# Welch Allyn®
# Q-Tel® RMS

## Rehabilitation Management System

## INSTALLATION MANUAL

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

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

The information contained in this manual is subject to change without notice.
All changes will be in compliance with regulations governing manufacture of medical equipment.

For patent information, please visit www.welchallyn.com/patents

For information about any Welch Allyn product, visit: https://www.welchallyn.com/en/about-us/locations.html

Customer Service and Technical Support: https://www.welchallyn.com/en/other/contact-us.html
1.888.667.8272, mor_tech.support@hillrom.com

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# 901047 CARDIOPULMONARY REHABILITATION MANAGEMENT SYSTEM

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# 1. SERVICE AND SPARE PARTS

## Assistance and Parts

If the product fails to function properly or if assistance, service or spare parts are required, contact the nearest Welch Allyn Technical Support Center.

USA Phone: 1.888.667.8272
Email: mor_tech.support@hillrom.com

For service outside the USA, contact your local representative.

**Please provide:**

- Product name and model number and complete description of the problem
- The serial number of your product (if applicable)
- The complete name, address and phone number of your facility
- For out-of-warranty repairs or spare parts orders, a purchase order (or credit card) number
- For parts order, the required spare or replacement part number(s)

## Repairs

All repairs on products under warranty must be performed or approved by Welch Allyn. Unauthorized repairs will void the warranty. In addition, whether or not covered under warranty, any product repair shall exclusively be performed by Welch Allyn certified service personnel.
If your product requires warranty, extended warranty, or non-warranty repair service, please call first the nearest Welch Allyn Technical Support Center. A representative will assist you in troubleshooting the problem and will make every effort to solve it over the phone, avoiding potential unnecessary returns.

In case the return cannot be avoided, the representative will record all necessary information and will provide a Return Material Authorization (RMA) number, as well as the appropriate return address. A Return Material Authorization (RMA) number must be obtained prior to any return.

**Packing Instructions:**

- Remove patient cable, battery, and Secure Digital memory card (as appropriate) prior to packing, unless you suspect they are associated with the problem.
- Whenever possible, use the original shipping carton and packing materials.
- Include a packing list and the Welch Allyn Return Material Authorization (RMA) number.
- It is recommended that all returned goods be insured. Claims for loss or damage to the product must be initiated by the sender.

# 2. NOTICES

## Manufacturer's Responsibility

Welch Allyn 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.
- 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.

This manual must be kept in a safe place to prevent its deterioration and/or alteration. The user and Welch Allyn authorized personnel must have access to this manual at any time.

The user of this device must periodically check the accessories, their functionality and integrity.

## Equipment Identification

Welch Allyn equipment is identified by a serial and reference number on the bottom of the device. Care should be taken so that these numbers are not defaced.

## Copyright and Trademark Notices



## Other Important Information

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

Welch Allyn 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 assumes no responsibility for any errors or omissions that may appear in this document. Welch Allyn makes no commitment to update or to keep current the information contained in this document.

# 3. WARRANTY INFORMATION

## Limited Warranty Statement

Welch Allyn warrants that the Welch Allyn Q-Tel RMS you have purchased meets the labeled specifications of the product and will be free from defects in materials and workmanship that occur within 1 year after the date of purchase. Accessories used with the Product are warranted for 90 days after the date of purchase.

The date of purchase is: 1) the date specified in our records, if you purchased the Product directly from us, 2) the date specified in the warranty registration card that we ask you to send to us, or 3) if you don't return the warranty registration card, 120 days after the date on which the Product was sold to the dealer from whom you bought the Product, as documented in our records.

This warranty does not cover damage caused by: 1) handling during shipping, 2) use or maintenance contrary to labeled instructions, 3) alteration or repair by anyone not authorized by Welch Allyn, and 4) accidents.

You assume all responsibility for the use of the Product with any accessory that does not meet the requirements described in the Product documentation.

If a product or accessory covered by this warranty is determined to be defective because of defective materials, components, or workmanship, and the warranty claim is made within the warranty period described above, Welch Allyn will, at its discretion, repair or replace the defective Product or accessory free of charge.

You must obtain a return authorization from Welch Allyn to return your Product before you send it to Welch Allyn's designated service center for repair.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. WELCH ALLYN'S OBLIGATION UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF PRODUCTS CONTAINING A DEFECT. WELCH ALLYN IS NOT RESPONSIBLE FOR ANY INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM A PRODUCT DEFECT COVERED BY THE WARRANTY.

# 4. USER SAFETY INFORMATION

**Warning:** This alert identifies hazards that may cause serious personal injury or death.

**Caution:** This alert identifies hazards that may cause minor personal injury, product or property damage.

***NOTE**: This manual may contain screen shots and pictures. Any screen shots and pictures are provided for reference only and are not intended to convey actual operating techniques. Consult the actual screen in the host language for specific wording.*

## Warning(s)

- **WARNING! Restricted use.** The Q-Tel RMS System is intended for use in a hospital or clinical setting by trained and authorized personnel who are acting on the orders or under the supervision of a physician. The system is intended as a complement to, not a substitute for, patient observation by health care professionals. Q- Tel RMS should not be used for unintended activities.

- **WARNING! Use only Welch Allyn approved equipment.** Use of accessories or cables other than those specified, with the exception of accessories or cables sold by Welch Allyn as replacement parts for internal components, may result in increased emissions or decreased immunity of the system. Use only Welch Allyn-approved and specified parts and accessories. Use of other parts can degrade performance and/or safety and may void warranty or contract coverage.

- **WARNING! Restricted use.** The Q-Tel RMS system needs special precautions regarding EMC and needs to be installed and put into service according to the guidelines of the EMC declaration tables.

- **WARNING! Audible alarms.** Do not connect any devices to the Aux input on the speakers as this may mask an audible alarm.

- **WARNING! Audible alarms are not available during a power failure.** During a power outage, the audible alarms may not function; discharge all patients.

- **WARNING! The *Lead Off* condition disrupts the alarm function.** The arrhythmia alarm detection system must have all leads properly connected to the patient in order to function correctly. If a lead-off condition occurs and the *Lead Off* alarm displays, reattach the lead as soon as possible.

- **WARNING! RF Interference.** Portable and mobile RF communications equipment may affect the Q-Tel RMS system. Observe the recommended separation distances in the EMC declaration tables.

- **WARNING! Improper system performance.** The Q-Tel RMS system should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, observe the Q-Tel RMS system to verify normal operation in the configuration in which it will be used.

1 **WARNING! Review default settings.** For optimal patient safety, all operators and clinicians using the system must review the system default settings periodically.

2 **WARNING! Explosion hazard.** This instrument is not approved for use and must not be operated in the presence of flammable anesthetics.

3 **WARNING! Shock hazard.** Do not place fluids on top of the system. Never spill liquid of any kind on this product. Connectors are not fluid proof. Fluid spilled onto the internal parts of the system can create an electrical hazard. If fluid enters the system, turn off the power immediately and call Technical Support. Do not use until the interior has been cleaned and tested. Water tight boots are commercially available, if needed, for your facility's environment.

4 **WARNING! Shock hazard.** Do not use spray on liquid cleaners/aerosol cleaners. Only use damp cloth for cleaning.

5 **WARNING! Shock hazard.** Do not use this product near water.

6 **WARNING! Possible injury or system damage.** Do not place this product on an unstable cart, stand, or table. This product may fall, causing serious damage to the product or to a person nearby.

7 **WARNING! Visual inspection required.** Visually inspect the system periodically to verify functionality. Be aware of and correct any system issues that can affect correct operation and full functionality, such as inoperable hardware, out of adjustment hardware, powered off hardware, or system error messages. Before each use of the equipment, visually check all connector cables and the power receptacle. Make sure all power cables are plugged in securely. Check for worn or damaged plastic coverings, frayed or broken wires, cracked connections, and other signs of damage. Do not operate the equipment if the integrity of these items is in question.

8 **WARNING! Monitor system data.** Q-Tel RMS provides ECG monitoring data. The operator must be aware of the meanings of this data and the patient's condition to ensure that the patient is not over-exerted during the rehab session.

9 **WARNING! Monitor system data.** Network slowdowns and system failures may delay or disable the display of ECG waveforms and visual alarms on network-connected Q-Tel RMS Workstations. Alarm volumes should be set sufficiently loud on the Q-Tel RMS Tower to be heard adequately over the entire rehab facility. The towers are the primary source of alarm notification. ECG waveforms displayed on the Workstation that are not being updated should not be relied upon for current patient status.

## Caution(s)

10 **Caution: UPS software is not compatible with Q-Tel RMS.** Do not install the UPS software that comes with the UPS device.

11 **Caution: Connect only the computer, monitor, and HUB to the UPS.** Do not connect any components, other than the computer, monitor, and HUB into the UPS. See the Q-Tel RMS Main Tower block diagram.

12 **Caution: System damage.** Do not obstruct the air holes on the unit. Improper ventilation and air flow could cause the unit to overheat, resulting in automatic shutdown. Slots and openings in the cabinet and the back or bottom are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, do not block or cover these openings. Do not place the product on a rug or similar surface that may block ventilation openings. Never place this product near or over a radiator or heat register. Do not place this product in a built-in installation unless proper ventilation is provided.

13 **Caution: Possible interference.** Other electrical devices used on or near patients connected to this device can cause arrhythmia-like artifact on ECG recordings or displays. Those devices, that induce or pass current through the body, can be checked as a possible source of artifact by turning them off while obtaining the diagnostic ECG waveforms on this device.

14 **Caution: Network failure.** The Q-Tel RMS system monitors network connections and notifies the user via a message window if a network failure is detected. If a network issue causes a Q-Tel RMS Workstation to be disconnected from the Q-Tel RMS Towers, the Workstation will cease to be functional. Immediately check the system network, and correct any dislodged network plugs, power-down conditions or other failures. Re-establishing the network connection and any needed link within a few minutes of the failure will allow activities in Patient Information and Charting and Editing to continue without shutting down and restarting the Q-Tel RMS Workstation application.

15 **Caution: Session storage at capacity.** Sessions that are stored to the hard drive will cause the device to fill over time. Each hour-long exam session with full disclosure data will use approximately 12 MB of storage. Over time the Q-Tel RMS database will fill with patient data. See the Purge and Archive section for instructions on maintaining system performance and allowing for continued storage of new session data.

## Electrical Safety

The electrical safety of this product has been considered in its design and production. Welch Allyn medical products are designed to comply with applicable national and international electrical codes.

- **WARNING! Shock hazard.** Do not use spray on liquid cleaners/aerosol cleaners. Only use damp cloth for cleaning.
- **WARNING! Possible injury or system damage.** The product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- **WARNING! Shock hazard.** Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock.
- **WARNING! Electrical hazard.** Do not connect additional multiple portable socket outlets (outlet strips) or extension cords to the Q-Tel RMS system.
- **WARNING! Electrical hazard.** Use only the medical grade power cords supplied with your system. Plug the system only into a grounded power outlet.
- **WARNING! Power cords and system cables.** Do not allow anything to rest on the power cord or cables. Do not locate this product where persons will or can walk or trip on the cord or cables.
- **WARNING! Power cords and system cables.** Do not let the cables get caught in the treadmill or other exercise device mechanism.
- **WARNING! Patient protection.** The Q-Tel RMS equipment was not designed to be used in the environment where the patient is undergoing a medical procedure as defined in IEC 60601-1-1 (1.5 m from the patient). The use of an isolation transformer between mains and Q-Tel RMS is required but is not a sufficient safety measure for use in the patient environment because of data connections (antenna network, data network) that might cause excessive leakage currents in some conditions. Additional separation devices may be required. Any equipment that has a physical connection between Q-Tel RMS and that is in the patient environment (e.g. laser printer and any powered components) must have additional protection against electrical shock (e.g., an Isolation Transformer and/or a separation device between the equipment and Q-Tel RMS) in order to be in compliance with IEC 60601-1 or equivalent safety standards.
- **WARNING! Possible improper system performance.** Do not connect items that are not specified as part of the Q-Tel RMS system to a Q-Tel RMS Tower or Workstation. Set up the Q-Tel RMS Tower or Workstation as described in the installation instructions and maintain that configuration.
- **Caution: Electrical hazard.** The maximum permitted load for the optional isolation transformer used with the system is 900VA.
- **Caution: Electrical hazard.** The Main Power Source / Isolation Transformer should be plugged into a dedicated power line to ensure that the primary power to the Q-Tel RMS computer is not subject to power sags induced by other devices.

## Improper Software Use

The system must be dedicated to the task of monitoring and recording parameters during rehabilitative sessions. You can compromise the ability of the machine to perform its job by running improper software (for example, games, screensavers, etc.) that is not qualified and tested to run with the Q-Tel RMS software and that uses resources needed for the monitoring and session entry process.

- **WARNING! Requires computer knowledge.** Users must be trained in the use of a PC and capable of recognizing abnormal PC behavior.

- **WARNING! Audible alarms.** Do not use the system to play CDs or DVDs as the sound may mask an audible alarm.

- **WARNING! Patient safety.** Do not alter the software. Do not add or run other software programs on the Q-Tel RMS Tower or Workstation computer (except anti-virus software), especially while monitoring patients. Any unauthorized change or addition may affect patient safety or efficacy. Other software can reduce disk space and available memory; it also can change configuration files. Quinton supports the operation of Q-Tel RMS in its software-only released configuration.

- **WARNING! Possible improper system performance.** Do not load unqualified software on the machine. Unqualified software can compromise the safety of your patient and the accuracy of the tests.

- **Caution: Safeguards for patient information.** The facility is responsible for ensuring appropriate safeguards are put in place to protect patient health information (PHI). This includes a mixture of physical and IT-based mechanisms to secure PHI from unauthorized access. Examples include:
  - Physically securing computers or securing access to them.
  - Ensuring strong passwords are used, especially on mobile equipment.

- **Caution: Computer virus protection.** Do not use removable media that have been used on other PCs. They can introduce computer viruses with destructive effects on the software and data.

## Operator Notes

All screen shots are for reference only. The screen displays differently depending on the system configuration.

At the end of each day, close the Q-Tel RMS application. If you do not close the application at the end of the day, you cannot admit patients to sessions the following day until you close and re-open the Q-Tel RMS application. It is also recommended to turn off the computer, particularly in areas or times of unstable AC power.

