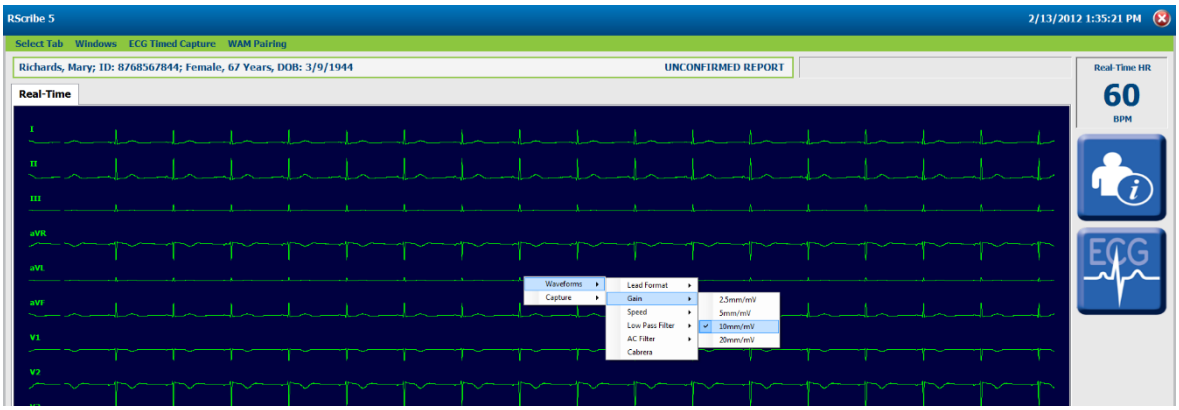
11. CONTEXT MENUS

Context Menu Settings

Many settings can be changed by clicking with the right mouse button on areas of the screen. A so-called "context menu" will be displayed as seen in the example below. The context menus will be different depending on the area where you click. Some specific context menus are available for display speed, gain, filter settings and lead layout in the area of the window where that parameter is displayed. The mouse indicator will change into a "pointing finger" when you hover over those areas. The context menu is also specific to the display area where you are (e.g. the full disclosure window or the captured ECG window), but where appropriate, the settings may apply to all windows; for example, if you change the gain through the menu in the full disclosure window, the gain in the real time window is also changed. Some context menus activate specific tools, like measurement calipers.

> ***NOTE**: Changes are maintained ONLY for the current sessions. Settings will revert back to the default settings with the next patient. See the appropriate section in this manual to permanently change the default settings.*

> ***NOTE**: Some of the described menus may not be present because they were locked by the administrator in the RScribe configuration settings.*



Change Lead Format

- Right mouse click while the cursor is over the ECG waveform
- Select **Waveforms**
- Select **Lead Format**
- Select from: 3+1, 6, 3+3, 12, or 6+6

> ***NOTE:** In the real time display only 6+6 and 12 lead formats are available. It is recommended to choose a format that allows at least 10 seconds of real time ECG on the screen during acquisition.*

3 + 1 Lead Format – Select Lead

- Right mouse click while the cursor is over the ECG waveform
- Select **Waveforms**
- Select **Lead Format**
- Select: **3+1**
- Select from: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, or V6

3 + 3 Lead Format – Select Leads

- Right mouse click while the cursor is over the ECG waveform
- Select **Waveforms**
- Select **Lead Format**
- Select: **3+3**
- Select from: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, or V6

NOTE: *3+3 lead format requires a lead selection for each of the three leads presented.*

Full Disclosure Change Lead Format

- To change lead format full disclosure display:
  - Right mouse click while the cursor is over the ECG waveform in the Full Disclosure window
  - Select **Waveforms**
  - Select **Lead Format**
  - Select from: single lead by 3, single lead by 6, or 3 lead

NOTE: *Single lead by 3 displays three lines of ECG data in the full disclosure buffer. Single lead by 6 displays six lines of ECG data in the full disclosure buffer. Three lead displays two groups of three leads in the full disclosure buffer. The amount of data displayed is dependent on the size of the display and the ECG sweep speed selected.*

Full Disclosure Single-lead Format – Change Lead

- To change the lead in a single-lead format:
  - Right mouse click while the cursor is over the ECG waveform in the Full Disclosure window
  - Select **Waveforms**
  - Select **Single Lead Format**
  - Select from: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, or V6

Full Disclosure Three-lead Format – Change Leads

- To change the lead in a 3-lead format:
  - Right mouse click while the cursor is over the ECG waveform in the Full Disclosure window
  - Select **Three Lead Format**
  - Select from: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, or V6

NOTE: *Three-lead format requires a lead selection for each of the three leads presented.*

Full Disclosure Change Print Lead

- To change the print lead:
  - Right mouse click while the cursor is over the ECG waveform in the Full Disclosure window
  - Select **Print Lead**
  - Select from: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, or V6

Change the ECG Presentation Gain

- Right mouse click while the cursor is over the ECG waveform
- Select **Waveforms**
- Select **Gain**
- Select from: 2.5 mm/mV, 5 mm/mV, 10mm/mV, or 20 mm/mV
- Gain displays and prints at the bottom of the ECG

NOTE: *A shortcut to this menu is available when you right-click on the current gain display of the window. Different gains are available in the median and full disclosure windows.*

Change the ECG Presentation Speed

- Right mouse click while the cursor is over the ECG waveform
- Select **Waveforms**
- Select **Speed**
- Select from: 5 mm/s, 10 mm/s, 25mm/s, or 50 mm/s
- Gain displays and prints at the bottom of the ECG

***NOTE**: A shortcut to this menu is available when you right-click on the current speed display of the window. Different speeds are available in the median and full disclosure windows.*

Change ECG Low Pass Filter

- Right mouse click while the cursor is over the ECG waveform
- Select **Waveforms**
- Select **Low Pass Filter**
- Select from: 0.05 – 40 Hz, 0.05 – 150 Hz, or 0.05 – 300 Hz

***WARNING**: When the 40 Hz filter is used, the frequency response requirement for diagnostic ECG equipment cannot be met. The 40 Hz filter significantly reduces high-frequency components of the ECG and pacemaker spike amplitudes, and is recommended only if high-frequency noise cannot be reduced by proper procedures.*

***NOTE**: A filter setting lower than 150 Hz will reduce the visibility of fast transients in the ECG like pacemaker spikes or fast notches. For pediatric ECGs a 300 Hz setting is recommended. Filter settings apply only to displayed and printed data. Data is stored in unfiltered format.*

***NOTE**: The High Pass filter (or base line filter), indicated by the number "0.05" cannot be changed. RScribe automatically implements a high performance base line filter that does not distort the ECG waveform. High Pass filters that do distort the ECG waveform are not available.*

Apply Anti-Aliasing to the ECG Display

- Right mouse click while the cursor is over the ECG waveform
- Select **Waveforms**
- Select **Anti-Aliasing**

***NOTE**: Anti aliasing reduces slightly the "staircase" effect due to individual pixels in digital monitors, but may put a strain on low performance computers.*

Change AC Filter on the Real-time ECG

- Right mouse click while the cursor is over the real time ECG waveform
- Select **Waveforms**
- Select **AC Filter**
- Select from: None, 50 Hz, or 60 Hz

***NOTE**: RScribe removes 60 Hz or 50 Hz interference. The setting you select depends on the line frequency in your country. For example, use the 60 Hz setting in the U.S. If the setting is correct but you still see mains interference, check the electrode connections, mains interference sources like transformers or motors close to the patient, and the connection to the safety ground of the computer. Try operating from battery power if needed.*

Change ECG Presentation To or From Cabrera Format

- Right mouse click while the cursor is on the ECG waveform.
- Select Waveforms
- Select or unselect

Change Median Zoomed Lead

- Right mouse click while the cursor is over the Median ECG waveform
- Select **Waveforms**
- Select **Lead**
- Select from: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6 , or All leads (all 12 leads superimposed)

Set Auto Print On or Off

- Right mouse click while the cursor is over the Median ECG waveform
- Select **Capture**
- Select **Auto Print**
- Select from: on or off

NOTE: *Defines whether or not RScribe will automatically print an unconfirmed ECG after a timed or manual capture. Manual printouts are always possible.*

Switch Between Best Ten and Last 10 Seconds Capture Mode

- Right mouse click while the cursor is over the real time ECG waveform
- Select **Capture**
- Select **Capture Mode**
- Select from: Best 10 or Last 10

NOTE: *Defines whether or not the RScribe will automatically capture the 10 seconds ECG with the lowest noise level from the full disclosure buffer, or the last 10 seconds of data when the ECG button is selected.*

Print Pace Spike Channel

- Right mouse click while the cursor is over the acquired ECG waveform
- Select **Pace Spike** on or off

NOTE: *When Pacer Spike is selected small tick marks will indicate at the bottom of the ECG printout where a pacemaker spike was detected by RScribe. This is not visible on the computer display.*

Display and Print Average RR Interval

- Right mouse click while the cursor is over the acquired ECG waveform
- Select **Interpretation**
- Select **Avg RR** on or off

Display and Print QTcB (Bazett)

- Right mouse click while the cursor is over the acquired ECG waveform
- Select **Interpretation**
- Select **QTcB** on or off

Display and Print QTcF (Fridericia)

- Right mouse click while the cursor is over the acquired ECG waveform
- Select **Interpretation**
- Select **QTcF** on or off

NOTE: *Welch Allyn VERITAS calculates by default the QTc with a linear correction method for average RR-interval similar to the Framingham method. In addition it is possible to display and print the QTc corrected with the Bazett or Fridericia correction methods.*

Print Automatic Interpretation Text

- Right mouse click while the cursor is over the acquired ECG waveform
- Select **Interpretation**
- Select **Print Interpretation** on or off

Display and Print Automatic Interpretation Reasons Text

- Right mouse click while the cursor is over the real time ECG waveform
- Select **Capture**
- Select **Interpretation**
- Select **Reasons Text** on or off

NOTE: *Reasons statements indicate why a particular interpretive statement was printed. Reasons statements print enclosed in [square brackets] within the interpretive text if the interpretation option is turned on. Turning the reasons statement function on or off does not affect the measurements performed or the interpretive statements selected by the analysis program.*

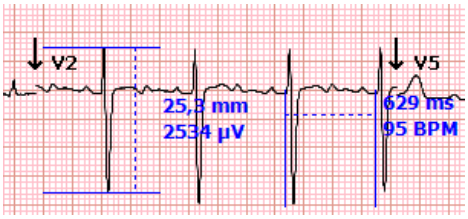
For Example:

Anteroseptal Infarct [40+ ms Q WAVE IN V1-V4] where "Anteroseptal Infarct" is the interpretive statement, and "40+ ms Q WAVE IN V1-V4" is the reason statement or explanation as to why the interpretive statement was printed.

Display Calipers for on-screen measurement

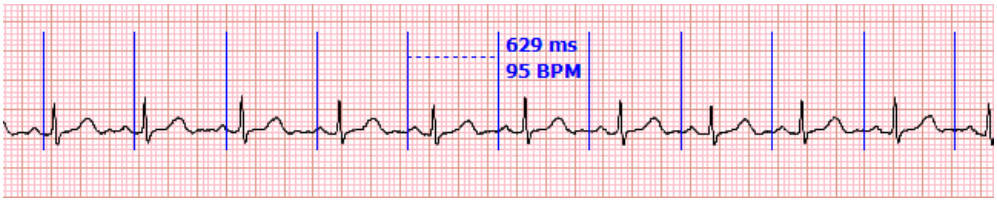
- Right mouse click while the cursor is over the acquired ECG waveform
- Select **Show Calipers** on or off

A caliper tool is available in the context menus when you right click anywhere in the main ECG window, and select Calipers. Calipers for amplitude and interval measurements will appear on the waveform.



Hover with the mouse over the caliper area. When you are close to the dotted line, the mouse cursor will change to a cross and you can now drag the caliper to desired position without changing the distance. When you are close to the solid line, the mouse cursor will change to a double arrow, and you can drag the single line to the desired position.

When you right click when the arrows or cross is present on the interval calipers, you can select **March Out** to repeat the interval caliper over the duration of the recording. You can use any of the vertical solid line to expand or shrink the calipers, and the horizontal dotted line to drag the whole series to a different position.



