

# DatamedFT™

## Service Manual

Datamed LLC

DatamedFT™ v3.0

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This product is not intended for home use.

**REGULATORY**

This product meets the definition of an MDDS and is not required to be registered by the FDA. This product complies with the regulator requirements of European Directive 93/42/EEC.



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## INTENDED USE

This product is a software application intended to convert EKG data from the format of one manufacturer to the format of another. It is intended to be used in the data flow between a device that acquires and analyzes a Resting EKG, and a storage/management system that stores the EKGs for viewing, editing, and printing. This product does not perform any analysis, measuring, or filtering. It is not intended to be used for any other purpose than converting the data in the file from source format to destination format.

## PROTECTED HEALTH INFORMATION (PHI) CONSIDERATIONS

This product is an online converter and does not store data in a database, but certain information can be stored locally, including PHI. 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 (Note that most of these are optional settings):

- Input folder - During processing or if the Output System is not available, the incoming source files are queued here.
- Log Folder - If Logging is enabled, the log files are not encrypted and will contain Patient ID and Name.
- Archive Folder - If Archiving is enabled, the source files will be moved here after processing and they contain all of the data.
- Debug Folder - If Debugging is enabled, the debug files are written here. Most of the data is encrypted, but record summary data is in plaintext.
- Windows<sup>®</sup> Registry - When combined with DatamedWL™, context information (which may contain PHI) can be stored in the registry in the DynamicFieldMappingByOrderID subkey off the Process key.

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## CHAPTER 1 - GETTING STARTED

**T**he DatamedFT™ application is an EKG format translator that accepts EKGs from any one of a number of supported proprietary or public input file formats and translates them into any of the support output formats. The application is installed as a system service and deals exclusively with files, both input and output. For communication with cardiographs and other acquisition equipment that require specialized transmissions protocols (e.g. serial, modem, or LAN), several Receiver Modules are available from Datamed LLC (“DLLC”) to handle these inputs. DatamedFT™ supports multiple simultaneous processes, each normally handling a different format conversion. The output format should always be the same for each process, with the input format being different. This allows custom option settings and field mapping for each distinct input.

Depending on when and where you purchased the software, DatamedFT™ will either be licensed by format or per device. If additional devices are added, the license will need to be updated, which may or may not be an additional charge. Contact DLLC if you have any questions.

### Definitions, Acronyms and Abbreviations

DFT	DatamedFT™ Format Translator
DLLC	Datamed LLC
DWL	DatamedWL™
FTPC	The computer that DFT is installed on

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## 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.** DatamedFT™ is independent of the destination host system and can be installed either on the host system server or anywhere with network access to the host system. Some host system vendors prefer that no additional software is installed on the host server, so DatamedFT™ will be installed on a separate adjacent computer (Format Translator PC or FTPC). The minimum specifications for this computer are: 2 GB RAM, 40 GB HD, and a LAN connection for file transmission. 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.
- ❖ **LAN considerations.** The DatamedFT™ software only reads and writes files. These files may be either local to the FTPC or on remote computers. If the FTPC is not the same physical computer as the destination host system, then DatamedFT™ will be configured to write output files across the network to the host system. This requires proper file-sharing network permissions to be set up. Also, if there is a firewall on either side of the FTPC then a rule must be set up to allow Windows file-sharing traffic (TCP ports 139 and 445; UDP ports 137 and 138) to pass.
- ❖ **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 DatamedFT™ installed. This can also be used if DatamedFT™ was uninstalled. A configuration file with initial settings may or may not be supplied. If the initial configuration file is not supplied, DatamedFTConfig will need to be run after installation to update the settings.

**NOTE:** *DatamedFT v2.x cannot be directly upgraded to v3.x. For upgrades, follow the instructions later in this chapter.*

### Install the License Key

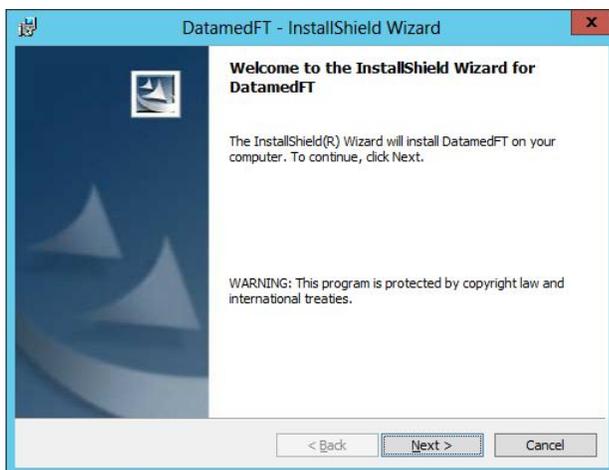
- In the installation media provided with the software there will be a file named *HASPUserSetup.exe*. Run this to install the full driver package. Alternatively, after installation the driver can be found using the shortcut under *Start → All Programs → Datamed → DatamedFT → Install HASP Security Key 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 2<sup>nd</sup> 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](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 DatamedFT™ Software

- The installation package can be found on the software installation flash drive or may be emailed. Locate *DatamedFT\_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.



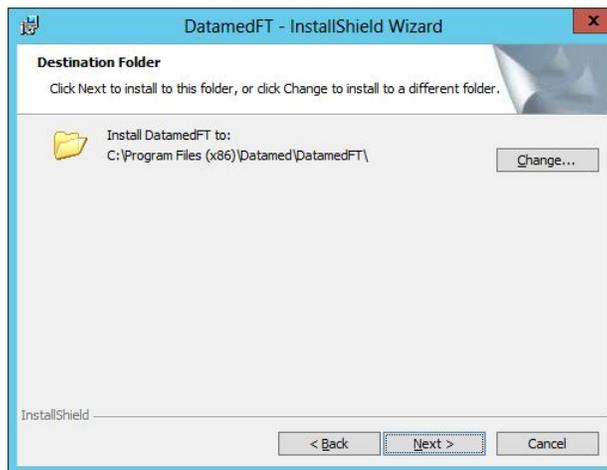
- The introduction screen will appear. Click *Next* to continue.



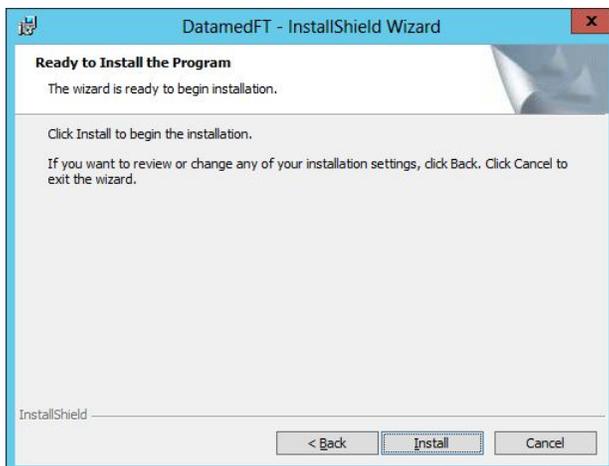
- Read the License Agreement carefully and select *I accept...* Click *Next* to continue.



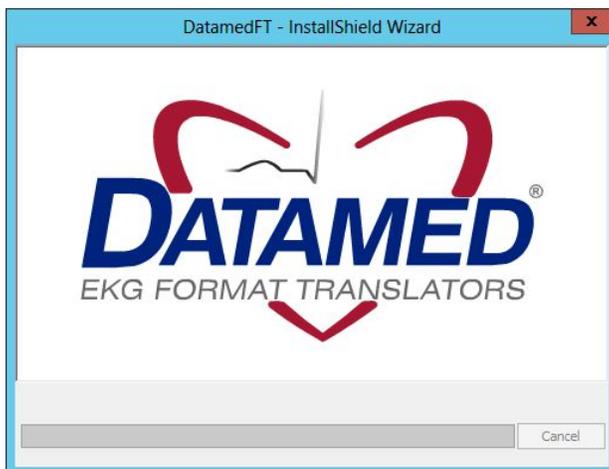
- Select the installation folder for the program and then click *Next* to continue.



- 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 DatamedFT* box. Click *Finish* to close the window.



The *DatamedFTConfig* utility should normally be run after installation. The configuration should be reviewed even if the configuration settings file was loaded, and set up from scratch if it was not. ***Note that the first process must be enabled by checking the Enabled box before it can be configured.*** The *DatamedFT* service will not start automatically until the computer is rebooted, but it can be started immediately from within the configuration utility.

An alternative method of starting the service is to open the *Services* applet from *Control Panel* → *Administrative Tools* and start *DatamedFT*.

The *Post Installation Notes* at the end of this chapter should be reviewed following installation.

## Updating

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

If DatamedFT™ v2.0 is installed, follow these steps:

- Start the *DatamedFTConfig* utility and select *File → Export settings to file* to export the settings to a .dft file.
- Uninstall the old version.
- Install the new version.
- Start the *DatamedFTConfig* utility and select *File → Import settings from file* to import the settings from the .dft file.

If DatamedFT™ v1.0 is installed, follow these steps:

- Use the *regedit* utility to examine the DatamedFT service registry settings in HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\services\DatamedFT. Write down the settings.
- Uninstall the old version from the command line by running "*datamedft -r*" in C:\DatamedFT.
- Install the new version.
- Start the *DatamedFTConfig* utility and configure the settings from your notes.

