

DatamedRcv™ DRCV01

Service Manual

Datamed LLC

DatamedRcv™ DRCV01 v3.0

Doc ID DMD-10301-00100 Rev B

4/2017

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CAUTIONS

This product is not intended for home use.

REGULATORY

This product is not a medical device.



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INTENDED USE

This product is a software application intended to receive transmissions from any device that uses the GE[®] transmission protocol and write the data to a file. This product does not alter the transmitted data in any way. It is not intended to be used for any other purpose and attempting to use it for any other purpose is a violation of the EULA.

PROTECTED HEALTH INFORMATION (PHI) CONSIDERATIONS

The file that is received by this product may or may not contain PHI. As this product does not interact with the contents of the file except to receive and write it out, no data from the file is written to the log. If the file contains PHI then appropriate measures should be taken to ensure the security of the file. When planning the physical and electronic security of the installation, it is important to be aware of this data and plan accordingly. PHI may appear in the following locations:

- Debug Folder - If Debugging is enabled, the debug files are written here. The debug file will contain the raw data transmitted from the sender and therefore may contain PHI. This data is always encrypted.

TABLE OF CONTENTS

Table of Contents	5
Chapter 1 - Getting Started	6
Chapter 2 - Installation.....	8
Requirements	8
New Installation.....	10
Updating	14
Uninstalling	14
Post-Installation Notes.....	15
Chapter 3 - Configuring DRCV01	16
Window Settings	16
Menu Options	17
Tab: DRCV01 connects to each cart.....	18
Tab: Carts connect to DRCV01 Listener(s).....	19
Chapter 4 - Configuring Transmitting Devices	21
GE® MAC®-5000 and MAC®-5500 Cardiographs	21
Chapter 5 - Configuring a Wireless Bridge	24
Chapter 6 - Troubleshooting	30
Appendix A - Updating the License Key	32
Appendix B - Registry Settings.....	33
Appendix C - End User License Agreement and Limited Warranty.....	34

CHAPTER 1 - GETTING STARTED

The DatamedRcv™ Model DRCV01 Receiver Module (“*DRCV01*”) is an accessory program for the Datamed® EKG Format Translator family. It runs as a system service and will monitor one or more serial ports and/or a TCP/IP port for connections from GE® cardiographs and monitors that transmit using the CSI protocol, as well as certain ZOLL® defibrillators. These devices typically either do not have an alternative method for transmitting the EKGs or it is difficult to accomplish. As each EKG is received by DRCV01 it is written to a specific output folder where the Datamed® EKG Format Translator software will pick it up and translate it to the appropriate destination format and location. The following list describes the native method of transmitting EKGs for each of the devices:

- GE® MAC®-600 - This cardiograph can transmit through the serial port (with or without a modem), or it can write files to an SD card.
- GE® MAC®-800 - This cardiograph can transmit through the serial port (with or without a modem), through the built-in modem (if installed) or through the built-in LAN port (if the option is enabled). It can also write files to an SD card.
- GE® MAC®-1200 - This cardiograph can only transmit through the serial port (with or without a modem).
- GE® MAC®-1600 - This cardiograph can transmit through the serial port (with or without a modem or wireless bridge), through the built-in modem (if installed) or through the built-in LAN port (if the option is enabled). It can also write files to an SD card.
- GE® MAC®-2000 - This cardiograph can transmit using a wireless dongle, or through the serial port (with or without a modem) or the built-in LAN port (if the option is enabled). It can also write files to an SD card.
- GE® MAC®-3500 - This cardiograph can transmit through the serial port (with or without a modem or wireless bridge), through the built-in modem (if installed) or through the built-in LAN port (if the option is enabled). It can also write files to an SD card.
- GE® MAC®-5000 - This cardiograph can only transmit through the serial port (with or without a modem or wireless bridge). It can also write files to a floppy disk.
- GE® MAC®-5500 - This cardiograph can transmit through the serial port (with or without a modem or wireless bridge), through the built-in modem (if installed) or through the built-in LAN port (if the option is enabled). It can also write files to an SD card.
- GE® MAC®-5500HD - This cardiograph can transmit through the serial port (with or without a modem or wireless bridge), through the built-in modem (if installed) or through the built-in LAN port (if the option is enabled). It can also write files to an SD card.

- ZOLL® E-Series® (prior to rev 4.01) and M-Series® defibrillators - If equipped with the *12-Lead Option*, this device can transmit through the PC Card modem.

GE® offers a wireless transmission option for some of these models. This is a Silex wireless bridge that connects to the serial port on the cardiographs. DRCV01 is also compatible with the built-in LAN port for MAC® cardiographs that support it and have the option activated (800/1600/3500/5500).

CHAPTER 2 - INSTALLATION

Requirements

- ❖ **License Key.** The software licenses that the applications need to run are contained in a License Key which can be either hardware or software. The hardware License Key is a specialized USB device (dongle) that must be accessible to the application at all times. It should be green or black and look like one of these:



For regions where a software License Key is available (currently North America) this type of key is activated on a specific computer and node-locked to that computer. If the key needs to be updated (e.g. if additional licenses are purchased), it can be updated via email - see *Appendix A* for instructions.

- ❖ **Software.** The installation package from DLLC which may be supplied on a flash drive or via download link.
- ❖ **Computer.** This software is independent of the host system and can be installed either on the host system server (if permitted by the manufacturer) or anywhere with network access to the host system. *It must be installed on the same computer (or VM) as DatamedFT™.* The minimum specifications for the computer are: 2 GB RAM, 40 GB HD, and a LAN connection or serial connection as appropriate. The following operating systems are supported: Windows Server 2008 x86 and x64, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, and Windows Server 2016. The .NET 4.5 Framework must be installed on this computer.
- ❖ **TCP/IP connection.** LAN connectivity can be achieved by utilizing a serial to LAN adapter (e.g. Silex wireless bridge) on the serial port. Depending on the adapter, either wired or wireless LAN is possible. Instructions for setting up these adapters can be found in *Chapter 5*. Please review the list of network information required. For the MAC® cardiographs with built-in LAN port, if the LAN option is enabled on the carts then a direct connection is possible.

- ❖ **Serial Connection.** All compatible cardiographs and devices support a serial connection. When using a serial connection either a direct serial cable or modems can be used. If using modems, both the cardiograph/device and the computer running DRCV01 will require a modem. GE® typically uses the MultiTech MultiModem ZBA (MT5634ZBA) modems. It is highly recommended that a modem from the same product family (MT5634ZBA, MT5634ZBA-USB, MT9234ZBA, MT9234ZBA-USB) be used for DRCV01. *Due to the incompatibilities encountered in testing, only the MultiTech modems are supported for use with DRCV01.* IMPORTANT NOTE: If a RS232 modem is used (as opposed to USB), the serial cable must have all control lines connected.
- ❖ **VM considerations.** This software can be run on virtual machines. If it is offered in your region you may choose to use a software license key. When using a hardware license key, a USB-to-Ethernet adapter such as AnywhereUSB is required. Note that using AnywhereUSB with a modem can affect the connectivity to the License Key (<http://www.digi.com/support/kbase/kbaseresultdet?id=3039>). DLLC recommends the use of hardware license keys where possible because they are reliable, portable and the license activation can never be broken.