12. EXAM SEARCH

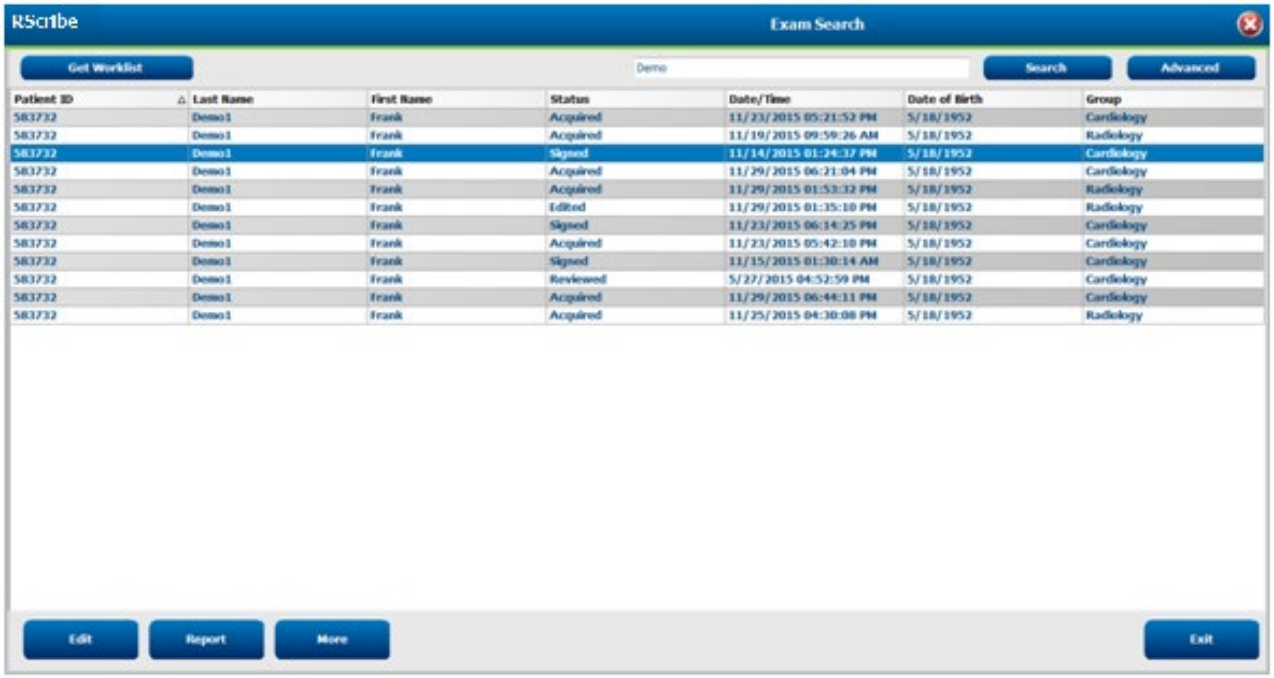
Selecting ECG Reports to Review

The Exam Search icon  is available for users that will edit, review, and sign exams. Click on the icon to open a window allowing you to view the exams according to their status and your role.

The **Get Worklist** button will filter the list of exams according to the User Preferences for the logged in user.

A search field is available for entry of a patient name or ID number. When you enter one or more alphanumeric characters, all exams that start with those characters are displayed in a list when the **Search** button is clicked. Listed exams can be sorted by clicking any of the column headers.

When a complete last name, first name, or patient ID is entered in the search field and the **Search** button is clicked, all matching exams will appear in the list.



Highlight an exam in the list and then click the

- **Edit** button to open the exam for review and editing, or
- **Report** button to open the final report for review and printing, or
- **More** button to display more advanced selections explained below.

- **Copy Offline** button that allows an existing exam to be copied to an external drive using a browser for review at another RScribe system.
- **Open Offline** button that allows an RScribe system user to open an exam from another system by browsing to the location of the copied exam.
- **Export** button allows the exam results in PDF, XML, and DICOM format to be sent to a destination defined in the system configuration settings. This is an optional feature and may not be available. This selection is

only enabled when the selected exam(s) has the associated export status enabled in the Workflow Config settings.

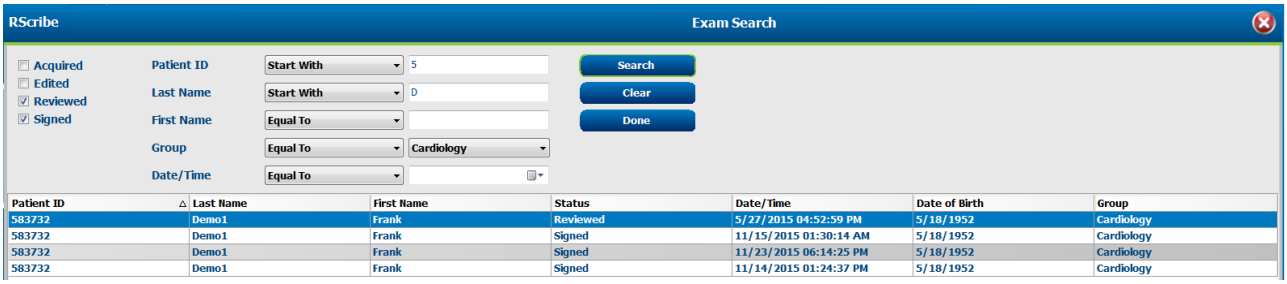
- **Reconcile** button is used to match an order to an exam that was performed before the order was available, or to correct information after the exam has been completed with incorrect patient demographics.
- **Archive** button is used to move the exam from the database to an external drive for long-term storage purposes. Archive may not be available when DICOM settings are set to prevent it.
- **Delete** button is used to permanently remove an exam or an order from the system database. The exam is not recoverable after performing this action.

Advanced Search

For more sophisticated exam list filtering, click on the **Advanced** button. The identifier selections are relational to the selected filter and are dependent on your system configuration.

The exam state(s) are selected by checkbox as identifiers. Click the **Search** button after your filter and identifiers are selected. Click the **Clear** button to cancel and remove your entries from the search fields.

When finished, click the **Done** button to exit the advanced search selections and return to the main Exam Search window.



Exam State Identifiers

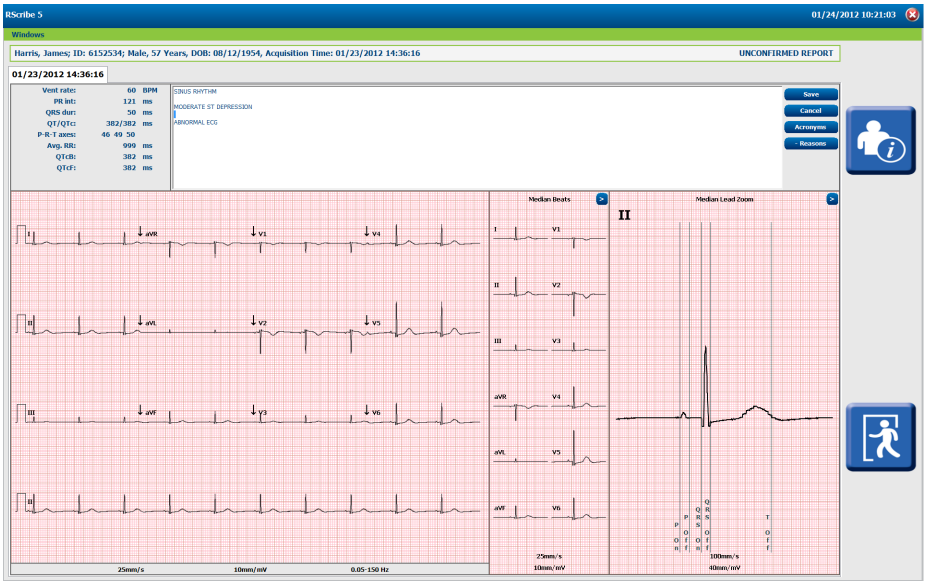
- Acquired
  - Checked if equal to
- Edited
  - Checked if equal to
- Reviewed
  - Checked if equal to
- Signed
  - Checked if equal to

Exam Criteria Identifiers

- Patient ID
  - Equal To
  - Start With
- Last Name
  - Equal To
  - Start With
- First Name
  - Equal To
  - Start With
- Group
  - Equal To
  - Blank (All)
  - Any defined Group this user can access
- Date/Time
  - Equal To
  - Prior To
  - Later Than

Edit a Resting ECG Report

When a report is selected from the Exam Search list, it is presented on the screen as shown below.



Editing Interpretation

- Double click the left mouse button in the interpretive statement box. This will change the grey background to white and activate the right hand editing buttons
- Use the mouse to move to the area of change and make the appropriate edits. You can select a word by double clicking and a complete statement by triple clicking.
- Select **Cancel** to leave the editing process without saving.
- Use **Acronyms** to display and select from a list of user-defined acronyms ensuring consistency of the interpretive statements. Predefined text selectable by Acronyms can be inserted at the mouse position. There are two ways to insert the text:
    - Double clicking on the Acronym in the list
    - Typing the Acronym preceded by the slash character "/" and followed by a space. The Acronym list does not need to be open to use this method.
- Reason statements explaining why certain calls were made may be removed by selecting -**Reasons**.
- Select **Save** to complete the editing process

***NOTE**: Each interpretation field line allows approximately 65 characters. Additional characters will wrap to the next line.*

***NOTE:** The interpretation area supports up to 11 lines of text. Additional lines are allowed but may overwrite the ECG waveform.*

Editing Measurements

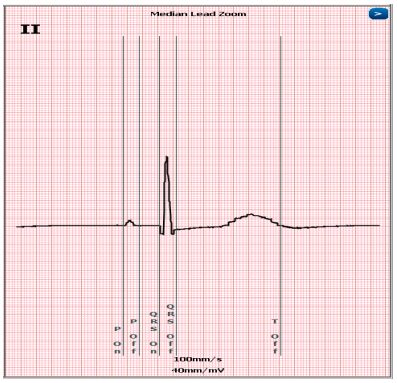
There are two ways to edit the global measurements, by direct editing and by the calipers on the zoomed median beat:

Direct Measurement Editing

- Double click the left mouse button in the measurement box. This will change the grey background to white.
- Use the mouse to move to the area of change and make the appropriate edits.
- Select **Cancel** to leave the editing process without saving.
- Select **OK** to complete the editing process
- Edited measurements will display with an asterisk to the left of the changed value; derived measurements will be automatically recalculated.

Editing using Median Beat Calipers

- This method can be used only for the interval measurements (PR-interval, QRS duration, QT duration)
- Double click the left mouse button in the zoomed median window. Measurement calipers are now active in this window.
- Drag the calipers indicating the cardinal points of the complex to the desired position. The involved intervals will be automatically recalculated.
- Select **Cancel** to leave the editing process without saving.
- Select **OK** to complete the editing process
- Edited measurements will display with an asterisk to the left of the changed value.



***NOTE**: Interval measurements can also be edited using the interval caliper tool. See below.*

Settings

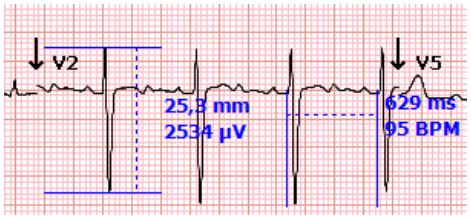
Many settings can be changed using context menus. Right click the mouse on any part of the ECG tracing for the following settings:

- Change the waveform presentation
- Print pacemaker spikes
- Print interpretation

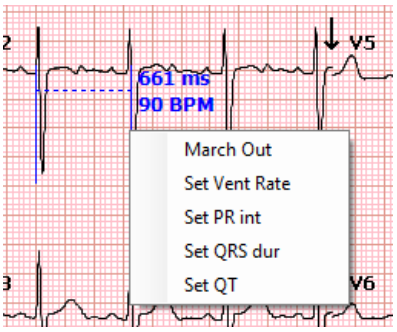
See the *Context Menus* section in this manual for a complete description of the context menus.

Measurement caliper tool

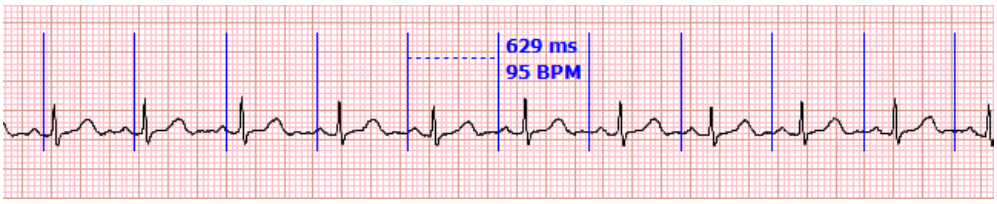
A caliper tool is available in the context menus when you right click anywhere in the main ECG window, and select Calipers. Calipers for amplitude and interval measurements will appear on the waveform.



Hover with the mouse over the caliper area. When you are close to the dotted line, the mouse cursor will change to a cross and you can now drag the caliper to desired position without changing the distance. When you are close to the solid line, the mouse cursor will change to a double arrow, and you can drag the single line to the desired position.



When you right click when the arrows or cross is present on the interval calipers, a special context menu appears that allows you to use the value displayed to edit the ECG interval measurements. You can also select **March Out** to repeat the interval caliper over the duration of the recording. You can use any of the vertical solid line to expand or shrink the calipers, and the horizontal dotted line to drag the whole series to a different position.