## Uninstalling

To uninstall DatamedFT™, do one of the following: 1) from *Start → All Programs → Datamed → DatamedFT*, select *Uninstall DatamedFT*; or 2) open *Control Panel*, choose *Add or Remove Programs*, select *DatamedFT*, and press the *Remove* button. In either case the application will be removed. This is a silent install and it may take a minute for the uninstall to complete. Note that only the application is removed - all EKG 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. Even if a configuration file was supplied, the Output Folder will need to be set to the correct location. Configuration settings are changed by using the DatamedFTConfig utility, which will be opened automatically for a new installation. A shortcut to this utility will be found on the desktop, and it can also be found at *Start* → *All Programs* → *Datamed* → *DatamedFT* → *DatamedFTConfig*. 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 *DatamedFT* 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 DatamedFT start= delayed-auto
```

**It is very important to make sure that all of the configured folders are created before starting the service, especially the Input Folder and Output Folder. The default folders shown are *not* automatically created during installation. Missing or invalid folders will be highlighted in yellow in the Configurator.**

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

**IMPORTANT NOTE: The account that the DatamedFT service runs under is very important to the proper operation of the translator. By default, the service will run under the Local System account. If the input and output folders are both on the FTPC, this setting will work fine. Typically, however, the translator will need to either read files from or write files to a network share and by definition, the Local System account does not have access to the network, so it will not work correctly. For this reason, 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 the accounts/permissions/shares have been addressed, the translation process should be tested - see *Chapter 7* for step-by-step directions. There are two completely independent sides: input (cardiograph/monitor) and output (host system). Each side should be tested individually. For the input side, the goal is to make sure that incoming files land in the *Input Folder* and this testing should be done with DatamedFT stopped. When you have successfully tested the input side, move on to the output side.

The goal of this testing is to make sure files can be written to the host system. One very important network test is to log into the FTPC using the same account that the DatamedFT service is running under and try to write a file to the *Output Folder* network share. Once the network permissions have been verified, you can use the files from the input testing to send into the host system. Depending on the licensed devices, sample files for testing may be found on the installation media.

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## CHAPTER 3 – CONFIGURING DATAMEDFT™

Once DatamedFT™ is installed, changes to the configuration settings can be done using the DatamedFTConfig 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. As DatamedFT™ supports multiple simultaneous processes; settings for each process are configured separately. Note that more processes can be configured than are licensed; however only the number of licenses and formats actually purchased will run. When configuration changes are made, they must be saved and then the service must be restarted for them to take effect. *NOTE: Depending on the security settings, extra permissions may be required to write to the registry. With UAC enabled, running the application should request elevated privileges.*

### Window Settings

At the top of the window there are three items:

- ✚ **Translator Process.** This selection box indicates which process is currently displayed in the detail tabs. Clicking a different process number in the drop-down list will display the settings for that process.
- ✚ **Enable this process.** Normally all configured processes are enabled; however it may be desirable to temporarily disable a process. Consider the following example: a customer has purchased a single translator license and has configured it. If they would like to test some settings and be able to switch back and forth, they could set up Process #2 with the new settings, and then enable first one and then another. Note that since they have one license, if both processes are enabled then only the first (Process #1) would run.
- ✚ **Total configured processes.** This controls the number of processes in the drop-down list for *Translator Process*. It is normally the same as the number of translator licenses, but the previous example shows that this may be altered as needed.

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 DatamedFT service.
- ✚ **Stop.** This button will stop the DatamedFT 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.

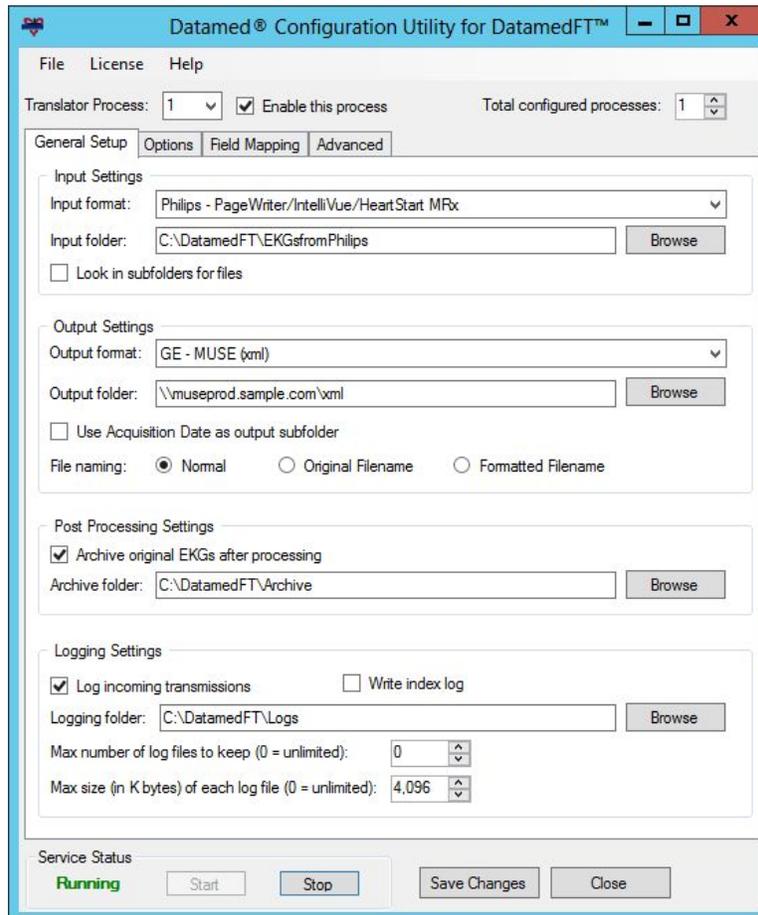
## Menu Options

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 DatamedFT Settings (.dft) 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 DatamedFT Settings (.dft) file. This file should not be edited manually. Typically this functionality is used to send the configuration settings to DLLC for troubleshooting.
- ✚ **File → Exit.** This is the same as clicking the *Close* button.
- ✚ **License → Create License Update Request File.** If the License Key needs to be updated, a license update request file (.c2v) must be created and sent to DLLC for updating. This menu option allows the file to be created directly. When you select this and confirm, you can select a folder and filename to write the file. See *Appendix A* for more details.
- ✚ **License → Load License Update.** To complete the update of the License Key, use this option to select the license update file (.v2c) received from DLLC and the update will be applied. See *Appendix A* for more details.
- ✚ **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: General Setup

This tab contains the primary settings for the selected *Translator Process*, including input and output formats. Most customers will only need to use this tab. Each setting is described below.



### Input Settings:

- ✚ **Input format.** This is a drop-down list of all input formats that you are licensed for.
- ✚ **Input folder.** The local folder on this PC that incoming EKG files must be written to. This folder is monitored by DatamedFT™ and all files that have the appropriate extension for the selected format will be picked up and translated. The **Browse** button allows you to browse for the folder to use (or create one). If the files need to be copied from a different PC on the LAN, use the **Move from folder** setting on the **Advanced** tab.

- ✚ **Look in subfolders for files.** Normally only files in the *Input Folder* are picked up for translation, however if this box is checked then all folders below it are searched as well.

#### Output Settings:

- ✚ **Output format.** This is a drop-down list of the output format that you are licensed for.
- ✚ **Output folder.** The folder that translated EKG files are written to. This folder can be local on the PC, but it is typically a network path to a share on the host system (`\\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 account that the DatamedFT 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 and changing the properties for the DatamedFT service.**
- ✚ **Use Acquisition Date as output subfolder.** If this is checked, output files will be written into subfolders of the *Output Folder* using the year and month of the Acquisition Date. The folder will be named using this pattern: YYYY-MM.
- ✚ **File naming.** This setting controls the naming convention of the files that are written to the *Output Folder*. Note that a couple of formats require a specific filename so this setting will be disabled. The file extension (.xml, .ecg, etc.) will always be the one appropriate for the *Output Format*. This can be one of three possible values:
  - Normal.** The default setting is to name the files using a combination of the *Input Format* acronym (4 characters), the original filename, and a sequence number. The format of the filename is: FormatAcronym\_OrigFilename\_OrigFileExtension\_Number.
  - Original Filename.** This setting will result in the output file being named exactly the same as the input file except with the appropriate file extension. ***If the filename is not unique and another file is translated that will result in the same name, it will fail. Also note that any underscores in the file name will be changed to hyphens.***
  - Formatted Filename.** This setting will create the filename using the Acquisition Date and Time and the Patient ID. The format of the filename is: YYYYMMDD\_HHMMSS\_PID.Index. The Index value is a sequence number used to make sure the filenames are unique.

#### Post Processing Settings:

- ✚ **Archive original EKGs after processing.** The default behavior is to delete the incoming EKG files after they are translated and successfully written to the *Output Folder*. The alternative is to move them to a folder to be archived. There is no

automatic purge process for the archived EKGs, so the user is responsible for monitoring the storage space. If this setting is checked, the *Archive Folder* must be filled in. *It is recommended that archiving be turned on.*

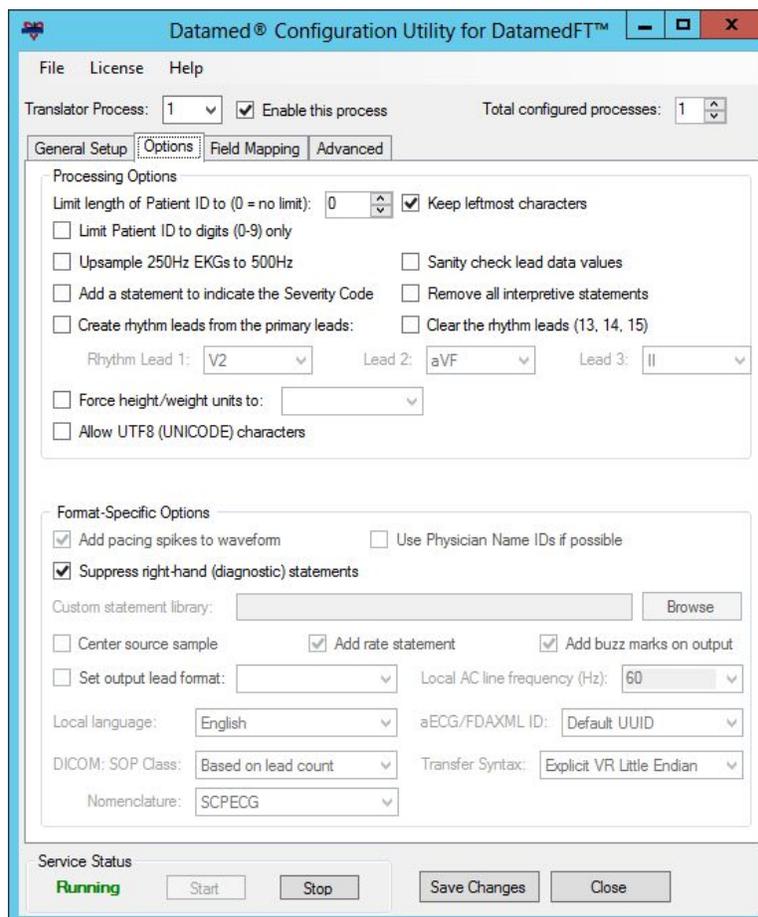
- ✚ **Archive folder.** The folder that the original EKG files are archived to. The *Browse* button allows you to browse for the folder to use (or create one).

#### Logging Settings:

- ✚ **Log incoming transmissions.** This setting enables the collection of information about the file translations in a log file. This file is user-readable and contains time-stamped entries for each file that is received and translated, including the Patient ID and Patient Name. If there is a problem with a file translation then it will be noted in this log. *It is recommended that logging be turned on.*
- ✚ **Write index log.** When this setting is enabled a compact index file will be created that has a single entry for each successfully translated EKG. The index file will be written to the *Logging folder*, but the other log file settings do not apply. The format of the index log file is:  
"PatientID","PatientLName","PatientFName",AcqDate(MM/DD/YYYY),AcqTime(HH:MM:SS),"File Name"
- ✚ **Logging folder.** The folder that the log files are created in. The *Browse* button allows you to browse for the folder to use (or create one).
- ✚ **Max number of log files to keep (0 = unlimited).** This is used to control the amount of disk space used for log files. Each time the DatamedFT service is started or when the maximum size is reached (see below) a new log file is created. As each new file is created, a check is made to make sure the total number of files does not exceed this value. If it does, the oldest file is aged out (deleted). The default setting is to disable the checking, which (as indicated by the label) is a setting of zero (0).
- ✚ **Max size (in K bytes) of each log (0 = unlimited).** This is also used to control the amount of disk space used for log files. As entries are written to the current log file, the size is checked to make sure it does not exceed the maximum. If it does, the file is closed and new file is created. The file size is specified in kilobytes (1,024 bytes) and the default setting is 256K. As indicated by the label, setting this to zero (0) will disable the checking.

## Tab: Options

This tab contains the optional settings for the selected *Translator Process*. Many of the settings are format-specific, so depending on the *Input Format* and *Output Format* selected, some of the settings will not be available. Each setting is described below.



### Processing Options:

- ✚ **Limit length of Patient ID to (0 = no limit).** This allows control over the maximum length of the Patient ID. The internal limit is 64 characters, but most host systems are limited to 16 characters. Many hospitals have an ID policy that requires a smaller number of characters. When the incoming Patient ID is longer than this value, the rightmost characters are preserved unless *Keep leftmost characters* is checked.
- ✚ **Limit Patient ID to digits (0-9) only.** This allows enforcement of a policy that all Patient IDs must be numeric. If this is checked any non-numeric characters are discarded.

- ✚ **Upsample 250Hz EKGs to 500Hz.** Most host systems accept only 250Hz or 500Hz data (some are 1000Hz). When this setting is used, any EKGs that contain 250Hz data will be upsampled to be at 500Hz.
- ✚ **Sanity check lead data values.** Lead data values are defined as 12-bit (+/- 2048) values. When this setting is on, a “sanity check” of the lead data is performed to eliminate corrupt values. First, any values outside the 12-bit range are clipped to be within the range. Next, if more than 25% of the values for any given lead were outside the 12-bit range, or if more than 50% of the values are outside an 11-bit range (these will be off the page), the data for that lead is blanked out (set to 0) to remove the corrupted data. The default for this setting is *OFF*.
- ✚ **Add a statement to indicate the Severity Code.** Checking this setting will cause a statement to be added that states the severity. The following severity statements are defined: “Normal ECG”, “Otherwise Normal ECG”, “Borderline ECG”, “Abnormal ECG”, or “Defective ECG”, or “No Severity Defined”.
- ✚ **Remove interpretive statements.** Checking this will cause *all* diagnostic/interpretive statements to be discarded. It should be used with extreme caution.
- ✚ **Clear the rhythm leads (13, 14, 15).** Checking this setting will cause all leads beyond the first twelve to be discarded. Some cardiographs (e.g. HP PageWriter® XLi) put the rhythm (10sec) leads in these places, but note that pediatric EKGs contain valid data here.
- ✚ **Create rhythm leads from the primary leads.** This setting allows specific leads to be copied to the 13<sup>th</sup>, 14<sup>th</sup>, and 15<sup>th</sup> positions. For some host systems this will show as 3x4+1R or 3x4+3R. The *Rhythm Lead 1*, *Lead 2*, and *Lead 3* settings allow you to select what lead will be in each spot. **Note that these additional leads are copies of the selected leads and do not replace the display format on the system - this setting should not be used without a specific reason.**
- ✚ **Force height/weight units to.** By default, the unit of measure for Height and Weight is carried from the source to the destination format. For example, if a cardiograph sends an EKG with Height in inches and Weight in pounds (Imperial), then those same units will be sent to the host system. If the hospital wants all incoming EKGs to have the same units, this setting will cause the values to be converted appropriately. The possible settings are “Imperial” (in/lbs) or “Metric” (cm/kg).