- **WARNING! Read this manual carefully.** The operator must be thoroughly familiar with the information in this manual before using the equipment.
- **WARNING! Review system findings.** Any notification or abnormal indication displayed by this system should be reviewed by skilled staff.
- **WARNING! Audible alarms.** The speakers must remain connected to the system at all times. Disconnecting the speakers can cause a system fault and can prevent you from hearing audible alarms.
- **WARNING! Remote usage.** When working on a Q-Tel RMS system located remotely away from the patient, do not use (exercise related) session management features or discharge a patient.
- **Caution: Powering off.** You must perform standard Windows shutdown procedures when you turn off the computer or the Q-Tel RMS software can become inoperable. See Powering Off the Computer.

  ***NOTE:*** *The Q-Tel RMS application requires the user to be a member of the local Power Users or Administrators group to run. Other components of the Q-Tel RMS, including the Backup/Restore, Configuration, Session Recovery, Import/Export and Purge/ Archive utilities, can be used only by users that are members of the local Administrators group.*

## S2 Transmitter Restrictions

Some countries regulate the use of transmitter channel frequencies. These restrictions are outlined below for the United States with declared channels for 802.11a/b/g/n wireless protocols by the Federal Communications Commission (FCC).

- 2.4 GHz: Channels 1 - 11
- 5 GHz U-NII-1: Channels 36, 40, 44, and 48
- 5 GHz U-NII-2: Channels 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 18, 132, 136, and 140
- 5 GHz U-NII-3: Channels 149, 153, 157, 161, and 165

Optimal channels for the particular facility are identified during a site survey.

## Indications for Use

The indications for use of the Q-Tel RMS system is the acquisition and transmission of ECG data by means of a WiFi (wireless fidelity) transmitter worn by individual patients in a hospital or clinical setting, to a central monitor where it is received, displayed, stored, and analyzed. The system alerts the user to heart rate and arrhythmia in the patient. The intended populations are ambulatory adults where cardiac monitoring is prescribed while undergoing exercise rehabilitation. Patient demographics, exercise prescription, and collected data can be exported to an outcomes management program.

## Intended Use

- The device is intended to acquire and transmit electrocardiograph (ECG) data by means of a WiFi transmitter worn by individual patients in a hospital or clinical setting to a central monitor where it is received, displayed, stored, and analyzed, with alarms for heart rate, arrhythmia, and ST change.
- The device is to be used on ambulatory adult populations where monitoring is prescribed while undergoing exercise rehabilitation.
- Multiple access points may be used and connected to a local area network.
- Specified wireless data entry devices may be connected to the system via a wireless access point and be used as a station for entry of patient session data.
- Optional workstation(s) may be connected to the system via a network for entering and viewing patient demographic and rehab session data. The workstation may also be used for tracking patient progress and displaying non-real-time waveforms and alarms.
- Patient demographics, exercise prescription, scheduling information, and collected data can be ported to an outcomes management program.

# 5. EQUIPMENT SYMBOLS AND MARKINGS

## Symbol Delineation

Welch Allyn products display one or more of these symbols and warning labels for your protection.

| | | | |
|---|---|---|---|
|   | Attention: Consult accompanying documents |  | Replace fuse only as marked |
|  | Earth ground (protective) |  | Fuse |
|  | Off (power disconnected from mains) |  | Mains power |
|  | On (power connected to mains) |  | Equipotentiality |
|  | Type B equipment – provides adequate protection against electric shock, particularly regarding allowable leakage current; reliability of the protective earth connection (when present) |  | 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. |
|  | Type BF equipment – contains an F-type isolated patient applied part providing a high degree of protection against electric shock |  | Input/output |
|  | Type BF equipment with defibrillation protection |  | Do not dispose as unsorted municipal waste. Requires separate handling for waste disposal according to local requirements. |
|  | Type CF equipment – contains an F type isolated patient applied part and provides a degree of protection against electric shock higher than that for type BF equipment regarding allowable leakage currents | **Hz** | Hertz |
|  | Type CF equipment with defibrillation protection | **A** | Amperes |
|  | Alternating current | **T** | Timed fuse (slo-blo) |

| | |
|---|---|
|  High voltage | **V** Volts |
|  Earth ground (functional) | **VA** Volt Amperes |
|  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. | |

# 6. OVERVIEW

This document contains the instructions for installing a new Q-Tel® RMS system from an out-of-box state to a fully networked configuration including physical connections, configuration, and functional testing.

This document makes the following assumptions concerning the environment in which these instructions will be carried out:

- User has 1 Q-Tel RMS Main Tower built on the Z2 PC platform with a configured BIOS, factory installation and configuration of Windows 10, and Q-Tel RMS software installed.
- User may have 1 or more Q-Tel RMS Secondary Towers built on the Z2 PC platform with a configured BIOS, factory installation and configuration of Windows 10 and Q-Tel RMS software installed.
- User may have 1 or more Q-Tel RMS Turnkey Workstation PCs with a configured BIOS, factory installation and configuration of Windows 10 and Q-Tel RMS software installed.
- User may have 1 or more customer provided Windows 10 PCs with no Q-Tel RMS software installed.
- User has received all accessories and peripherals required to complete this installation.
- User has provided a dedicated Wi-Fi access point for exclusive use with the Q-Tel RMS system.

These instructions have been written with the entry-level PC user in mind, however some steps may require additional technical expertise depending on the users comfort level with more in-depth PC and Windows configuration procedures.

All tables and screenshots were verified as accurate at the time of document creation, but may not represent the most current iterations of hardware or software versions as a result of additional updates or changes.

Use the instructions in this document for a complete installation process or in part as a troubleshooting tool for ensuring correct connection, configuration, and functioning of the Q-Tel RMS.

## Definitions

Through-out this document the instructions use specific terminology to reference systems and components. This terminology is defined below:

| | |
|---|---|
| Main Tower | The main telemetry monitoring system. This unit receives telemetry data from the S2 transmitter and houses the patient database. This Main provides full session control, management, and progress reporting. The is a vendor provided PC |
| Secondary Tower | An *optional* telemetry monitoring system that connects to the Main Tower. This unit receives telemetry data from the S2 transmitter to expand the monitoring capacity and does not contain a patient database. Up to two Secondary Towers can be added to your Q- Tel system. The Secondary provides full session control, management, and progress reporting. This is a vendor provided PC. |
| Turnkey Workstation | An *optional* remote system that connects to the Main Tower. It does not directly accept telemetry data from the S2 transmitter. The Turnkey allows patient and session management, charting and editing, and progress reporting. This is a vendor provided PC |
| Software Only Workstation | An *optional* remote system that connects to the Main Tower. It does directly accept telemetry data from the S2 transmitter. The Workstation solution allows patient demographics input, session management, and reporting function. This is a customer provided PC. |

# 7. MAIN TOWER INSTALLATION

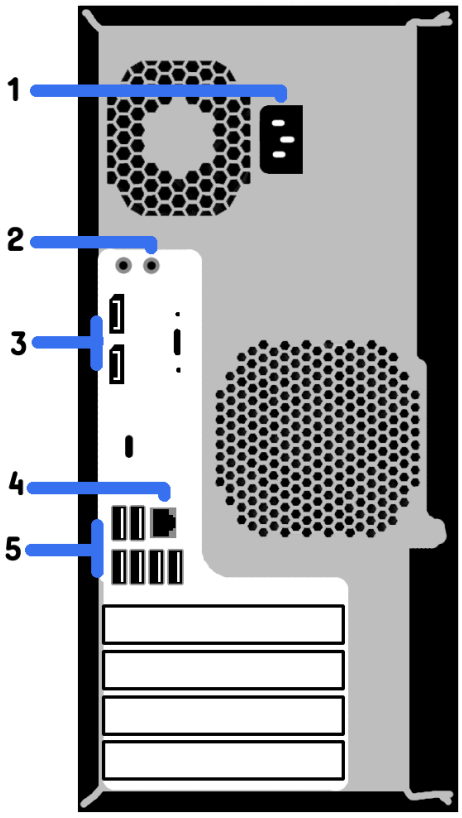
This section contains the instructions for installing a new Q-Tel RMS Main Tower from an out-of-box state to a fully networked configuration including physical connections, configuration, and functional testing.

Use the following tables as a guideline for performing your hardware installation. Some details may have changed since the creation of this installation manual, however the underlying principles should remain the same.

## Installing Main Tower Hardware

Unlike previous generations of the Q-Tel RMS product, installation of the Main Tower will not require any additional internal hardware installed into the PC beyond what is provided from the factory.

**Figure 1 - Z2 Main Tower Diagram**




***Overview***

***1 – Power cord socket***
***2 – Audio line out***
***3 – DisplayPort output***
***4 – Network port***
***5 – USB ports***

## Accessory and Cable Installation

The following instructions will guide you through the installation of various accessories and power cabling. These steps assume that you have one or more of the following hardware in your possession. Skip any steps that do not apply.

- LCD Monitor
- LCD power cord
- Video cable
- Video adapter
- USB Keyboard
- USB Mouse
- Network cable
- Main Tower power cord
- Speakers
- Isolation Transformer
- Isolation Transformer power cord
- IEC-M to NEMA-F adapter
- UPS 120V, 1000VA / 600W

### Isolation Transformer

1. Connect the isolation transformer power cord to the isolation transformer.
2. Connect the IEC-M to NEMA-F adapter to the isolation transformer.

### UPS 120V, 1000VA / 600W

3. Plug the UPS into the available end of the IEC-M to NEMA-F adapter coming from the isolation transformer.

### PC power cord

4. Connect the provided power cord to the power socket on the back of the Main Tower *(marked **1** in Figure 1).*
5. Plug the Main Tower power cord into the battery supported side of the rear of the UPS.

### Keyboard and mouse

6. Connect the keyboard and mouse to an available USB port on the back of the Main Tower *(marked **5** in Figure 1).* It is typically recommended to use the USB 2.0 ports (top two black USB ports) for keyboard and mouse.

### LCD Monitor

7. Connect the provided power cord and video cable to your LCD monitor.
8. Plug the power cord of the LCD monitor into the battery supported side of the rear of the UPS.
9. Connect the unused end of your video cable to either of the available DisplayPort outputs *(marked **3** in Figure 1).*

### Network cable

10. Connect one end of the network cable to the network port *(marked **4** in Figure 1).*

### Speakers

11. If your speakers use a 3.5mm jack, connect to the green stereo port on the back of the Main Tower *(marked **2** in Figure 1)*.
12. If your speakers are USB only, connect the USB cable to an available USB port on the back of the Main Tower *(marked **5** in Figure2).*

Once everything is connected, plug the isolation transformer into the wall and ensure that the isolation transformer and UPS are switched on.

## Installing Peripherals

The following instructions will guide you through the installation of your peripheral hardware. These may include one or more of the following devices. You may skip the installation steps for any devices which are not applicable to your system.

- 8 Port Network Switch
- Laser Printer
- External USB Hard Drive

### 8 Port Network Switch

1. Connect the provided power cord to the rear of your 8 Port Network Switch.
2. Locate the unconnected end of the network cable attached to your Main Tower.
3. Attached this cable to any free network ports on the front of your network switch.
4. Plug the network switch power cord into an available wall outlet.
5. Connect the switch to the customer provided Wi-Fi access point.

### Laser Printer

6. Connect the provided power cord to the rear of your Laser Printer.
7. Connect one end of the provided network cable to the network port on the back of the printer.
8. Connect the other end of the network cable to an unused port on your 8 Port Network Switch.
9. Plug the printer power cord into an available wall outlet.

### External USB Hard Drive

10. Connect one end of the provided USB cable to the rear of your external hard drive.
11. Connect the other end of the USB cable to an available USB 3.0 (bottom three blue USB ports) on the rear of the Main Tower

## Configure Main Tower

### Update time zone

1. Move the mouse cursor to the lower right corner of your screen
2. Right-click the time / date section of your taskbar and choose **Adjust date/time**.
3. Change your time zone to the correct time zone for this system location.
4. If it is necessary to correct your local time, click the **Change** button under Change date and time.
5. Update your date and time as appropriate and then click **Change** to accept the new setting.
6. Close the Date & time window.

## Network Settings

Network settings are entirely dependent on the environment in which the system is being installed. For Q-Tel RMS systems that are not connected to the facility network and remain in an isolated private workgroup such as "QTELNETWORK", it is recommended to follow an IP address scheme similar to the below example, which can be extrapolated on as needed:

| | | | |
|---|---|---|---|
| Wi-Fi Access Point IP Address: | 192.168.10.1 | Secondary Tower IP Address: | 192.168.10.20 |
| Main Tower IP Address: | 192.168.10.10 | Workstation IP Address: | 192.168.10.30 |

1. Move the mouse cursor to the lower right corner of your screen.
2. Right-click on the network connection icon and select **Open Network & Internet Settings**.
3. Click **Change adapter options**.
4. Right-click the active network adapter and choose **Properties**.
5. If **Internet Protocol Version 6** is checked, uncheck it.
6. Select **Internet Protocol Version 4**.
7. Click **Properties**.
8. Enter the desired IP address for this PC and then click **OK**.

## Updating Printer IP Address

Using the M600 Series PCL6 driver for the M601, M602, and M603 printers the QTelNetPrinter is installed and configured by the factor to use IP address 192.168.10.21 to match the IP address that would be typically recommended for a private workgroup configuration of a **HP Laser Jet M601/M602/M603 series printer**. If the customer has a pre-existing **HP Laser Jet M601/M602/M603 series printer**, you can use the following steps to change the IP address set within Windows once you have obtained the current IP address of the printer.

If the customer has an HP LaserJet M604 - M609 printer it may be necessary to uninstall the current printer and then download the appropriate driver package from the HP website.

1. Click on the **Search** icon in the lower left corner of your screen.
2. Enter **Printer** and then select **Printers & Scanners**.
3. Click on your installed printer and choose **Manage**.
4. On the left side of your window click **Printer Properties.**
5. Click the **Ports** tab.
6. Take note of the name of the currently check marked and highlighted port
7. Click **Add Port.**
8. Select **Standard TCP/IP Port** and then click the **New Port** button.
9. At the new port wizard click **Next**.
10. Enter the desired IP address in **Printer Name or IP Address**.
11. Enter a name for the port in **Port name.**
12. Click **Next** and then click **Finish**.
13. Click **Close** on the Printer Ports window.
14. Verify that your new port is now check marked and highlighted. Click **Apply.**
15. Right-click the original printer port identified in step 6 and click **Delete Port.**
16. Click **OK** at the prompt and then close the **Printer Properties** window.

## Configure Q-Progress storage location

1. Double-click the Q-Progress icon on your desktop.
2. Click **View** on the top menu bar. Select **Options**.
3. Click square button **[…]**
4. Browse to and double-click the **C:\QTelDataCenter\QProgressCSVData** folder. Click **OK**.
5. Click **Apply** and then click **OK**. Close Q-Progress.