New Installation

These instructions are for a new installation where there is no prior version of DRCV01 installed. This can also be used if DRCV01 was uninstalled. DRCV01Config will need to be run after installation to update the settings.

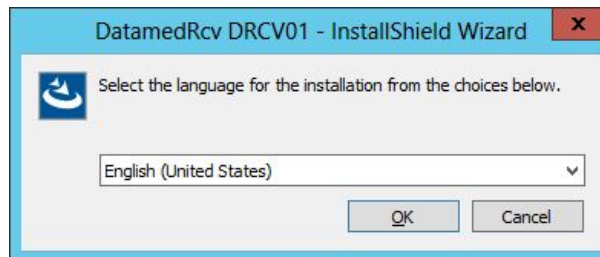
NOTE: *DRCV01 v1.x cannot be directly upgraded to v3.x. For upgrades, follow the instructions later in this chapter.*

Install the License Key

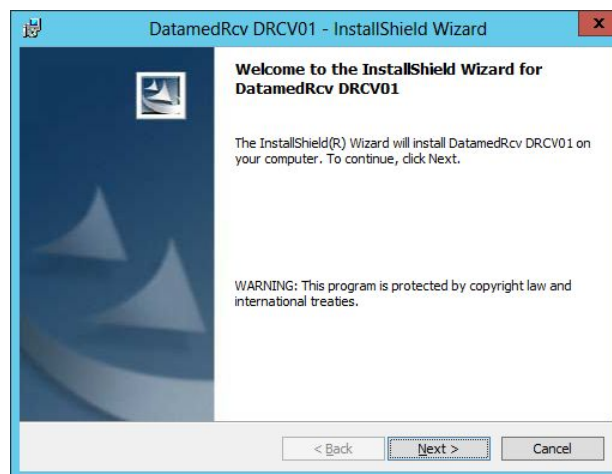
- In the installation media provided with the software there will be a file named *HASPUserSetup.exe*. Run this to install the full driver package. Alternatively, after installation the driver can be found using the shortcut under *Start → All Programs → Datamed → DatamedFT → Install License Key Drivers*. This driver package includes important tools used to diagnose issues. The latest driver for Sentinel HASP from the manufacturer may be downloaded directly from the SafeNet website at: <http://sentinelcustomer.safenet-inc.com/sentineldownloads/>.
- For a hardware License Key, insert the hardware key into the USB port and confirm that the LED inside the key lights. If you are using an AnywhereUSB adapter, follow the instructions that came with the adapter and install the Digi driver, then configure it to point to the adapter and USB port.
- For a software License Key you must activate the license and lock it to the VM that will be used. This is a two-step procedure that requires coordination with DLLC. Follow these steps:
 - a. After installing the driver, run *DatamedSentinelUtility.exe*. On the first tab select *Installation of new protection key* and then press the *Collect Information* button. Name and save the file, then send the fingerprint file (.c2v) file to the DLLC technician you are working with.
 - b. DLLC will use the file to manually activate the software License Key and send you back a license update (.v2c). You can apply this using the 2nd tab of that same utility. At this point the license is activated and locked
- Check to make sure that the License Key is available by using the Admin Control Center which is part of the driver package. Open a browser and go to http://localhost:1947/_int_/devices.html and confirm that you see the License Key in the list and it says "Local" in the *Location* column.

Install the DRCV01 software

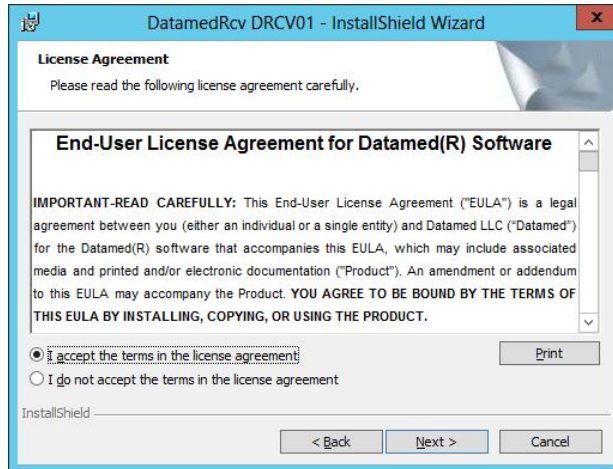
- The installation package can be found on the software installation flash drive or may be emailed. Locate *DatamedRcv_DRCV01_Setup_v3.x.x.exe* and double click on it. The following screen should appear. Select the appropriate language and then click *Next* to continue.



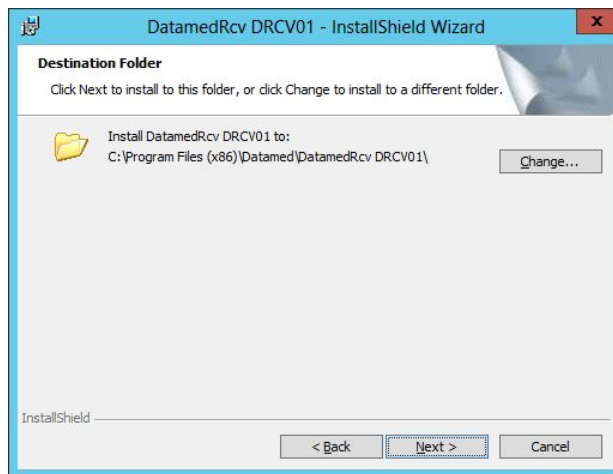
- The introduction screen will appear. Click *Next* to continue.



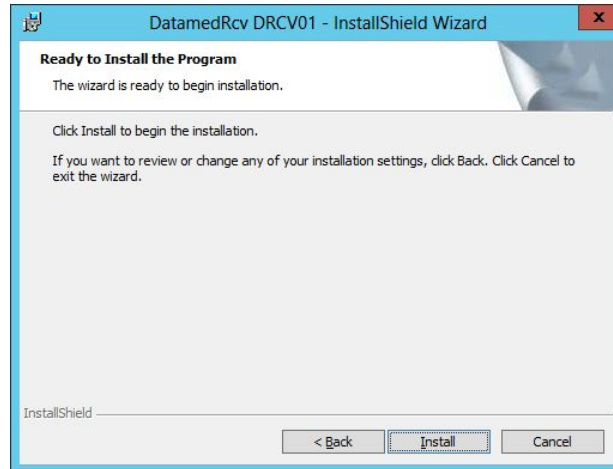
- Read the License Agreement carefully and select *I accept...* Click *Next* to continue.



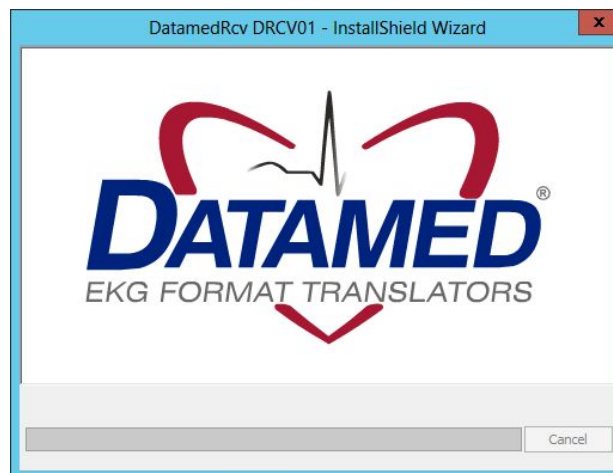
- Select the installation folder for the program and then click *Next* to continue.