- ✚ **Allow UTF8 (UNICODE) characters.** By default, the application expects and handles characters in the Western Latin character set. With this option enabled the application will accept UTF8 characters in the inputs and use UTF8 in selected outputs - primarily the XML outputs.

#### Format-Specific Options:

- ✚ **Add pacing spikes to waveform.** This is enabled for GE® MUSE® (.ecg) input only. If this setting is checked and the source EKG contains pacing spike locations, the sample

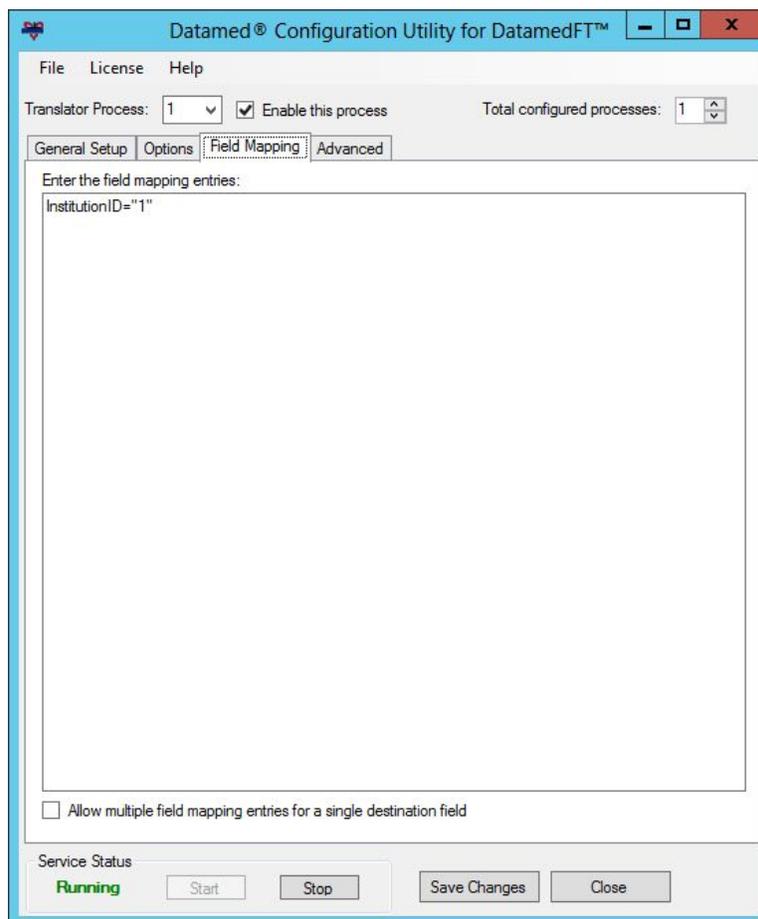
value at each location will be increased by a specific amount. This spike is not in the raw data but is added by MUSE®, and it is also added by the cart for GE XML format. NOTE: With this setting TRUE, the waveform data exactly matches the raw waveform data created by MUSE®.

- ✚ **Use Physician Name IDs if possible.** This applies to GE® MUSE® (.ecg) output only. If this option is checked, any doctor name field that is numeric will be treated as an id instead of a name.
- ✚ **Suppress right-hand (diagnostic) statements.** This applies to HP PageWriter® M17xx and Philips XML input only. Philips cardiographs and monitors add special statements that appear on the right side of the paper when printed and indicate the details that led to the diagnosis statement that appears on the left. Most hospitals do not want to see these statements, so by default they will be removed during translation.
- ✚ **Custom statement lib.** This applies to HP PageWriter® M17xx input only. Some HP cardiographs have a custom statement library that was set up on the TraceMaster system. If that is the case, the statement library can be substituted for the standard HP statement library in DatamedFT™. This setting specifies the complete pathname to a file that contains the customer-specific statement library, which must be created by DLLC. Contact DLLC support if this setting is needed.
- ✚ **Center source sample.** This applies to Philips TraceMaster NT output only. If checked, this specifies that each data segment of the 3x4 or 6x2 data will be pulled from the middle of the source data instead of the normal time-spaced positions. For 3x4 EKGs each of the four groups of three leads is 2.5 seconds long, so with this setting each lead will contain the middle 2.5 seconds of data - 3.75 seconds in from the start. For 6x2 EKGs each of the two groups of six leads are 5 seconds long which means each lead would be pulled from 2.5 seconds in from the start.
- ✚ **Add rate statement.** This applies to Philips TraceMaster NT output only. If checked, a statement showing the Ventricular Rate will be added.
- ✚ **Add buzz marks on output.** This applies to Philips TraceMaster NT output only. If checked, the start and end of each lead will contain "buzz marks", which are brief (0.1s) bursts of noisy data. These are used as markers.
- ✚ **Set output lead format.** This applies to Lumedx - ECG-MS, Philips TraceMaster NT, and Philips TraceMasterVue outputs only. If this option is checked, the selection box allows you to specify the report lead format of the output. The choices for Lumedx - ECG-MS output are: "3x4", "3x4+1R", "3x4+3R", "3x5", "3x5+1R", "3x5+3R", "4x4", "4x4+1R", "6x2", "12x1", and "1x12+3R". The choices for Philips TraceMaster NT output are: "3x4", "3x4+1R", "3x4+3R", and "6x2". The choices for Philips TraceMasterVue outputs are: "3x4", "3x4+1R", "3x4+3R", "3x5", "3x5+1R", "3x5+3R", "4x4", "4x4+1R", "6x2", "12x1", "1x12+3R", "Cabrera 3x4", "Cabrera 3x4+1R", "Cabrera 3x4+3R", "Cabrera 3x5", "Cabrera 3x5+1R", "Cabrera 3x5+3R", "Cabrera 4x4", "Cabrera 4x4+1R", "Cabrera 6x2", "Cabrera 12x1", and "Cabrera 1x12+3R".

- ✚ **AC line frequency (Hz).** This applies to *HP PageWriter® M17xx* and *Nihon Kohden* inputs only. These two formats do not contain the frequency of the AC line, so this setting specifies the AC Frequency that will be used as the AC Filter if it is on. The default is 60Hz.
- ✚ **Local language.** This applies to *Fukuda Denshi (ecg)*, *Nihon Kohden*, and *Spacelabs Ultraview®/UltraviewSL® w/ICS* inputs only. If the source EKGs are not in English, this setting is required so that the dates and coded statements may be converted using the appropriate statement library (where available). Note that this setting only affects the dates and coded statements - not any text statements. The choices for *Fukuda Denshi (ecg)* input are: "English" (default), "French", "German", "Spanish", and "Italian". The choices for *Nihon Kohden* input are: "English" (default) and "Italian". The choices for *Spacelabs Ultraview®/UltraviewSL® w/ICS* input are: "English" (default), "German", "French", "Spanish", "Italian", "Swedish", "Dutch", "Polish", "Czech", "Brazilian", "Portuguese", and "Hungarian".
- ✚ **DICOM: SOP Class.** This applies to *DICOM®* outputs only. It is used to specify what the SOP Class will be set to in the output: "12-Lead ECG Waveform", "General ECG Waveform", "Based on lead count" (default). There are two SOP Classes for ECG: *12-Lead ECG Waveform Storage* and *General ECG Waveform Storage*. The *12-Lead ECG Waveform Storage* SOP Class has been widely used but is limited to 12 leads. Forthcoming IHE standards will dictate that the *General ECG Waveform Storage* SOP Class be used for all ECGs. However many existing systems do not have the ability to read this SOP Class. This setting gives fine control over what SOP Class will be set. When set to "12-Lead ECG Waveform", the SOP Class will always be set to *12 Lead ECG Waveform Storage* regardless of the number of leads. Note that any leads over 12 will **not** be removed, so if the receiving system cannot handle them then a field mapping must be used to clear the extra leads. When set to "General ECG Waveform", the SOP Class will always be set to *General ECG Waveform Storage* regardless of the number of leads. When set to "Based on lead count", the SOP Class will be set to *12 Lead ECG Waveform Storage* if there are 12 leads or less, and *General ECG Waveform Storage* if there are more than 12 leads.
- ✚ **Transfer Syntax.** This applies to *DICOM®* outputs only. It is used to specify what Transfer Syntax will be used in the output: "Explicit VR Little Endian" (default) or "Implicit VR Little Endian".
- ✚ **Nomenclature.** This applies to *DICOM®* outputs only. It is used to specify what nomenclature codes to use for measurement values in the output: "SCPECG" (default) or "MDC".

## Tab: Field Mapping

This tab contains the field mapping entries for the selected *Translator Process*. Each mapping entry must be on a separate line. See *Chapter 4* for a complete description of the field mapping and syntax.



### Field Mapping Settings:

- ✚ ***Allow multiple field mapping entries for a single destination field.*** By default, mapping a new value to a destination field that is already used will replace the previous mapping. In almost every case there is no benefit gained by storing a value in a field and then storing another value in the same destination. However if this is necessary for some specific reason, checking this option will allow multiple mappings to the same destination field.

## Tab: Advanced

This tab contains the advanced settings for the selected *Translator Process*. These settings are for advanced users and will normally only be used with directions from DLLC support personnel. Each setting is described below.

### Advanced Settings:

- ✚ **Move from folder.** This is used when the incoming EKG files are in a folder on a separate computer on the network. When used, it should contain a network path to a share on the remote computer (`\\computername\sharename`). The *computername* can be specified as a name or IP address. EKG files will be moved from the remote computer to the *Input Folder* and then processed normally. The *Browse* button allows you to browse the Network Neighborhood for the folder to use. This setting will be disabled for the inputs that require 2 source files. See the **IMPORTANT NOTE** on the *Output Folder* description above regarding network settings.

- ✦ **Input File Extension(s).** Each input format has one or more default file extensions which are the only file extensions being monitored. In certain cases it may be required to handle more than one extension with a single process. For example, most Burdick cardiographs write files with an extension of “.raw”, however the Atria cardiographs write “.ecg” files. In a hospital with a mix of these carts, files with both extensions will be written to the *Input Folder* and must be handled with a single process. To handle this situation, when *Cardiac Science Quinton® Eclipse™/Burdick® Atria* is selected as the *Input Format*, this setting will be filled in with “.raw;.ecg”. Note that the extensions should be separated by a semicolon and be prefaced with the dot “.”. The following wildcard characters are allowed in the extension: # will match a single numeric digit; ? will match any single character; and \* will match the rest of the characters. For example “.e?g” would match .ekg or .ecg.
- ✦ **Output File Extension.** Each output format has a default file extension. This setting allows the default to be overridden. Note that for most host systems, the extension is critical and the file will not be read if it is not the right extension. For that reason, this setting should be used with care.
- ✦ **Output folder max files.** Changing this setting to a number greater than 0 will cause the translator to monitor the number of files in the *Output Folder*. If the number of files reaches the maximum limit, the translator will pause until the number of files falls to the threshold specified by *Min files* and then continue processing. These two settings allow the output to be throttled when the incoming files are outpacing the downstream processing of the output files.
- ✦ **Delay (ms) between files.** Increasing this setting from 0 will cause the translator to pause between EKGs for the specified time period (in milliseconds). This can be used to slow down processing if desired.
- ✦ **Append this statement to each EKG record.** This setting allows a specific text statement to be added to each translated EKG.
- ✦ **HP Statement Type.** This applies to *Philips TraceMaster NT* output only. It specifies how statements are treated by the TraceMaster system. The choices are “0” which means standard, “1” which means text (default), or “2” which means remarks. This setting should not be changed without consulting DLLC support personnel.
- ✦ **HP Version Signature.** This applies to *Philips TraceMaster NT* output only. It specifies the Statement Library version. This setting should not be changed without consulting DLLC support personnel.

#### Debugging:

- ✦ **Debugging.** In the event that there is a problem with the translator, DLLC support personnel may want to collect detailed technical information by turning on debugging. The choices for this are “Off” (default), “On”, and “High”. This setting should not be changed without consulting DLLC support personnel. When debugging is on a file (or

files) containing debugging information will be written to the *Debug Folder*. This information is encrypted and should be sent to DLLC support for analysis. See *Chapter 7* for more details. *Note that the debugging can be turned on without restarting the service - after saving the settings it will take effect with the next incoming file. Debugging will consume disk space and slow down the processing - it should not be left on unless DLLC is tracking down an issue.*

- ✚ **Debug folder.** The folder where the debug files will be created. The **Browse** button allows you to browse for the folder to use (or create one).
- ✚ **Max number of debug files to keep (0 = unlimited).** This is used to control the amount of disk space used for debug files. Each time the DatamedFT service is started or when the maximum size is reached (see below) a new debug file is created. As each new file is created, a check is made to make sure the total number of files does not exceed this value. If it does, the oldest file is aged out (deleted). The default setting is to keep the last ten (10) files. As indicated by the label, setting this to zero (0) will disable the checking.
- ✚ **Max size (in K bytes) of each debug file (0 = unlimited).** This is also used to control the amount of disk space used for debug files. As entries are written to the current debug file, the size is checked to make sure it does not exceed the maximum. If it does, the file is closed and new file is created. The file size is specified in kilobytes (1,024 bytes) and the default setting is 256K. As indicated by the label, setting this to zero (0) will disable the checking.

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## CHAPTER 4 – FIELD MAPPING

The DatamedFT™ Configuration utility provides for extensive field mapping to control the data as it is translated. Fields can be set to specific values, to values from other fields, or to pieces from other fields. Simple math functionality (addition only) is available for numeric fields. And registry mapping functionality is provided for any field.

To use the field mapping, open the DatamedFT™ Configuration utility, select the process (number) that needs to be configured, and select the Field Mapping tab. This is a text edit area that allows for multiple field mapping entries. Note that the order is important and the mapping is done sequentially. This allows for complex data manipulation, especially in conjunction with the TMPINT and TMPSTR temporary fields (see the example section below). To make a field mapping entry, enter it on a single line as: *Destination=Source*

Note that date fields must be MMDDYYYY and time fields must be HHMMSS.

### Field Mapping Syntax

The format of the source and destination for field mapping is different. The following describes the format of the **source** data:

*FieldName*

Value Types: String/Integer/FloatingPoint/Code

*FieldName(ArrayIndex)*

Value Types: String/Integer/FloatingPoint/Code

*ArrayIndex* is 1-n

*FieldName{StartPos,Length}*

Value Types: String

*FieldName(ArrayIndex){StartPos,Length}* is allowed

*StartPos* is the starting character position - positive starts from the left and negative starts from the right (1 is 1st character, -1 is the last character).

*Length* is required and the value will fall into one of three ranges:

- 0 means take all characters until the end of the string. For example, {3,0} with a string value of "ABCDEF" will return "CDEF".