Editing Patient Information

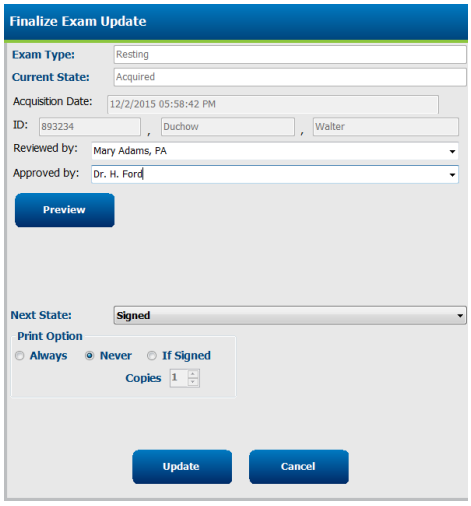
Use the  icon on the right to edit patient and exam demographic information as explained in previous chapters.

Printing the Report

Use the  icon on the right to print the ECG in the currently displayed format on the default Windows printer. Note that the state of the exam is not yet updated at this point, so the previous state of the ECG (e.g. Unconfirmed report) is still reported.

Confirm and Sign the Report

When you have finished the editing, select the Exit  icon. A Finalize Exam Update dialogue will appear, allowing you to define the next state of the exam. The proposed next state is defined by the workflow configuration of the RScribe (see the *System Settings* section in this manual).



- When the next state of a report is “reviewed” a “Reviewed By” control will display.
- When the target state is “signed” an “Approved By” control will also display. If "Legal Signature" is checked in the RScribe configuration work flow control, the “Approved By” control will be replaced by a text box to enter the user name. The user name is pre-populated with the currently logged in user name. A text box is provided to enter the user’s password.
- Select **Preview** to select a preview of the printed record before signing. Preview allows you also to select or deselect the automatic printing of a 12-lead rhythm strip with the report. See next page for description of the print preview program.
- Use Next State to move to Acquired, Edited, Review, or Signed.

  There are four possible states, dependent on how the system settings are defined:
  - **Acquired** indicates that the recording has been acquired and is waiting for the analyst to confirm or modify results.
  - **Edited** indicates the analyst has examined the results and prepared the recording for review.
  - **Reviewed** indicates that an authorized user has confirmed the results are correct.
  - **Signed** indicates that the exam results are correct and no further processing is necessary.

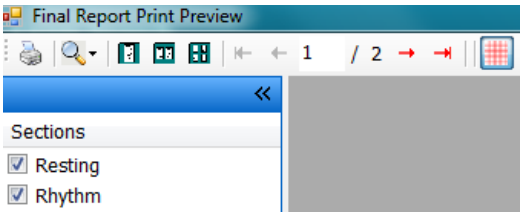
    When selected, both a Username and Password field must be completed by a user with signing privileges (if Legal Signatures is selected in the system settings).
- Use **Print Option** to choose whether an ECG will print automatically after an update.
- Select **Update** to store the changes in Modality Manager, or **Cancel** to discard the changes and return to the Exam Search display.

  ***NOTE**: RScribe can be customized to follow strict user control, allowing the "approved by" and "reviewed by" controls to be populated only by the current user. Contact Welch Allyn Customer service for information about the customization of the product.*

Report Print Preview

To open a preview of the printed report, select **Preview…** from the Exam Update a preview is generated and the first report page is displayed.

Icon Tool Bar



Use the printer icon to open a Windows' printer dialog and choose defined printers with properties, print range, and number of copies. To print the report, select OK.

Use the magnifying glass icon to choose Auto to fit the window or a percentage size for display.

Use the page icons to select a single-page, two-page, or four-page preview.

The number of report pages is shown as xx / xx (displayed page number per total pages). The red arrow keys allow you to preview the next page or the previous page, as well as move to the last page or the first page.

Use the pink grid icon to toggle the ECG grid background on or off. An X appears when the background is off.

Sections

Use the checkboxes at the left of the display to choose sections for inclusion or exclusion in the final report. Select the arrows in the bottom left corner of the display to refresh the displayed report after a change is made. The "Resting" section will print the predefined 12-lead ECG report with demographic information, measurements, interpretation and signature block. The "Rhythm" section prints a 12-lead rhythm strip with summarized patient information and no measurements and interpretation.

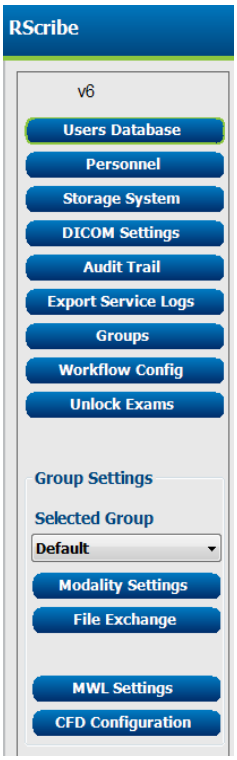
Exit the Print Preview

Click on the red **X** to close the report preview and return to the previous display.

13. SYSTEM SETTINGS

Use the System Configuration icon  on the main screen to enter the system configuration menus

The IT and Clinical Administrator can select the System Configuration icon to enter the RScribe administrative functions. All other users can enter this menu to access the Export Service Log task only.



A list of administrative task buttons is presented to:

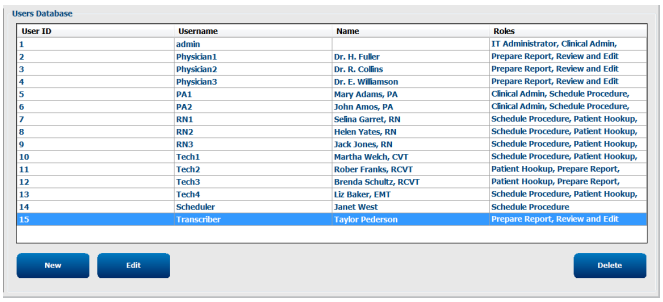
- Manage user accounts
- Manage personnel lists
- Manage Groups
- Manage archived exams *
- View audit trail logs
- Export service logs for troubleshooting purposes
- Configure system-wide modality settings
- Configure DICOM data exchange**
- Configure (DICOM) MWL Settings**
- Configure XML and PDF file exchange
- Configure workflow
- Unlock exams
- CFD Configuration (not applicable for RScribe)

* Task may not be available when operating with DICOM
** Only present when DICOM feature is enabled

Manage User Accounts and Personnel

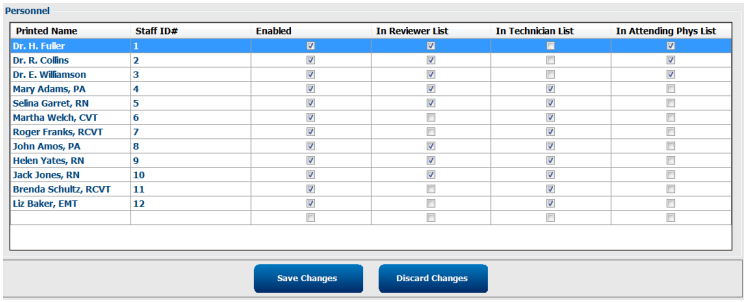
User's Database

The IT administrator will select **Users Database** to create new or delete user accounts, reset user passwords, assign roles (permissions) and groups for each user, and assign personnel entries for that user's selection. When active directory is used, no password is needed.



Personnel

Personnel is selected to add personnel that will be available in the Patient Information, Summary, and the Finalize Exam Update windows. Listed personnel can be assigned to each user account and will appear as selections for the logged-in user and in the appropriate final report fields.



New User

Selection of the **New** button within the Users Database window will open the New User dialog, similar to the window to the right.

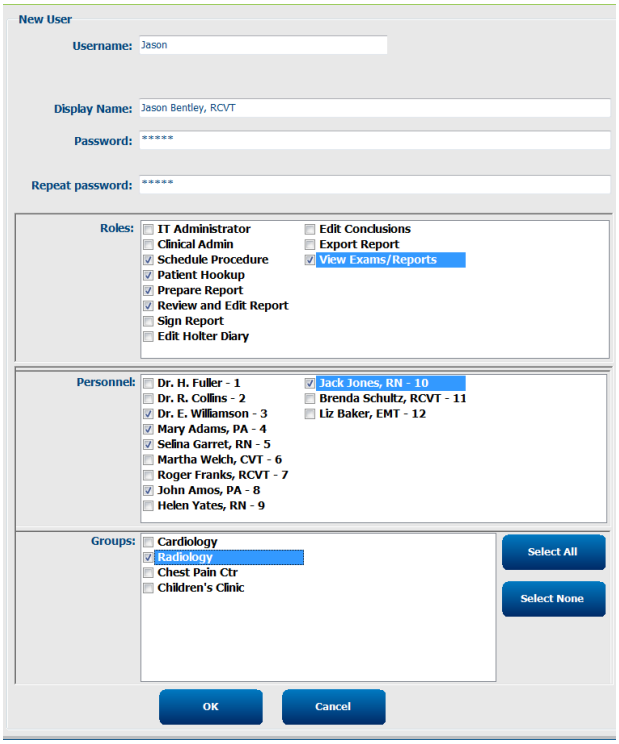
> **Tip:** It is best to complete the Personnel list before adding Users.

The name entered in the Display Name field will appear on the RScribe display when that user logs in.

The login password is entered and repeated.

Roles for this user, Personnel that will populate drop-down lists for this user, and Groups that this user will have access to are checked.

> **Tip:** Refer to User Role Assignment Table.



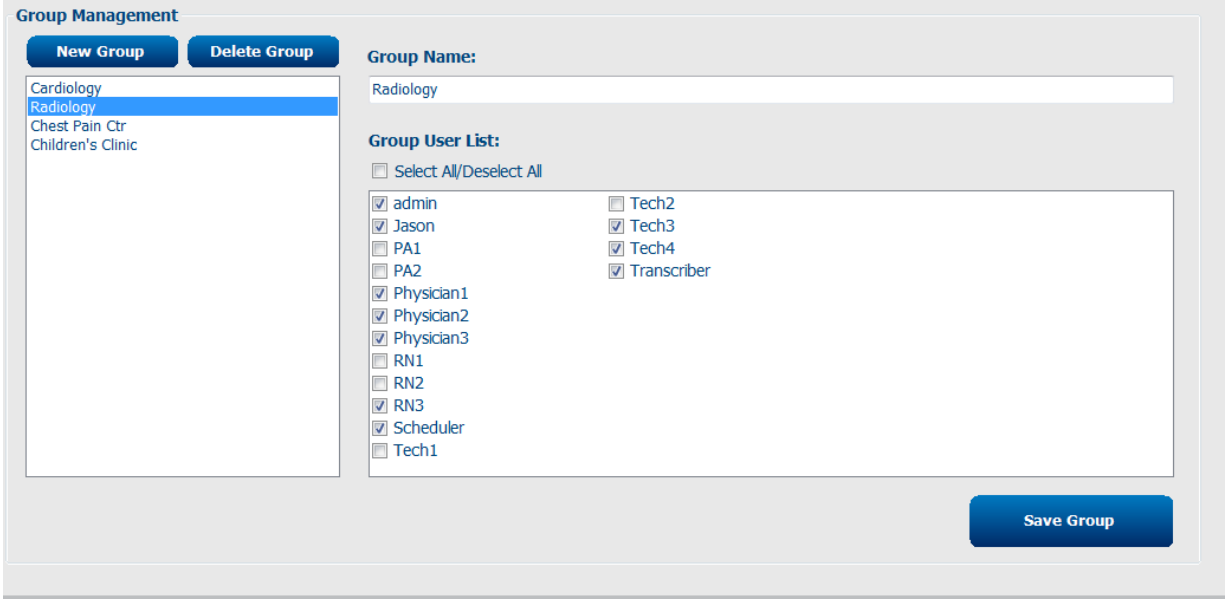
Manage/Create Groups

Groups allow the IT administrator to group exams according to user access, reporting preferences (modality settings) and file exchange preferences. Any user can be assigned to multiple groups. A group definition can be copied and saved with a new name to create a second group, copying all settings and preferences of the existing group.

- Select the **Groups** button to make changes. Any created group can be copied, renamed and modified.
- To create a new group, highlight the group you would like to copy, select **New Group**, and enter the new **Group Name**. A new group will be created with the settings of the highlighted group.
- Select the users under the **Group User List** that may have access to the highlighted group. The Select All and Deselect All selection can be used to enable or disable all users.

- If you want to rename a group without creating a new one, highlight the group, and enter a Group Name
- Select **Save Group** to save your changes.

The Default group (first in the list) can only be renamed. An unlimited number of new groups can be created and modified.



RScribe Modality Settings, DICOM Modality Worklist (MWL), File Exchange paths and Filename customization can be uniquely defined for each individual group.

Groups, with exception of the Default group, can be deleted. All exams present in the database for the deleted group will be automatically assigned to the default group.

Modality Settings

Modality Settings define all RScribe modality specific default values that do not change on a daily or patient-to-patient basis. Most of these settings can be modified within the RScribe modality for a single exam, but most of these default conditions will rarely need to change. The Modality settings may be "Locked" by the administrator, meaning that the setting will not be available from within the modality. Use the "Lock" checkbox to the right of each setting to exclude it from the settings available from within the modality.

Modality settings and file exchange settings are Group dependent; make sure to select the desired group before proceeding.

Select the tab you wish to modify and click on **Save Changes** to apply or **Discard Changes** to cancel changes before exiting.