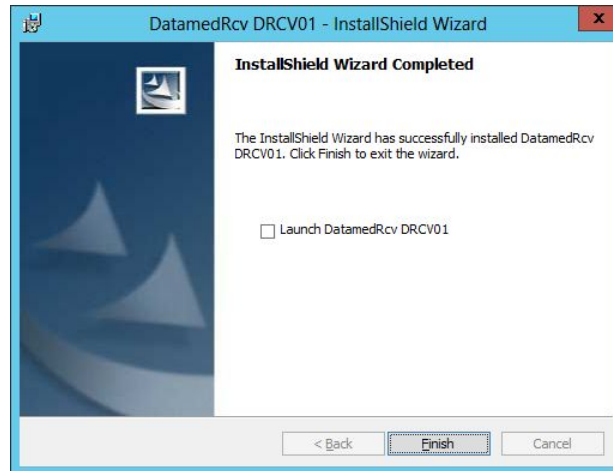
- When ready, click *Next* to begin the installation. Installation should take 1-2 minutes.



- During installation this screen will appear. Depending on what other software you have installed on the computer, you may or may not see the logo as shown below.



- Once installation is complete, this screen will appear. If you want to run the configuration utility immediately, check the *Launch DatamedRcv DRCV01* box. Click *Finish* to close the window.



Updating

If DRCV01 v3.0 or higher is already installed, running the setup program will update it. The screens are the same as a new installation.

If DRCV01 v1.x is installed, follow these steps:

- Open the configuration utility and copy all of the settings down manually.
- Uninstall the old version.
- Install the new version.
- Start the *DRCV01Config* utility and configure it with the written settings.

Uninstalling

To uninstall DRCV01, do one of the following: 1) from *Start* → *All Programs* → *Datamed* → *DatamedRcv_DRCV01*, select *Uninstall DRCV01*; or 2) open *Control Panel*, choose *Add or Remove Programs*, select *DatamedRcv_DRCV01*, and press the *Remove* button. In either case the application will be removed. It may take a minute for the uninstall to complete. Note that only the application is removed - all ECG files and logs will remain.

Post-Installation Notes

If this was an update then the configuration settings will already be set up and should not need to be changed. However, for a new installation the configuration settings will need to be set up. Configuration settings are changed by using the DRCV01Config utility. A shortcut to this utility will be found on the desktop, and it can also be found at *Start* → *All Programs* → *Datamed* → *DatamedRcv DRCV01* → *DRCV01Config*. See *Chapter 3* for a complete description of the configuration settings.

We recommend setting the service *Startup Type* to *Automatic (Delayed Start)*. This is especially important when using an AnywhereUSB adapter. After installation open the *Services* applet, locate the *DatamedRcv_DRCV01* service, right-click on *Properties*, and change *Startup Type* to *Automatic (Delayed Start)*. An alternate method is to run this from the command line (note that the space after the '=' is required):

```
sc config DatamedRcv_DRCV01 start= delayed-auto
```

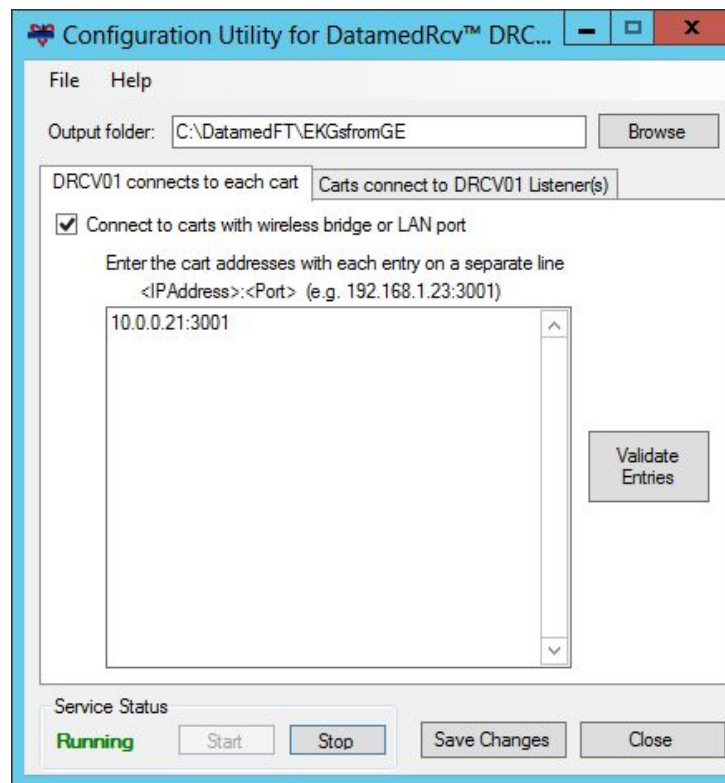
Note that the *DatamedRcv_DRCV01* service will not start automatically until the computer is rebooted. It can be started immediately using the *DRCV01Config* utility. An alternative method of starting the service is to open the *Services* applet from *Control Panel* → *Administrative Tools* and start *DatamedRcv_DRCV01*.

IMPORTANT NOTE: Normally this application is installed on the same computer as *DatamedFT™* and the output goes to a local folder. If the output will be directed to a shared folder on a separate computer, the account that the *DatamedRcv_DRCV01* service runs under is critical to the proper operation. By default, the service will run under the Local System account and by definition this account does not have access to the network, so it will not work correctly. In this situation, after installation and configuration it is very important to set the service to run with a domain (or workgroup) account. It will also be necessary to add the same domain (or workgroup) account to the folder that is being shared on the host management system.

Once the setup is complete and any accounts/permissions/shares have been addressed, the receiving process should be tested. The best way to do this is with *DatamedFT™* temporarily stopped. The cart(s) should be configured and a test transmission done. As long as a file appears in the Output Folder then this installation is complete.

CHAPTER 3 – CONFIGURING DRCV01

Once DRCV01 is installed, changes to the configuration settings can be done using the DRCV01Config utility that is installed along with the service. Open the utility from the desktop shortcut or from the Windows™ Start menu and it will automatically read the current configuration settings from the registry. When configuration changes are made, they must be saved and then the service must be restarted for them to take effect.



Window Settings

At the top of the window there is one item:

- ✚ **Output folder.** The folder that incoming EKG files are written to. This must be the *Input folder* for DatamedFT™. If DatamedFT™ is installed on the same computer (typical) then it will be a local folder. If DatamedFT™ is installed on a different computer then this will be the network path to a share on the remote computer (`\\computername\sharename`). The *computername* can be specified as a name or IP address. The *Browse* button allows you to browse for the folder to use (or create one).

IMPORTANT NOTE: If the *Output folder* is on a network share, the Log On account that the DatamedRcv_DRCV01 service is running under *must* have permissions to access that share. The default account for services is the System Account, which *does not* have network access permissions. The account can be changed by opening the Services applet from the *Help* menu and changing the properties for the DatamedRcv_DRCV01 service.