- >0 means take a specific number of characters. For example, {3,2} with a string value of "ABCDEF" will return "CD".
- <0 means take characters until the specified number from the end. For example, {2,-2} with a string value of "ABCDEF" will return "BCD".

**FieldName{Action, Parameter}**

Value Types: String

FieldName(ArrayIndex){Action, Parameter} is allowed

*Action* specifies the type of action to take using the supplied character(s):

- "STRIPLEADING" - Remove any of the specified characters from the beginning of the string (e.g. "{STRIPLEADING,0}").
- "STRIPTRAILING" - Remove any of the specified characters from the end of the string.
- "STRIPFIRST" - Remove the first character of the string if it is one of the specified characters.
- "STRIPLAST" - Remove the last character of the string if it is one of the specified characters.
- "STRIPALL" - Remove all of the specified characters from the string.
- "STRIPSUBSTRING" - Scans the string for groups of the complete set of characters in order (substring) and removes them (e.g. "{STRIPSTRING,Test}" will remove occurrences of the word "Test").
- "NULLIFFIRST" - Returns an empty string if the first character of the string is one of the specified characters - this is a type of conditional expression.
- "NULLIFLAST" - Returns an empty string if the last character of the string is one of the specified characters - this is a type of conditional expression.
- "NULLIFSUBSTRING" - Returns an empty string if the specified substring is in the string - this is a type of conditional expression.
- "UPPERCASE" - Converts the source field to upper case. The *Parameter* is not used and may be blank, however the comma must be present (i.e. "{UPPERCASE,}").
- "LOWERCASE" - Converts the source field to lower case. The *Parameter* is not used and may be blank, however the comma must be present (i.e. "{LOWERCASE,}").
- "PRESUBSTRING" - Scans the string for first occurrence of the specified substring and returns the string up to that point.
- "POSTSUBSTRING" - Scans the string for first occurrence of the specified substring and returns the string after that point.
- "SPLITNAME" - Splits a name string into First and Last Name and returns the value based on the *Parameter*: 'F' for First Name or 'L' for Last Name (e.g. "AttendingDoctorName{SPLITNAME,L}" will return the last name of the Attending Doctor).

*Parameter* is one or more ASCII characters to use for the selected action and can represent individual characters or a substring. Up to 32 characters are allowed including a space.

**FieldName{Format,Length}**

Value types: Integer (destination is a string field)

FieldName(ArrayIndex){Format,Length} is allowed

*Format* is V|F and L|R and S|Z (e.g. "FLS" or "FRZ")

V = Variable length - Length is a maximum, no padding

F = Fixed length - Length is fixed, value will be padded or truncated

L = Left justify - only valid for Fixed-length

R = Right justify - only valid for Fixed-length  
 S = Pad with spaces - only valid for Fixed-length  
 Z = Pad with zeros - only valid for Fixed-length

*Length* is required (1-20) - NOTE: any truncation will occur in the left-most digits (e.g. 12345 -> 345) INCLUDING any minus sign.

#### ***FieldName{REGMAP,RegistryKey}***

Value Types: String/Integer/FloatingPoint/Code

*RegistryKey* is a full path to a registry key. By default the HKEY\_LOCAL\_MACHINE hive is used and the hive name is not required (see the examples at the end of the chapter), however if desired the hive name can be entered. The following hives are supported: HKEY\_LOCAL\_MACHINE, HKEY\_CURRENT\_USER, HKEY\_USERS, and HKEY\_CURRENT\_CONFIG. Values must be either REG\_SZ or REG\_DWORD.

#### ***FieldName{FILEMAP,FileName,SourceCol,DestCol}***

*FileName* is the full filename (including path) of a file that contains rows of data in CSV (comma separated value) format. There must be a minimum of 2 columns in the file.

*SourceCol* is the column number (starting at 1) that contains the value to be matched with the value in *FieldName*. The first row with a matching value will always be chosen, even if subsequent rows also match.

*DestCol* is the column number (starting at 1) that contains the value which is returned as the result of the mapping lookup.

NOTE: If the file is updated the service must be restarted to update the cached data.

#### ***TMPSTR(ArrayIndex 1-10)***

Value Types: String

These are temporary holding locations for values - they must have been used as a destination field first or they will be blank (256 chars).

#### ***TMPINT(ArrayIndex 1-10)***

Value Types: Integer

These are temporary holding locations for values - they must have been used as a destination field first or they will be blank.

#### ***"FixedText"***

Value Types: String/Integer/FloatingPoint/Code

Text in double quotes will be used as written. For numbers the text will be converted to a number. For destination fields that are codes, use the appropriate code text ("Yes", "No", etc.).

+

Value Types: String/Integer

Concatenate strings or add numbers. Up to ten (10) items are allowed.

-

Value Types: Integer

Subtract this number from the previous number. Up to ten (10) items are allowed.

The following describes the format of the **destination** data:

***FieldName***

Value Types: String/Integer/FloatingPoint/Code

***FieldName(ArrayIndex)***

Value Types: String/Integer/FloatingPoint/Code

***TMPSTR(ArrayIndex 1-10)***

Value Types: String

These are temporary holding locations for values (max 256 characters). Integer and Floating Point types will be converted to their String equivalent. Codes will be converted to strings.

***TMPINT(ArrayIndex 1-10)***

Value Types: Integer

These are temporary holding locations for values.

***?***

Value Types: String/Integer

This character is used as a prefix to the FieldName. If present, it will only perform the mapping if the destination field is empty (blank or 0).

***!***

Value Types: String/Integer

This character is used as a prefix to the FieldName. If present, it will only perform the mapping if the source data is NOT empty (blank or 0).

***{Action,Parameter}***

Value Types: String/Integer

This sequence is used as a prefix to the FieldName. If present, it will only perform the specified action on the field.

Action specifies the type of activity to perform:

- "INSERTSTMT" - This may only be used with the TextStatement field and no array indicator should be used. It will move all of the statements down one and copy the source data to the index specified by the parameter (e.g. "{INSERTSTMT,3}TextStatement" will copy the source data to the 3rd statement and move any existing statements down).
- "APPENDSTMT" - This may only be used with the TextStatement field and no array indicator should be used. It will copy the source data to end of the statement list. The parameter indicates how many blank lines to skip (e.g. "{APPENDSTMT,1}TextStatement" will copy the source data to bottom of the statements, skipping 1 blank line).

## Field List

Field Name	Data Type / Values
<i>Test Location Information</i>	
InstitutionID	String (Max 64 characters)
InstitutionName	String (Max 128 characters)
FacilityID	String (Max 64 characters)
FacilityName	String (Max 128 characters)
DepartmentID	String (Max 64 characters)
DepartmentName	String (Max 128 characters)
Room	String (Max 64 characters)
Bed	String (Max 64 characters)
PatientLocation	String (Max 64 characters)
<i>Patient Information</i>	
PatientID	String (Max 128 characters)
SecondaryPatientID	String (Max 128 characters)
PatientMRN	String (Max 128 characters)
SSNumber	String (Max 32 characters)
PatientFName	String (Max 128 characters)
PatientMName	String (Max 64 characters)
PatientLName	String (Max 128 characters)
DateOfBirth	String (Max 8 characters)
AgeUnits	Coded List -- Values: "Hours", "Days", "Weeks", "Months", "Years"
AgeValue	Integer
HeightValue	Integer
HeightUnits	Coded List -- Values: "Imperial", "Metric"
WeightValue	Integer
WeightUnits	Coded List -- Values: "Imperial", "Metric"
Sex	Coded List -- Values: "Male", "Female"
Race	Coded List -- Values: "Unknown", "Eskimo", "American Indian", "Black", "Hawaiian", "Hispanic", "Oriental", "Pacific Islander", "Caucasian", "Other race", "Asian"
DrugLabel	String Array (10 elements, 64 characters each)
DrugCode	Integer Array (10 elements)
DiagnosisLabel	String Array (10 elements, 64 characters each)
DiagnosisCode	Integer Array (10 elements)
ReferringDoctorName	String (Max 256 characters)
ReferringDoctorID	String (Max 64 characters)

<b>AttendingDoctorName</b>	String (Max 256 characters)
<b>AttendingDoctorID</b>	String (Max 64 characters)
<b>ConsultingDoctorName</b>	String (Max 256 characters)
<b>ConsultingDoctorID</b>	String (Max 64 characters)
<b>FellowName</b>	String (Max 256 characters)
<b>FellowID</b>	String (Max 64 characters)
<b>FinancialClass</b>	String (Max 64 characters)
<b>EncounterNumber</b>	String (Max 128 characters)
<b>AccountNumber</b>	String (Max 64 characters)
<b>ClassCode</b>	String (Max 64 characters)
<b><i>Order Information</i></b>	
<b>OrderNumber</b>	String (Max 128 characters)
<b>RequestingDoctorName</b>	String (Max 256 characters)
<b>RequestingDoctorID</b>	String (Max 64 characters)
<b>ProcedureBillCode</b>	String (Max 128 characters)
<b>DiagnosisBillCode</b>	String (Max 128 characters)
<b><i>Equipment Information</i></b>	
<b>ManufacturerID</b>	String (Max 2 characters)
<b>ManufacturerName</b>	String (Max 128 characters)
<b>CartModel</b>	String (Max 64 characters)
<b>CartSerialNum</b>	String (Max 128 characters)
<b>CartVersion</b>	String (Max 64 characters)
<b>CartID</b>	String (Max 64 characters)
<b><i>Test Information</i></b>	
<b>EKGUniqueID</b>	String (Max 64 characters)
<b>AcqDate</b>	String (Max 8 characters)
<b>AcqTime</b>	String (Max 6 characters)
<b>TestReason</b>	String (Max 128 characters)
<b>StatEKG</b>	Coded List -- Values: "No", "Yes"
<b>SeverityCode</b>	Coded List -- Values: "Unknown", "Normal ECG", "Otherwise Normal ECG", "Borderline ECG", "Abnormal ECG", "Defective ECG"
<b>Systolic</b>	Integer (mmHg)
<b>Diastolic</b>	Integer (mmHg)
<b>TechnicianName</b>	String (Max 256 characters)
<b>TechnicianID</b>	String (Max 64 characters)

<b>PerformingDoctorName</b>	String (Max 256 characters)
<b>PerformingDoctorID</b>	String (Max 64 characters)
<b>Confirmed</b>	Coded List -- Values: "No", "Yes"
<b>ConfirmingDoctorName</b>	String (Max 256 characters)
<b>ConfirmingDoctorID</b>	String (Max 64 characters)
<b>ConfirmDate</b>	String (Max 8 characters)
<b>ConfirmTime</b>	String (Max 6 characters)
<b>EditorName</b>	String (Max 256 characters)
<b>EditorID</b>	String (Max 64 characters)
<b>EditDate</b>	String (Max 8 characters)
<b>EditTime</b>	String (Max 6 characters)
<b><i>Global Measurements</i></b>	
<b>FiltersNotApplied</b>	Coded List -- Values: "No", "Yes"
<b>ArtifactFilter</b>	Coded List -- Values: "No", "Yes"
<b>BaselineWanderFilter</b>	Coded List -- Values: "No", "Yes"
<b>ACFilter</b>	Coded List -- Values: "None", "60", "50"
<b>LowPassFilter</b>	Integer (Hz)
<b>HighPassFilter</b>	Integer (hundredths of Hz – e.g. 15 = 0.15Hz)
<b>ReportACFilter</b>	Coded List -- Values: "None", "60", "50"
<b>ReportLowPassFilter</b>	Integer (Hz)
<b>ReportHighPassFilter</b>	Integer (hundredths of Hz – e.g. 15 = 0.15Hz)
<b>VLeadAmplitude</b>	Coded List -- Values: "Normal", "Half"
<b>TraceSensitivity</b>	Integer (mm/mV)
<b>PaperSpeed</b>	Integer (mm/sec)
<b>VRate</b>	Integer (bpm)
<b>ARate</b>	Integer (bpm)
<b>POnset</b>	Integer (msec)
<b>POffset</b>	Integer (msec)
<b>PDuration</b>	Integer (msec)
<b>QOnset</b>	Integer (msec)
<b>QOffset</b>	Integer (msec)
<b>QRSDuration</b>	Integer (msec)
<b>TOnset</b>	Integer (msec)
<b>TOffset</b>	Integer (msec)
<b>TDuration</b>	Integer (msec)
<b>PRInterval</b>	Integer (msec)
<b>RRInterval</b>	Integer (msec)

PPInterval	Integer (msec)
QTInterval	Integer (msec)
QTDispersion	Integer (msec)
QTCorrected	Integer (msec)
QTCBazett	Integer (msec)
QTCFridericia	Integer (msec)
FrontalPAxis	Integer (degrees)
FrontalQRSI40Axis	Integer (degrees)
FrontalQRSAxis	Integer (degrees)
FrontalQRST40Axis	Integer (degrees)
FrontalSTAxis	Integer (degrees)
FrontalTAxis	Integer (degrees)
HorizontalPAxis	Integer (degrees)
HorizontalQRSI40Axis	Integer (degrees)
HorizontalQRSAxis	Integer (degrees)
HorizontalQRST40Axis	Integer (degrees)
HorizontalSTAxis	Integer (degrees)
HorizontalTAxis	Integer (degrees)
FiducialPoint	Integer (msec)
PValid	Coded List -- Values: "No", "Yes"
ArrhythmiaFlag	Coded List -- Values: "No", "Yes"
PaceEnhancement	Coded List -- Values: "No", "Yes"
QRSCount	Integer
<b>Miscellaneous Information</b>	
UserLabel	String Array (10 elements, 64 characters each)
UserText	String Array (10 elements, 64 characters each)
<b>Statements</b>	
NumberOfStatements	Integer
TextStatement	String Array (50 elements, 127 characters each)
<b>Waveform Data</b>	
SampleRate	Integer
LeadSampleCount	Integer
LeadLSB	FloatingPoint
LeadID	Integer Array (16 elements)
LeadIsDerived	Integer Array (16 elements)

<b>MedianSampleRate</b>	Integer
<b>MedianSampleCount</b>	Integer
<b>MedianLSB</b>	FloatingPoint
<b>MedianLeadID</b>	Integer Array (16 elements)
<b>PaceSpikeCount</b>	Integer

## Field Mapping Examples

The following examples demonstrate the use of the field mapping to achieve specific goals:

- To hardcode the Institution ID as "1" (typical for output to GE<sup>®</sup> MUSE<sup>®</sup>):  
`InstitutionID="1"`
- To copy Department Name to Department ID only if Department ID is empty:  
`?DepartmentID=DepartmentName`
- To strip off leading zeros from the Patient ID:  
`PatientID=PatientID{STRIPLEADING,0}`
- To get the substring from OrderNumber starting at the 3<sup>rd</sup> character and skipping the last 2:  
`OrderNumber=OrderNumber{3,-2}`
- To create a Secondary Patient ID using the patient's initials following by 12 digits of the numeric Patient ID, right justified with leading zeros:  
`TMPSTR(1)=PatientFName{1,1}+PatientLName{1,1}`  
`TMPINT(1)=PatientID`  
`SecondaryPatientID=TMPSTR(1)+TMPINT(1){FRZ,12}`
- To make a (numeric) Patient ID always 9 digits padded with zeros:  
`TMPINT(1)=PatientID`  
`PatientID=TMPINT(1){FRZ,9}`
- To create a registry mappings to translate the Department Name to a new Department Name and Department ID.

First create the registry mapping. This can be anywhere in the registry, but is typically in the DatamedFT registry Key. The values can be REG\_DWORD or REG\_SZ data types. Here is the sample mapping data:

<u>Cart Dept Name</u>	<u>Server Dept Name</u>	<u>Server Dept ID</u>
ICU1	ICU	13
Emergency	ER	15
Pediatrics	PED	7

Here are the registry entries for this sample:

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\DatamedFT\DeptNameMapping]
"ICU1"="ICU"
```

```
" Emergency "=" ER "  
" Pediatrics "="PED"  
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\DatamedFT\DeptIDMapping]  
"ICU1"=dword:0000000d  
" Emergency " =dword:0000000f  
" Pediatrics " =dword:00000007
```