## Configure number of transmitters number, Unit ID and Bed ID

In the instructions below, the Unit ID is used to identify a specific S2 transmitter, and the Bed ID will be used to associate the S2 transmitter with the specific Tower it has been configured to communicate with. The recommended scheme is Main Tower – Bed ID 1, First Secondary Tower – Bed ID 2, Additional Secondary Tower – Bed ID 3

1. From the desktop, launch the Q-Tel RMS Configuration utility.
2. If prompted, click **Yes** to the UAC prompt.
3. Select the **System Setup** tab.
4. Set the **Number of licensed transmitters** to match the number of transmitters you have.
5. Enter a Unit ID for each S2 transmitter, starting at **1** and incrementing by 1 until all units have a Unit ID.
6. Set the Bed ID to 1 for every S2 unit
7. Click **Save** and then close the configuration utility.

# 8. SECONDARY TOWER INSTALLATION

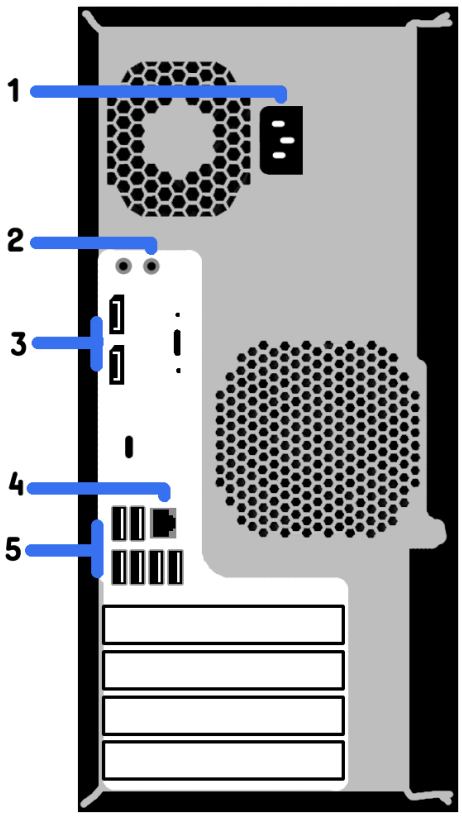
This section contains the instructions for installing a new Q-Tel RMS Secondary Tower from an out-of-box state to a fully networked configuration including physical connections, configuration, and functional testing.

Use the following tables as a guideline for performing your hardware installation. Some details may have changed since the creation of this installation manual, however the underlying principles should remain the same.

## Installing Secondary Tower Hardware

Unlike previous generations of the Q-Tel RMS product, installation of the Secondary Tower will not require any additional internal hardware installed into the PC beyond what is provided from the factory.

**Figure 2 - Z2 Secondary Tower Diagram**




***Overview***

***1 – Power cord socket***
***2 – Audio line out***
***3 – DisplayPort output***
***4 – Network port***
***5 – USB ports***

## Accessory and Cable Installation

The following instructions will guide you through the installation of various accessories and power cabling. These steps assume that you have one or more of the following hardware in your possession. Skip any steps that do not apply.

- LCD Monitor
- LCD power cord
- Video cable
- Video adapter
- USB Keyboard
- USB Mouse
- Network cable
- Secondary Tower power cord
- Speakers

### PC power cord

1. Connect the provided power cord to the power socket on the back of the Secondary Tower *(marked **1** in Figure 2)*.
2. Plug the Secondary Tower power cord into the battery supported side of the rear of the UPS.

### Keyboard and mouse

3. Connect the keyboard and mouse to an available USB port on the back of the Secondary Tower *(marked **5** in Figure 2)*. It is typically recommended to use the USB 2.0 ports (top two black USB ports) for keyboard and mouse.

### LCD Monitor

4. Connect the provided power cord and video cable to your LCD monitor.
5. Plug the power cord of the LCD monitor into the battery supported side of the rear of the UPS.
6. Connect the unused end of your video cable to either of the available DisplayPort outputs *(marked **3** in Figure 2)*.

### Network cable

7. Connect one end of the network cable to the network port *(marked **4** in Figure 2)*.

### Speakers

8. If your speakers use a 3.5mm jack, connect to the green stereo port on the back of the Secondary Tower *(marked **2** in Figure 2)*.
9. If your speakers are USB only, connect the USB cable to an available USB port on the back of the Secondary Tower *(marked **5** in Figure 2)*.

Once everything is connected, plug the isolation transformer into the wall and ensure that the isolation transformer and UPS are switched on.

## Installing Peripherals

The following instructions will guide you through the installation of your peripheral hardware. These may include one or more of the following devices. You may skip the installation steps for any devices which are not applicable to your system.

- 8 Port Network Switch

### 8 Port Network Switch

1. Locate the unconnected end of the network cable attached to your Secondary Tower
2. Attached this cable to any free network ports on the front of your network switch.

## Configure Secondary Tower

### Update PC Name

Each PC utilized with Q-Tel RMS should be given a unique name, however it is possible that installations with multiple Q-Tel RMS Secondary Towers will be provided with PCs that share the same computer name. In the event it is determined that you must provide your Secondary Towers unique computer names, the following steps can be used.

1. Log into the PC with an account that has Administrator rights
2. Right-click the Windows Start button and choose **System**.
3. Under the **Device specifications** section click the **Rename this PC** button.
4. Enter a new unique PC name for this computer and click **Next.**
5. Once the name change completes click **Restart Now**.

### Update time zone

1. Move the mouse cursor to the lower right corner of your screen
2. Right-click the time / date section of your taskbar and choose **Adjust date/time**.
3. Change your time zone to the correct time zone for this system location.
4. If it is necessary to correct your local time, click the **Change** button under Change date and time.
5. Update your date and time as appropriate and then click **Change** to accept the new setting.
6. Close the Date & time window.

### Network Settings

Network settings are entirely dependent on the environment in which the system is being installed. For Q-Tel RMS systems that are not connected to the facility network and remain in an isolated private workgroup such as "QTELNETWORK", it is recommended to follow an IP address scheme similar to the below example, which can be extrapolated on as needed:

| | | | |
|---|---|---|---|
| Wi-Fi Access Point IP Address: | 192.168.10.1 | Secondary Tower IP Address: | 192.168.10.20 |
| Main Tower IP Address: | 192.168.10.10 | Workstation IP Address: | 192.168.10.30 |

1. Move the mouse cursor to the lower right corner of your screen.
2. Right-click on the network connection icon and select **Open Network & Internet Settings**.
3. Click **Change adapter options**.
4. Right-click the active network adapter and choose **Properties**.
5. If **Internet Protocol Version 6** is checked, uncheck it.
6. Select **Internet Protocol Version 4**.
7. Click **Properties**.
8. Enter the desired IP address for this PC and then click **OK**.

### Updating Printer IP Address

Using the M600 Series PCL6 driver for the M601, M602, and M603 printers the QTelNetPrinter is installed and configured by the factor to use IP address 192.168.10.21 to match the IP address that would be typically recommended for a private workgroup configuration of a **HP Laser Jet M601/M602/M603 series printer**. If the customer has a pre-existing **HP Laser Jet M601/M602/M603 series printer**, you can use the following steps to change the IP address set within Windows once you have obtained the current IP address of the printer.

If the customer has an HP LaserJet M604 - M609 printer it may be necessary to uninstall the current printer and then download the appropriate driver package from the HP website.

1. Click on the **Search** icon in the lower left corner of your screen.
2. Enter **Printer** and then select **Printers & Scanners**.
3. Click on your installed printer and choose **Manage**.
4. On the left side of your window click **Printer Properties.**
5. Click the **Ports** tab.
6. Take note of the name of the currently check marked and highlighted port
7. Click **Add Port.**
8. Select **Standard TCP/IP Port** and then click the **New Port** button.
9. At the new port wizard click **Next**.
10. Enter the desired IP address in **Printer Name or IP Address**.
11. Enter a name for the port in **Port name.**
12. Click **Next** and then click **Finish**.
13. Click **Close** on the Printer Ports window.
14. Verify that your new port is now check marked and highlighted. Click **Apply.**
15. Right-click the original printer port identified in step 6 and click **Delete Port.**
16. Click **OK** at the prompt and then close the **Printer Properties** window.

## Verify / Configure COM+ Remote Server and HOST settings

Communication between the Secondary Tower and the Main Tower will utilize a combination of COM+ settings and, in a private Workgroup environment, the Windows HOST file settings that are set during the first run of the application. The information entered during the manufacturing process may not be accurate for the installation environment. The settings can be checked and changed using the steps below.

To verify or change the Main Tower PC name set for the Secondary to connect to:

1. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
2. Type **Component** into the search text field and then click on **Component Services** in the results area above.
3. Double-click **Component Services** to expand the menu.
4. Double-click **Computers,** then **My Computer,** and then **COM+ Applications**
5. Right-click **QTelNetwork** and choose **Properties.**
6. Click the **Activation** tab and verify that the name listed under **Remote Server name** matches the current name of the Main Tower PC (Steps 1 and 2 in the Update PC Name instructions can be used on the Main Tower to verify the PC name).
7. If the names do not match, enter the correct Main Tower PC name and then click **Apply** and **OK**. Otherwise simply click Cancel to make no changes.
8. Right-click **QTelWaveformMgr** and choose **Properties.**
9. Click the **Activation** tab and verify that the name listed under **Remote Server name** matches the current name of the Main Tower PC.
10. If the names do not match, enter the correct Main Tower PC name and then click **Apply** and **OK**. Otherwise simply click Cancel to make no changes.
11. Close the Component Services window.

To verify or change the corresponding HOST file entry that is used to resolve PC name to IP address in a non-domain (Active Directory) environment do the following:

12. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
13. Type **C:\Windows\System32\drivers\etc** into the search text field and then hit your **Enter** key.
14. Right-click the **HOST** file and choose **Open with.**
15. Choose **Notepad** from the presented list and click **OK**.

You will be presented with the Windows HOST file that has 18 lines that begin with **#** mark. This mark tells Windows to ignore that line as it is informational only. There is no need to modify these lines. Below these lines there may be an entry of an IP address and a computer name. An example is shown below:

**192.168.10.10 QTELTOWER**

16. If the entry is present, verify that both the IP Address and PC name for the Main Tower is correct. If either is incorrect, update them to be correct. Note that the IP address and PC name are typically separated by on press of the TAB key.
17. If the HOST file does not have an entry for the IP Address and PC name of the Main Tower, enter it in the blank area just below the bottom most line starting with **#**. Once the entry has been added click **File** and choose **Save.**

## Configure Q-Progress storage location

1. Double-click the Q-Tel RMS Workstation icon and select Patient Info.
2. Confirm that Q-Tel RMS launches without error. Close Q-Tel RMS.
3. Double-click the Q-Progress icon on your desktop to allow it to create the file we need to modify.
4. Close the Q-Progress application.
5. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
6. Type **C:\Program Files (x86)\Quinton\QTel RMS** into the search text field and then hit your **Enter** key.
7. In the QTel RMS folder that opens, scroll down until you locate the text file named **settings**.
8. Right-click the **settings** file and choose **Open**.

   You will now be presented with the save location that will be used by Q-Progress to save reports to a central location so that all systems can share and utilize the same report copies. The default save location will be displayed as:

   **/QProgressCSVData**
   **1**

   ***We will modify only the top line, leaving the second line with 1 untouched***. The most reliable save location setting is to use a UNC path directly to the Main Tower rather than the more traditional method of using a mapped network drive with a Windows assigned drive letter. The format of the UNC path is:

   **\\{Main Tower PC Name}\{Shared Folder}\{Sub-Folder}**

   The Q-Tel RMS Main Tower is sharing out a folder with a network share name of **QTelAppsPath** in which a **QProgressCSVData** folder exists for holding Q-Progress reports. The previous Main Tower Installation steps already instructed you to choose this location on the Main Tower. Now we will point all other systems to the same location.

   The most likely UNC path based on the Factory configuration would be:

   **\\QTELTOWER\QTelAppsPath\QProgressCSVData**

   The Main Tower PC name in the above example can be changed to match the Main Tower PC name that is currently in use. The two folder names after that should generally remain as shown. Using the above example your **settings** file should read:

   **\\QTELTOWER\QTelAppsPath\QProgressCSVData**
   **1**

9. Once the desired path has been entered click **File** and choose **Save**.
10. The HOST file can be closed.

    NOTE: You can pre-verify the accuracy of the UNC path by doing the following.

11. Power on the Main Tower and log into Windows.
12. On the Secondary Tower, click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
13. Enter your UNC path into the search text field and then hit your **Enter** key.

14. The expected result is that the QProgressCSVData folder on the Main Tower will open for you on the Secondary Tower.

### Configure number of transmitters number, Unit ID and Bed ID

In the instructions below, the Unit ID is used to identify a specific S2 transmitter, and the Bed ID will be used to associate the S2 transmitter with the specific Tower it has been configured to communicate with. The recommended scheme is Main Tower – Bed ID 1, First Secondary Tower – Bed ID 2, Additional Secondary Tower – Bed ID 3

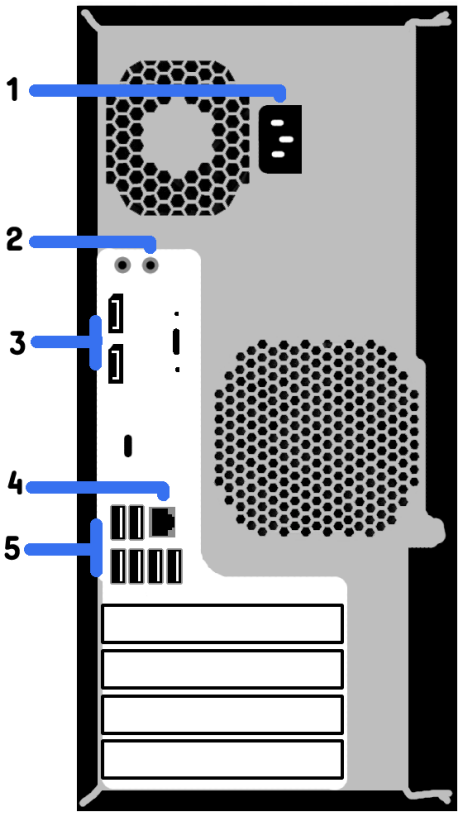
1. From the desktop, launch the Q-Tel RMS Configuration utility.
2. If prompted, click **Yes** to the UAC prompt.
3. Select the **System Setup** tab.
4. Set the **Number of licensed transmitters** to match the number of transmitters you have.
5. Enter a Unit ID for each S2 transmitter, using an initial Unit ID that is 1 higher than the top value used on the Main Tower so that all S2 transmitters remain sequential across all Towers.
6. Set the Bed ID to **2** for every S2 unit if this is the first of your Secondary Towers. Set the Bed ID to **3** if this is the second Secondary Tower.
7. Click **Save** and then close the configuration utility

# 9. TURNKEY WORKSTATION INSTALLATION

## Installing Turnkey Workstation Hardware

Use *Figure 3* as a reference for making connections with the Turnkey Workstation.