Waveforms Tab

Waveforms

Gain

- To change default ECG gain:
  - Position the left mouse key over the **Gain**
  - Select **Gain**
  - Select from: 2.5 mm/mV, 5 mm/mV, 10mm/mV, or 20 mm/mV
  - Gain displays and prints at the bottom of the ECG

Anti-aliasing

- To apply anti-aliasing to ECG view:
  - Select **Anti-aliasing**
  - Choices: On, Off

***NOTE**: Anti aliasing reduces slightly the "staircase" effect due to individual pixels in digital monitors, but may put a strain on low performance computers.*

Low Pass Filter

- To change default ECG low pass filter:
  - Select **Low Pass Filter**
  - Select from: 0.05 – 40 Hz, 0.05 – 150 Hz, or 0.05 – 300 Hz

***WARNING**: When the 40 Hz filter is used, the frequency response requirement for diagnostic ECG equipment cannot be met. The 40 Hz filter significantly reduces high-frequency components of the ECG and pacemaker spike amplitudes, and is recommended only if high-frequency noise cannot be reduced by proper procedures.*

***NOTE**: A filter setting lower than 150 Hz will reduce the visibility of fast transients in the ECG like pacemaker spikes or fast notches. For pediatric ECGs a 300 Hz setting is recommended. Filter settings apply only to displayed and printed data. Data is stored in unfiltered format.*

***NOTE**: The High Pass filter (or base line filter), indicated by the number "0.05" cannot be changed. RScribe automatically implements a high-performance base line filter that does not distort the ECG waveform. High Pass filters that do distort the ECG waveform are not available.*

AC Filter

- To change default ECG AC filter:
  - Select **AC Filter**
  - Select from: None, 50 Hz, or 60 Hz

***NOTE**: RScribe removes 60 Hz or 50 Hz interference. The setting you select depends on the line frequency in your country. For example, use the 60 Hz setting in the U.S. If the setting is correct but you still see mains interference, check the electrode connections, mains interference sources like transformers or motors close to the patient, and the connection to the safety ground of the computer. Try operating from battery power if needed.*

Cabrera

- To change default ECG to Cabrera:
  - Left mouse click on the **Cabrera** icon
  - Choices: On, Off

***NOTE**: Use the lock indicator to the right of the selections to eliminate the selection from the technician permitting only unlocked selections.*

Median Zoom

Lead

- To change default median ECG lead format display:
  - Select **Lead**
  - Choices: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6 , All leads (all 12 leads superimposed)

Speed

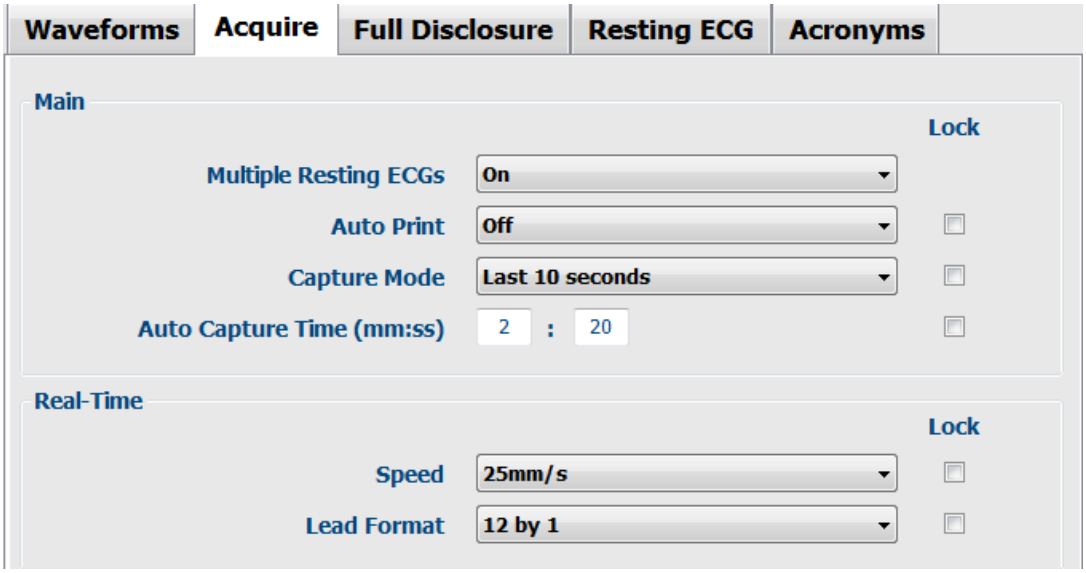
- To change default speed on the display:
  - Select **Speed**
  - Choices: 100 mm/s, 200 mm/s

Gain

- To change default ECG gain:
  - Select **Gain**
  - Choices: 10, 20, 40, 80 mm/Mv

Acquire Tab

This Tab is for the default settings of the real time acquisition function of RScribe.



Main

Multiple Resting ECGs

- Select **Multiple Resting ECGs**
- Choices: On, Off

NOTE: *Multiple Resting ECGs set to the ON position allows for multiple ECG acquisitions within the same session. When multiple ECGs are collected during a session, separate exams will be created automatically for each ECG in the systems database when exiting the session. If the field is set to Off, each time an ECG is collected within the session, it will replace the previous one.*

Auto Print

- Select **Auto Print**
- Choices: On, Off

NOTE: *Defines whether or not RScribe will automatically print an unconfirmed ECG after a timed or manual capture. Manual printout are always possible*

Capture Mode

- Select **Capture Mode**
- Choices: Best 10, Last 10

NOTE: *Defines whether or not the RScribe will automatically capture the 10 seconds ECG with the lowest noise level from the full disclosure buffer, or the last 10 seconds of data when the ECG button is selected.*

Auto Capture Time (mm:ss)

- Set from: a minimum of 20 seconds up through 59:59

NOTE: *Defines the time intervals in which the ECG will automatically be acquired once when "Timed ECG Capture" is selected from within the modality*

Real Time

Speed

- Select **Speed**
- Choices: 5, 10, 25, 50 mm/sec

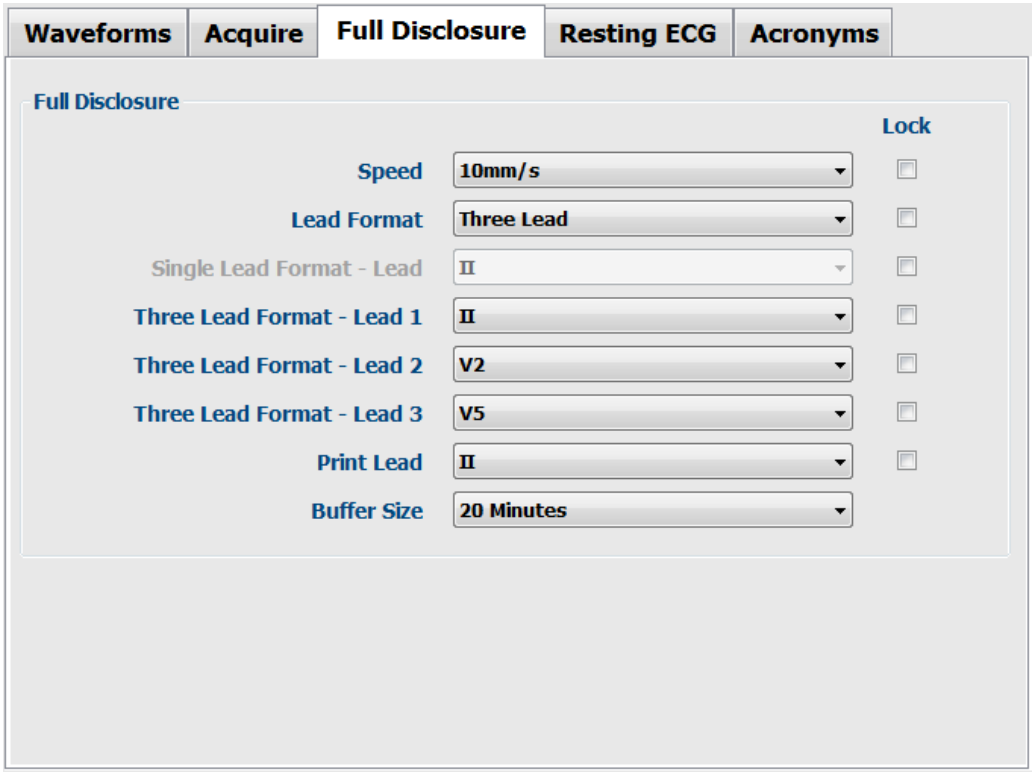
Lead Format

- Select **Lead**
- Choices: 12 by 1, 6 by 2

NOTE: *In the real time display only 6+6 and 12 lead formats are available. It is recommended to choose a format that allows at least 10 seconds of real time ECG on the screen during acquisition.*

Full Disclosure Tab

This Tab is for the default settings of the full disclosure buffer at the bottom of the acquisition screen.



Speed

- Select **Speed**
- Choices: 5, 10, 25, 50 mm/s

Lead Format

- Select **Lead Format**
- Choices: single lead by 3, single lead by 6, or 3 lead

NOTE: *Single lead by 3 displays three lines of ECG data in the full disclosure buffer. Single lead by 6 displays six lines of ECG data in the full disclosure buffer. Three lead displays two groups of three leads in the full disclosure buffer. The amount of data displayed is dependent on the size of the display and the ECG sweep speed selected.*

Single Lead Format - Lead

- Select **Single Lead Format**
- Choices: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6

Three Lead Format - Lead 1, 2 or 3

- Select **Three Lead Format**
- Choices: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6

NOTE: *The three-lead format requires a lead selection for each of the three leads presented.*

Print Lead

- Select **Print Lead**
- Choices: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6

NOTE: *Use Print Lead to select the lead printed on full disclosure printouts.*

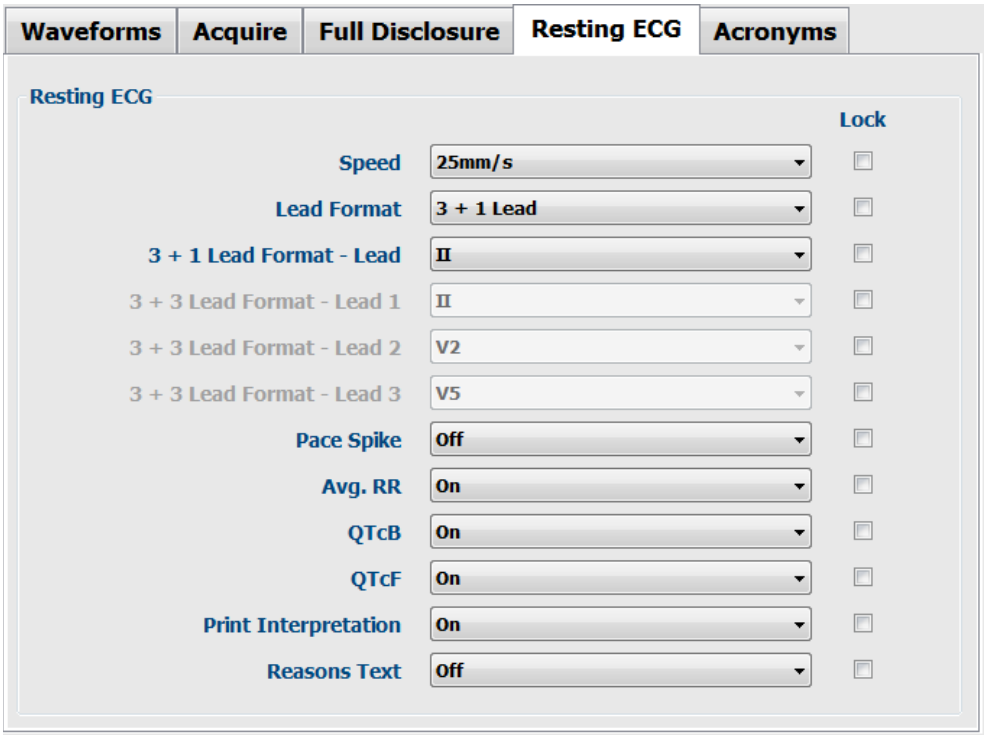
Buffer Size

- Select **Buffer Size**
- Choices: 5, 10, 20, 30, 45, 60 minutes

NOTE: *Use the Buffer Size to select the total amount of acquisition time permitted in the full disclosure memory. A warning message will display when the selected time limit has been reached, and acquisition terminated.*

Resting ECG Tab

This Tab is for the default settings of the captured ECG waveform and printouts.