And here are the field mapping entries - note that the Department ID mapping must be done first because we need the unmapped Department Name for the lookup:

```
DepartmentID=DepartmentName{REGMAP, SYSTEM\CurrentControlSet\Services\DatamedFT\DeptIDMapping}  
DepartmentName=DepartmentName{REGMAP,  
SYSTEM\CurrentControlSet\Services\DatamedFT\DeptNameMapping}
```

- To use a file with mapping entries to translate the Department ID to a name:

First write down the mapping data. Here is sample data:

<u>DepartmentID from DEVICE</u>	<u>CurrentLocation for SYSTEM</u>
11	ER
12	ICU
13	CCU

Now create a text file and put this data in the file (sample.csv):

```
11,ER  
12,ICU  
13,CCU
```

Lastly, add this Field Mapping entry:

```
DepartmentName=DepartmentID{FILEMAP, C:\Temp\SampleMap.csv,1,2}
```

---

## CHAPTER 5 – INPUT FORMATS

The DatamedFT™ application will read files from a number of cardiographs and other input devices. Some of these write files directly, and others utilize separate accessory software from DLLC to receive the data and write files. The following information is organized by manufacturer/device and it describes the format(s) used for that device as well as any special installation/configuration requirements. Combining the Input Format along with the Output Format (*Chapter 6*), any possible configuration of the translator can be set up. ***Format names are descriptive labels for convenience only and do not represent trademarks or imply endorsement of the referenced vendor.***

### AMEDTEC Medizintechnik Aue GmbH

#### AMEDTEC ECGPro

Input Format setting: *AMEDTEC - ECGPro (scp)*. When used as an acquisition device, this system is supported using the AMEDTEC SCP (.scp) file format. Transmission is done via network file share (LAN). For additional information about this system you can contact the manufacturer or visit their website at: [www.amedtec.de](http://www.amedtec.de).

### Cardiolex

#### EC Sense

Input Format setting: *Cardiolex - EC Sense*. These PC-based systems are supported when using the proprietary (.xml) file format. Transmission is done via network file share (LAN) from the ECWSDB utility provided by Cardiolex. Information about the devices can be found on the manufacturer's website: [www.cardiolex.se](http://www.cardiolex.se).

### Cardioline SpA (*formerly et medical devices SpA*)

#### Cardioline® Rest ECG cardiographs (including ClickECG)

Input Format setting: *Cardioline - Cardioline Rest ECG*. These cardiographs are supported when using the Cardioline SCP (.scp) file format. Transmission is done via network file share (LAN). Note that some models write files with no file extension, but these are picked up with the default setting. Information about the devices can be found on the manufacturer's website: [www.cardioline.com](http://www.cardioline.com).

## corpuls<sup>®</sup> GS Elektromedizinische Geräte G. Stemple GmbH

### corpuls<sup>3</sup> defibrillator/monitors

Input Format setting: *Corpuls - Corpuls3*. These devices are supported when using the corpuls<sup>®</sup> SCP (.scp) file format. Transmission is by proprietary cellular to the corpuls.web receiving station which writes them to the shared folder. Information about the devices can be found on the manufacturer's website: [www.corpuls.com](http://www.corpuls.com)

## custo med<sup>®</sup> GmbH

custo diagnostic, cardio 100, cardio110, cardio 100BT, cardio 110BT, cardio 130, cardio 200BT

Input Format setting: *custo med - custo diagnostic*. These cardiographs are supported when using the DICOM<sup>®</sup> (.dcm) file format. Transmission is done via network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.customed.de](http://www.customed.de).

## Diagnostica AS (formerly MedIT AS)

### MeditConcept cardiographs

Input Format setting: *Diagnostica (MedIT) - MeditConcept*. These cardiographs are supported when using the proprietary (.med) file format. Transmission is done via network file share (LAN). Note that the MeditSense/Spirare devices are *not* compatible at this time. Information about the devices can be found on the manufacturer's website: [www.spirare.com](http://www.spirare.com).

## DICOM<sup>®</sup>

Input Format setting: *DICOM*. Cardiographs and other devices that output resting ECGs using the *12-Lead ECG Waveform SOP Class* or the *General ECG Waveform SOP Class* are compatible input formats. DLLC's DICOM Conformance Statement can be found on the website: [http://datamed.com/docs/dicom\\_conformance\\_statement.pdf](http://datamed.com/docs/dicom_conformance_statement.pdf).

## Dräger

Infinity<sup>®</sup> patient monitors (Delta, Delta XL, Kappa, Omega Package, Omega-S Package, Acute Care System, M540)

Input Format setting: *Draeger - Infinity (si4)*. These monitors are supported when using the proprietary SIFOR (.si4) file format. The proprietary (.ekg) file format is no longer accessible because it may not contain the interpretive statements. DatamedRcv™ DRCV05 is required and should be installed on the Dräger gateway server. Information about the devices can be found on the manufacturer's website: [www.draeger.com](http://www.draeger.com).

## EB Neuro SpA (formerly Ates Medica Device S.r.l.)

### Easy ECG series cardiographs

Input Format setting: *EB Neuro (Ates Medica Device) - Easy ECG*. These cardiographs are supported when using the DICOM® (.dcm) file format. Transmission is done via network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.ebneuro.com](http://www.ebneuro.com).

## Edan Instruments, Inc.

### SE-601 series, SE-12, SE-12 Express, SE-1200, SE-1200 Express, SE-1201, SE-3 series, SE-300 series, SE-1010 cardiographs

Input Format setting: *Edan - SE (dcm)* or *Edan - SE (scp)*. These cardiographs are supported when using the DICOM® (.dcm) file format or the Edan SCP (.scp) file format. Transmission is done via FTP to an FTP server (such as the FTP service in IIS) that is running on the FTPC. Instructions for setting up the cart and the FTP service are available. Information about the devices can be found on the manufacturer's website: [www.edan.com.cn](http://www.edan.com.cn).

## Esaote®

### P80, P80 Power, P8000, and P8000 Power Cardiographs

Input Format setting: *Esaote® - P80/P8000*. These cardiographs are supported when using the proprietary (.esa) file format or the proprietary XML (.xml) file format. Transmission is done via network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.esaote.com](http://www.esaote.com).

### AT-10 plus cardiographs

Input Format setting: *SCHILLER - CARDIOVIT/DEFIGARD/ARGUS PRO/SEMA/SEMA3 (xml)*. These OEM SCHILLER cardiographs are supported when using the proprietary XML (.xml) file format. Serial or LAN transmission requires a receiver utility available from Esaote. Information about the devices can be found on the manufacturer's website: [www.esaote.com](http://www.esaote.com).

### MyTrace 16 cardiographs

Input Format setting: *SCHILLER - CARDIOVIT/DEFIGARD/ARGUS PRO/SEMA/SEMA3 (xml)*. These OEM SCHILLER cardiographs are supported when using the proprietary XML (.xml) file format. Transmission is done via network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.esaote.com](http://www.esaote.com).

### MyCardioPad and MyCardioPad XL cardiographs

Input Format setting: *SCHILLER - CARDIOVIT/DEFIGARD/ARGUS PRO/SEMA/SEMA3 (xml)*. These OEM SCHILLER cardiographs are supported when using the proprietary XML (.xml) file format. LAN transmission requires a receiver utility available from Esaote. Information about the devices can be found on the manufacturer's website: [www.esaote.com](http://www.esaote.com).

## Fukuda Denshi

### FCP-7101, FX-7102, FX-7202, FX-7302, FX-7542, FX-8222, and FX-8322 cardiographs

Input Format setting: *Fukuda Denshi - FX-series cardiographs (ecg)*. These cardiographs are supported when using the proprietary (.ecg) file format. Transmission can be done via network file share (LAN), FTP, USB flash drive, or PC card. Information about the devices can be found on the manufacturer's website: [www.fukuda.com](http://www.fukuda.com).

### FCP-7402 cardiographs

Input Format setting: *Fukuda Denshi - FX-series cardiographs (ecg)*. These cardiographs are supported when using the proprietary (.ecg) file format. Transmission can be done via network file share (LAN) using a PC LAN card, or by PC card. Information about the devices can be found on the manufacturer's website: [www.fukuda.com](http://www.fukuda.com).

### Patient monitors with CVW Monitoring Gateway

Input Format setting: *Fukuda Denshi - CVW Monitoring Gateway*. These patient monitors are supported when using the proprietary (.mwf/.xml) file format. The monitors are on a private LAN and communicate with the CVW Monitoring Gateway, which writes out the files to a shared folder. **Note that there are two files output for each ECG and the *Move from folder option* cannot be used.** Information about the devices can be found on the manufacturer's website: [www.fukuda.com](http://www.fukuda.com).

### Option Settings (see Chapter 3 for details):

*Local language*. This option is important if the local language is supported and not the default.

*Move from folder*. This option is disabled.