At the bottom of the window there is a status indicator and four buttons:

- ✚ **Service Status.** This shows the current status of the DatamedFT service. There are several possible values: **Stopped** - indicates that the service is not running; **Running** - indicates that the service is running; **Starting** - which indicates that the service is in the process of starting; **Stopping** - which indicates that the service is shutting down; **Paused** - which indicates that the service was manually paused; and **Unknown** - which indicates a problem. The blue statuses are normally transitional so if the status remains for more than a couple of seconds then there is a problem. The most common reason for this condition is that the License Key is not present or accessible.
- ✚ **Start.** This button will start the DatamedRcv_DRCV01 service.
- ✚ **Stop.** This button will stop the DatamedRcv_DRCV01 service.
- ✚ **Save Changes.** This button will cause all configuration changes to be saved to the registry. Previous settings will be discarded.
- ✚ **Close.** This button closes the window. Any unsaved changes will be discarded.

Menu Options

The following menu options are available:

- ✚ **File → Reload from registry.** Selecting this will cause any changes to be discarded and the settings on the screen reset to the saved values.
- ✚ **File → Save to registry.** This is the same as clicking the *Save Changes* button.
- ✚ **File → Import settings from file.** This will load configuration settings from a DRCV01 Settings (.dr1) file. This file is created by exporting the settings. Note that the settings are loaded into the window, but are not saved to the registry until the *Save Changes* button is clicked.
- ✚ **File → Export settings to file.** This will save the configuration settings *as they exist in the window* (possibly edited) to a DRCV01 Settings (.dr1) file. This file should not be edited manually. Typically this functionality is used to send the configuration settings to DLLC for troubleshooting.
- ✚ **File → Enable debugging.** In the event that there is a problem with the translator, DLLC support personnel may want to collect detailed technical information. After

checking this option and restarting the service, files containing debugging information will be written to the *Output Folder*. This information should be sent to DLLC support for analysis. See *Chapter 6* for more details.

- ✚ *File → Exit*. This is the same as clicking the *Close* button.
- ✚ *Help → Open Windows Event Viewer*. This will open the Event Viewer to the Application Event Log.
- ✚ *Help → Open Windows Services Manager*. This will open the services applet so that you can access the properties for Windows services.
- ✚ *Help → About*. This will open a window that displays information about the application and the license details.

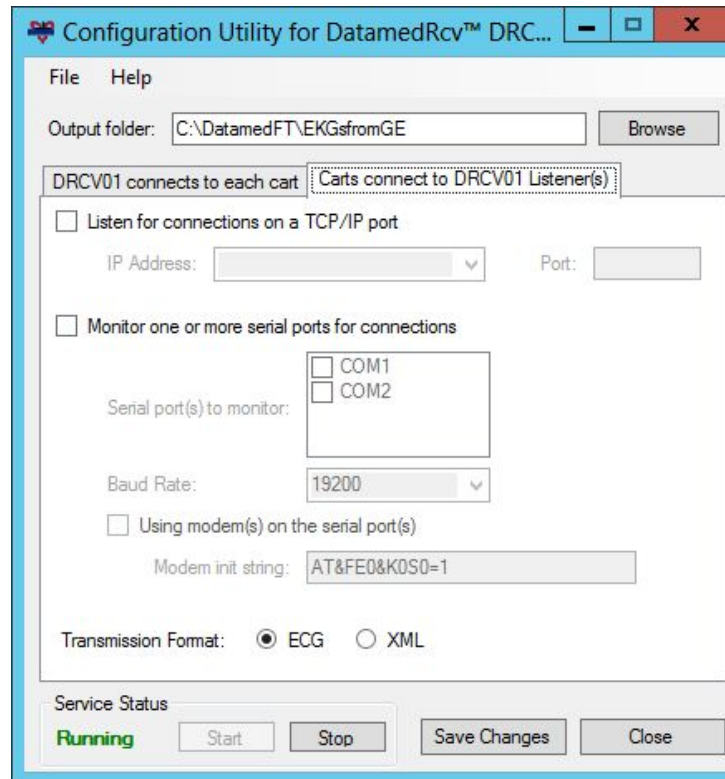
Tab: DRCV01 connects to each cart

This tab contains the settings for connections that are initiated and maintained by DRCV01. It can be used with carts using a Silex™ wireless bridge as well as carts that have a built-in LAN port. ***This method of connecting to the carts is the one used by MUSE® and should always be the preferred method.*** Each setting is described below.

- ✚ *Connect to carts with wireless bridge or LAN port*. If this box is checked, connections will be established with all of the carts listed in the address box.
- ✚ *Enter the cart addresses...* This text box must contain the IP address and port of each cart that will be connected. In contrast to the TCP/IP Settings where the address of this computer was used, the setting here is the address configured in the cardiograph itself. The format of each line is the IP address then a colon, and then the port number.
- ✚ *Validate Entries*. After entering the cart addresses in the text box, press this button to validate the formatting of the addresses. Any invalid entries will be removed.

Tab: Carts connect to DRCV01 Listener(s)

This tab contains the settings for TCP/IP connections that use a serial-to-LAN adapter and also for serial connections (direct or modem). Each setting is described below. Note that the settings shown in the screenshots are just sample data.



TCP/IP Settings:

- ✚ **Listen for connections on a TCP/IP port.** If this box is checked, a single TCP/IP port will be monitored for incoming connections from carts. This will only work with serial-to-LAN adapters (wireless bridge), not the built-in LAN port. When configuring the serial-to-LAN adapter, the IP address and port configured here must be used.
- ✚ **IP Address.** This specifies the IP address of the PC that is running DRCV01. The drop-down list should contain all possible addresses. Normally there is only a single address in the list, but some computers may have more than one. Select the appropriate address from the list.
- ✚ **Port.** This is the port number that will be monitored for incoming connections. This port must not be monitored by any other process, and any firewall must be configured to pass data to this port.

Serial Settings:

- ✚ **Monitor one or more serial ports for connections.** If this box is checked, one or more serial ports will be monitored for incoming connections from carts.
- ✚ **Serial port(s) to monitor.** This list will show all serial ports that are configured on the computer. Check any ports that are used to connect to the carts. Any number of ports may be monitored, but keep in mind that all ports must have the same type of connection (i.e. modem or direct cable). In other words, you can have several modems or several direct cables, but not a mix of the two.
- ✚ **Baud Rate.** This allows the baud rate of the serial port(s) to be set. Some carts can only support limited baud rates so this setting must be matched to the cart setting for direct serial connections. For modem connections this can normally be set to 57600 or 115200. Note that if multiple ports are configured they will all be set to the same baud rate.
- ✚ **Using modem(s) on the serial port(s).** If this box is checked, all selected ports must be connected to modems.
- ✚ **Modem init string.** This string identifies commands that are sent to the modem to set it up for reception. The default string is correct for MultiTech® modems and should not normally be changed.
- ✚ **Transmission Format.** This setting specifies the formatting of the data that is being transmitted. *It only applies to incoming TCP/IP connections or serial connections that use a modem.* When setting up the Transmission Settings on the cardiograph, two choices are *Serial Line (MUSE)*, which corresponds to the *ECG* format, and *Serial Line (XML)*, which corresponds to the *XML* format. *ECG* format should always be selected because it is the native format of the device and because it has error checking built in to the transmission. Note that for extremely high rate EKGs (250bps+), artifacts may appear in the waveforms due to the characteristics of the file format. This specific issue is also observed in native GE® implementations (MUSE®).