Speed

- Select **Speed**
- Choices: 25, 50 mm/sec

Lead Format

- Select **Lead Format**
- Choices: 3+1, 6, 3+3, 12, 6+6

3 + 1 Lead Format - Lead

- Select **3+1 Lead Format**
- Choices: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6

3 + 3 Lead Format - Lead

- Select **3+3 Lead Format**
- Choices: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6

NOTE: *3+3 lead format requires a lead selection for each of the three leads presented.*

Pace Spike

- Select **Pace Spike**
- Choices: On, Off

NOTE: *When Pace Spike is selected small tick marks will indicate at the bottom of the ECG printout where a pacemaker spike was detected by RScribe. This is visible only on the printout, not on the computer display.*

Average RR

- Select **Avg. RR**
- Choices: On, Off

NOTE: *Use this option to display an averaged RR value on the report.*

QTcB (Bazett)

- Select **QTcB**
- Choices: On, Off

QTcF (Fridericia)

- Select **QTcF**
- Choices: On, Off

NOTE: *Welch Allyn VERITAS calculates by default the QTc with a linear correction method for average RR-interval similar to the Framingham method. In addition it is possible to display and print the QTc corrected with the Bazett or Fridericia correction methods.*

Print Interpretation

- Select **Print Interpretation**
- Choices: On, Off

Reasons Text

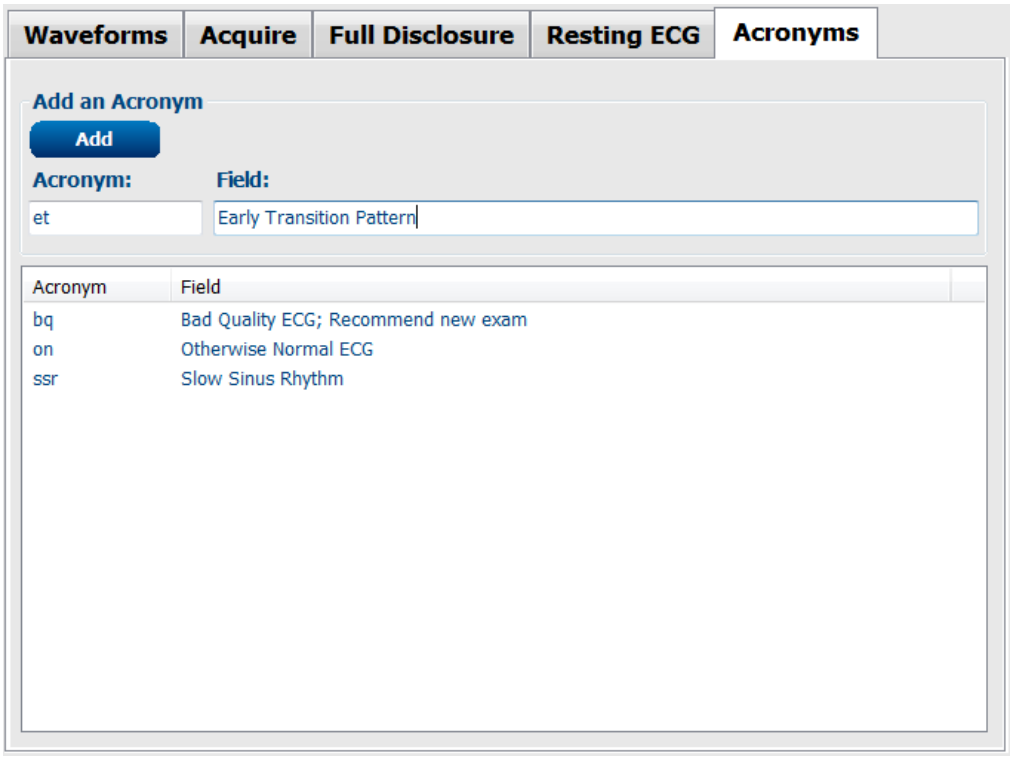
- Select **Reasons Text**
- Choices: On, Off

NOTE: *Reasons statements indicate why a particular interpretive statement was printed. Reasons statements print enclosed in [square brackets] within the interpretive text if the interpretation option is turned on. Turning the reasons statement function on or off does not affect the measurements performed or the interpretive statements selected by the analysis program.*

For Example:

Anteroseptal Infarct [40+ ms Q WAVE IN V1-V4] where “Anteroseptal Infarct” is the interpretive statement, and “40+ ms Q WAVE IN V1-V4” is the reason statement or explanation as to why the interpretive statement was printed.

Acronyms Tab



Acronyms may be defined as shortcuts to insert phrases during interpretation editing. Type an acronym and phrase in the white space and select **"Add"**. You cannot use a space within an acronym. Delete acronyms by highlighting them and pressing the keyboard Delete key.

File Exchange

RScribe supports the ability to import orders from XML files and export PDF, XML, or both results to an external system dependent on the RScribe system activated features. Import/Export directories for the selected group are defined in the File Exchange Configuration window under the File Export Settings tab.

Enter information into the File Information fields to include institution and department information in the exported results.

When Q-Exchange XML is selected as the Export Format, the Q-Exchange version is then selected from a dropdown. Version 3.6 is selected by default.

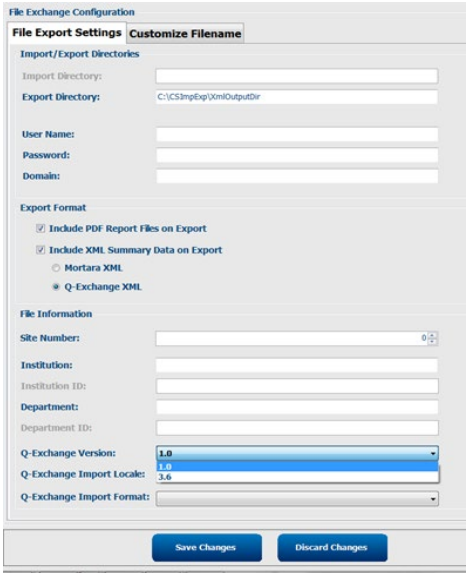
The Site Number field is not applicable to RScribe.

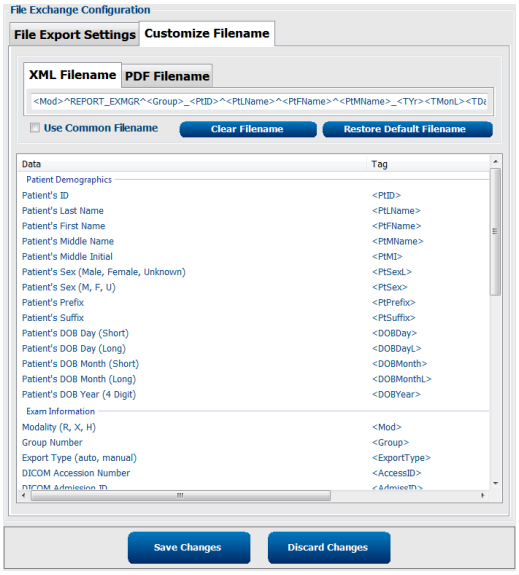
The file name configuration for XML and PDF results may be customized under the Customize Filename tab. To customize, select the **Clear Filename** button, select the tags in the order you wish them to appear in the name, and then **Save Changes**.

To use a common filename for both PDF and XML files, select the **Use Common Filename** checkbox.

> ***NOTE:*** *Default Import/Export paths are defined during software installation. PDF files will be exported to C:\CSImpExp\XmlOutputDir until modified by the administrative user. Access to PDF files are based on user account settings. Permission changes to the file or folder may be required.*
>
> ***NOTE:*** *When exporting results using the Q-Exchange XML report format, the filename must end with _R.*
>
> ***NOTE:*** *When DICOM communication is enabled, XML (orders) import selection is grayed to indicate it is not selectable.*

File Export Settings	Customize Filename





DICOM and MWL Settings

RScribe supports the ability to exchange information with DICOM systems dependent on the system activated features. A DICOM Modality Worklist (MWL) will be received from the DICOM server. A DICOM encapsulated PDF will be exported to the defined destination.

Unlock Exams

RScribe internally tracks transitioning exams preventing the same exam to be processed by two or more users. When a second user attempts to access an exam in use, a message displays with notification that the exam is not currently available.

As a measure for recovering locked exams, administrative users can unlock an exam that resides on the same workstation by selecting **Unlock Exams**. Highlight the listed exam(s) and click on **Unlock**.

Manage Archive Storage

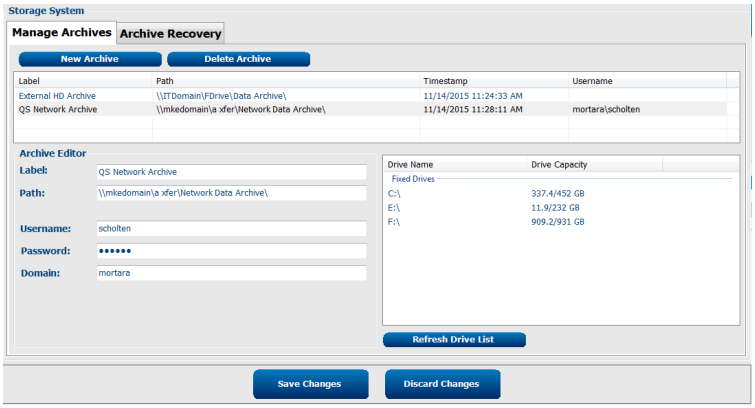
The RScribe administrative user will manage storage system disks through selection of **Storage System**.

Add Archive Location

Select **New Archive** button to begin definition of a path to the archive directory destination.

- Any external disk (e.g. NAS, USB, etc.) accessible from the RScribe central database is a candidate for becoming an archive volume.
- The archive path should be defined as a UNC path such as \\ServerName\ShareName\Directory\
- A Username, Password and Domain may be entered as needed to add the new storage disk to the Archive drive listing.

Select **Save Changes** button to create the archive location or **Discard Changes** button to exit this window without saving changes.



The **Refresh Drive List** button is available to update the list of available drives.

An archive path may also be deleted by highlighting the desired label and selecting the **Delete Archive** button. When selected, a prompt asking if you are sure you want to delete the selected archive is presented. Select **Yes** or **No**.

Archived exams will remain at the destination until they are manually deleted.

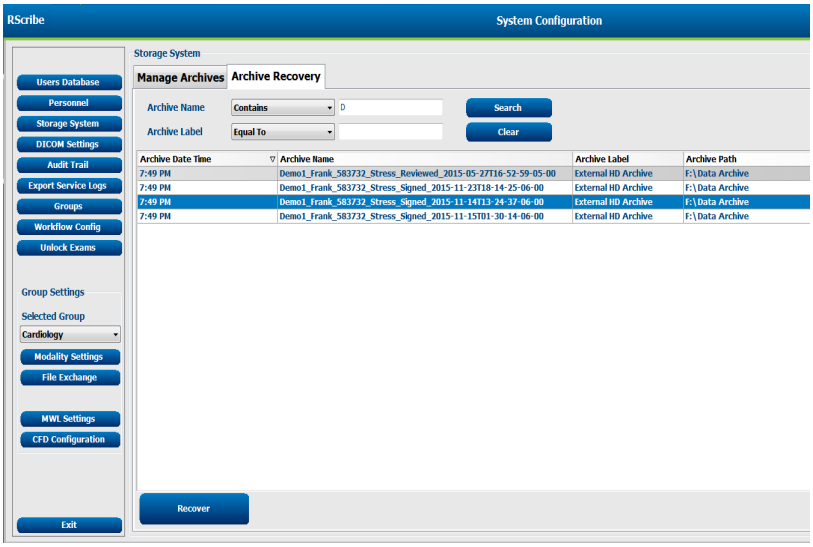
Recover Archived Exams

Administrative users can restore exams from the archive location to the RScribe database through selection of **Archive Recovery** tab. Once selected, a window will open allowing a search of the Archive Name or the Archive Label.

To search by Archive Name, a letter or number combination may be entered to show exams that contain the characters. To search by Archive Label, the first letter of the label can be entered with the Start With description, or the entire Archive Label can be entered with the Equal To description. Select the **Search** button when ready. The **Clear** button can be selected to clear all search fields. Column headers can be selected to sort listed exams by that item.

To restore exams, highlight the desired exam(s) in the list and click on **Recover**.

Multiple exams can be restored by highlighting them followed by a single **Recover** button click.