## GE® Healthcare

### GE® MAC®-600 cardiographs

Input Format setting: *GE - MAC/DASH/SOLAR/CARESCAPE (ecg/acq/mon)* or *GE - MAC (xml)*. These cardiographs are supported when using the proprietary (.ecg) file format - or when using the XML (.xml) file format. Transmission can be by serial modem, direct serial, or using a serial-to-LAN adapter for LAN/WLAN, all of which require the DatamedRcv™ Model DRCV01 receiver module for reception. Another option is to write the files to an SD

card for manual transport. Information about the devices can be found on the manufacturer's website: [www.gehealthcare.com](http://www.gehealthcare.com).

#### GE® MAC® -800, MAC® -1600, MAC® -3500, MAC® -5500, and MAC® -5500HD cardiographs

Input Format setting: *GE - MAC/DASH/SOLAR/CARESCAPE (ecg/acq/mon)* or *GE - MAC (xml)*. These cardiographs are supported when using the proprietary (.ecg) file format - or when using the XML (.xml) file format. Transmission can be by serial modem, direct serial, or using a serial-to-LAN adapter for LAN/WLAN, all of which require the DatamedRcv™ Model DRCV01 receiver module for reception. If the device has the LAN option enabled then it can transmit using the built-in Ethernet port, which also requires the DatamedRcv™ Model DRCV01 receiver module for reception. Another option is to write the files to an SD card for manual transport. Information about the devices can be found on the manufacturer's website: [www.gehealthcare.com](http://www.gehealthcare.com).

#### GE® MAC® -1200 cardiographs

Input Format setting: *GE - MAC/DASH/SOLAR/CARESCAPE (ecg/acq/mon)*. These cardiographs are supported when using the proprietary (.ecg) file format. Transmission is by serial modem, direct serial, or using a serial-to-LAN adapter for LAN/WLAN, all of which require the DatamedRcv™ Model DRCV01 receiver module for reception. Information about the devices can be found on the manufacturer's website: [www.gehealthcare.com](http://www.gehealthcare.com).

#### GE® MAC® -2000 cardiographs

Input Format setting: *GE - MAC/DASH/SOLAR/CARESCAPE (ecg/acq/mon)* or *GE - MAC (xml)*. These cardiographs are supported when using the proprietary (.ecg) file format - or when using the XML (.xml) file format. Transmission can be by LAN/WLAN which requires the DatamedRcv™ Model DRCV01 receiver module for reception. Another option is to write the files to an SD card for manual transport. Information about the devices can be found on the manufacturer's website: [www.gehealthcare.com](http://www.gehealthcare.com).

#### GE® MAC® -5000 cardiographs

Input Format setting: *GE - MAC/DASH/SOLAR/CARESCAPE (ecg/acq/mon)* or *GE - MAC (xml)*. These cardiographs are supported when using the proprietary (.ecg) file format - or when using the GE XML (.xml) file format. Transmission can be by serial modem, direct serial, or using a serial-to-LAN adapter for LAN/WLAN, all of which require the DatamedRcv™ Model DRCV01 receiver module for reception. Another option is to write the files to the floppy disk for manual transport. Information about the devices can be found on the manufacturer's website: [www.gehealthcare.com](http://www.gehealthcare.com).

We recommended that these cardiographs be set to produce 500Hz output. The following steps describe how to do this:

1. Turn on power to the MAC5000
2. Select "More" (<F6>)
3. Select "Main Menu" (<F2>)
4. Select "More" (<F6>)

5. Select "System Setup" (<F1>)
6. Enter System Password then press <Return>
7. Select "ECG" then press <Return>
8. Select "ECG Acquisition/Analysis" then press <Return>
9. Use down arrow to move down to "Storage Format" then press <Return>
10. Use up/down arrows to choose the middle setting "500 Hz (MUSE Network)" then press <Return>
11. Use down arrow to move down to "Return" then press <Return>
12. Use up arrow to move up to "Return" then press <Return>
13. Use down arrow to move down to "Save Setup" then press <Return>
14. Choose "To system" then press <Return>
15. Use down arrow to move down to "Main Menu" then press <Return>
16. Select "Resting ECG" (<F1>)

#### GE® CardioSoft™

Input Format setting: *GE - MAC/DASH/SOLAR/CARESCAPE (ecg/acq/mon)* or *GE - MAC (xml)*. These systems are supported when using the proprietary (.ecg) file format. The system should be configured to write the files to a network file share (LAN). In the System Configuration, choose the "MUSE" tab, then in the *Store procedure for MUSE* section select *Data transfer to MUSE via Shared Directory* and fill in the share name and account. Information about the devices can be found on the manufacturer's website: [www.gehealthcare.com](http://www.gehealthcare.com).

#### GE® DASH®, SOLAR®, and CARESCAPE® patient monitors

Input Format setting: *GE - MAC/DASH/SOLAR/CARESCAPE (ecg/acq/mon)* or *GE - MAC (xml)*. These monitors are supported when using the proprietary (.mon) file format. The monitors are connected to a private LAN and the GE monitoring gateway software is required to receive files from the monitors and then write them to a network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.gehealthcare.com](http://www.gehealthcare.com).

#### Marquette® MAC® -VU cardiograph

Input Format setting: *GE - MAC/DASH/SOLAR/CARESCAPE (ecg/acq/mon)*. These cardiographs are supported when using the proprietary (.acq, .ecg) file format. Transmission can via an SDLC modem is no longer supported. These devices have a serial port and can be configured to transmit by serial modem, direct serial, or use a serial-to-LAN adapter for LAN/WLAN, all of which require the DatamedRcv™ Model DRCV01 receiver module for reception. Another option is to write the files to the floppy disk for manual transport. To the best of our knowledge, these legacy devices are no longer supported by GE and information is not available on their website.

#### Option Settings (see Chapter 3 for details):

*Add pacing spikes to waveform.* This option is ON by default.

*Local language.* This option is important if the local language is supported and not the default.

#### Notes for GE® devices:

On GE® devices, the term *Site* is used, which is synonymous with *Institution ID* in most other systems. Likewise, the term *Location* corresponds to *Department ID* in other systems.

## Gem-Med, s.l.

### Gem Heart cardiographs

Input Format setting: *Gem-Med - Gem Heart (dcm)* or *Gem-Med - Gem Heart (scp)*. These cardiographs are supported when using Gem Med SCP (.scp) file format or when using the DICOM® (.dcm) file format. Transmission is done via network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.gem-med.com](http://www.gem-med.com).

## HP (Philips)

### PageWriter® M1700A (XLi), M1701A (XLs), M1702A (XLe) cardiographs

Input Format setting: *HP - PageWriter M17xx*. These cardiographs are supported when using the proprietary (.nnn) file format. Transmission can be by serial modem or direct serial, both of which require the DatamedRcv™ Model DRCV03 receiver module for reception. Files can be also written to a floppy disk for manual transport. ***We strongly recommend the use of floppy disks to transport the files if possible because the files contain significantly more information than the transmitted files.*** A standard transmitted file will have 2.5sec of each of the 12 leads, plus up to three rhythm leads with 10sec of data, all at 250Hz. However when using the floppy drive the "Special Store Mode" setting will cause it to write files with 10sec of all 12 leads at 500Hz (see below for instructions). To the best of our knowledge, these legacy devices are no longer supported and information is not available online.

To configure the XLi to utilize the Special Store Mode (12x10x500), follow these steps:

1. Press *MENU* until you see the choice including *Config*, then press *Config*.
2. If a password is requested, enter your password. (BioMed should know this).
3. Press *Global*. As each choice is presented, press *Enter* to go to the next step or *Choose* to change the entry and then *Enter* to go on to the next entry. Most items should be left unchanged.
4. Keep pressing *Enter* to step through a long list of entries until you see an entry labeled *Special Applications*. Press *Choose* to change it to *Yes*, then *Enter*.
5. Press *Enter* a few more times until you see *ECG Store Mode*. Press *Choose* to change it from *Standard* to *Special*. Then press *Enter* to keep the choice.
6. Press *Exit* to leave the menu and keep your settings.

7. Test your new configuration by recording an EKG, send it through the translator into the host system and try displaying this test EKG in 12x10 format. If all leads are complete you have successfully changed the XLI.

This procedure will need to be done with each XLI cardiograph. Note that this storage mode is incompatible with TraceMaster OS/2 and TraceMaster NT. Also note that using this storage mode will limit the number of EKGs stored on each diskette to about 30.

#### PageWriter® M1770A (100/100i), M1771A (200/200i), M1772A (300/300i/300pi) cardiographs

Input Format setting: *HP - PageWriter M17xx*. These cardiographs are supported when using the proprietary (.nnn) file format. Transmission can be by serial modem or direct serial, both of which require the DatamedRcv™ Model DRCV03 receiver module for reception. Floppy drives are not present on these models so the “Special Store Mode” as described above is not available. To the best of our knowledge, these legacy devices are no longer supported and information is not available online.

#### Option Settings (see Chapter 3 for details):

*Suppress right-hand (diagnostic) statements.* This option is ON by default.

*Custom statement lib.* This option is not typically used.

*AC line frequency (Hz).* This option is important and should always be set correctly.

#### Notes for HP devices:

The term *Location* on these cardiographs is 5-digit field that combines two discrete elements: a 3 digit *Institution ID* and a two digit *Department ID*. During translation these two elements are separated.

## LifeWatch® Services, Inc.

#### Card Guard CG-7000DX BT

Input Format setting: *Card Guard CG-7000DX BT*. These cardiographs are supported when using the proprietary (.bin/.txt) file format. This device has an extremely limited data set. Transmission is done via network file share (LAN). **Note that there are two files output for each ECG and the *Move from folder* option cannot be used.** Information about the devices may be found on the manufacturer’s website: [www.lifewatch.com](http://www.lifewatch.com).

#### Option Settings (see Chapter 3 for details):

*Move from folder.* This option is disabled.

## Mindray®

BeneHeart® R3 and R12 cardiographs

BeneHeart® D3 and D6 defibrillator/monitors

V-Series monitors

Passport 2 and Spectrum monitors with View 12 ECG Module connected to Panorama Central Station (v10.1 or higher)

Patient monitors and defibrillators with 12 ECG Module connected to Hypervisor Central Station (v6.6 or higher)

Passport 12m and 17m monitors with 12 ECG Module connected to DPM Central Station (v01.01 or higher)

Passport 12m and 17m monitors with 12 ECG Module connected to BeneVision® Central Station (v02.01.01 or higher)

Input Format setting: *Mindray - BeneHeart/Passport/Spectrum/V-Series*. These cardiographs are supported when using the Mindray XML (.xml) file format. Transmission is done via network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.mindray.com](http://www.mindray.com).

## Mortara Instrument, Inc. (including Cardiac Science Corporation)

Quinton® Eclipse™ 850, Quinton® Eclipse™ Plus, and Eclipse™ Premier

Input Format setting: *Mortara - Burdick Atria/Quinton Eclipse/Eclipse Premier*. These cardiographs are supported when using Burdick custom SCP (.raw) file format. Transmission is by serial modem or direct serial cable and requires CSC's *ECLIO* utility (supplied by DLLC). Information about the devices can be found on the manufacturer's website: [www.mortara.com](http://www.mortara.com).

Burdick® Atria 3000, Atria 3100, Atria 6100, Atria 8300, and Atria 8500 cardiographs

Input Format setting: *Mortara - Burdick Atria/Quinton Eclipse/Eclipse Premier*. These cardiographs are supported when using Burdick custom SCP (.raw, .ecg) file format. Transmission can be by serial modem or direct serial cable which requires CSC's *ECLIO* utility (supplied by DLLC). These devices can also transmit over a network file share (LAN). Note that this device will output a file with the extension .raw unless the LAN connection is used, in which case it will have the extension .ecg. Information about the devices can be found on the manufacturer's website: [www.mortara.com](http://www.mortara.com).

### Notes for Quinton®/Burdick® devices:

When using serial transmission the typical workflow for these cardiographs is to record EKGs in its internal memory, then to take the cart to a PC on the hospital LAN for downloading via a serial cable into the FTPC's *Input Folder*. We recommend this directory

be shared so a remote PC can be mapped to \\<FTPName>\<ShareName>. This will make it easier for an EKG tech to copy their EKG files to the FTPC. The communication utility *ECLIO* is used on each PC that will connect to an Eclipse cart. This CSC utility is distributed by DLLC and can be used on multiple computers in conjunction with a DatamedFT™ installation. Be sure to configure the MapFile to point to \\<FTPName>\<ShareName> on each Eclipse-compatible PC so the EKGs will reach DatamedFT™. It is possible to use a Null-Modem cable for a direct serial connection to these cardiographs. An asynchronous modem can also be used to send EKGs from a remote location via a dial up telephone line.

### Burdick® CareCenter MD™ cardiographs

Input Format setting: *Mortara - Burdick CareCenter MD (xml)*. These cardiographs are supported when using Burdick custom XML (.xml) file format. Only the ECG Modality is supported. These devices write to a network file share (LAN). Select *XML (discrete) export* to write the files to the shared folder. Information about the devices can be found on the manufacturer's website: [www.mortara.com](http://www.mortara.com).