**Figure 3 - Z2 Turnkey Workstation Diagram**




***Overview***

***1 – Power cord socket***
***2 – Audio line out***
***3 – DisplayPort output***
***4 – Network port***
***5 – USB ports***

## Accessory and Cable Installation

The following instructions will guide you through the installation of various accessories and power cabling. These steps assume that you have one or more of the following hardware in your possession. Skip any steps that do not apply.

- LCD Monitor
- LCD power cord
- Video cable
- Video adapter
- USB Keyboard
- USB Mouse
- Network cable
- Workstation power cord

### PC power cord

1. Connect the provided power cord to the power socket on the back of the Workstation *(marked **1** in Figure 3).*
2. Plug the Secondary Tower power cord into the battery supported side of the rear of the UPS.

### Keyboard and mouse

3. Connect the keyboard and mouse to an available USB port on the back of the Workstation *(marked **5** in Figure 3).* It is typically recommended to use the USB 2.0 ports (top two black USB ports) for keyboard and mouse.

### LCD Monitor

4. Connect the provided power cord and video cable to your LCD monitor.
5. Plug the power cord of the LCD monitor into the battery supported side of the rear of the UPS.
6. Connect the unused end of your video cable to either of the available DisplayPort outputs *(marked **3** in Figure 3).*

### Network cable

7. Connect one end of the network cable to the network port *(marked **4** in Figure 3).*

Once everything is connected, plug the isolation transformer into the wall and ensure that the isolation transformer and UPS are switched on.

## Installing Peripherals

The following instructions will guide you through the installation of your peripheral hardware. These may include one or more of the following devices. You may skip the installation steps for any devices which are not applicable to your system.

- 8 Port Network Switch

### 8 Port Network Switch

1. Locate the unconnected end of the network cable attached to your Workstation
2. Attached this cable to any free network ports on the front of your network switch.

## Configure Turnkey Workstation

### Update PC Name

Each PC utilized with Q-Tel RMS should be given a unique name, however it is possible that installations with multiple Q-Tel RMS Turnkey Workstations will be provided with PCs that share the same computer name. In the event it is determined that you must provide your Turnkey Workstations unique computer names, the following steps can be used.

1. Log into the PC with an account that has Administrator rights
2. Right-click the Windows Start button and choose **System**.
3. Under the **Device specifications** section click the **Rename this PC** button.
4. Enter a new unique PC name for this computer and click **Next.**
5. Once the name change completes click **Restart Now**.

## Update time zone

1. Move the mouse cursor to the lower right corner of your screen
2. Right-click the time / date section of your taskbar and choose **Adjust date/time**.
3. Change your time zone to the correct time zone for this system location.
4. If it is necessary to correct your local time, click the **Change** button under Change date and time.
5. Update your date and time as appropriate and then click **Change** to accept the new setting.
6. Close the Date & time window.

## Network Settings

Network settings are entirely dependent on the environment in which the system is being installed. For Q-Tel RMS systems that are not connected to the facility network and remain in an isolated private workgroup such as "QTELNETWORK", it is recommended to follow an IP address scheme similar to the below example, which can be extrapolated on as needed:

| | | | |
|---|---|---|---|
| Wi-Fi Access Point IP Address: | 192.168.10.1 | Secondary Tower IP Address: | 192.168.10.20 |
| Main Tower IP Address: | 192.168.10.10 | Workstation IP Address: | 192.168.10.30 |

1. Move the mouse cursor to the lower right corner of your screen.
2. Right-click on the network connection icon and select **Open Network & Internet Settings**.
3. Click **Change adapter options**.
4. Right-click the active network adapter and choose **Properties**.
5. If **Internet Protocol Version 6** is checked, uncheck it.
6. Select **Internet Protocol Version 4**.
7. Click **Properties**.
8. Enter the desired IP address for this PC and then click **OK**.

## Updating Printer IP Address

Using the M600 Series PCL6 driver for the M601, M602, and M603 printers the QTelNetPrinter is installed and configured by the factor to use IP address 192.168.10.21 to match the IP address that would be typically recommended for a private workgroup configuration of a **HP Laser Jet M601/M602/M603 series printer**. If the customer has a pre-existing **HP Laser Jet M601/M602/M603 series printer**, you can use the following steps to change the IP address set within Windows once you have obtained the current IP address of the printer.

If the customer has an HP LaserJet M604 - M609 printer it may be necessary to uninstall the current printer and then download the appropriate driver package from the HP website.

1. Click on the **Search** icon in the lower left corner of your screen.
2. Enter **Printer** and then select **Printers & Scanners**.
3. Click on your installed printer and choose **Manage**.
4. On the left side of your window click **Printer Properties.**
5. Click the **Ports** tab.
6. Take note of the name of the currently check marked and highlighted port
7. Click **Add Port.**
8. Select **Standard TCP/IP Port** and then click the **New Port** button.
9. At the new port wizard click **Next**.
10. Enter the desired IP address in **Printer Name or IP Address**.
11. Enter a name for the port in **Port name.**
12. Click **Next** and then click **Finish**.
13. Click **Close** on the Printer Ports window.
14. Verify that your new port is now check marked and highlighted. Click **Apply.**
15. Right-click the original printer port identified in step 6 and click **Delete Port.**
16. Click **OK** at the prompt and then close the **Printer Properties** window.

## Verify / Configure COM+ Remote Server and HOST settings

Communication between the Turnkey Workstation and the Main Tower will utilize a combination of COM+ settings and, in a private Workgroup environment, the Windows HOST file settings that are set during the first run of the application. The information entered during the manufacturing process may not be accurate for the installation environment. The settings can be checked and changed using the steps below.

To verify or change the Main Tower PC name set for the Turnkey Workstation to connect to:

1. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
2. Type **Component** into the search text field and then click on **Component Services** in the results area above.
3. Double-click **Component Services** to expand the menu.
4. Double-click **Computers,** then **My Computer,** and then **COM+ Applications**
5. Right-click **QTelNetwork** and choose **Properties.**
6. Click the **Activation** tab and verify that the name listed under **Remote Server name** matches the current name of the Main Tower PC (Steps 1 and 2 in the Update PC Name instructions can be used on the Main Tower to verify the PC name).
7. If the names do not match, enter the correct Main Tower PC name and then click **Apply** and **OK**. Otherwise simply click Cancel to make no changes.
8. Right-click **QTelWaveformMgr** and choose **Properties.**
9. Click the **Activation** tab and verify that the name listed under **Remote Server name** matches the current name of the Main Tower PC.
10. If the names do not match, enter the correct Main Tower PC name and then click **Apply** and **OK**. Otherwise simply click Cancel to make no changes.
11. Close the Component Services window.

To verify or change the corresponding HOST file entry that is used to resolve PC name to IP address in a non-domain (Active Directory) environment do the following:

12. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
13. Type **C:\Windows\System32\drivers\etc** into the search text field and then hit your **Enter** key.
14. Right-click the **HOST** file and choose **Open with.**
15. Choose **Notepad** from the presented list and click **OK**.

You will be presented with the Windows HOST file that has 18 lines that begin with **#** mark. This mark tells Windows to ignore that line as it is informational only. There is no need to modify these lines. Below these lines there may be an entry of an IP address and a computer name. An example is shown below:

**192.168.10.10 QTELTOWER**

16. If the entry is present, verify that both the IP Address and PC name for the Main Tower is correct. If either is incorrect, update them to be correct. Note that the IP address and PC name are typically separated by on press of the TAB key.
17. If the HOST file does not have an entry for the IP Address and PC name of the Main Tower, enter it in the blank area just below the bottom most line starting with **#**. Once the entry has been added click **File** and choose **Save.**

## Configure Q-Progress storage location

1. Double-click the Q-Tel RMS Workstation icon and select Patient Info.
2. Confirm that Q-Tel RMS launches without error. Close Q-Tel RMS.
3. Double-click the Q-Progress icon on your desktop to allow it to create the file we need to modify.
4. Close the Q-Progress application.
5. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
6. Type **C:\Program Files (x86)\Quinton\QTel RMS** into the search text field and then hit your **Enter** key.
7. In the QTel RMS folder that opens, scroll down until you locate the text file named **settings**.
8. Right-click the **settings** file and choose **Open**.

   You will now be presented with the save location that will be used by Q-Progress to save reports to a central

location so that all systems can share and utilize the same report copies. The default save location will be displayed as:

**/QProgressCSVData**
**1**

***We will modify only the top line, leaving the second line with 1 untouched***. The most reliable save location setting is to use a UNC path directly to the Main Tower rather than the more traditional method of using a mapped network drive with a Windows assigned drive letter. The format of the UNC path is:

**\\{Main Tower PC Name}\{Shared Folder}\{Sub-Folder}**

The Q-Tel RMS Main Tower is sharing out a folder with a network share name of **QTelAppsPath** in which a **QProgressCSVData** folder exists for holding Q-Progress reports. The previous Main Tower Installation steps already instructed you to choose this location on the Main Tower. Now we will point all other systems to the same location.

The most likely UNC path based on the Factory configuration would be:

**\\QTELTOWER\QTelAppsPath\QProgressCSVData**

The Main Tower PC name in the above example can be changed to match the Main Tower PC name that is currently in use. The two folder names after that should generally remain as shown. Using the above example your **settings** file should read:

**\\QTELTOWER\QTelAppsPath\QProgressCSVData**
**1**

9. Once the desired path has been entered click **File** and choose **Save**.
10. The HOST file can be closed.

NOTE: You can pre-verify the accuracy of the UNC path by doing the following.

11. Power on the Main Tower and log into Windows.
12. On the Turnkey Workstation, click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
13. Enter your UNC path into the search text field and then hit your **Enter** key.
14. The expected result is that the QProgressCSVData folder on the Main Tower will open for you on the Turnkey Workstation.

# 10. SOFTWARE ONLY WORKSTATION INSTALLATION

The following section will guide you through the installation and configuration of the Q-Tel RMS Workstation software on a customer provided PC. It may be required to perform the following steps under a user account that has full local Administrator rights to ensure that all components install and update correctly.
During the installation of the Workstation software it is critical that any antivirus software be disabled for the duration of the installation to avoid a partial or incomplete install. All required antivirus exclusions from Section 14 must be in place before the antivirus software is re-enabled.

## Software Installation

### Installing Q-Tel RMS Workstation Software

1. Insert your Q-Tel RMS 5.x Workstation installation media into your PC.
2. Browse to and run **Setup.exe.**
3. If prompted with a User Access Control alert, click **Yes**.
4. If prompted to install Amyuni PDF Converter and/or Adobe Reader, choose **Yes**.
5. At the installation welcome screen click **Next**.
6. At the Reboot prompt click **OK** to reboot your system.

## Configure Workstation

### Network Settings

Network settings are entirely dependent on the environment in which the system is being installed. For Q-Tel RMS systems that are not connected to the facility network and remain in an isolated private workgroup such as "QTELNETWORK", it is recommended to follow an IP address scheme similar to the below example, which can be extrapolated on as needed:

| | | | |
|---|---|---|---|
| Wi-Fi Access Point IP Address: | 192.168.10.1 | Secondary Tower IP Address: | 192.168.10.20 |
| Main Tower IP Address: | 192.168.10.10 | Workstation IP Address: | 192.168.10.30 |

1. Move the mouse cursor to the lower right corner of your screen.
2. Right-click on the network connection icon and select **Open Network & Internet Settings**.
3. Click **Change adapter options**.
4. Right-click the active network adapter and choose **Properties**.
5. If **Internet Protocol Version 6** is checked, uncheck it.
6. Select **Internet Protocol Version 4**.
7. Click **Properties**.
8. Enter the desired IP address for this PC and then click **OK**.

### Update Workgroup

When install in a Workgroup environment, the Workstation will need to be added to the same workgroup configured on your Main Tower. The following steps can be used to update the Workgroup for this PC:

1. Log into the PC with an account that has Administrator rights
2. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
3. Type **workgroup** into the search text field and then click **Change workgroup name** in the results area above.
4. Click the **Change** button.
5. Enter the Workgroup name set on the Main Tower and click **OK.**

## Add QTelUser account

1. Right-click the Windows Start button and choose **Computer Management**.
2. Double-click **Local Users and Groups** to expand the menu.
3. Right-click **Users** and choose **New User**
4. In the **User name** field enter **QTelUser**
5. Enter **quinton** into the **Password** field and again in the **Confirm password** field.
6. Uncheck **User must change password at next logon**.
7. Put a checkmark in **Password never expires**.
8. Click the **Create** button.

## Add QTelUsers group

In order to run, the Q-Tel RMS application requires specific user group membership for the user logged into Windows. The Software Only Workstation should only require membership to **QTelUsers**. The following steps can be used to create this user group.

1. Right-click the Windows Start button and choose **Computer Management**.
2. Double-click **Local Users and Groups** to expand the menu.
3. Right-click **Groups** and choose **New Group**
4. In the **Group name** field enter **QTelUsers**
5. Click the **Add** button, type in **QTelUser**, click **Check Names** and then click **OK**
6. Click the **Create** button.