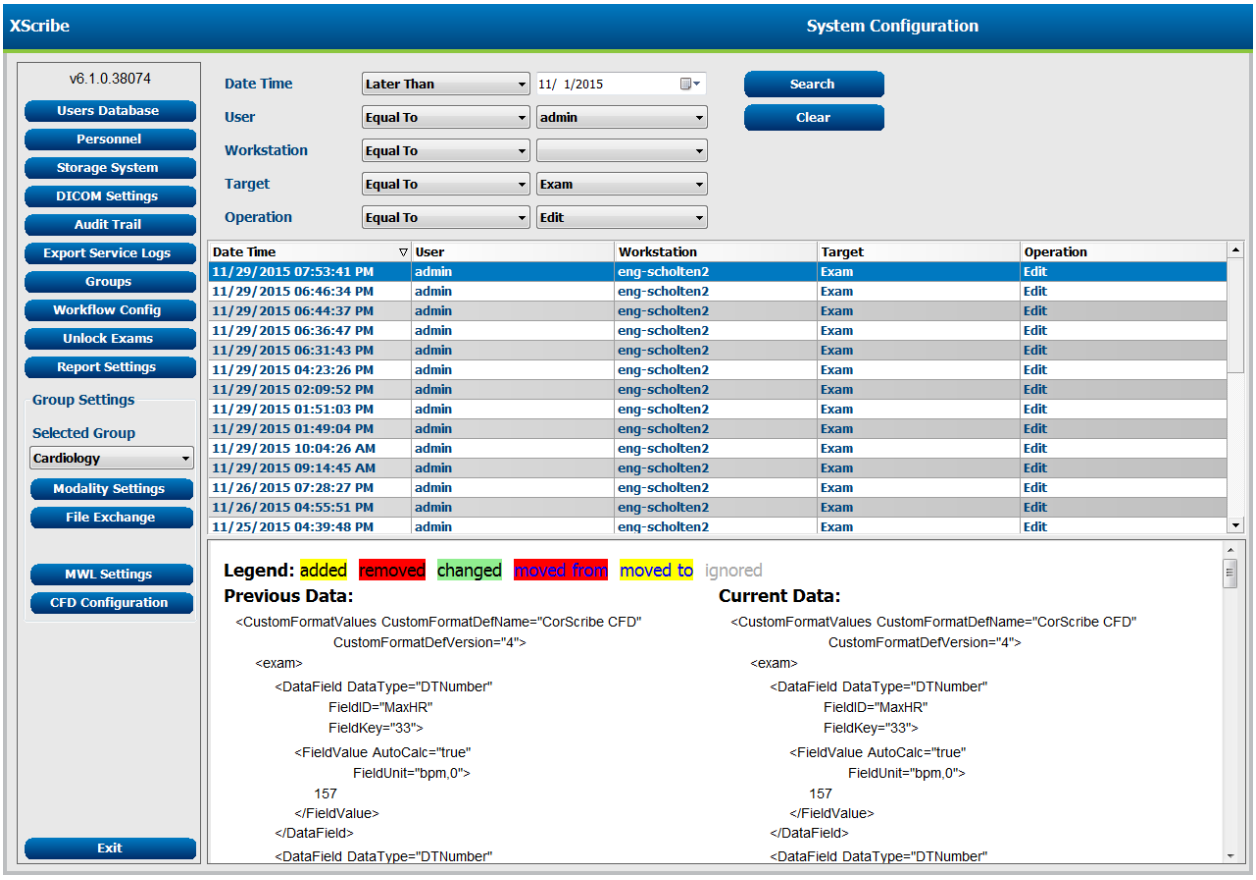


Audit Trail Logs

The RScribe administrative user will select **Audit Trail** to view the audit trail history. A selection of filter criteria is available to sort the listing by date, user, workstation, operation, or target (e.g. User, Patient, Exam, Conclusion, Locked Exams, User and System Settings). One or more filter criteria can be used to find audit trails.

Selection of results will display differences by comparing the XML statistics data before and after changes. A legend with colored highlighting will point to added, removed, changed, and moved information.

All configuration information, user information, patient demographic information, exam demographic information, textual conclusions, archive operations, and exam download requests are tracked by the audit trail with a date and time.



Service Logs

All RScribe users have access to **Export Service Logs**. Selection of the button creates a Win-7 zipped file that can be sent to the desktop containing a copy of the system logged events.

The file named EMSysLog.xml.gz can be e-mailed to a Welch Allyn service representative for troubleshooting purposes.

Configure Workflow

The RScribe exam states are designed to follow typical user workflow. There are five possibilities with meanings defined below each state:

1. ORDERED
   The resting ECG exam is either scheduled by a user or an external scheduling system has sent an order.

2. ACQUIRED
   The resting ECG exam is completed at the RScribe system and is ready for editing.

3. EDITED
   The resting ECG exam has been analyzed with or without changes and is ready for review by a physician. Conclusions may be entered at this state.

4. REVIEWED
   The resting ECG exam has been reviewed and confirmed to be accurate by an authorized user (e.g. physician, fellow, clinician, etc.). Conclusions may be entered at this state.

5. SIGNED
   The exam is reviewed and electronically signed by an authorized user. No further workflow processing is required. Conclusions may be entered at this state.

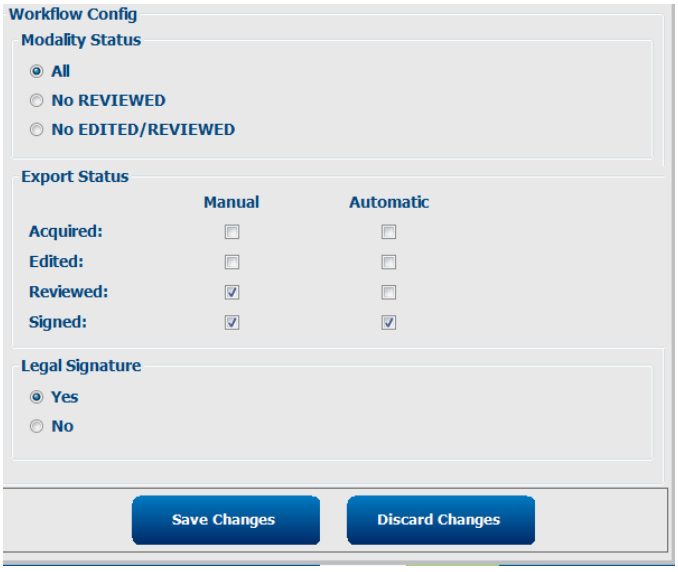
The user with appropriate permissions is prompted with a Final Exam Update dialog to confirm or Update the next logical state when exiting a resting ECG exam. A drop-down menu allows selection of a state in respect to the exam's current state.

Workflow Config

A Legal Signature can be enabled by selecting **Yes** or disabled by selecting **No**. Administrative users can configure the workflow to include all, or exclude some states through selection of **Workflow Config**.

- Select **All** under Modality Status to enable all five states.
- Select **No REVIEWED** under Modality Status to move the state from EDITED to SIGNED.
- Select **No EDITED/REVIEWED** under Modality Status to move the state from ACQUIRED to SIGNED.

Checkboxes under Export Status allow choices for Manual or Automatic export of the results when the state is updated to Acquired, Edited, Reviewed or Signed. Any combination may be selected.



No Legal Signature

When updating the exam to the signed state, the signature area will show the approver's name with a label of **Approved by:** in the final report.

About the Legal Signature

The legal signature requires the user credentials prior to updating a resting ECG exam when changing to a signed state. When enabled, the user is prompted to authenticate with a user name and password when transitioning to the signed state. Authentication can be entered when a different user is currently logged in. When the correct credentials are not entered, the user will be notified with a message that the "Credentials supplied are not valid."

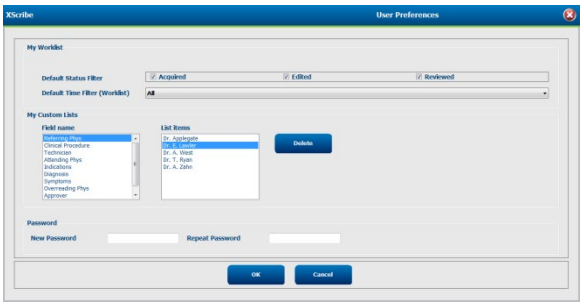
When the signing physician has been set up as an Attending Physician under Personnel, the printed name will appear in the RScribe final report on the signature line following the **Signed by:** field label.

User Preferences

Select the User Preferences icon to open the window. Set selections define the default criteria for the Get Worklist in the Search feature when the particular user is logged into RScribe.

Set selections can be changed when the user selects the Advanced search selections.

The user can also change the password in this window if the user account is an internal account.



All users have access to the User Preferences settings but may not have the Search feature available. Those users will only enter this window to change their own password.

There are three possible choices for the Worklist exam states that can be enabled or disabled by checkboxes. The choices are dependent on the workflow configuration modality status setting in that Edited or Review may not appear as selections.

1. Acquired
2. Edited
3. Reviewed

There are three choices for the default time filter for worklists.

1. All
2. Today
3. Last week

The user's custom lists can also be modified on this page. Some demographic data entry lists also accept free text which will be automatically added to the list for future use. "My Custom Lists" allows deletion of any list items you do not wish to use in the future.

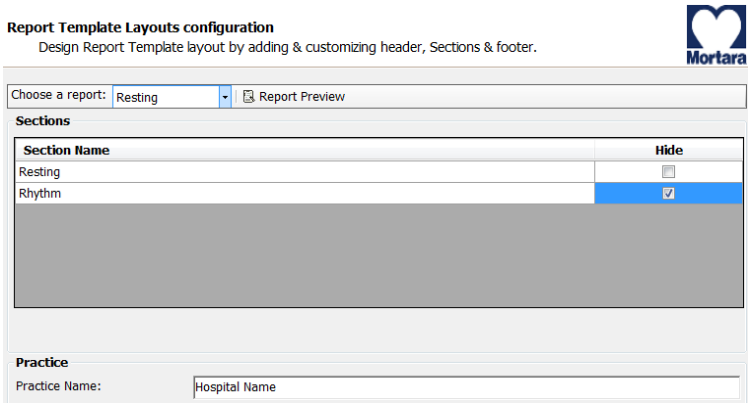
When finished, select **OK** to save changes or **Cancel** to exit the window without saving changes.

RScribe will present the default settings on any of the workstations that the user logs into.

Report Configuration Tool

RScribe final reports can be configured with the practice name prior to using the system. The practice name is printed at the bottom of each ECG report. In addition, the system can be set up to add or omit a 10 s 12-lead rhythm strip to each ECG report.

The Report Configuration Tool is a separate program. Click on the Start menu from the RScribe workstation desktop. Choose "All Programs", "Welch Allyn Instrument" followed by "Report Configuration Tool". This will open a dialog window prompting a Group choice from a drop-down list. Each group that has been defined will have its own report configuration. Select the group.



Choose the Resting report from the top left. Enter the practice name at the bottom white space. Select the **Hide** checkbox if you do not want to print a rhythm strip with each ECG. You can use **Report Preview.**

> ***NOTE:*** *Rhythm strips can be added with selected ECGs also when the "Hide" is selected when you preview an individual ECG report.*

Select **Next** and **Finish** to save the configuration for the selected group. Select another group to configure or **Exit** to leave the report configuration tool.

User Role Assignment Table

	IT Admin	Clinical Admin	Schedule Procedure	Patient Hookup	Prepare Report
Main Screen					
Schedule / Orders	No	Yes	Yes	No	No
Start a Resting Exam	No	No	No	Yes	No
Exam Search	No	Yes	No	No	Yes
User Preferences	Yes - No Status Filter	Yes - No Status Filter	Yes - No Status Filter	Yes - Filter Acquired only	Yes - Filter Acquired and Edited only
System Configuration	Yes - No Modality Settings, CFD or Report Settings	Yes - Audit Trail, Service Logs, Report Settings, Modality Settings and CFD	Yes - Service Logs only	Yes - Service Logs only	Yes - Service Logs only
Exam Search					
Edit	No	No	No	No	Yes - Acquired and Edited Exams only
Report	No	No	No	No	No
Copy Offline	No	Yes	No	No	No
Open Offline	No	No	No	No	Yes
Export	No	No	No	No	No
Reconcile	No	Yes (Signed only)	No	No	No
Archive	No	Yes	No	No	No
Delete	No	Yes	No	No	No
Editing Permissions					
Summary Tables	No	No	No	No	Yes
Conclusions Section	No	No	No	No	Diagnosis, Reason For End and Technician
Patient Data	No	No	No	Patient and Contact Fields - only after Acquisition	Admission ID, Indications, Referring Physician, Procedure type, Location, Notes, and Technician
Page Review	No	No	No	No	Yes - View/Add/Edit Events and Print
Update Exam State	No	No	No	Acquired only	Edited only

	Review and Edit Report	Sign Report	Edit Conclusions	Export Report	View Exams/Reports
Main Screen					
Schedule / Orders	No	No	No	No	No
Start a Resting Exam	No	No	No	No	No
Exam Search	Yes	Yes	Yes	Yes	Yes
User Preferences	Yes	Yes	Yes - Filter Acquired and Edited only	Yes - No Status Filter	Yes - No Status Filter
System Configuration	Yes - Service Logs only	Yes - Service Logs only	Yes - Service Logs only	Yes - Service Logs only	Yes - Service Logs only
Exam Search					
Edit	Yes - Acquired, Edited, Reviewed Exams only	Yes	Yes - Acquired and Edited Exams only	No	Yes
Report	No	No	No	No	Yes - Reviewed and Signed Exams only
Copy Offline	No	No	No	No	No
Open Offline	Yes	Yes	Yes	No	Yes
Export	No	No	No	Yes - Reviewed and Signed Exams only	No
Reconcile	Yes (Not Signed)	Yes (Not Signed)	No	No	No
Archive	No	No	No	No	No
Delete	No	No	No	No	No
Editing Permissions					
Summary Tables	No	No	No	No	No
Conclusions Section	Symptoms and Conclusions	Symptoms and Conclusions	Symptoms and Conclusions	No	No
Patient Data	No	No	No	No	No
Page Review	Yes - View and Print only	View and Print only	Yes - View and Print only	No	Yes - View and Print only
Update Exam State	Reviewed only	Signed only	Edited only	No	No - Screen is not shown

14. RSCRIBE DATA EXCHANGE CONFIGURATION

Data Exchange Interfaces

The RScribe can exchange data with other information systems using file exchange and/or DICOM®. HL7 is also possible by adding Welch Allyn's HL7 Gateway to the solution.