CHAPTER 4 – CONFIGURING TRANSMITTING DEVICES

The device that transmits EKGs to DRCV01 must be configured properly to be able to transmit EKGs successfully. The following information should be used to assist in this setup. Always consult the manufacturer's manual in conjunction with these instructions.

GE[®] MAC[®] -5000 and MAC[®] -5500 Cardiographs

These cardiographs can be configured to transmit using a modem, a direct serial connection, a LAN/WLAN network (using a serial-to-LAN adapter), or using the built-in LAN connection (MAC[®]-5500 only). To set up the cardiograph for transmission, use one of the following checklists:

When using a serial-to-LAN adapter or direct serial connection

1. Press *More* [F6], then *Main Menu*, then *More* [F6], then *System Setup*
2. Enter the system password and press ↵ (Enter)
3. Select *Basic System* and press ↵
4. If you are using a serial-to-LAN adapter and connecting it with the special cable that supplies power (as opposed to using an A/C adapter), you will need to turn on power to the external adapter. This will increase the power consumption slightly, but it is needed for proper operation. Perform the following steps:
 - a. Select *Miscellaneous Setup* and press ↵
 - b. Select *Serial Power Always On* and press ↵, then select *Yes* and press ↵
 - c. Select *Return* and press ↵
5. Select *Transmission* and press ↵
6. Select *Dial tone required* and press ↵, then select *No* and press ↵
7. Select *Use IR for Serial Line* and press ↵, then select *No* and press ↵ **[NOTE: this setting may not be present depending on the cart firmware]**
8. Select *Serial Line Baud Rate* and press ↵, then select *115.2k* and press ↵. If the maximum setting is less than 115.2k (e.g. 9600 or 19200), set it to the maximum.
9. Select *Default Location* and press ↵, then select *Serial Line (MUSE)* and press ↵
10. Select *Return* and press ↵
11. Again select *Return* and press ↵
12. Select *Save Setup* and press ↵
13. Select *Main Menu* and press ↵ to get back to the main menu
14. Press *File Manager* [F5] to access a list of EKG files to transmit
15. After selected the desired files, press *Transmit* [F4] to send the selected files

When using a modem

1. Press *More [F6]*, then *Main Menu*, then *More [F6]*, then *System Setup*
2. Enter the system password and press ↵ (Enter)
3. Select *Basic System* and press ↵
4. Select *Transmission* and press ↵
5. Select *Modem Speaker* and press ↵, then select *Dialing Only* and press ↵
6. Select *Dial tone required* and press ↵, then select *Yes* and press ↵
7. Select *Dialing method* and press ↵, then select *Tone* and press ↵
8. Select *Fax error correction* and press ↵, then select *No* and press ↵
9. Select *#1 Phone Number* and press ↵, then type in the phone number to reach the modem on the computer where DRCV01 is installed and then press ↵
10. Select *Location 1* and press ↵, for *Type* select *MUSE Network* and press ↵
11. Select *Use IR for Serial Line* and press ↵, then select *No* and press ↵ **[NOTE: this setting may not be present depending on the cart firmware]**
12. Select *Serial Line Baud Rate* and press ↵, then select *115.2k* and press ↵. If the maximum setting is less than 115.2k then use the maximum setting available. Either settings will work fine with a modem.
13. Select *Default Location* and press ↵, then select *#1* and press ↵
14. Select *Return* and press ↵
15. Again select *Return* and press ↵
16. Select *Save Setup* and press ↵
17. Select *Main Menu* and press ↵ to get back to the main menu
18. Press *File Manager [F5]* to access a list of EKG files to transmit
19. After selected the desired files, press *Transmit [F4]* to send the selected files

When using the built-in LAN port of a MAC®-5500

1. Press *More [F6]*, then *Main Menu*, then *More [F6]*, then *System Setup*
2. Enter the system password and press ↵ (Enter)
3. Select *Basic System* and press ↵
4. Select *Transmission* and press ↵
5. Select *Default Location* and press ↵, then select *Ethernet (MUSE)* and press ↵
6. Select *Return* and press ↵
7. Select *Network Setup* and press ↵

8. *Enter the IP Address, Subnet Mask, and Gateway address that apply to the cardiograph (not the computer running DRCV01).* This information can typically be obtained from the IT System Administrator. Then enter the Port Number that will be used by DRCV01 to connect to this machine. If there is a firewall between the cart and the computer then this port will need to be opened. This IP Address and Port Number will be used when configuring the Direct Connections tab in DRCV01.
9. Select *Return* and press ↵
10. Again select *Return* and press ↵
11. Select *Save Setup* and press ↵
12. Select *Main Menu* and press ↵ to get back to the main menu
13. Press *File Manager [F5]* to access a list of EKG files to transmit
14. After selected the desired files, press *Transmit [F4]* to send the selected files

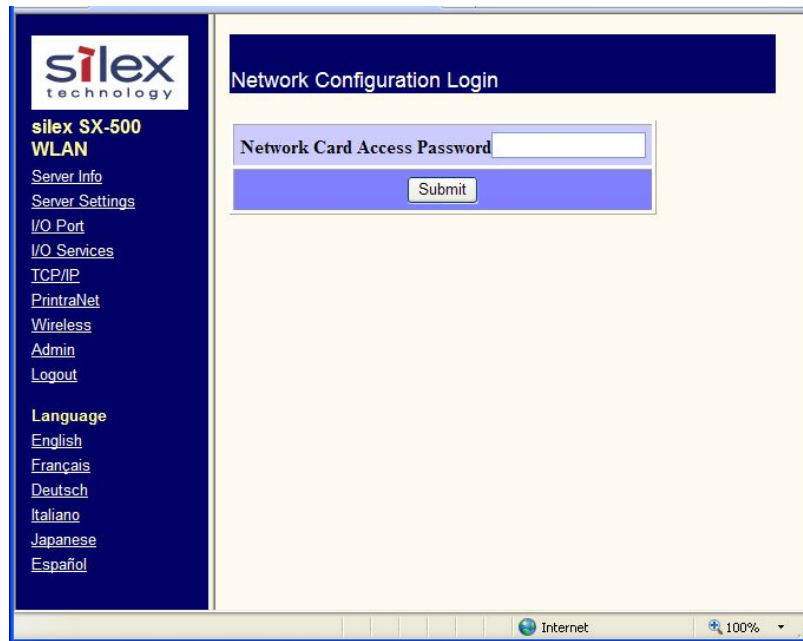
CHAPTER 5 - CONFIGURING A WIRELESS BRIDGE

The Silex Technology® wireless bridge can be purchased through GE as a cart option. Before beginning the installation, it is critical that the network information is gathered. DLLC recommends that a static IP address be used for the adapter. You will need to configure the IP address of the adapter (static address with gateway and subnet mask, or DHCP) and depending on the connection type selected you may need to add the IP address of the computer that is running DRCV01 on the adapter. In addition, for wireless connections the wireless network connection settings MUST be available. These settings include the SSID, security type (WEP, WPA, etc.), and passwords.