## Configure Windows COM+ settings

Communication between the Software Only Workstation and the Main Tower utilizes the COM+ and MSDTC Windows components for data transaction. The following steps will guide you through configuring these Windows settings:

1. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
2. Type **Component** into the search text field and then click on **Component Services** in the results area above.
3. Double-click **Component Services** to expand the menu.
4. Double-click **Computers,** right-click **My Computer** and choose **Properties**
5. Select the **COM Security** tab
6. Under **Access Permissions** click **Edit Limits**
7. Ensure that the **Everyone** and **ANONYMOUS LOGON** groups have **Allow** checked for both **Local Access** and **Remote Access** *(Figure 4 and Figure 5).*

**Figure 4 - Permissions for Everyone**

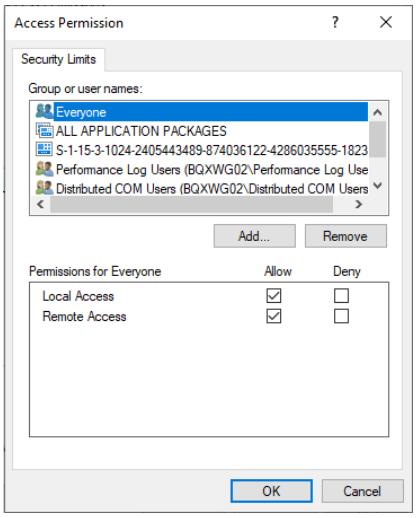
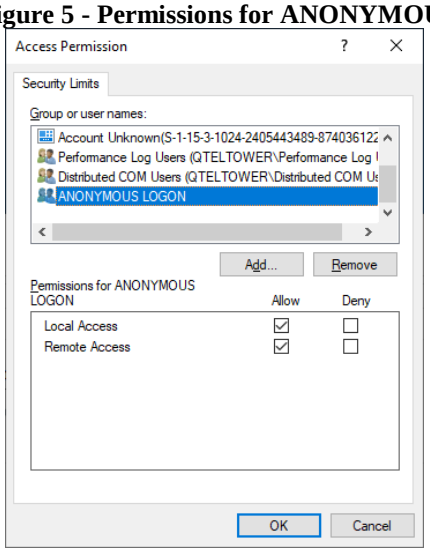
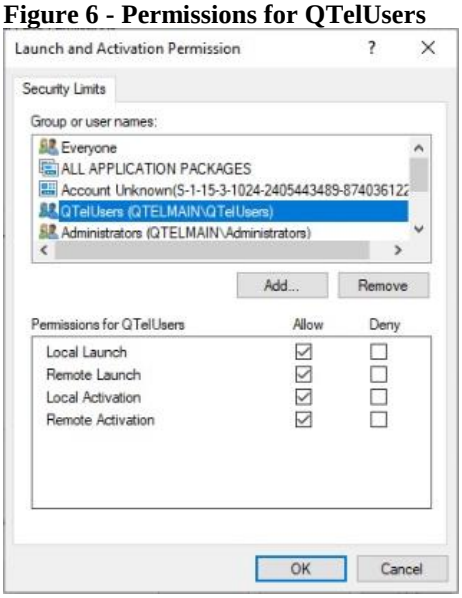



**Figure 5 - Permissions for ANONYMOUS**



8. Under **Launch and Activation** click **Edit Limits**
9. Click the **Add** button, type in **QTelUsers**, click **Check Names** and then click **OK**
10. Select **QTelUsers** from the list
11. Select **Allow** for **Local Launch, Remote Launch, Local Activation,** and **Remote Activation** *(Figure 6).*

**Figure 6 - Permissions for QTelUsers**




12. Click **OK** and close the **Component Services** window.

## Configure COM+ Remote Server and HOST settings

Communication between the Software Only Workstation and the Main Tower will utilize a combination of COM+ settings and, in a private Workgroup environment, the Windows HOST file settings that are set during the first run of the application.

To manually set the Main Tower PC name set for the Software Only Workstation to connect to:

1. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
2. Type **Component** into the search text field and then click on **Component Services** in the results area above.
3. Double-click **Component Services** to expand the menu.
4. Double-click **Computers,** then **My Computer,** and then **COM+ Applications**
5. Right-click **QTelNetwork** and choose **Properties.**
6. Click the **Activation** tab and locate the **Remote Server name** field.
7. Enter the correct Main Tower PC name and then click **Apply** and **OK**.
8. Right-click **QTelWaveformMgr** and choose **Properties.**
9. Click the **Activation** tab and locate the **Remote Server name** field.
10. Enter the correct Main Tower PC name and then click **Apply** and **OK**.
11. Close the Component Services window.

To set the corresponding HOST file entry that is used to resolve PC name to IP address in a non-domain (Active Directory) environment do the following:

12. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
13. Type **C:\Windows\System32\drivers\etc** into the search text field and then hit your **Enter** key.
14. Right-click the **HOST** file and choose **Open with.**
15. Choose **Notepad** from the presented list and click **OK**.

You will be presented with the Windows HOST file that has 18 lines that begin with **#** mark. This mark tells Windows

to ignore that line as it is informational only. There is no need to modify these lines. Below these lines there may be an entry of an IP address and a computer name. An example is shown below:

**192.168.10.10 QTELTOWER**

16. If the entry is present, verify that both the IP Address and PC name for the Main Tower is correct. If either is incorrect, update them to be correct. Note that the IP address and PC name are typically separated by on press of the TAB key.
17. If the HOST file does not have an entry for the IP Address and PC name of the Main Tower, enter it in the blank area just below the bottom most line starting with **#**. Once the entry has been added click **File** and choose **Save.**

## Configure Firewall Exclusions

The following steps will guide you through the process of configuring the Windows Firewall from a default state. If this PC is using an alternative Firewall solution, these exception will need to be added to that software. Refer to your firewall solution user guide for instructions.

1. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
2. Type **Firewall** into the search text field and then click **Windows Defender Firewall** from the results area.
3. Select **Advanced settings** on the left side of the window.
4. Select **Inbound Rules** in the upper left side of the window.
5. On the right menu select **New Rule**.
6. Use the following data to create each new rule for the Windows Firewall.

| |
|---|
| **Type:** Program<br>**Path:** C:\Program Files (x86)\Quinton\QTel RMS\RehabEx.exe<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Tel |
| **Type:** Program<br>**Path:** C:\Program Files (x86)\Quinton\QTel RMS\QProgress.exe<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Progress |
| **Type:** Custom<br>**Program:** All Programs<br>**Protocol and ports:** Protocol: TCP Local Port: RPC Dynamic Ports<br>**Remote Port:** *{Choose Specific Ports}* 1024-65535<br>**Scope:** Local IP Address: Any address; Remote IP address: Any address<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Tel RPC for DCOM |
| **Type:** Port<br>**Protocol:** TCP<br>**Specific Local Port:** 135<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Tel TCP |

| |
|---|
| **Type:** Port<br>**Protocol:** UDP<br>**Specific Local Port:** 137-138<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Tel UDP |
| **Type:** Port<br>**Protocol:** TCP<br>**Specific Local Port:** 445<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Tel File and Printer Sharing (SMB-In) |
| **Type:** Custom<br>**Program:** All Programs<br>**Protocol and ports:** Protocol: ICMPv4; Local Port: Any; Remote Port: Any<br>**Scope:** Local IP Address: Any address; Remote IP address: Any address<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Tel File and Printer Sharing (Echo Request – ICMPv4-In) |

## Obtaining and Installing Q-Tel RMS Workstation Software License

The Q-Tel RMS software license is generated using the same license tool as utilized for Q-Tel RMS version 4.1 and uses the same steps. If you do not have access to the license tool, you will need to contact Technical Support to obtain a license package for your Software Only Workstation. This requires that you provide both the CPU ID of the system you are licensing and as well as the software serial number to the representative assisting you.

The software serial number should have been included with your software, and the CPU ID of your computer can be obtained by doing the following:

1. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
2. Type **CMD** into the search text field and then click **Command Prompt** from the results area above.
3. In the Command Prompt window type **wmic cpu get processorid** and hit **enter.**
4. Write down the alpha-numeric Processor ID that is output.

Once the CPU ID and serial have been provided to Technical Support they will generate a license package and will provide you with a way to download this so that it may be transferred to the PC you are trying to license. If the license package is in ZIP format, unzip it.

1. Insert your media containing the Workstation license file.
2. Browse to and execute the QT_########_R#.exe executable.
3. Click **OK** on the confirmation prompt

## Configure Q-Progress storage location

1. Log into your PC using the QTelUser account or any account with QTelUsers group membership.
2. Double-click the Q-Tel RMS Workstation icon and select Patient Info.
3. Confirm that Q-Tel RMS launches without error. Close Q-Tel RMS.
4. Double-click the Q-Progress icon on your desktop to allow it to create the file we need to modify.
5. Close the Q-Progress application.
6. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
7. Type **C:\Program Files (x86)\Quinton\QTel RMS** into the search text field and then hit your **Enter** key.

8. In the QTel RMS folder that opens, scroll down until you locate the text file named **settings**.
9. Right-click the **settings** file and choose **Open**.

   You will now be presented with the save location that will be used by Q-Progress to save reports to a central location so that all systems can share and utilize the same report copies. The default save location will be displayed as:

   **/QProgressCSVData**
   **1**

   ***We will modify only the top line, leaving the second line with 1 untouched***. The most reliable save location setting is to use a UNC path directly to the Main Tower rather than the more traditional method of using a mapped network drive with a Windows assigned drive letter. The format of the UNC path is:

   **\\{Main Tower PC Name}\{Shared Folder}\{Sub-Folder}**

   The Q-Tel RMS Main Tower is sharing out a folder with a network share name of **QTelAppsPath** in which a **QProgressCSVData** folder exists for holding Q-Progress reports. The previous Main Tower Installation steps already instructed you to choose this location on the Main Tower. Now we will point all other systems to the same location.
   The most likely UNC path based on the Factory configuration would be:

   **\\QTELTOWER\QTelAppsPath\QProgressCSVData**

   The Main Tower PC name in the above example can be changed to match the Main Tower PC name that is currently in use. The two folder names after that should generally remain as shown. Using the above example your **settings** file should read:

   **\\QTELTOWER\QTelAppsPath\QProgressCSVData**
   **1**

10. Once the desired path has been entered click **File** and choose **Save**.
11. The HOST file can be closed.

    NOTE: You can pre-verify the accuracy of the UNC path by doing the following.

12. Power on the Main Tower and log into Windows.
13. On the Turnkey Workstation, click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
14. Enter your UNC path into the search text field and then hit your **Enter** key.
15. The expected result is that the QProgressCSVData folder on the Main Tower will open for you on the Turnkey Workstation.

# 11. QPROGRESS SOFTWARE INSTALLATION

The following section will guide you through the installation and configuration of the Q-Progress standalone software. It may be required to perform the following steps under a user account that has full local Administrator rights to ensure that all components install and update correctly.

During the installation of the Workstation software it is critical that any antivirus software be disabled for the duration of the installation to avoid a partial or incomplete install.

## Software Installation

The following steps will guide you through the process of installing the Q-Progress software to your facility provided computer. This software is automatically included with the Q-Tel RMS software installs and does not need to be installed separately on those systems.

### Installing Q-Progress Software

1. Insert your Q-Progress 5.x installation media into your PC.
2. Browse to and run **Setup.exe.**
3. If prompted with a User Access Control alert, click **Yes**.
4. If prompted to install Amyuni PDF Converter and.or Adobe Reader, choose **Yes**.
5. At the installation welcome screen click **Next**.
6. At the Reboot prompt click **OK** to reboot your system.

## Configure Q-Progress Workstation

### Network Settings

Network settings are entirely dependent on the environment in which the system is being installed. For Q-Tel RMS systems that are not connected to the facility network and remain in an isolated private workgroup such as "QTELNETWORK", it is recommended to follow an IP address scheme similar to the below example, which can be extrapolated on as needed:

| | | | |
|---|---|---|---|
| Wi-Fi Access Point IP Address: | 192.168.10.1<br>192.168.10.10 | Secondary Tower IP Address:<br>Workstation IP Address: | 192.168.10.20<br>192.168.10.30 |
| Main Tower IP Address: | | | |

9. Move the mouse cursor to the lower right corner of your screen.
10. Right-click on the network connection icon and select **Open Network & Internet Settings**.
11. Click **Change adapter options**.
12. Right-click the active network adapter and choose **Properties**.
13. If **Internet Protocol Version 6** is checked, uncheck it.
14. Select **Internet Protocol Version 4**.
15. Click **Properties**.
16. Enter the desired IP address for this PC and then click **OK**.

### Update Workgroup

When install in a Workgroup environment, the Workstation will need to be added to the same workgroup configured on your Main Tower. The following steps can be used to update the Workgroup for this PC:

6. Log into the PC with an account that has Administrator rights
7. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.

8. Type **workgroup** into the search text field and then click **Change workgroup name** in the results area above.
9. Click the **Change** button.
10. Enter the Workgroup name set on the Main Tower and click **OK.**

### Add QTelUser account

9. Right-click the Windows Start button and choose **Computer Management**.
10. Double-click **Local Users and Groups** to expand the menu.
11. Right-click **Users** and choose **New User**
12. In the **User name** field enter **QTelUser**
13. Enter **quinton** into the **Password** field and again in the **Confirm password** field.
14. Uncheck **User must change password at next logon**.
15. Put a checkmark in **Password never expires**.
16. Click the **Create** button.

### Configure COM+ Remote Server and HOST settings

Communication between the Q-Progress Workstation and the Main Tower will utilize a combination of COM+ settings and, in a private Workgroup environment, the Windows HOST file settings that are set during the first run of the application.

To manually set the Main Tower PC name set for the Q-Progress Workstation to connect to:

1. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
2. Type **Component** into the search text field and then click on **Component Services** in the results area above.
3. Double-click **Component Services** to expand the menu.
4. Double-click **Computers,** then **My Computer,** and then **COM+ Applications**
5. Right-click **QTelNetwork** and choose **Properties.**
6. Click the **Activation** tab and locate the **Remote Server name** field.
7. Enter the correct Main Tower PC name and then click **Apply** and **OK**.
8. Right-click **QTelWaveformMgr** and choose **Properties.**
9. Click the **Activation** tab and locate the **Remote Server name** field.
10. Enter the correct Main Tower PC name and then click **Apply** and **OK**.
11. Close the Component Services window.

To set the corresponding HOST file entry that is used to resolve PC name to IP address in a non-domain (Active Directory) environment do the following:

12. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
13. Type **C:\Windows\System32\drivers\etc** into the search text field and then hit your **Enter** key.
14. Right-click the **HOST** file and choose **Open with.**
15. Choose **Notepad** from the presented list and click **OK**.

You will be presented with the Windows HOST file that has 18 lines that begin with **#** mark. This mark tells Windows to ignore that line as it is informational only. There is no need to modify these lines. Below these lines there may be an entry of an IP address and a computer name. An example is shown below:

**192.168.10.10 QTELTOWER**

16. If the entry is present, verify that both the IP Address and PC name for the Main Tower is correct. If either is incorrect, update them to be correct. Note that the IP address and PC name are typically separated by on press of the TAB key.
17. If the HOST file does not have an entry for the IP Address and PC name of the Main Tower, enter it in the blank area just below the bottom most line starting with **#**. Once the entry has been added click **File** and choose **Save.**

## Configure Firewall Exclusions

The following steps will guide you through the process of configuring the Windows Firewall from a default state. If this PC is using an alternative Firewall solution, these exception will need to be added to that software. Refer to your firewall solution user guide for instructions.

1. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
2. Type **Firewall** into the search text field and then click **Windows Defender Firewall** from the results area.
3. Select **Advanced settings** on the left side of the window.
4. Select **Inbound Rules** in the upper left side of the window.
5. On the right menu select **New Rule**.
6. Use the following data to create each new rule for the Windows Firewall.

| |
|---|
| **Type:** Program<br>**Path:** C:\Program Files (x86)\Quinton\QTel RMS\QProgress.exe<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Progress |
| **Type:** Custom<br>**Program:** All Programs<br>**Protocol and ports:** Protocol: TCP Local Port: RPC Dynamic Ports<br>**Remote Port:** *{Choose Specific Ports}* 1024-65535<br>**Scope:** Local IP Address: Any address; Remote IP address: Any address<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Tel RPC for DCOM |
| **Type:** Port<br>**Protocol:** TCP<br>**Specific Local Port:** 135<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Tel TCP |
| **Type:** Port<br>**Protocol:** UDP<br>**Specific Local Port:** 137-138<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Tel UDP |
| **Type:** Port<br>**Protocol:** TCP<br>**Specific Local Port:** 445<br>**Action:** Allow the connection<br>**Profile:** Domain, Private, and Public<br>**Name:** Q-Tel File and Printer Sharing (SMB-In) |

**Type:** Custom
**Program:** All Programs
**Protocol and ports:** Protocol: ICMPv4; Local Port: Any; Remote Port: Any
**Scope:** Local IP Address: Any address; Remote IP address: Any address
**Action:** Allow the connection
**Profile:** Domain, Private, and Public
**Name:** Q-Tel File and Printer Sharing (Echo Request – ICMPv4-In)

## Configure Q-Progress storage location

1. Log into your PC using the QTelUser account or any account with QTelUsers group membership.
2. Double-click the Q-Progress icon on your desktop to allow it to create the file we need to modify.
3. Close the Q-Progress application.
4. Click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
5. Type **C:\Program Files (x86)\Quinton\QTel RMS** into the search text field and then hit your **Enter** key.
6. In the QTel RMS folder that opens, scroll down until you locate the text file named **settings**.
7. Right-click the **settings** file and choose **Open**.

   You will now be presented with the save location that will be used by Q-Progress to save reports to a central location so that all systems can share and utilize the same report copies. The default save location will be displayed as:

   **/QProgressCSVData**
   **1**

   ***We will modify only the top line, leaving the second line with 1 untouched***. The most reliable save location setting is to use a UNC path directly to the Main Tower rather than the more traditional method of using a mapped network drive with a Windows assigned drive letter. The format of the UNC path is:

   **\\{Main Tower PC Name}\{Shared Folder}\{Sub-Folder}**

   The Q-Tel RMS Main Tower is sharing out a folder with a network share name of **QTelAppsPath** in which a **QProgressCSVData** folder exists for holding Q-Progress reports. The previous Main Tower Installation steps already instructed you to choose this location on the Main Tower. Now we will point all other systems to the same location.
   The most likely UNC path based on the Factory configuration would be:

   **\\QTELTOWER\QTelAppsPath\QProgressCSVData**

   The Main Tower PC name in the above example can be changed to match the Main Tower PC name that is currently in use. The two folder names after that should generally remain as shown. Using the above example your **settings** file should read:

   **\\QTELTOWER\QTelAppsPath\QProgressCSVData**
   **1**
8. Once the desired path has been entered click **File** and choose **Save**.
9. The HOST file can be closed.

   NOTE: You can pre-verify the accuracy of the UNC path by doing the following.

10. Power on the Main Tower and log into Windows.
11. On the Q-Progress Workstation, click the **Search button** next to the Windows Start button in the lower left corner of your desktop.
12. Enter your UNC path into the search text field and then hit your **Enter** key.
13. The expected result is that the QProgressCSVData folder on the Main Tower will open for you on the Q-Progress Workstation.

# 12. S2 DEPLOYMENT & Q-TEL NETWORK DIAGRAMS

## S2 Configuration

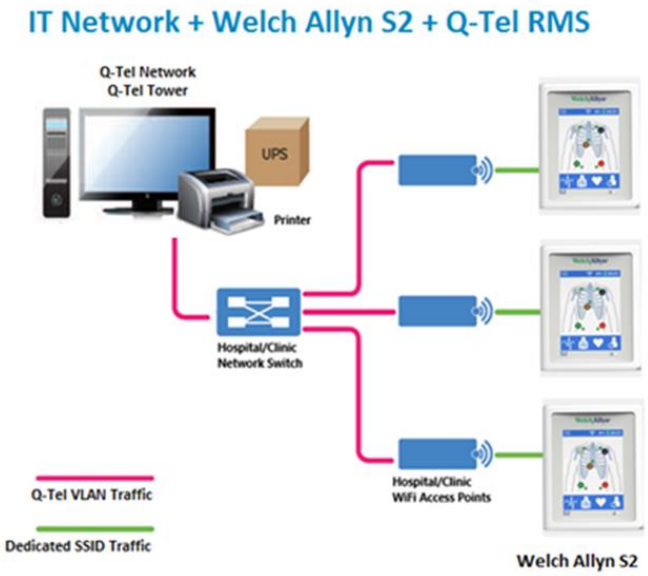
For the S2 configuration instructions please refer to the S2 User Manual 9515-210-50-ENG for more information. The following considerations should be applied to the steps contained in the S2 User Manual.

- A single Q-Tel RMS Tower (Main or Secondary) will support a maximum of 12 individual S2 transmitters on the Main Tower, 12 S2 transmitters on the first Secondary Tower, and a maximum of 8 S2 transmitters on a second Secondary Tower.
- S2 transmitters are configured to communicate with a specific Tower and will only be used with that Tower.
- Unit ID will be used as a reference # to tie an individual transmitter to a given monitoring slot on the Q-Tel system. Therefore Unit IDs should be sequential and unique across the entire system.
- The Bed ID setting will be used to identify which Tower a given unit is configured to communicate with.
- The Bed ID scheme to be used is:
  - Main Tower - Bed ID 1
  - Secondary Tower #1 - Bed ID 2
  - Secondary Tower #2 - Bed ID 3

## S2 Network Diagram

The following diagram represents a basic view of how the S2 transmitters communicate with their associated Tower.

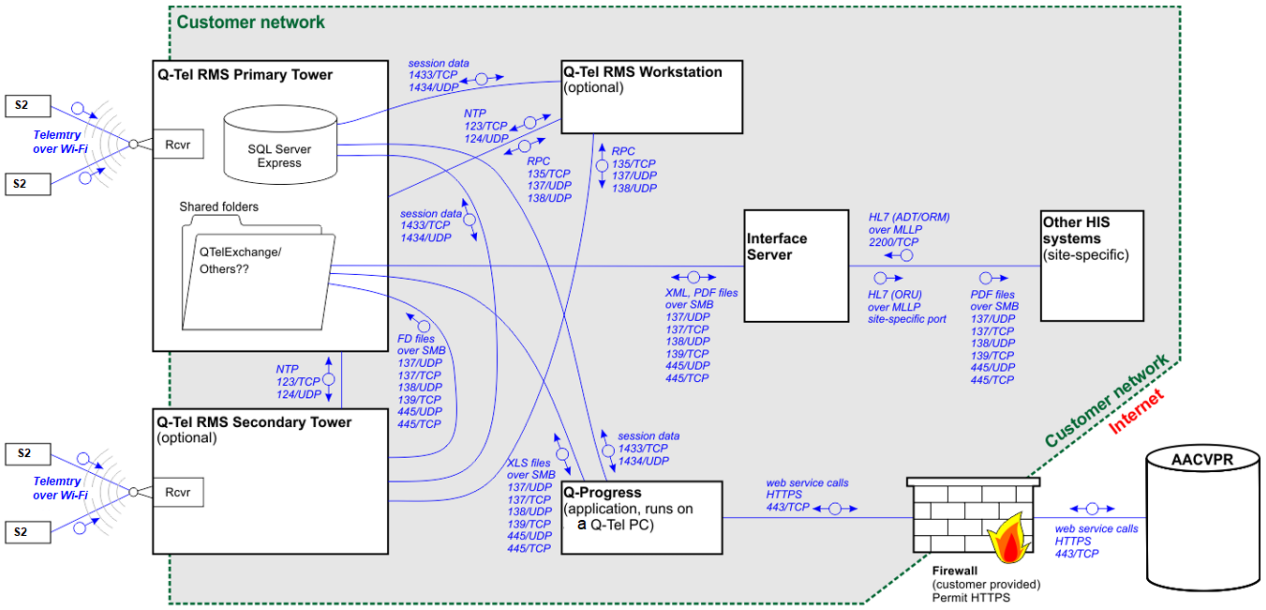
**Figure 7 - S2 communication diagram**



## Q-Tel Network Message Diagram

The following diagram represents a basic view of how the S2 transmitters communicate with their associated Tower.

**Figure 8 - Q-Tel message diagram**



# 13. CONFIGURING ANTI-VIRUS SOFTWARE

## Anti-Virus Policy

The use of anti-virus (AV) software on the computers hosting the Q-Tel applications is recommended. 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 Q-Tel application
- AV software must be configured to exclude files/folders as defined in the Q-Tel Installation Manual
- Active scanning is discouraged during operation of the Q-Tel application
- If you allow active scanning during the operation of the Q-Tel application and exclusions are not configured per instructions in the Q-Tel Installation Manual; you may notice performance degradation during operation of the product.
- If you have a technical support issue on your Q-Tel RMS system, you may be asked to remove any virus scanning software from the device in order to investigate the issue.

## Anti-Virus Exclusions

In order to ensure that your Anti-Virus software does not negatively interact with the Q-Tel RMS software it is required that you create exclusions for the following executables on your Q-Tel RMS systems. *See your AV manufacturers user documentation for guidance on how to create exclusions.*

Q-Tel RMS Main Tower, Secondary Tower, Turnkey and Software Only Workstation

C:\Program Files (x86)\Quinton\QTel RMS\QECGCopySvr.exe
C:\Program Files (x86)\Quinton\QTel RMS\QArchTempFolderCleaner.exe

# 14. WINDOWS UPDATES

## Microsoft Windows Updates Policy

It is recommended that all Q-Tel RMS systems be periodically updated with Microsoft critical and security updates to protect their system 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
- Do not install Microsoft updates during use of the product
- After installing updates, verify proper system operation before monitoring patients

There are no known Microsoft update conflicts with the Q-Tel application. Please contact Mortara Technical Support if conflicts are identified.

# 15. POST INSTALLATION TESTING

## Functional Testing: Q-Tel RMS Main & Secondary

For the functional testing below, ensure that you are logged into your Q-Tel RMS Towers with a user account that is already a member of the QTelUsers or QTelAdmins group.

*Prior to conducting a signal quality check for the covered area, the Signal Quality logging must be enabled on the QTel system by using the Registry Editor to set the data value for "TypeProtocolEnable" from a zero(0) to a one(1). Follow the instructions in the Enable Signal Quality Logging section to enable the necessary logging.*

*The signal quality logging should be disabled once the testing is completed.*

Ensure that you have powered on and configured S2 transmitters and an available ECG source for testing with.

1. Double-click on the **Q-Tel RMS Tower** icon
2. Select **Patient Information** from the splash screen
3. Verify that the audio alarm test is performed and click the **Yes** to acknowledge the test success.
4. Click **New Patient** and enter a First name, last name, and MRN number for your test patient.
5. Click **OK**
6. Click the **Session Management** button in the upper left corner of the application.
7. Highlight your test patient in the patient list and click the **Admit** button.
8. If prompted with a Sessions Reminder, click **OK**
9. Select the Unit ID of the S2 transmitter you are using.
10. Verify that **Comm Fail** is not displayed on the ECG tile and that an ECG trace begins shortly after admissions. Observe the ECG waveform presented for the test patient and verify that there are no gaps and that the heart rate matches the output of the ECG source.

Signal Quality Check:

11. With the transmitter actively transmitting data to the QTel system, physically walk around the entire covered area (as defined by the customer) pausing momentarily at various points that would be considered worst case locations within the covered area. These would be areas on the outer edges of the covered area, or perhaps areas with physical obstruction to the nearest access point.

12. Once the transmitter has been moved throughout the entire covered area, the log file data should be reviewed for signal strength measurements taken. Pass criteria would be all measurements taken at or above the -65dbm threshold (-65dbm to 0dbm). Record the worst reading onto the test data record.

13. Click the **Discharge** tab, select **Cancelled Session** and then click the **Discharge** button.
14. Click **Yes** at the confirmation prompt.
15. Repeat steps 6 – 10 for each S2 transmitter configured for this Tower. During one of these repeats, click the **Print** button next to **Demographics** at the top of the application. Verify that this report prints out on your default printer.
16. After the final S2 transmitter test is discharged, close the Q-Tel RMS application.

## Functional Testing: Q-Tel RMS Workstation

For the functional testing below, ensure that you are logged into your Q-Tel RMS Towers with a user account that is already a member of the QTelUsers or QTelAdmins group.

Ensure that you have powered on and configured S2 transmitters and an available ECG source for testing with.

1. On your Main Tower, double-click on the **Q-Tel RMS Tower** icon
2. Select **Session Management** from the splash screen
3. Verify that the audio alarm test is performed and click the **Yes** to acknowledge the test success.
4. Highlight your test patient in the patient list and click the **Admit** button.
5. If prompted with a Sessions Reminder, click **OK**
6. Select the Unit ID of the S2 transmitter you are using.
7. Verify that **Comm Fail** is not displayed on the ECG tile and that an ECG trace begins shortly after admissions. Observe the ECG waveform presented for the test patient and verify that there are no gaps and that the heart rate matches the output of the ECG source.
8. On your Workstation, double-click on the **Q-Tel RMS Workstation** icon
9. Select **Session Management** from the splash screen
10. When the application finishes loading, verify that your test patient is present in the active session list.
11. Double-click the checkbox to the right of the patient name, below the ECG icon.
12. Verify that the patient ECG is presented.
13. Double-click the checkbox below the downward pointing finger icon.
14. Verify that the list is replaced with the customers session control interface.
15. Select the **Discharge** tab, click the **Session Report** checkbox under the printer icon, and click the **Discharge** button.
16. Verify that the **Session Report** prints and that the patient ECG tile vanishes from the Main Tower.