All data exchange is performed by the central RScribe Server (aka Modality Manager); all RScribe workstations connected to the dedicated RScribe Server share the same data exchange settings.

Glossary

Term	Definition
Ordered Test	A diagnostic test that has been electronically ordered by an authorized caregiver. Scheduling may be a separate step, or "now" may be implied by the ordering system.
Scheduled Test	An ordered test that has also been scheduled to be performed at a specific time. It could be scheduled for now, any time today, a specific date, and/or a specific time.
RScribe Server or Modality Manager	The database used to organize and store patient and test data. It may reside on the local RScribe computer, a remote RScribe computer, or on a central server. An RScribe is associated with one and only one RScribe Server (Modality Manager).
Ad Hoc Test	A test that is performed without an electronic order.
RScribe Desktop	The application desktop that displays the icons for such tasks as performing a test, editing a test, finding a test, finding a patient, etc.
SCP	Service Class Provider. In DICOM, this is the "server" that listens for connections from clients.
SCU	Service Class User. In DICOM, this is the "client" that initiates the connection to the SCP.
MWL	DICOM Modality Worklist.

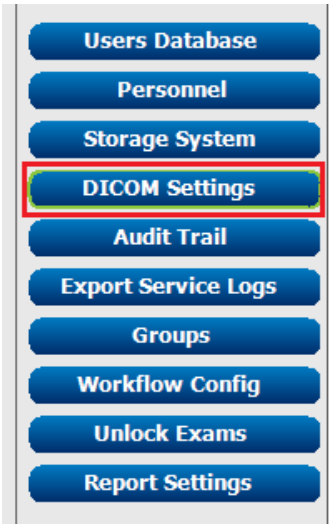
DICOM

When the RScribe Server is configured for DICOM, all ordered/scheduled test information comes from the MWL SCP. If an ad hoc test needs to be performed, just start the test and enter new demographics at that time.

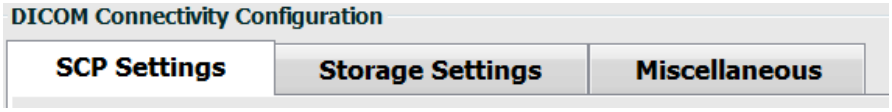
Configuring DICOM

RScribe users with "IT Administrator" permission can configure the RScribe Server DICOM settings. Log into any RScribe computer associated with the RScribe Server to be configured. Launch any of the RScribe Stations to start a RScribe Desktop. Click on **System Configuration**.

Then select **DICOM Settings**.

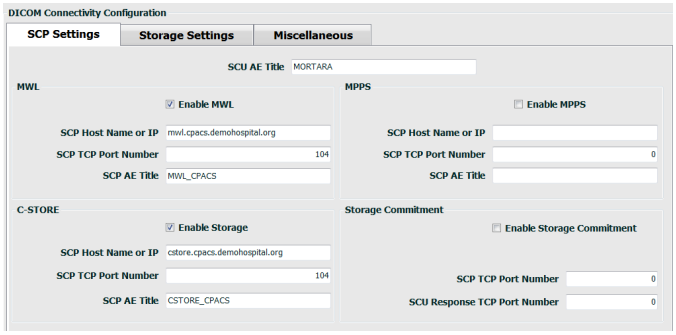


The DICOM settings are organized on 3 tabs: SCP Settings, Storage Settings, and Miscellaneous.



SCP Settings

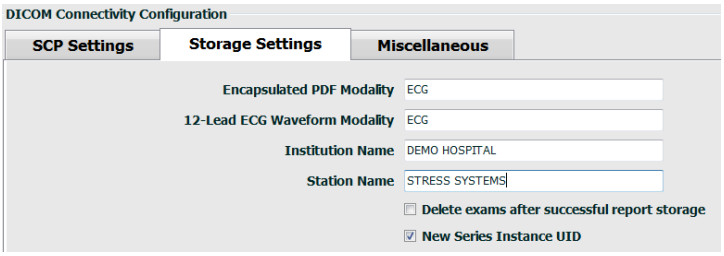
Service Class Provider (SCP) settings contain the communication settings used for Modality Worklist (MWL), C-STORE, Modality Performed Procedure Step (MPPS), and Storage Commitment.



SCP	Setting	Description
Modality Worklist (MWL)	Enable MWL	Check to enable MWL.
	SCP Host Name or IP	DNS hostname or IP address of the SCP.
	SCP TCP Port Number	TCP/IP port number of the MWL service.
	SCP AE Title	Application Entity (AE) Title of the SCP.
C-STORE	Enable Storage	Check to enable storage of results (Encapsulated-PDF for ECG reports). This checkbox enables storage for all RScribe workstations connected to the central Modality Manager.
	SCP Host Name or IP	DNS hostname or IP address of the SCP. If Storage Commitment is also enabled, it will communicate with this same SCP host.
	SCP TCP Port Number	TCP/IP port number of the storage service.
	SCP AE Title	Application Entity (AE) Title of the SCP. If Storage Commitment is also enabled, it will communicate with this same AE Title.
Modality Performed Procedure Step (MPPS)	Enable MPPS	Check to enable MPPS status messages.
	SCP Host Name or IP	DNS hostname or IP address of the SCP.
	SCP TCP Port Number	TCP/IP port number of the MPPS service.
	SCP AE Title	Application Entity (AE) Title of the SCP.
Storage Commitment	Enable Storage Commitment	Check to enable Storage Commitment.
	SCP TCP Port Number	TCP/IP port number of the Storage Commitment service.
	SCU Response TCP Port Number	TCP/IP port the RScribe Server will use to listen for Storage Commitment responses.

Storage Settings

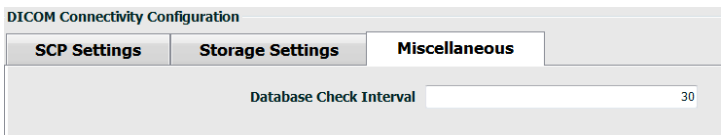
These settings specify how to store the results of the tests.



Setting	DICOM Tag	Description
Encapsulated PDF Modality	(0008,0060)	Modality value stored in the encapsulated-PDF objects from ECG tests. Normally set to “ECG”.
12-Lead ECG Waveform Modality	(0008,0060)	Modality value stored in the 12-Lead ECG Waveform objects from resting ECG tests. Normally set to “ECG”.
Institution Name	(0008,0080)	Name of institution or department that performed the test.
Station Name	(0008,1010)	DICOM Station Name that performed the test. Since this is global for all RScribe workstations attached to this RScribe Server, it may need to be fairly general.
Delete exams after successful report storage		Check if the exam data should automatically be deleted after the DICOM PDF or waveform has been stored. Only use this option if you’re sure you’ll never need to amend the test results later. This option is only active when Storage Commitment is used.
New Series Instance UID		When checked, and the test results are amended and signed again, the DICOM PDF or waveform will be given a different Series Instance UID from the previous ones used for this test.
Enable file export on storage		Check if PDF and XML files should be exported. The “Enable Storage” box must also be checked on the SCP Setting tab.
Export Folder Path		Path where PDF and XML files will be placed when the test is signed. This can be a UNC path to a network file share.
Export User Name		The username to use when writing to the export folder.
Export Password		The password corresponding to the username.
Export Domain		The domain the username is from.

Miscellaneous Settings

This tab contains other settings.

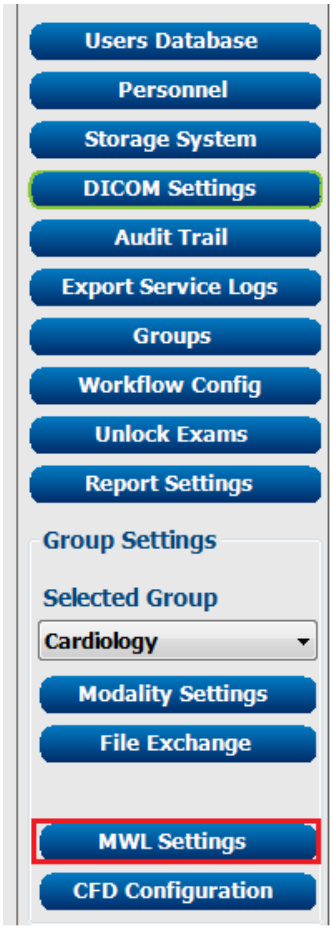


Setting	Description
Database Check Interval	Specifies the number of seconds between each MWL query. ***Note**: when a RScribe workstation displays the MWL, it does not display the list it just retrieved from the MWL SCP. Instead, it displays the MWL most recently retrieved by the RScribe Server. If the interval is set to 30 seconds, the MWL displayed by the RScribe is at most 30 seconds old. If set to 600 seconds, then it could be up to 10 minutes old. Using a small number ensures the list is up-to-date. However, a small number could overload the MWL SCP with frequent queries.*

MWL Settings

RScribe users with "IT Administrator" permission can configure the RScribe Server DICOM settings. Log into any RScribe computer associated with the server to be configured. Launch any of the RScribe workstations to start a RScribe Desktop. Click on **System Configuration**.

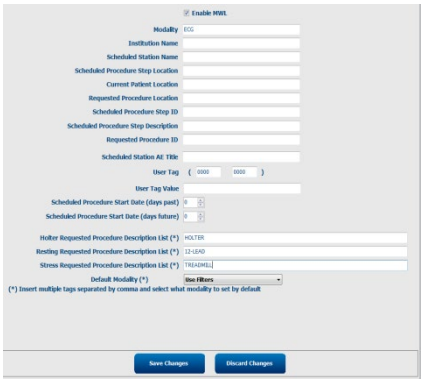
MWL Settings are per Group, so first select the appropriate Group, and then select **MWL Settings**.



The MWL settings are for filtering the MWL items RScribe Server seeks from the MWL SCP.

Since these are global settings for all MWL items for all the RScribe associated with this RScribe Server, the query needs to be fairly broad.

The only settings that specify which MWL items go to the individual RScribe workstations are the Requested Procedure Description Lists. There you will list the procedure descriptions for the procedures those particular workstations support.



Setting	DICOM Tag	Description
Modality	(0008,0060)	Usually set to “ECG”.
Institution Name	(0008,0080)	Name of institution or department where the order was placed, or where it should be performed.
Scheduled Station Name	(0040,0010)	DICOM Station Name scheduled to perform the test.
Scheduled Procedure Step Location	(0040,0011)	Location where the test is scheduled to be performed.
Current Patient Location	(0038,0300)	Patient’s current location, e.g. a room number for an inpatient.
Requested Procedure Location	(0040,1005)	Location where the test was requested to be performed.
Scheduled Procedure Step ID	(0040,0009)	The procedure step ID of the scheduled procedure.
Scheduled Procedure Step Description	(0040,0007)	The text description of the scheduled procedure step.
Requested Procedure ID	(0040,1001)	The ID of the requested procedure.
Scheduled Station AE Title	(0040,0001)	AE Title of the system scheduled to perform the test.
User Tag, Value		Any tag and value not already supported in the other settings can be configured here.
Scheduled Procedure Start Date (days past)	(0040,0002)	Days prior to today. 0 = all dates, 1 = minimum days past.
Scheduled Procedure Start Date (days future)	(0040,0002)	Days in the future. 0 = all dates, 1 = minimum days future.
Holter Requested Procedure Description List	(0032,1060)	List of requested Holter procedure descriptions, separated by commas.
Resting Requested Procedure Description List	(0032,1060)	List of requested resting ECG procedure descriptions, separated by commas.
ECG Requested Procedure Description List	(0032,1060)	List of requested ECG procedure descriptions, separated by commas.
Default Modality		The modality to assume when a MWL item does not have a Requested Procedure Description.

DICOM Events

The table below shows when DICOM transactions are performed.

DICOM Transaction	RScribe
Modality Worklist C-FIND	Query made periodically according to "Database Check Interval"
PDF or Waveform C-STORE Storage Commitment	When the State is changed to **Signed** with the "Finalize Exam Update" dialog.
MPPS IN PROGRESS	Not supported.
MPPS DISCONTINUED	Not supported.
MPPS COMPLETED	After performing a new test and changing the State with the "Finalize Exam Update" dialog.

DICOM Echo

The DICOM communications configuration can be verified with the **DICOM Test Utility** found under **Mortara Modality Manager** menu in the Windows Start menu. To perform a DICOM Echo test, click the "Run Test" button. It will display the status of DICOM Echo tests to the Storage SCP, MWL SCP, and MPPS SCP. Click the "Exit" button when done viewing the results.

File Exchange

When the Modality Manager is configured for XML Connectivity, scheduled test information can be received in XML files, or the user can schedule tests using the Schedule/Order icon on the RScribe Desktop. Files are automatically exported when they meet the defined criteria for the Workflow Config Export Status settings.