IMPORTANT NOTE: The instructions provided by GE® or Silex Technology® should always be used as the primary reference for configuring the wireless bridge. These instructions are provided as a backup and to highlight the important settings but they may not match the latest firmware.

Whether using wireless or wired LAN, the Silex adapter must typically be configured using the wired port. Connect a network crossover cable (available at most computer stores) from the adapter to a laptop or other computer. This will create an isolated network environment. To get power, either use the A/C adapter that came with the Silex, or connect the adapter to the cardiograph using the special serial power cable (see *Chapter 3* for configuration). The default configuration on the wired LAN port is for DHCP, however since there is no DHCP server on the isolated network, it will default to IP address 192.0.0.192. Set the computer's IP address to 192.0.0.191 (subnet mask 255.255.255.0, gateway 192.0.0.1) so that it will be able to connect to the Silex adapter.

Once the Silex adapter is connected to the LAN or directly to a computer, use a web browser to go to the adapter's IP address (192.0.0.192) to access the web interface. At the login screen the default password is "access". Click *Submit* to login.



IMPORTANT NOTE: When making changes, press the *Submit* button at the bottom of each page, but don't press *Reset* until all changes have been saved. Note that due to a quirk in the web interface, the saved settings may not show up on the screen until the adapter has been reset, even though they have actually been saved. Once all desired changes have been saved, press the reset switch. To restore the factory settings, press and hold the reset switch on the adapter for 5 seconds.

Clicking on *I/O Port* in the left sidebar menu will bring up the I/O Port Setting screen. The important changes are described below. Some firmware versions add a setting called *Local Port* below *Destination Port* and it should be set to the same value as *Destination Port*. If DRCV01 will be configured to connect to the carts then disable *ECable Mode*. If DRCV01 will be configured to listen for connections from the carts then enable *ECable Mode* and enter the IP address and port that DRCV01 is configured to listen on. Click *Submit* to save the settings.

I/O Port Settings	
Port Name	S1
Port Type	Serial
Baud Rate	115200 ?
Bits per character	8 ?
Stop Bits	1 ?
Parity	None ?
Flow Control	None ?
ECable Mode	<input checked="" type="radio"/> Enable <input type="radio"/> Disable ?
Destination IP Address	192.168.1.13 ?
Destination Port	9100 ?
Connection attempt time	30 sec ?
Console Mode String	<input type="text"/> ?
Port Filter	TRAP ?
Submit	

Baud Rate should be set to 115,200.

If using "DRCV01 connects to each cart" tab then disable ECable Mode.

If using "Carts connect to DRCV01 Listener" tab then Enable ECable Mode and enter the Destination IP and Port that match the DRCV01 settings.

Clicking on *TCP/IP* in the left sidebar menu will bring up the Configure TCP/IP screen. If DRCV01 will be configured to connect to the carts then click on the second link in *Enabled Services* and enter the port that this adapter will listen on - this is the port that must be entered with the adapter's IP address in DRCV01. In the *IP Address* section enter the IP address of the Silex adapter - not the computer. Although DHCP can be used, a static IP address is strongly recommended. Make note of the IP address by placing a label or sticker on the case of the adapter. Click *Submit* to save the settings.

Configure TCP/IP	
TCP/IP	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Enabled Services	SLX3B382D S1 A SLX3B382D S1 B
IP Address	IP Address <input type="text" value="192.168.1.12"/> Subnet Mask <input type="text" value="255.255.255.0"/> Gateway <input type="text" value="192.168.1.1"/> Boot Method <input type="text" value="STATIC"/> Boot Tries <input type="text" value="3"/>
RARP Boot Settings	<input type="checkbox"/> No Subnet Mask <input type="checkbox"/> No Gateway <input checked="" type="checkbox"/> Set address with ARP/Ping
Applications Enabled	<input checked="" type="checkbox"/> LPD <input checked="" type="checkbox"/> TCP port <input checked="" type="checkbox"/> FTP <input checked="" type="checkbox"/> Telnet <input checked="" type="checkbox"/> S-TELNET <input checked="" type="checkbox"/> HTTP <input checked="" type="checkbox"/> HTTPS <input checked="" type="checkbox"/> POP3 <input checked="" type="checkbox"/> SMTP <input checked="" type="checkbox"/> SNMP <input checked="" type="checkbox"/> DNS <input checked="" type="checkbox"/> TFTP <input checked="" type="checkbox"/> ECHO
TCP Window	<input type="text" value="10240"/>
TCP Timeout	<input type="text" value="1"/> min
LPD Settings	<input type="checkbox"/> LPD Banner Enable <input type="checkbox"/> LPD Retry Enable
Keepalive Timer	<input type="text" value="1"/> min
Probe Idle Connections	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Access Control	Configure IP Access Control
DNS	Configure DNS
<input type="button" value="Submit"/>	

If using "DRCV01 connects to each cart" tab then click here and enter the port number to listen on

Enter the IP Address and other settings.

If the wireless capability will be used, click on *Wireless* in the left sidebar menu to bring up the Configure Wireless screen. The important changes are described below. Click *Submit* to save the settings.

Configure Wireless		
Mode	INFRASTRUCTURE <input type="button" value="v"/>	<input style="float: right;" type="button" value="?"/>
Radio	802.11b-g <input type="button" value="v"/>	<input style="float: right;" type="button" value="?"/>
SSID	<SSID Value> <input type="text"/>	<input style="float: right;" type="button" value="?"/>
Network Security	Configure Network Security	<input style="float: right;" type="button" value="?"/>
Channel	11 <input type="button" value="v"/>	<input style="float: right;" type="button" value="?"/>
Speed	54 <input type="button" value="v"/>	<input style="float: right;" type="button" value="?"/>
International Roaming	Flexible <input type="button" value="v"/>	<input style="float: right;" type="button" value="?"/>
Dynamic Frequency Select	Disabled <input type="button" value="v"/>	<input style="float: right;" type="button" value="?"/>
Country	United States <input type="button" value="v"/>	<input style="float: right;" type="button" value="?"/>
Signal Quality	Disable	
RTS Threshold	2432 <input type="text"/>	<input style="float: right;" type="button" value="?"/>
<input type="button" value="Submit"/>		

Choose the mode (typically Infrastructure).

Enter the SSID.

Click here to set up wireless security.

Select the appropriate country

To configure the security settings, click on *Configure Network Security* in the Configure Wireless screen. The network administrator will supply the necessary security information needed.

If using PEAP or TLS authentication, a certificate file will be needed. This file is generated on the Server Certificate Authority recognized by the Radius server. On the server, open *Control Panel* → *Internet Options*, choose the *Content* tab, and press the *Certificates* button. Choose the *Trusted Root Certification Authorities* and locate the server’s CA. Select the CA and export it to a .CER file.

If using TLS authentication, in addition to the certificate file, private and public keys are required. Export the User/Client Certificate recognized by the Radius server to a PFX file, then use the OpenSSL utility to convert the PFX file into a private key PEM file and a public key PEM file.

The following screen shows settings for WEP encryption. See the instructions below or the Silex manual for more options. Click *Submit* to save the settings.