# Q-Tel Operational Qualification Testing

**Q-Tel System Serial #:** _____

**Operational Testing (Main/Secondary)**

| | |
|---|---|
| Application launch | Pass / Fail |
| Audio alarm test | Pass / Fail |
| Patient Admit / No Comm Fail | Pass / Fail |
| ECG Waveform test | Pass / Fail |
| Signal Quality Check (-65 – 0dbm) | Pass / Fail _____ dbm |
| Patient Discharge | Pass / Fail |
| Additional Transmitter Testing | Pass / Fail |
| Printer Test Page | Pass / Fail |
| Database Backup | Pass / Fail |
| Signal Quality Logging Disabled | Yes / No |

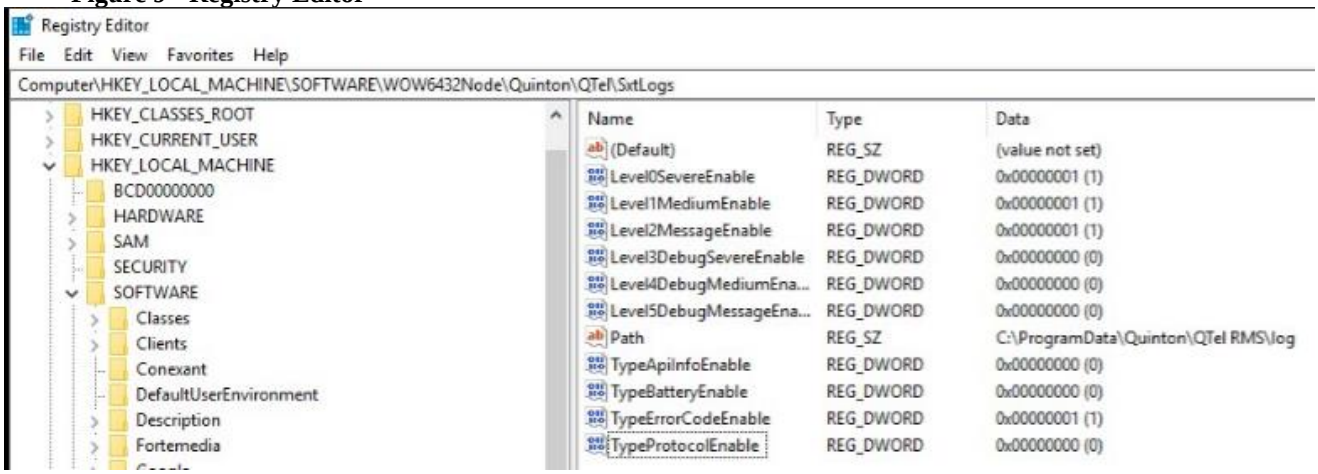
| **Workstation Testing** | **Yes / NA** |
|---|---|
| Workstation application launch | Pass / Fail |
| Test patient presented | Pass / Fail |
| Patient data presented | Pass / Fail |
| Customer Session Control | Pass / Fail |
| Patient discharge | Pass / Fail |
| Session Report printing | Pass / Fail |

Performed By: _____ Date: _____

## Enable Signal Quality Logging

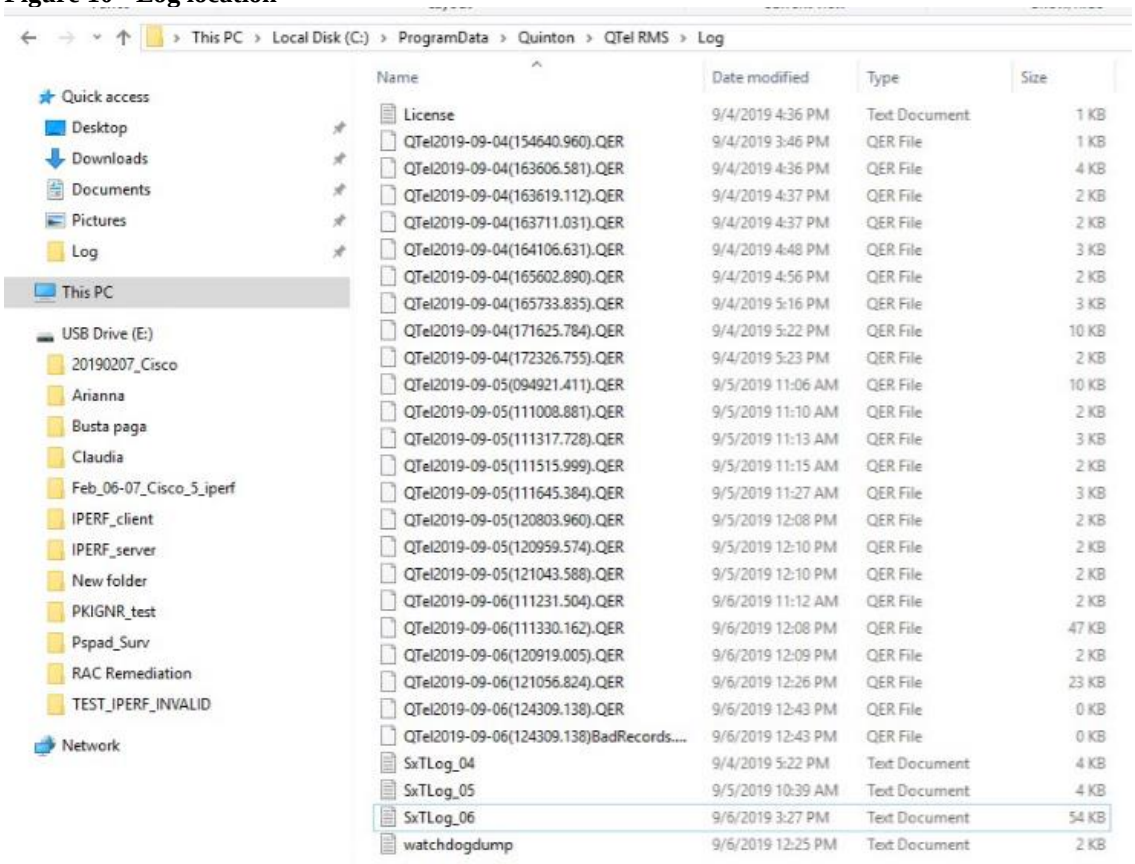
*Registry Editor is accessed by typing "regedit" into the Windows Search utility in the system tray.*

**Figure 9 - Registry Editor**




Once enabled, the log files (SxTLog_xx) will be saved under the Log folder of Q-Tel main PC, with the _xx file extension indicating the day of the month the file was created.

**Figure 10 - Log location**




Configure an S2 transmitter with a patient simulator as input data to properly communicate to the QTel system (per the QTel User manual). The Network Diagnostic screen on the S2 can be used to monitor the general signal quality. Both the Signal Strength and a Signal Quality Index will be presented. The Quality

Index is represented by a number between 0 and 3 as defined on the table below. The minimum Signal Strength value considered to be acceptable is -65dbm.

**Figure 11 - S2 Display**


| Quality Index | Description | RSSI (dBm) |
|---|---|---|
| 0 | No or too low WIFI signal | < -75 |
| 1 | Poor WIFI signal | -75 to -68 |
| 2 | Fair WIFI signal | -67 to -55 |
| 3 | Good WIFI signal | > -55 |

*Refer to the example log file on the following page for information regarding how to identify the signal strength readings collected.*

The following information is an example of a S2/QTel log file with the main areas of interest identified for monitoring channel signal strength.

**Figure 12 - S2 connection log**

**SxTLog_xx**

2: 2019-09-06 15:47:17.224 : S2TSrv.cpp : S2TSrv::init_and_open_server : 124 : S2-T, base port 30000, used port 30200, monid 2;0: Started
2: 2019-09-06 15:47:17.227 : S2Tlib.cpp : CreateInstance : 189 : Instance created with following configuration
2: 2019-09-06 15:47:17.231 : S2Tlib.cpp : LogConfiguration : 67 : base_port 30000, unit 2, bed 0, queue_size 1250, discon timeout 10000
2: 2019-09-06 15:47:17.234 : S2Tlib.cpp : LogConfiguration : 69 : Log: protocol 1, battery 0, apinfo 0, err_codes 1
2: 2019-09-06 15:47:17.237 : S2Tlib.cpp : LogProtocolConfiguration : 75 : packet_buffer_size 256, max_read_per_loop 16, rsp_msg_period_ms 900, rtx_req_period_ms 450
2: 2019-09-06 15:47:17.240 : S2Tlib.cpp : LogProtocolConfiguration : 77 : wait_for_packet_lost 10, seq_error_thr 12, wait_before_retx_req 0, wait_before_next_retx_req 3, max_retx_req 3, send_clock_period_sec 10
2: 2019-09-06 15:47:17.354 : S2TProtocolMgr.cpp : S2TProtocolMgr::RegisterDevice : 226 : MonID(2;0): registering device C4:7F:51:04:EA:DD
2: 2019-09-06 15:47:17.358 : S2TSrv.cpp : S2TSrv::process_params : 720 : ;S2T-E;2;0;MAIN;00040000
2: 2019-09-06 15:47:17.361 : S2TSrv.cpp : S2TSrv::process_params : 752 : S2 FIRMWARE VERSION: STM-MAIN (1.1.0.22); STM-WIFI (1.1.0.22); SAM-ECG (1.3.4.0)
2: 2019-09-06 15:47:17.365 : S2TSrv.cpp : S2TSrv::pop_pck : 418 : MonID(2;0): Initializing protocol parameters: samples per send (80), wait for lost packet limit (10), sequence error threshold (12)
2: 2019-09-06 15:47:17.369 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;PCKRDN;12;11;6;3;-46;0;
2: 2019-09-06 15:47:17.432 : S2TImpl.cpp : S2TImpl::isDeviceConnected : 672 : MonID(2;0): DEVCOM_STATE_CHANGE: From SxT_NEVER_CONNECTED to SxT_CONNECTED
2: 2019-09-06 15:47:17.515 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;PCKRDN;13;12;7;3;-46;0;
2: 2019-09-06 15:47:17.675 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;PCKRDN;14;13;8;3;-46;0;
2: 2019-09-06 15:47:17.840 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;PCKRDN;15;14;9;3;-46;0;
2: 2019-09-06 15:47:17.998 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;PCKRDN;16;15;10;3;-48;0;
2: 2019-09-06 15:47:23.594 : S2TSrv.cpp : S2TSrv::process_params : 720 : ;S2T-E;2;0;MAIN;00040000
2: 2019-09-06 15:47:32.396 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;PCKREQ;104;0;105;2;-57;0;
2: 2019-09-06 15:47:32.558 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;RTXSRV;104;106;104;2;-56;0;
2: 2019-09-06 15:47:45.517 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;PCKREQ;186;0;187;2;-66;0;
2: 2019-09-06 15:47:45.679 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;RTXSRV;186;188;186;2;-66;0;
2: 2019-09-06 15:48:00.075 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;PCKREQ;277;0;278;3;-54;0;
2: 2019-09-06 15:48:00.233 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;RTXSRV;277;279;277;3;-54;0;
2: 2019-09-06 15:48:27.432 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;PCKREQ;448;0;449;3;-41;0;
2: 2019-09-06 15:48:27.597 : S2TSrv.cpp : S2TSrv::process_protocol : 764 : ;S2T-P;2;0;RTXSRV;448;450;448;3;-45;0;
2: 2019-09-06 15:48:37.877 : S2TSrv.cpp : S2TSrv::close_server : 145 : S2-T, base port 30000, used port 30200, monid 2;0: stopped


* As defined by the QTel transmitter assignments in the system configuration.

# 16. AUTO IMPORT IMPLEMENTATION GUIDE

**IMPORTANT:** If the interface that generates in-bound messages for Q-Tel RMS has been configured incorrectly, and it sends XML messages with fields that exceed their specified character length (ex. Order number should never exceed 40 characters) and it does not include reference to the name space of the schema to trigger validation of the message contents against the schema used by Q-Tel RMS, it may result in the application accepting a message with invalid value lengths which can result in application failure to launch.

The steps below MUST be performed before

## Licensing

The Import and Export functions require Q-Exchange be included in the Main Tower software license. Please refer to MIS-12-193-01 for the Q-Tel Software Licensing Procedure.

## Q-Exchange XML message review

1. Use a valid interface adapter software such as CorPoint to interface with the customers EMR and generate Q-Exchange XML files for Patient Import. The files must meet the provided schema in Appendix A.

**Note:** It is important for the XML file generated to contain the name space of the schema for schema validation to occur:

```
<qe:QTel_patient_record searchable="true" xmlns:qe="http://www.quinton.com/qtelRMSExchange/import/V1">
```

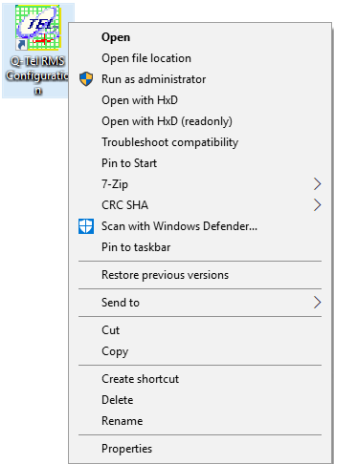
**Note:** It is important to not exceed the maximum length as defined within the schema.

2. Confirm that XML patient files are delivered to the **ImportPatients** folder under the designated **Q-Exchange Export Folder**. The **Q-Exchange Export Folder** defaults to **C:\QDataCenter** on the Main Tower and is configured in the **Q-Tel RMS Configuration** application.
3. Confirm that the XML files generated contains the schema namespace parameter within the `<qe:Qtel_patient_record>` tag. The namespace parameter is as follows:

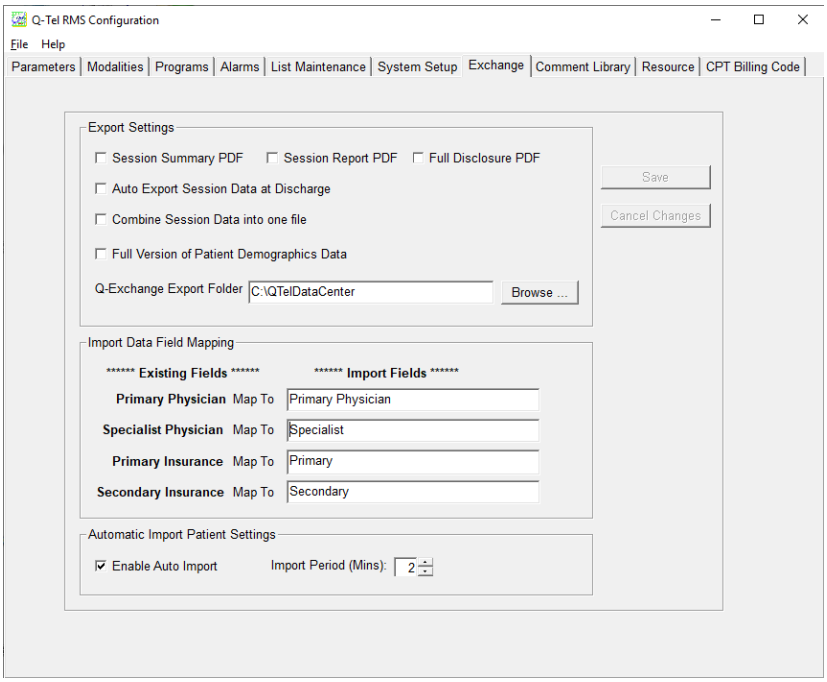
```
xmlns:qe="http://www.quinton.com/qtelRMSExchange/import/V1
```

## Configuring Auto Import

1. Run the **Q-Tel RMS Configuration** application as administrator.




2. In the Exchange tab ensure **Enable Auto Import** is checked and ensure that the **Import Period** is appropriate for the site. The import period is set in minutes and two minutes is usually sufficient.