Files can be manually exported anytime from the "Exam Search" dialog. Search for the test to be exported, highlight it, and click **Export**. This Manual Export is only available for tests that meet the defined criteria for the Workflow Config Export Status settings.

Setting	Description
Import directory	If orders will be sent to Modality Manager as XML files, this is the full path to the folder where the XML files will be placed.
Export directory	Specify the full path to the folder where the XML and PDF files should be placed as each test report is signed.
User Name	This is the name of the Windows domain account to use for writing files into the export folder. If left blank, the default service account will be used to write the files.
Password	The account password that goes with the User Name.
Domain	The name of the domain for the User Name account.
Site Number	This is the UNIPRO "Site Number". It is not used by RScribe.

RScribe Export XML

XML Tag	Description
/ECG	
@ACQUISITION_TIME	Date and time the ECG waveforms were recorded. In the HL7 format: yyyyMMddHHmmss.
@ACQUISITION_TIME_XML	Date and time the ECG waveforms were recorded. In the XML format (including time zone): yyyy-mm-dd**T**hh:mm:ss+hh:mm
@ROOM	From the Patient Room field.
@LOCATION	From the Patient Location field.
@COMMENT	From the Comment field.
@AGE	Patient's age at time of ECG acquisition.
@AGE_UNITS	Age units: Y = years M = months W = weeks D = days
@HEIGHT	Patient's height.
@HEIGHT_UNITS	Height units: I = inches C = centimeters
@WEIGHT	Patient's weight.
@WEIGHT_UNITS	Weight units: L = pounds K = kilograms
@NUM_QRS	Total number of beats detected by VERITAS™ resting ECG interpretation algorithm.
@AVERAGE_RR	Average RR interval calculated by VERITAS. Expressed in milliseconds.
@VENT_RATE	Average ventricular rate (heart rate) calculated by VERITAS. Expressed in beats-per-minute.
@SYSTOLIC_BP	From the Systolic BP field.
@DIASTOLIC_BP	From the Diastolic BP field.
@DIAGNOSIS	From the Diagnosis field.
@REFERRING_PHYSICIAN	From the Referring Physician field.
@TECHNICIAN	From the Technician field.
@SEQUENCE_NUMBER	Sequence number assigned to the ECG by the electrocardiograph. It is the electrocardiograph's accession number.
@ORDER_NUMBER	DICOM Study Instance UID (0020,000D).
@ACCESSION_NUMBER	DICOM Accession Number (0008,0050).
@ADMISSION_ID	DICOM Admission ID (0038,0010).
/ECG/DEMOGRAPHIC_FIELD	
@ID	Field identifier: 1= Patient Last Name 2= Patient Id Number 3= Patient Age 4= Patient Gender (Male, Female, Unknown)

XML Tag	Description
	5= Patient Race (Unknown, Caucasian, Black, Oriental, Hispanic, American Indian, Aleut, Hawaiian, Pacific Islander, Mongolian, Asian) 6= Medication ((blank), Antianginal, Antiarrythmic, Anticholesterol, Anticoagulants, Antihypertensive, Antihypotensive, Aspirin, Beta Blockers, Calcium Blockers, Digoxin, Diurectics, Nitroglycerin, Psychotropic) 7= Patient First Name 8= LCD Request 9= Patient Height 10= Patient Weight 11= Soc Sec Number 12= Patient Second Id 13= Patient Middle Name 14= Patient Location 15= Patient Room 16= Patient Birth Date (yyyyMMdd) 17= Comment 18= Reason Code 19= Referring Physician 20= Attending Physician 21= Overreading Physician 22= Technician 23= Diagnosis 24= Note 1 25= Note 2 26= Order Number 27= Systolic Blood Pressure 28= Diastolic Blood Pressure 29= Requesting Physician 30= Accession Number 31= Admission ID
@VALUE	Field value.
@UNITS	Value units, if applicable. See descriptions for AGE, HEIGHT, and WEIGHT.
/ECG/SITE	
@ID	Site number from Group Settings (0 is default).
/ECG/SUBJECT	
@LAST_NAME	Patient's last name.
@SECOND_LAST_NAME	Patient's second last name.
@FIRST_NAME	Patient's first name.
@GENDER	Patient's gender: Male, Female, Unknown.
@RACE	Patient's race. Values are from the Custom Format Definition.
@ID	Patient's primary ID or medical record number (MRN).
@DOB	Patient's date of birth in the HL7 yyyyMMdd format.
@DOB_XML	Patient's date of birth in the XML yyyy-mm-dd format.
/ECG/MEDICATION	
@NAME	Drug name: (blank) Antianginal,

XML Tag	Description
	Antiarrythmic, Anticholesterol, Anticoagulants, Antihypertensive, Antihypotensive, Aspirin, Beta Blockers, Calcium Blockers, Digoxin, Diurectics, Nitroglycerin, Psychotropic
/ECG/SOURCE	
@TYPE	Type of device that recorded the waveforms: RESTING HOLTER STRESS
@MANUFACTURER	Name of the device manufacturer, “Welch Allyn Inc.”
@MANUFACTURER_ID	Manufacturer ID according to the UNIPRO standard. 8 = Welch Allyn
@MODEL	Electrocardiopgraph model number.
@ACQUIRING_DEVICE_DEVICE_TYPE	Acquiring device type: S = System.
@ACQUIRING_DEVICE_MANUFACTURER_CODE	Acquiring device manufacturer code binary. Permissible codes are: 8= Welch Allyn
@ACQUIRING_DEVICE_MODEL_DESCRIPTION	Acquiring device model description.
@ANALYZING_DEVICE_DEVICE_TYPE	Acquiring device type: S = System
@ANALYZING_DEVICE_MANUFACTURER_CODE	Analyzing device manufacturer code binary. Permissible codes are: 8= Welch Allyn
@ANALYZING_DEVICE_MODEL_DESCRIPTION	Analyzing device model description.
@BASELINE_ROLL_FILTER	Cutoff frequency of the high-pass baseline roll filter in units of Hertz.
@LOW_PASS_FILTER	Cutoff frequency of the low-pass filter in units of Hertz.
@FILTER_BITMAP	This field indicates if other filters have been used during the processing of the ECG. 8 = no AC filter 9 = 60 Hz AC filter 10 = 50 Hz AC filter
/ECG/AUTOMATIC_INTERPRETATION	
/ECG/AUTOMATIC_INTERPRETATION/STATEMENT	
@STATEMENT_NUMBER	VERITAS automatic interpretation statement number, starting with 1 as the first statement.
@TEXT	Main body of the interpretation statements.
@REASON	Reasons given with the statement.
/ECG/INTERPRETATION	
@OVERREADING_PHYSICIAN	Name of signing physician.

XML Tag	Description
@TIME	Date/time when the interpretation was overread (signed) by the overreading physician, in XML date/time format.
@TEXT	Overreading physician's interpretation.
/ECG/TYPICAL_CYCLE	**Median beat/representative beat/typical cycle…**
@R_PEAK	Position of the R-peak as determined by VERITAS, expressed in milliseconds from the beginning of the typical cycle waveforms.
@P_ONSET	Position of the P-onset as determined by VERITAS, expressed in milliseconds from the beginning of the typical cycle waveforms.
@P_OFFSET	Position of the P-offset as determined by VERITAS expressed in milliseconds from the beginning of the typical cycle waveforms.
@Q_ONSET	Position of the QRS-onset as determined by VERITAS, expressed in milliseconds from the beginning of the typical cycle waveforms.
@Q_OFFSET	Position of the QRS-offset as determined by VERITAS, expressed in milliseconds from the beginning of the typical cycle waveforms.
@T_OFFSET	Position of the T-offset as determined by VERITAS, expressed in milliseconds from the beginning of the typical cycle waveforms.
@P_DURATION	Duration of the P-wave as determined by VERITAS, expressed in milliseconds.
@PR_DURATION	Duration of the PR interval as determined by VERITAS, expressed in milliseconds.
@QRS_DURATION	Duration of the QRS-wave as determined by VERITAS, expressed in milliseconds.
@QT	Duration of the QT interval as determined by VERITAS, expressed in milliseconds.
@QTC	Duration of the QT interval normalized to 60 bpm using the linear method: $QTc = QT + \frac{(1000 - RR)}{7}$
@QTCB	Duration of the QT interval normalized to 60 bpm using the Bazett method: $QTcB[s] = \frac{QT[s]}{(RR[s])^{1/2}}$
@QTCF	Duration of the QT interval normalized to 60 bpm using the Fridericia method: $QTcF = \frac{QT}{RR^{1/3}}$
@P_AXIS	P axis as determined by VERITAS, expressed in degrees.
@QRS_AXIS	QRS axis as determined by VERITAS, expressed in degrees.
@T_AXIS	T axis as determined by VERITAS, expressed in degrees.
@BITS	Number of bits per sample in the encoded waveform data: 8, 16 (default), 32.
@FORMAT	Format of the encoded waveform data: SIGNED (default) means values can be positive and negative.
@UNITS_PER_MV	Number of units per mV in the encoded waveform data. For example, 400 units per mV is the same as 2.5 uV per unit.
@DURATION	Duration of the waveforms, expressed in milliseconds.
@SAMPLE_FREQ	Sampling frequency of the waveforms, expressed in samples per second, or Hz.

XML Tag	Description
@ENCODING	Type of encoding used for the waveforms: BASE64 (default), BINHEX.
/ECG/TYPICAL_CYCLE/TYPICAL_CYCLE_CHANNEL	
@NAME	Name of the lead: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6, TEA.
@DATA	The encoded waveform data.
/ECG/CHANNEL	
@OFFSET	Offset from the beginning of the ECG recording where this lead starts, expressed in milliseconds.
@BITS	Number of bits per sample in the encoded waveform data: 16 (default).
@FORMAT	Format of the encoded waveform data: SIGNED (default) means values can be positive and negative.
@UNITS_PER_MV	Number of units per mV in the encoded waveform data. For example, 400 units per mV is the same as 2.5 uV per unit.
@DURATION	Duration of the waveforms, expressed in milliseconds.
@SAMP_FREQ	Sampling frequency of the waveforms, expressed in samples per second, or Hz.
@NAME	Name of the lead: I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6, TEA.
@ENCODING	Type of encoding used for the waveforms: BASE64 (default).
@DATA	The encoded waveform data.
/ECG/ASSOCIATED_REPORT_DOCUMENT	
@Path	Path and name of the corresponding PDF file.
@DocumentFormat	PDF

RScribe Order XML

XML Tag	Description
/RestingECGRequest	
/RestingECGRequest/PatientDemographics	
./**LastName**/Value	Patient's last name.
./**FirstName**/Value	Patient's first name.
./**MiddleName**/Value	Patient's middle name.
./**ID**/Value	Patient's primary ID or medical record number (MRN).
./**SecondID**/Value	Patient's second ID.
./**SocialSecurityNum**/Value	Patient's social security number.
./**PatientBirthDate**/Value	Patient's date of birth in the HL7 yyyyMMdd format.
./**Age**/Value	Patient's age (in years). If the birthdate is known, set Age to 0 so RScribe will calculate the age at the time of the test.
./**Gender**/Value	Patient's gender: Male, Female, Unknown.
./**Race**/Value	Patient's race. Values are defined in the Custom Format Definition.
./**Height**/Value	Patient's height.
./**Height**/Units	Height units: I = inches C = centimeters
./**Weight**/Value	Patient's weight.
./**Weight**/Units	Weight units: L = pounds K = kilograms
./**PatientLocation**/Value	Patient's location.
./**PatientRoom**/Value	Patient's room.
./**CommentField**/Value	Comments.
./**ReferringPhysician**/Value	Name of referring physician.
./**AttendingPhysician**/Value	Name of attending physician.
./**OverreadingPhysician**/Value	Name of physician requested to overread test.
./**AssistingProvider**/Value	Name of assisting provider.
./**ProcedureDiagnosis**/Value	Procedure diagnosis.
./**ReasonForProcedure**/Value	Reason for test.
./**Medication1**/Value	Medication name: (blank) Antianginal, Antiarrythmic, Anticholesterol, Anticoagulants, Antihypertensive, Antihypotensive, Aspirin, Beta Blockers, Calcium Blockers,

XML Tag	Description
	Digoxin, Diurectics, Nitroglycerin, Psychotropic
./**Medication2**/Value	See Medication1.
./**Note1**/Value	Notes.
./**Note2**/Value	Notes.
./**SysBPNum**/Value	Systolic blood pressure in mmHg.
./**DiaBPNum**/Value	Diastolic blood pressure in mmHg.
./**RequestingPhysician**/Value	Requesting physician name.
./**AccessionNumber**/Value	DICOM Accession Number.
./**AdmissionID**/Value	DICOM Admission ID.
./**ScheduledDate**/Value	Date when test is scheduled to be performed in yyyyMMdd format.
./**ScheduledTime**/Value	Time when test is scheduled to be performed in hhmm or hhmmss format.