Configure Network Security		
Encryption Mode	WEP 128 bit	?
Key Selection	1	?
WEP Key	Key #1: <WEP Key> Key #2: Key #3: Key #4:	?
Wireless Authentication Type	Open System	?
Wired Authentication Type	None	?
Authentication Attempts	0	?
User ID	anonymous	?
Password		?
Authentication Protocol	PAP	?
PSK	*****	?
Authentication Server Certificate	Configure Authentication Server Certificate	
SSL/TLS Private Key	Configure Private Key	
Submit		

Enter the encryption mode.

Enter the WEP key.

Note that the Wireless Authentication Type is Open even though the access point in this case is set to WEP-Shared Key. It will not work if set to Shared.

For WEP encryption, set the *Encryption Mode* to *WEP 64 bit* or *WEP 128 bit*. Enter the *Key Selection* and then enter the *WEP Key*. **Wireless Authentication must be set to Open System.**

For DWEP encryption, set the *Encryption Mode* to *Dynamic WEP*. The *Wireless Authentication Type* can be either *LEAP* or *EAP-FAST*. Enter the *User ID* and *Password*.

For WPA or WPA2 encryption, set the *Encryption Mode* to *WPA* or *WPA2*. The *Wireless Authentication Type* can be *LEAP*, *PEAP*, *TLS*, *TTLS*, *EAP-FAST*, or *PSK*. For *PSK* authentication, enter the *PSK* passphrase, otherwise enter the *User ID* and *Password*. For *PEAP* or *TLS* authentication, load the *Authentication Server Certificate* (.CER file) created previously. In addition, for *TLS* authentication import the private and public keys (.PEM files) created previously.

CHAPTER 6 - TROUBLESHOOTING

When DRCV01 is installed, a new Windows™ service named `DatamedRcv_DRCV01` is created. The service continually monitors the License Key and if it is removed the service will log a message to the Event Log and stop processing. Once the key is connected again the service will resume processing. The `DRCV01Config` utility can be used to start, stop, and monitor the service.

If there is a problem, the first place to look is the *Event Viewer*, which can be accessed from **Control Panel** → **Administrative Tools** or from the *Help* menu. Once the viewer is opened, select **Application** from the left side menu and the right side will be filled with the application event log. Double-clicking on any entry in the log will open a window that shows the details for the event. The *Type* column in the log will indicate whether this is an *Information* or *Error* message, and the *Source* column will indicate what service logged the entry. The *Information* messages are normal and for a normal startup there will be two or more from `DatamedRcv_DRCV01` depending on the configuration. The *Error* messages describe problems that have occurred. Reviewing the log entries will give insight into what is working and what is a problem. If the License Key could not be contacted, the service will log an Error message describing the condition.

The other reason that the service can fail to access the key is due to a licensing problem. In this case see *Appendix A* for instructions for updating the key.

After the startup message, there should be either one or two messages that say that `DatamedRcv_DRCV01` has started listening for transmissions or has connected to the cart(s) and list the folder where files will be written. If any message that should be there is not present, check the configuration settings using the `DRCV01Config` utility to confirm that the parameters are correct. In most cases, however, there will be an error message that describes the problem. Most errors are self-explanatory and can be resolved by correcting the setting or condition that caused them.

Here are some common issues and answers:

- **Symptom: The License Key cannot be located**
 - The License Key is required for the `DatamedRcv_DRCV01` service to run. Whether the License Key is attached to the computer directly, attached to the VM's host computer, or connected by network, it must be accessible and a local driver must be installed. To verify that the key is connected, do one (or both) of the following:
 - Start the Configuration Utility and select *Help* → *About* on the menu. After a moment it should show the license information.

- Open a browser and connect to this address: <http://localhost:1947>. If the complete driver package is properly installed you should see the Sentinel Admin Control Center. If you do not see this, use the shortcut under *Start* → *All Programs* → *Datamed* → *DatamedRcv DRCV01* → *Install HASP Security Key Drivers* or download and install the latest driver, which can be found at:
<http://sentinelcustomer.safenet-inc.com/sentineldownloads/>
- On the key is a light that should be on if the driver is working.
- If the Security Key still can't be located, please contact DLLC support.
- **Symptom: No files are written**
 - If the service starts properly but no files are received when the originating device makes a transmission, then the communication needs to be checked. DLLC support personnel may need to gather detailed information using the debugging facility. If directed to collect debugging information, follow the directions to enable debugging in *Chapter 3*. The debug file(s) will be created in the output folder and should be sent to DLLC.
 - Check the permissions on the output folder to make sure that the service has write permissions.
- **Symptom: Connections are not fully closed**
 - If netstat -a reveals a large number of connections that persist despite the carts closing them then you may need to set the *TcpTimedWaitDelay* parameter. This is accessed using *regedit* to access HKLM\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters. If there is not a value named *TcpTimedWaitDelay* then create a REG_DWORD value and set it to a number between 30 and 240. More information about this settings is available here: <https://technet.microsoft.com/en-us/library/cc938217.aspx>.

DLLC support can be reached by email at support@datamed.com or by phone at either (800) 601-3361 ext 2 (within the US) or +1 901 672 6225 ext 2 (outside the US).

APPENDIX A – UPDATING THE LICENSE KEY

Licensing for Datamed® software applications is controlled using a hardware or software License Key. Hardware License Keys can easily be moved to another computer and the license can't ever be broken, but a USB port is required. In contrast, a software License Key is tied to a specific computer and cannot easily be moved but there is no hardware involved.

Upon delivery of the Datamed® software, a hardware License Key will already be programmed with the appropriate licensing information. Software License Keys must be activated and locked before use. If additional connection licenses are purchased, the key can be updated remotely to activate the new licenses. A single License Key may be used for any number of licenses for Datamed® software applications on a single computer (physical or virtual).

There are four ways to update the License Key:

1. Use the Configurator utility. This is the normal method and is described in detail below.
2. Use `DatamedLicenseUtil`. This utility displays the license details, just like the About screen in the Configurator. It has functions just like the ones described below.
3. Use `DatamedSentinelUtility`. This utility is normally only used for sites with software License Keys but it will work with hardware Licenses Keys as well.
4. Use the Admin Control Center. This is a browser interface provided by the HASP driver package. You access this page at <http://localhost:1947/>. This interface has a number of good diagnostic features and when working with DLLC support you will probably be asked to open this page to gather information.

On the License menu in the Configurator utility there are two options: one to create a license update request file, and one to apply the update. The license update request file must be emailed to DLLC so that an update can be created and sent back. The following is a step-by-step procedure:

- Step 1:** Start the DRCV01 Configuration Utility and select *License → Create License Update Request File* on the menu. You will be able to select a folder and filename to write the file to. Note that the license key must be present on this computer.
- Step 2:** A file will be created in the location specified with an extension of ".c2v". Email this file to DLLC at support@datamed.com.
- Step 3:** DLLC will generate an update file (with an extension of ".v2c") and email it back. Save this file.
- Step 4:** In the DRCV01 Configuration Utility select *License → Load License Update* on the menu. Navigate to the saved update file and press *Open* to load the license.

When the update is complete a success message will be displayed. The update files can be discarded. Stop and restart the service to allow the new license to take effect.