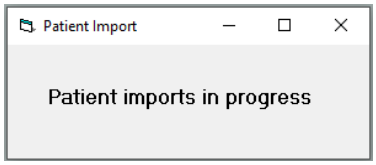

**Note:** Auto import spreads the imports out during normal operation such that imports, while the application is running, are done at one XML import per second started once the import period expires. Imports done at the start of the Q-Tel RMS application happen in succession much more quickly.

## Test Auto Import on Startup

1. Trigger new Patient XML files to be sent to the XML files located within the **ImportPatients,** configured by default as **C:\QDataCenter\ImportPatients**.
2. Open the XML files and confirm that they contain the proper `Qtel_patient_record` tag with the XML name space (`xmlns`) as follows:

```
<qe:QTel_patient_record searchable="true" xmlns:qe="http://www.quinton.com/qtelRMSExchange/import/V1">
```

3. Start the Q-Tel RMS Tower application
4. Confirm that a dialog is displayed briefly indicating that patient imports are taking place.




5. Confirm that within the log file, in the **ImportPatients\LogFiles** directory, there is an indication of success for each Patient Import XML file imported into the system:

```
Q-Exchange Import Logging

10/8/2019 1:54:31 PM Success auto importing patient mrn: 34295 from TEST_FILE_ALL_TAGS.xml in  372
    milliseconds
```

The new patients shall now be available within the Q-Tel application.

## Test Auto Import during Operation

1. Start the Q-Tel RMS Tower application and begin monitoring activities for one or more patients.
2. Trigger new Patient XML files to be sent to the **ImportPatients** directory, configured by default as **C:\QDataCenter\ImportPatients**.
3. Confirm that the mouse pointer briefly changes to the busy icon for each XML file loaded.

Note that this change to the mouse pointer does not prohibit any user interaction during an import and is simply a visual indication of import that lasts less than a second.

4. Confirm that within the log file, in the **ImportPatients\LogFiles** directory, there is an indication of success for each Patient Import XML file imported into the system.

```
Q-Exchange Import Logging

10/8/2019 1:54:31 PM Success auto importing patient mrn: 34295 from TEST_FILE_ALL_TAGS.xml in  372
    milliseconds
```

The new patients shall now be available within the Q-Tel application.

# **Appendix A**: QExchange Patient Import Schema:

```
<?xml version="1.0" encoding="UTF-16" ?>
<xs:schema targetNamespace="http://www.quinton.com/qtelRMSExchange/import/V1" xmlns:xs="http://www.w3.org/2001/XMLSchema"
	xmlns:qe="http://www.quinton.com/qtelRMSExchange/import/V1" elementFormDefault="qualified"
	attributeFormDefault="unqualified">
	<xs:simpleType name="import_type_1">
		<xs:restriction base="xs:string">
			<xs:maxLength value="40" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="import_type_2">
		<xs:restriction base="xs:string">
			<xs:minLength value="1" />
			<xs:maxLength value="40" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="import_type_3">
		<xs:restriction base="xs:string">
			<xs:minLength value="1" />
			<xs:maxLength value="20" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="import_type_4">
		<xs:restriction base="xs:string">
			<xs:maxLength value="20" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="import_type_5">
		<xs:restriction base="xs:string">
			<xs:maxLength value="50" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="last_name_type">
		<xs:restriction base="xs:string">
			<xs:minLength value="1" />
			<xs:maxLength value="50" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="first_name_type">
		<xs:restriction base="xs:string">
			<xs:maxLength value="50" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="middle_name_type">
		<xs:restriction base="xs:string">
			<xs:maxLength value="1" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="ssn_type">
		<xs:restriction base="xs:string">
			<xs:maxLength value="11" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="mrn">
		<xs:restriction base="xs:string">
			<xs:minLength value="1" />
			<xs:maxLength value="25" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="phone">
		<xs:restriction base="xs:string">
			<xs:maxLength value="25" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="postalcode">
		<xs:restriction base="xs:string">
			<xs:maxLength value="10" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="address">
		<xs:restriction base="xs:string">
			<xs:maxLength value="255" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="city">
		<xs:restriction base="xs:string">
			<xs:maxLength value="80" />
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="Date">
		<xs:annotation>
			<xs:documentation>The data must be in format of YYYY-MM-DD </xs:documentation>
```

```
        </xs:annotation>
        <xs:restriction base="xs:date" />
</xs:simpleType>
<xs:element name="address1" type="qe:address" />
<xs:element name="address2" type="qe:address" />
<xs:element name="city" type="qe:city" />
<xs:element name="state" type="qe:address" />
<xs:element name="postalcode" type="qe:postalcode" />
<xs:element name="country" type="qe:address" />
<xs:element name="homephone" type="qe:phone" />
<xs:element name="workphone" type="qe:phone" />
<xs:element name="cellphone" type="qe:phone" />
<xs:element name="pager" type="qe:phone" />
<xs:element name="fax" type="qe:phone" />
<xs:element name="email" type="qe:address" />
<xs:element name="contact">
        <xs:complexType>
                <xs:sequence>
                        <xs:element ref="qe:address1" minOccurs="0" />
                        <xs:element ref="qe:address2" minOccurs="0" />
                        <xs:element ref="qe:city" minOccurs="0" />
                        <xs:element ref="qe:state" minOccurs="0" />
                        <xs:element ref="qe:postalcode" minOccurs="0" />
                        <xs:element ref="qe:country" minOccurs="0" />
                        <xs:element ref="qe:homephone" minOccurs="0" />
                        <xs:element ref="qe:workphone" minOccurs="0" />
                        <xs:element ref="qe:cellphone" minOccurs="0" />
                        <xs:element ref="qe:pager" minOccurs="0" />
                        <xs:element ref="qe:fax" minOccurs="0" />
                        <xs:element ref="qe:email" minOccurs="0" />
                </xs:sequence>
        </xs:complexType>
</xs:element>
<xs:element name="carrier_name" type="qe:import_type_5" />
<xs:element name="group_name" type="qe:import_type_5" />
<xs:element name="HICN" type="qe:import_type_5" />
<xs:element name="contact_name" type="qe:import_type_5" />
<xs:element name="carrier_type" type="qe:import_type_2" />
<xs:element name="contact_phone" type="qe:phone" />
<xs:element name="carrier">
        <xs:complexType>
                <xs:sequence>
                        <xs:element ref="qe:carrier_name" minOccurs="0" />
                        <xs:element ref="qe:group_name" minOccurs="0" />
                        <xs:element ref="qe:HICN" minOccurs="0" />
                        <xs:element ref="qe:contact_name" minOccurs="0" />
                        <xs:element ref="qe:carrier_type" minOccurs="0" />
                        <xs:element ref="qe:contact_phone" minOccurs="0" />
                </xs:sequence>
        </xs:complexType>
</xs:element>
<xs:element name="insurance_carriers">
        <xs:complexType>
                <xs:sequence>
                        <xs:element ref="qe:carrier" minOccurs="0" maxOccurs="2" />
                </xs:sequence>
        </xs:complexType>
</xs:element>
<xs:element name="physician_first_name" type="qe:first_name_type" />
<xs:element name="physician_middle_name" type="qe:middle_name_type" />
<xs:element name="physician_last_name" type="qe:last_name_type" />
<xs:element name="physician_id" type="qe:import_type_4" />
<xs:element name="physician_type" type="qe:import_type_2" />
<xs:element name="physician">
        <xs:complexType>
                <xs:sequence>
                        <xs:element ref="qe:physician_first_name" minOccurs="0" />
                        <xs:element ref="qe:physician_middle_name" minOccurs="0" />
                        <xs:element ref="qe:physician_last_name" minOccurs="0" />
                        <xs:element ref="qe:physician_id" minOccurs="0" />
                        <xs:element ref="qe:physician_type" minOccurs="0" />
                        <xs:element ref="qe:contact" minOccurs="0" />
                </xs:sequence>
        </xs:complexType>
</xs:element>
<xs:element name="physicians">
        <xs:complexType>
                <xs:sequence>
                        <xs:element ref="qe:physician" minOccurs="0" maxOccurs="2" />
                </xs:sequence>
        </xs:complexType>
</xs:element>
<xs:element name="message_id" type="qe:import_type_1" />
```

```
        <xs:element name="billing_code" type="qe:import_type_1" />
        <xs:element name="order_number" type="qe:import_type_1" />
        <xs:element name="patient_account_number" type="qe:import_type_1" />
        <xs:element name="patient_birth_date" type="qe:Date" />
        <xs:element name="patient_first_name" type="qe:first_name_type" />
        <xs:element name="patient_gender" type="qe:import_type_4" />
        <xs:annotation>
                <xs:documentation>The values are:Male, Female, Unknown, Unspecified</xs:documentation>
        </xs:annotation>
        <xs:element name="patient_last_name" type="qe:last_name_type" />
        <xs:element name="patient_middle_name" type="qe:middle_name_type" />
        <xs:element name="patient_mrn" type="qe:mrn" />
        <xs:element name="patient_ssn" type="qe:ssn_type" />
        <xs:element name="patient_race" type="qe:import_type_4" />
        <xs:element name="QTel_patient_record">
                <xs:complexType>
                        <xs:sequence>
                                <xs:element ref="qe:message_id" minOccurs="0" />
                                <xs:element ref="qe:billing_code" minOccurs="0" />
                                <xs:element ref="qe:order_number" minOccurs="0" />
                                <xs:element ref="qe:patient_account_number" minOccurs="0" />
                                <xs:element ref="qe:physicians" minOccurs="0" />
                                <xs:element ref="qe:insurance_carriers" minOccurs="0" />
                                <xs:element ref="qe:patient_last_name" />
                                <xs:element ref="qe:patient_first_name" minOccurs="0" />
                                <xs:element ref="qe:patient_middle_name" minOccurs="0" />
                                <xs:element ref="qe:patient_mrn" />
                                <xs:element ref="qe:patient_ssn" minOccurs="0" />
                                <xs:element ref="qe:patient_gender" minOccurs="0" />
                                <xs:element ref="qe:patient_birth_date" minOccurs="0" />
                                <xs:element ref="qe:patient_race" minOccurs="0" />
                                <xs:element ref="qe:contact" minOccurs="0" />
                        </xs:sequence>
    <xs:attribute name="searchable" type="xs:boolean"/>
                </xs:complexType>
        </xs:element>
</xs:schema>
```

# **Appendix B:** Q-Exchange Patient XML file example

```
<?xml version="1.0" encoding="UTF-16"?>
<qe:QTel_patient_record searchable="true" xmlns:qe="http://www.quinton.com/qtelRMSExchange/import/V1">
        <qe:message_id/>
        <qe:billing_code>93798</qe:billing_code>
        <qe:order_number>ORM102</qe:order_number>
        <qe:patient_account_number>675639</qe:patient_account_number>
        <qe:physicians>
                <qe:physician>
                        <qe:physician_first_name>Sarah</qe:physician_first_name>
                        <qe:physician_middle_name>A</qe:physician_middle_name>
                        <qe:physician_last_name>Young</qe:physician_last_name>
                        <qe:physician_id>74438</qe:physician_id>
                        <qe:physician_type>Primary Physician</qe:physician_type>
                        <qe:contact>
                                <qe:address1>123 My Street</qe:address1>
                                <qe:address2>Apt 20</qe:address2>
                                <qe:city>Milwaukee</qe:city>
                                <qe:state>Wisconsin</qe:state>
                                <qe:postalcode>53500</qe:postalcode>
                                <qe:country>United States</qe:country>
                                <qe:homephone>(123)432-9876</qe:homephone>
                                <qe:workphone>(332)673-4429</qe:workphone>
                                <qe:cellphone>(560)339-4951</qe:cellphone>
                                <qe:pager>7834</qe:pager>
                                <qe:fax>(414)335-7680</qe:fax>
                                <qe:email>me@me.com</qe:email>
                        </qe:contact>
                </qe:physician>
                <qe:physician>
                        <qe:physician_first_name>Darin</qe:physician_first_name>
                        <qe:physician_middle_name>H</qe:physician_middle_name>
                        <qe:physician_last_name>Hall</qe:physician_last_name>
                        <qe:physician_id>67841</qe:physician_id>
                        <qe:physician_type>Specialist</qe:physician_type>
                        <qe:contact>
                                <qe:address1>3030 North Main Street</qe:address1>
                                <qe:address2>Suite 45B</qe:address2>
                                <qe:city>Milwaukee</qe:city>
                                <qe:state>Wisconsin</qe:state>
                                <qe:postalcode>53500</qe:postalcode>
                                <qe:country>United States</qe:country>
                                <qe:homephone>(643)922-4355</qe:homephone>
                                <qe:workphone>(643)822-5233</qe:workphone>
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                                <qe:pager>8942</qe:pager>
                                <qe:fax>(110)631-2995</qe:fax>
                                <qe:email>you@you.com</qe:email>
                        </qe:contact>
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        <qe:insurance_carriers>
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                        <qe:contact_phone>(888)231-4459</qe:contact_phone>
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                        <qe:contact_name>Sam Meyers</qe:contact_name>
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                        <qe:contact_phone>(888)774-3311</qe:contact_phone>
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```

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                <qe:workphone>(555)745-7822</qe:workphone>
                <qe:cellphone>(520)331-9778</qe:cellphone>
                <qe:pager>6431</qe:pager>
                <qe:fax>(520)845-2271</qe:fax>
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