### ELI®-series cardiographs

Input Format setting: *Mortara - ELI-series (dcm)* or *Mortara - ELI-series (xml)*. These cardiographs are supported when using the DICOM® (.dcm) file format or the Mortara XML (.xml) file format. Transmission requires the *ELI-Link* utility (available from Mortara). Information about the devices can be found on the manufacturer's website: [www.mortara.com](http://www.mortara.com).

The *ELI-Link* utility can be installed on the FTPC or on a separate computer. It receives incoming transmissions and can write out either XML or DICOM files. When configuring *ELI-Link*, set the *XML-MI* folder (for XML format) or the *DICOM* folder (for DICOM format) to the same as the *Input folder* in DatamedFTConfig (typically *C:\DatamedFT\EKGsfromMortara*). For version 2.20 of *ELI-Link*, set the *EXPORT* folder to an unused folder. This folder will accumulate small (4KB) files that must be removed periodically. Version 3.00 of *ELI-Link* allows you to specify that those files are not created.

**Note for XML transmissions:** By default the *Site* field is split into *Department ID* and *Institution ID*. *Department ID* is the first four bits and can be from 0-15. *Institution ID* is the next 5 bits (0-32). The original *Site* value from the cart is put in *UserText(1)* and can be retrieved from there if desired.

## Nihon Kohden Corporation

### Cardiofax® ECG-1250A/K, ECG-1350A/K, ECG-1550A/K, and ECG-2550 cardiographs

Input Format setting: *Nihon Kohden - ECG Gateway QP-984PK/Cardiofax ECG/Polaris (dat)*. These cardiographs are supported when using the proprietary (.dat) file format. Transmission is done by LAN and requires the NK receiver utility (supplied by DLLC). Note that the *Sub ID* field from the device will be copied to the *Order Number* field.

Information about the devices can be found on the manufacturer's website: [www.nihonkohden.com](http://www.nihonkohden.com).

Here are the steps necessary to set up communications for a NK 1550-A Cardiograph:

1. Turn on the Nihon Kohden Cart. There is a power supply switch on the back and a power button on the top.
2. Connect an Ethernet cable to the LAN port in the back.
3. The screen will default to a Resting ECG View. On the bottom left of the screen there will be a button labeled *Menu*. This cardiograph uses a touch screen so gently touch *Menu*.
4. The next screen is the Main Menu where system settings are configured. The first one you will set up is in the *System Test* menu, so touch that button in the lower right hand corner.
5. Next touch *Network Setting*. This should be in the third column, near the bottom of your screen.
6. Touch the icon labeled *PCI-DP838151* (or similar) that represents the installed NIC. If there is no NIC you will need to contact Nihon Kohden. On the IP Address tab either select DHCP or enter the IP Address, Subnet Mask, and Default Gateway that are assigned to this cart. After entering the appropriate settings, touch *OK* (top right), then *File*, then *Close*. To test LAN connectivity, use the *ping* utility from another PC on the network.
7. After closing that screen, touch *End* on the bottom of the menu screen, and *OK* to go back to the main default screen.
8. Touch *Menu* to go back to the Main Menu screen, then touch *System Settings*, then *Communication Settings*, and finally *Ethernet Settings*.
9. On this screen enter the (static) IP address of the FTPC in the *Ordering Server Address* and *File Server Address* fields. The defaults for the other fields should be correct. The FTPC will run the ECTP/FTP communication software provided by Nihon Kohden which receives files sent from the cardiograph. The settings on this screen must match the settings configured with ECTPSET (above). When the information is correct, touch *Register* to save your settings. Touch *Register* on each screen to save and return to the previous screen.
10. After an EKG is taken, the buttons on your screen will change. Touch *File* and then *Transfer* to transmit the EKG to the FTPC. EKGs that are saved on the cardiograph can be transmitted by touching *Menu*, then *Data Management*, then selecting the desired EKG(s), touching *Process*, and finally *Transfer*.
11. The EKG data will be written to a .dat file, which DatamedFT will process. There will also be a small .req file which is not needed and must be manually removed periodically.

### Cardiofax® ECG-1150A/K, 9130K cardiographs

Input Format setting: *Nihon Kohden - ECG Gateway QP-984PK/Cardiofax ECG/Polaris (dat)*. These cardiographs are supported when using the proprietary (.dat) file format. Transmission is done manually using an SD card to transfer the files. Note that the *Sub ID* field from the device will be copied to the *Order Number* field. Information about the devices can be found on the manufacturer's website: [www.nihonkohden.com](http://www.nihonkohden.com).

### Lifescope® BSM-series patient monitors with QP-984PK

Input Format setting: *Nihon Kohden - ECG Gateway QP-984PK/Cardiofax ECG/Polaris (dat)*. These monitors are supported when using the proprietary (.dat) file format. The monitors are connected to a private LAN and the NK monitoring gateway transmits them by LAN to the NK receiver utility (supplied by DLLC or NK). NK may install the receiver utility on the monitoring gateway(s). If it is not installed on the management/storage system server, it is recommended that DatamedFT™ be installed on a standalone computer in case multiple gateway servers are needed. Note that the *Sub ID* field from the device will be copied to the *Order Number* field. Information about the devices can be found on the manufacturer's website: [www.nihonkohden.com](http://www.nihonkohden.com).

### Lifescope® BSM-series patient monitors with QP-992PK

Input Format setting: *Nihon Kohden - ECG Gateway QP-992P (mwf+xml)*. These patient monitors are supported when using the proprietary (.mwf/.xml) file format. The ECG Server Extension (QP-992P) is a plug-in to the Unified Gateway (QP-988P), which is required to use the ECG Server Extension. The monitors are connected to a private LAN and the ECG Gateway receives files from the monitors and then writes out files to a shared folder. **Note that there are two files output for each ECG and the *Move from folder option* cannot be used.** Information about the devices can be found on the manufacturer's website: [www.nihonkohden.com](http://www.nihonkohden.com).

### Option Settings (see Chapter 3 for details):

*AC line frequency (Hz)*. This option is important and should always be set correctly.

*Local language*. This option is important if the local language is supported and not the default.

*Move from folder*. This option is disabled.

### Notes for NK cardiographs and monitors with QP-984PK gateway using the NK receiver:

All NK cardiographs transmit via LAN an NK receiver utility. The QP-984PK monitoring gateway also transmits to the NK receiver utility. This utility was created by Nihon Kohden Corporation (Japan) and DLLC is authorized to distribute this utility "as-is" with the DatamedFT™ software. DLLC will provide assistance with it but we have no control over it or information beyond what we provide. At the time of this printing, the current receiver utility version is v1.2.1.7.

On some 64-bit systems the *EctpCore* software displays an error message saying that it is not compatible. If you see that message it can be made to work by utilizing the Compatibility Mode in Windows. Right-click on the *NK EctpCore Setup* program and select Properties, then the Compatibility tab. In the *Compatibility mode* section, select the 32-bit operating system closest to the one you are using. For example, in Windows Server 2008 R2 you will select *Windows Server 2008 (Service Pack 1)*. Apply the changes and then you can follow the install procedure.

**Notes for NK monitors with QP-984PK gateway:**

In some cases the monitors will be configured to place the Account Number (Visit Number) in the Patient ID field. The monitors have limited fields so NK has a workaround configuration that places the Patient ID (MRN) in the Attending Doctor field. When using this workaround, you will need to enter these field mapping entries to save the Account Number and restore the Patient ID:

```
AccountNumber=PatientID
TMPINT(1)=AttendingDoctorName
PatientID=TMPINT(1){FRZ,9}
```

Depending on the output format, you may choose to copy the Account Number to a user field instead of the Account Number field.

## Norav Medical™ Ltd

PC ECG 1200™ family (1200M™, 1200HR™, 1200S™, 1200W™, Blue-ECG™), Green ECG LAN™, NHH 1200™, NECG-3™, NECG-12™, and NECG-12C™ cardiographs

Input Format setting: *Norav - 1200 family (dcm)* or *Norav - 1200 family (scp)*. These cardiographs are supported when using the DICOM® (.dcm) file format or the Norav SCP (.scp) file format. Transmission is done via network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.norav.com](http://www.norav.com).

## Ortivus AB

Mobimed cardiographs, Mobimed Smart, CoroNet patient monitors

Input Format setting: *Ortivus - Mobimed/CoroNet*. These cardiographs and monitors are supported when using the proprietary (.ort) file format. Transmission is done via network file share (LAN). The monitors are connected to a private LAN and the Coronet gateway is required to receive files from the monitors and then write them to the shared folder. Information about the devices can be found on the manufacturer's website: [www.ortivus.com](http://www.ortivus.com).

## Philips Healthcare

### PageWriter® Touch, PageWriter® Trim II, PageWriter® Trim III, and PageWriter® TC cardiographs

Input Format setting: *Philips - PageWriter/IntelliVue/HeartStart MRx*. These cardiographs are supported when using the Philips XML (.xml) file format. Transmission is a web-based protocol and requires the DatamedRcv™ Model DRCV02 receiver module for reception. For some of these devices it is possible to transmit over serial modem to a RAS Server, where it becomes a standard network transmission (to the receiver). Note that DLLC does not provide configuration support for RAS servers. Information about the devices can be found on the manufacturer's website: [www.medical.philips.com](http://www.medical.philips.com).

By default these devices output unfiltered data, so non-Philips management systems will show data that does not match the source device. In current software releases, the PageWriter® TC cardiographs and some of the older devices contain a setting that will force filtered data to be exported. *It is very important that this is configured appropriately.*

Follow these steps to turn on filtered output and the Baseline Wander filter in the TC and some Touch models:

1. On the main screen touch *Setup*.
2. Touch *Configure Cardiograph Default Settings*.
3. Touch the *Algorithm/Pacing* button at the top.
4. Under *Algorithm* there are two choices and the selection depends on the number of leads you will be recording. Philips recommends always using *PH100B*.
5. Touch the *Filter* button at the top.
6. Under *Optional Filter* make sure the *Baseline Wander* filter is *ON*.
7. Touch *Exit*, and then *Yes* in the message screen to save these changes.
8. Touch *Configure ECG Network Settings*.
9. Touch the *LAN/WLAN Settings* button at the top. Check these settings and update them as appropriate.
10. Touch the *ECG Mgmt Systems* button at the top.
11. Touch the *Edit/Delete TraceMaster* button in the second row.
12. In the *Select TraceMaster Server* picklist, choose the default entry (typically *TMVUE*) and touch *Edit*. If there are no entries in the picklist, touch the *Create TraceMaster* button in the second row. The setup will be the same except you will name the entry when you save.
13. Set or update the following settings:
  - a. Set *System Type* to *ECG Management*.
  - b. Set *Connectivity Settings* to *Server Settings*.
  - c. Set the Server URL to <http://<IPAddress>/emscomm>, where <IPAddress> is the address of the computer running DRCV02 or DatamedWL™.
  - d. The *User Name* and *Password* are not used. *Computer Name* should be set to the name of the computer running DRCV02 or DatamedWL™.
  - e. The four buttons on the right should all be *OFF*.

- f. Under *ECG Mgmt Version - Filtered ECG*, choose **Other EMS - XML 1.04** if the algorithm was set to *PH090A* above; or choose **Other EMS - XML 1.04.01** if the algorithm was set to *PH100B* above. These pairings are critical for proper operation. NOTE: If you are using DatamedWL™, the worklist functionality will not work with either **Other EMS** selection - it must be set to one of the *TraceMasterVue* selections (typically *TraceMasterVue C.02*). This means that the ECGs will not be filtered and so the filter settings should be set to .05 - 150Hz.
14. Touch **Save Settings** to save the changes. Touch **Exit** and then **Exit** again to return to the main screen.

#### IntelliVue® (MP5/MP30/MP50/MP70/MP90/X2) patient monitors with 12-Lead option

Input Format setting: *Philips - PageWriter/IntelliVue/HeartStart MRx*. These monitors are supported when using the Philips XML (.xml) file format. For PIIC Classic prior to Rev G there must be a Philips Database Server because the LAN connection is from the DB Server. For PIIC Classic Rev G and later, the Philips IntelliVue Information Central ("PIIC") will support the LAN connection. The IntelliVue® monitors are on a private LAN with the Database Server/PIIC, which has a second NIC to connect to the hospital's LAN. The typical use is to store EKGs at each bedside, then review the stored EKGs at the PIC to select which EKGs are to be exported to the management system. Once EKGs are selected and "tagged" for export, a soft button "Export" is pressed to send the EKG files via LAN to the FTPC. Information about the devices can be found on the manufacturer's website: [www.medical.philips.com](http://www.medical.philips.com).

For PIIC Classic the files will be written to a shared folder on the FTPC. For PIIC iX the files are transmitted to DatamedRcv™ DRCV02.

If the EKG contains HEXAD data a statement will be added to indicate that some leads are derived: "\*\*\*\* *The following leads are derived: <lead names>* \*\*\*\*".