APPENDIX B – REGISTRY SETTINGS

If it is necessary to change the settings for DRCV01 after installation, the DRCV01Config utility should be used. There is normally no reason to access the registry editor to make the changes. In the event that DLLC support personnel request it, you can open the registry editor by selecting Start → Run and then type "*regedit*" and press *OK*. When the registry editor opens, navigate the folders to HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\DatamedRcv_DRCV01.

Most of the settings must not be changed or the operation of DRCV01 will be affected. If any setting is changed DatamedRcv_DRCV01Start must be restarted.

APPENDIX C – END USER LICENSE AGREEMENT AND LIMITED WARRANTY

The current End User License Agreement and Limited Warranty (EULA) can be found on DLLC's web site (www.datamed.com). The following EULA was current at the time of this printing.

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10. LIMITATION OF LIABILITY AND REMEDIES. Notwithstanding any damages that you might incur for any reason whatsoever (including, without limitation, all damages referenced herein and all direct or general damages in contract or anything else), the entire liability of Datamed and any of its Representatives under any provision of this EULA and your exclusive remedy hereunder (except for any remedy of repair or replacement elected by Datamed with respect to any breach of the Limited Warranty) shall be limited to the lesser of (i) the actual damages you incur in reasonable reliance on the Product or (ii) the license fees actually paid by you for the Product. The foregoing limitations, exclusions and disclaimers (including Sections 8, 9, 10 and 11) shall apply to the maximum extent permitted by applicable law, even if any remedy fails its essential purpose. The disclaimers and limitations on liability set forth above are fundamental elements of the basis of the agreement between Datamed and you.

11. Export Restrictions. You acknowledge and agree that the Product is subject to restrictions and controls imposed by the Export Administration Act of 1979, as amended, and the Export Administration Regulations thereunder ("the Acts"). You agree and certify that neither the Product nor any direct product thereof is being or will be used for any purpose prohibited by the Acts. You further agree and certify that neither the Datamed Product nor any direct product thereof will be exported to (i) the following countries which are currently subject to U.S. trade embargoes: Cuba, Iran, Libya, North Korea, Sudan and Syria or (ii) persons or entities on the U.S. "Denied Persons List", "Specially Designated Nationals List" and "Entities List".

12. U.S. GOVERNMENT LICENSE RIGHTS. All Product provided to the U.S. Government pursuant to solicitations issued on or after December 1, 1995 is provided with the commercial license rights and restrictions described elsewhere herein. All Product provided to the U.S. Government pursuant to solicitations issued prior to December 1, 1995 is provided with "Restricted Rights" as provided for in FAR, 48 CFR 52.227-14 (JUNE 1987) or DFAR, 48 CFR 252.227-7013 (OCT 1988), as applicable.

13. APPLICABLE LAW. This EULA is governed exclusively by the laws of the State of Tennessee, USA. The state and federal courts located in Shelby County, Tennessee shall have exclusive jurisdiction to adjudicate any dispute arising out of or relating to this Agreement.

14. ENTIRE AGREEMENT; SEVERABILITY. This EULA (including any addendum or amendment to this EULA which is included with the Product) is the entire agreement between you and Datamed relating to the Product and the support services (if any) and they supersede all prior or contemporaneous oral or written communications, proposals and representations with respect to the Product or any other subject matter covered by this EULA. This EULA sets forth the entire liability of Datamed and its representatives and your exclusive remedy with respect to the Product and services and their use. To the extent the terms of any Datamed policies or programs for support services conflict with the terms of this EULA, the terms of this EULA shall control. Any waiver of the terms herein by Datamed must be in a writing signed by an authorized officer of Datamed and expressly referencing the applicable provisions of this EULA. If any provision of this EULA is held to be void, invalid, unenforceable or illegal, it shall be enforced to the extent permissible and all other provisions shall continue in full force and effect. Headings are included for convenience only, and shall not be considered in interpreting this Agreement. This EULA does not limit any rights that Datamed may have under trade secret, copyright, patent or other laws.

The following Datamed GUARANTEE applies to you if you acquired this Product in any country other than the United States:

Statutory rights not affected - The following guarantee is not restricted to any territory and does not affect any statutory rights that you may have from your reseller or from Datamed if you acquired the Product directly from Datamed. If you acquired the Product or any support services in Australia, New Zealand or Malaysia, please see the "Consumer rights" section below.

The Guarantee - The Product is designed and offered as one of Datamed's Datamed(R) products. You accept that no Product is error free and you are strongly advised to back-up your files regularly. Provided that you have a valid license, Datamed guarantees that a) for a period of 90 days from the date of receipt of your license to use the Product or the shortest period permitted by applicable law it will perform substantially in accordance with any written materials that accompany the Product; and b) any support services provided by Datamed shall be substantially as described in applicable written materials provided to you by Datamed and Datamed's support engineers will use reasonable efforts, care and skill to solve any problem issues. Acknowledging that Datamed has limited support resources, all support will be done remotely from Datamed's home location. In the event that the Product fails to comply with this guarantee, Datamed will either (a) repair or replace the Product or (b) return the price you paid. This guarantee is void if failure of the Product results from accident, abuse or misapplication. Any replacement Product will be guaranteed for the remainder of the original guarantee period or 30 days, whichever period is longer. You agree that the above guarantee is your sole guarantee in relation to the Product and any support services.

Exclusion of All Other Terms - To the maximum extent permitted by applicable law and subject to the guarantee above, Datamed disclaims all warranties, conditions and other terms, either express or implied (whether by statute, common law, collaterally or otherwise) including but not limited to implied warranties of satisfactory quality and fitness for particular purpose with respect to the Product and any written materials that accompany the Product. Any implied warranties that cannot be excluded are limited to 90 days or to the shortest period permitted by applicable law, whichever is greater.

Limitation of Liability - To the maximum extent permitted by applicable law and except as provided in the Datamed Guarantee, Datamed and its Representatives shall not be liable for any damages whatsoever (including without limitation, damages for loss of business profits, business interruption, loss of business information or other pecuniary loss) arising out of the use or inability to use the Product, even if Datamed has been advised of the possibility of such damages. In any case Datamed's entire liability under any provision of this EULA shall be limited to the amount actually paid by you for the Product. These limitations do not apply to any liabilities that cannot be excluded or limited by applicable laws.

Consumer Rights - Consumers in Australia, New Zealand or Malaysia may have the benefit of certain rights and remedies by reason of the Trade Practices Act and similar state and territory laws in Australia, the Consumer Guarantees Act in New Zealand and the Consumer Protection Act in Malaysia in respect of which liability cannot lawfully be modified or excluded. If you acquired the Product in New Zealand for the purposes of a business, you confirm that the Consumer Guarantees Act does not apply. If you acquired the Product in Australia and if Datamed breaches a condition or warranty implied under any law which cannot lawfully be modified or excluded by this agreement then, to the extent permitted by law, Datamed's liability is limited, at Datamed's option, to: (i) in the case of the Product: a) repairing or replacing the Product; or b) the cost of such repair or replacement; and (ii) in the case of support services: a) re-supply of the services; or b) the cost of having the services supplied again.

Should you have any questions concerning this EULA, or if you desire to contact Datamed for any reason, please use the address information enclosed in this Product to contact Datamed directly or visit Datamed on the World Wide Web at <http://www.datamed.com>.