By default these devices output unfiltered data, so non-Philips management systems will show data that does not match the source device. The current software release contains a setting that will force filtered data to be exported (Config Wizard → Network Configuration → Network Device → 12 Lead ECG Management → Filter Before Export). ***It is very important that this is configured appropriately.***

Here are additional notes about installation for IntelliVue with PIIC Classic:

1. Philips will configure the PIIC/Central Station. The Philips technician will need the IP Address where DatamedFT™ is installed, and the username/password of the account with write access to the shared folder.
2. If the PIIC is software revision "L" or later, any account name and share name can be used for access. For previous revisions the account name must be "PMDEExport" and the share name must also be "PMDEExport" - contact DLLC or Philips for the password.

3. On the FTPC, the DatamedFT™ *Input Folder* must be shared with access for the account that was set up on the PIC. When setting up the share, make sure to review the properties to make sure that the account has Full Access permissions for this share.

#### HeartStart® MRx monitor/defibrillators

Input Format setting: *Philips - PageWriter/IntelliVue/HeartStart MRx*. These devices are supported when using the Philips XML (.xml) file format. Transmission is by cellular to the 12-Lead Transfer Station (available from Philips) which writes them to the shared folder. Information about the devices can be found on the manufacturer's website: [www.medical.philips.com](http://www.medical.philips.com).

#### Option Settings:

*Suppress right-hand (diagnostic) statements*. This option is ON by default.

### Physio-Control®

#### LIFEPAK® 12 and LIFEPAK® 15 defibrillator/monitors

Input Format setting: *Physio-Control - LIFEPAK 12/15*. These devices are supported when using the XML (.xml) file format. Transmission is by cellular to the LIFENET® RS Receiving Station which writes them to the shared folder. Information about the devices can be found on the manufacturer's website: [www.physio-control.com](http://www.physio-control.com).

### QRS Diagnostic

#### Office Medic™

Input Format setting: *QRS Diagnostic - Office Medic (scp)*. These PC-based cardiographs are supported when using the QRS SCP (.scp) file format. Transmission is done via network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.qrsdiagnostic.com](http://www.qrsdiagnostic.com).

### SCHILLER AG

#### CARDIOVIT® CS-6/12, AT-3, AT-4, AT-5, AT-6, AT-60, CS-100, AT-10, and AT-2 plus cardiographs

Input Format setting: *SCHILLER - CARDIOVIT (rst)*. These cardiographs are supported when using the proprietary (.rst) file format. Serial transmission requires the SemaComm utility (available from SCHILLER). Information about the devices can be found on the manufacturer's website: [www.schiller.ch](http://www.schiller.ch).

**CARDIOVIT® AT-101 series, CARDIOVIT® AT-102, and CARDIOVIT® AT-10 plus cardiographs**

Input Format setting: *SCHILLER - CARDIOVIT (rst)* or *SCHILLER - CARDIOVIT/DEFIGARD/ARGUS PRO/SEMA/SEMA3 (xml)*. These cardiographs are supported when using the proprietary (.rst) file format or the SCHILLER XML (.xml) file format. Serial transmission requires the SemaComm utility (available from SCHILLER). LAN transmission requires the SCS utility (available from SCHILLER). Information about the devices can be found on the manufacturer's website: [www.schiller.ch](http://www.schiller.ch).

Note: LAN transmission in AT-101 requires the built-in SCM option (included in AT-101 Tele). LAN/WLAN transmission in AT-102 requires the built-in SCM option.

**CARDIOVIT® AT-104 PC, CardioLaptop AT-110, and CARDIOVIT® CS-200 cardiographs**

Input Format setting: *SCHILLER - CARDIOVIT (rst)*. These cardiographs are supported when using the proprietary (.rst) file format. Transmission is done via network file share. Information about the devices can be found on the manufacturer's website: [www.schiller.ch](http://www.schiller.ch).

**CARDIOVIT® CS-200 Excellence cardiographs**

Input Format setting: *SCHILLER - CARDIOVIT/DEFIGARD/ARGUS PRO/SEMA/SEMA3 (xml)*. These cardiographs are supported when using the SCHILLER XML (.xml) file format. LAN transmission requires the SCS utility or SEMA3 gateway (available from SCHILLER). Transmission can also be done via network file share. Information about the devices can be found on the manufacturer's website: [www.schiller.ch](http://www.schiller.ch).

**CARDIOVIT® AT-102 Plus, MS-2007, MS-2010, and MS-2015 cardiographs; DEFIGARD® DG-5000, ARGUS PRO LifeCare, and ARGUS PRO LifeCare2 with ARGUS PRO Transport defibrillator/monitors**

Input Format setting: *SCHILLER - CARDIOVIT/DEFIGARD/ARGUS PRO/SEMA/SEMA3 (xml)*. These devices are supported when using the SCHILLER XML (.xml) file format. LAN transmission requires the SCS utility or SEMA3 gateway (available from SCHILLER). Information about the devices can be found on the manufacturer's website: [www.schiller.ch](http://www.schiller.ch).

**CARDIOVIT® DT-1**

Input Format setting: *SCHILLER - CARDIOVIT/DEFIGARD/ARGUS PRO/SEMA/SEMA3 (xml)*. This system is supported as an input device using the SCHILLER XML (.xml) file format. Transmission is done via network file share. Information about the system can be found on the manufacturer's website: [www.schiller.ch](http://www.schiller.ch).

**CARDIOVIT® AT-170, FT-1**

Input Format setting: *SCHILLER - CARDIOVIT/DEFIGARD/ARGUS PRO/SEMA/SEMA3 (xml)*. This system is supported as an input device using the SCHILLER XML (.xml) file format. These devices transmit to SEMA3 which writes out the files to a network file share.

Information about the system can be found on the manufacturer's website: [www.schiller.ch](http://www.schiller.ch).

#### SEMA ECG Management System

Input Format setting: *SCHILLER - CARDIOVIT/DEFIGARD/ARGUS PRO/SEMA/SEMA3 (xml)*. This system is supported as an input device using the SCHILLER XML (.xml) file format. Transmission is done via network file share. Information about the system can be found on the manufacturer's website: [www.schiller.ch](http://www.schiller.ch).

#### SEMA3 ECG Management System

Input Format setting: *SCHILLER - CARDIOVIT/DEFIGARD/ARGUS PRO/SEMA/SEMA3 (xml)* or *SCHILLER - CARDIOVIT/SEMA3 (dcm)*. This system is supported as an input device using the SCHILLER XML (.xml) file format or the DICOM® (.dcm) file format. Transmission is done via network file share. Information about the system can be found on the manufacturer's website: [www.schiller.ch](http://www.schiller.ch).

### SEIVA s.r.o.

#### ECG Praktik, ECG Praktik Portable, ECG Cardio Writer, ECG Cardio Touch cardiographs

Input Format setting: *SEIVA - ECG Praktik/ECG Cardio*. These cardiographs are supported when using the DICOM® (.dcm) file format. Transmission is done via network file share (LAN) or FTP transfer. Information about the devices can be found on the manufacturer's website: [www.seiva.com](http://www.seiva.com).

### Spacelabs Healthcare

#### CardioExpress® cardiographs

Input Format setting: *Spacelabs - CardioExpress*. These cardiographs are supported when using the Spacelabs SCP (.scp) file format. Transmission is done via network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.spacelabshealthcare.com](http://www.spacelabshealthcare.com).

#### XPREZZON®, Qube®, Ultraview, and UltraviewSL® patient monitors with ICS and ICS G2

These monitors are available with Datamed® translation technology embedded. Contact Spacelabs Healthcare or visit their website ([www.spacelabshealthcare.com](http://www.spacelabshealthcare.com)) for more information. Note that monitoring systems prior to ICS are also compatible. Contact DLLC if you are setting up DatamedFT™ with one of these systems.

#### Option Settings (see Chapter 3 for details):

*Local language*. This option is set internally in the ICS configuration.

## VectraCor<sup>®</sup>, Inc.

### VectraplexECG<sup>™</sup> System

Input Format setting: *VectraCor - VectraplexECG System*. These PC-based cardiographs are supported when using the VectraCor SCP (.scp) file format. Transmission is done via network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.vectracor.com](http://www.vectracor.com).

## Verathon<sup>®</sup> Inc (formerly HeartScape Technologies, Inc.)

### Heartscape<sup>™</sup> 3D ECG System, Prime<sup>™</sup> ECG cardiographs

Input Format setting: *Verathon (HeartScape) - Heartscape 3D ECG/Prime ECG*. These cardiographs are supported when using the proprietary (.hsp) file format. This system acquires an 80-lead ECG and can export 12 or 15-lead "slices" of the data to a host system. Transmission is done via network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.verathon.com](http://www.verathon.com).

## Welch Allyn, Inc

### CP-series cardiographs with CardioPerfect<sup>®</sup> Workstation

Input Format setting: *Welch Allyn - CPxxx/CardioPerfect Workstation*. These cardiographs are supported when using the Welch Allyn SCP (.scp) file format. Files from the CP-series cardiographs are loaded into CPWS and exported over the LAN to DatamedFT<sup>™</sup>. The Connectivity Kit is required - contact Welch Allyn for this module. Model CP-100 writes files to an SD card or USB memory stick. Model CP-200 can write files to an SD card/USB memory stick or communicate directly with CPWS over a USB cable. Model CP-50 can write files to an SD card/USB memory stick or communicate directly with CPWS over a USB cable or Ethernet connection. Model CP-20 can communicate directly with CPWS over a serial or Wi-Fi connection. Information about the devices can be found on the manufacturer's website: [www.welchallyn.com](http://www.welchallyn.com).

### CP150 with DICOM Option

Input Format setting: *Welch Allyn - CP150 with DICOM Option*. These cardiographs are supported when using DICOM<sup>®</sup> (.dcm) file format. Since the cart transmits using the DICOM<sup>®</sup> network protocol, it should only be used with DatamedWL<sup>™</sup>. Information about the devices can be found on the manufacturer's website: [www.welchallyn.com](http://www.welchallyn.com).

## ZOLL<sup>®</sup> Medical Corporation

### E-Series<sup>®</sup> (prior to rev 4.01) and M-Series<sup>®</sup> defibrillator/monitors

Input Format setting: *ZOLL - E-Series/M-Series (ecg)*. These devices are supported when using a proprietary (.ecg) file format. Transmission is by serial modem, direct serial, or

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using a serial-to-LAN adapter for LAN/WLAN, all of which require the DatamedRcv™ Model DRCV01 receiver module for reception. Information about the devices can be found on the manufacturer's website: [www.zoll.com](http://www.zoll.com).

#### X-Series® defibrillator/monitors

Input Format setting: *ZOLL - X-Series (xml)*. These devices are supported when using ZOLL XML (.xml) file format. The devices will transmit to RescueNet® 12-Lead and then export to a Network file share (LAN). Information about the devices can be found on the manufacturer's website: [www.zoll.com](http://www.zoll.com).

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## CHAPTER 6 - OUTPUT FORMATS

The DatamedFT™ application will write files to a number of host systems. The following sections describe each supported format and detail any special installation/configuration requirements. Combining the Input Format (*Chapter 5*) along with the Output Format, any possible configuration of the translator can be set up. ***Format names are descriptive labels for convenience only and do not represent trademarks or imply endorsement of the referenced vendor.***

### ACK IT Solutions

#### ACK Medical Integration

Output Format setting: ***ACK IT Solutions - ACK Medical Integration***. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. When DatamedFT™ writes the output files to the ACK server, a utility provided by ACK will pick up the file and load it into the database. Files will be in DICOM® (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.ack.co.kr](http://www.ack.co.kr).

#### Option Settings (see Chapter 3 for details):

***DICOM: SOP Class***. This option should be checked against the system capability.

***Transfer Syntax***. This option is rarely changed.

***Nomenclature***. This option is rarely changed.

### Agfa HealthCare Corporation

#### HeartStation®

Output Format setting: ***Agfa - HeartStation***. The DatamedFT™ translator is available as a manufacturer option for this management system. Additional licenses may be added by contacting your Agfa representative. Files will be in a proprietary (.hli) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.agfahealthcare.com](http://www.agfahealthcare.com).

## AMEDTEC Medizintechnik Aue GmbH

### AMEDTEC ECGPro

Output Format setting: *AMEDTEC - ECGPro*. This management system is compatible with DatamedFT™ starting with AMEDTEC ECGPro® version 3.20. The translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in a proprietary (.atc) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.amedtec.de](http://www.amedtec.de).

## Axis Systems Co., Ltd

### Axis Hospital Information Management System

Output Format setting: *DICOM (generic)*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. When DatamedFT™ writes the output files to the server, a utility provided by Axis will pick up the file and load it into the database. Files will be in DICOM® (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.axis-systems.mn](http://www.axis-systems.mn).

#### Option Settings (see Chapter 3 for details):

*DICOM: SOP Class*. This option should be checked against the system capability.

*Transfer Syntax*. This option is rarely changed.

*Nomenclature*. This option is rarely changed.

## Aprima Medical Software

### Aprima® 2011

Output Format setting: *Aprima - Aprima 2011*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. When DatamedFT™ writes the output files to the Aprima server, a utility provided by Aprima will pick up the file and load it into the database. Files will be in DICOM® (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.aprima.com](http://www.aprima.com).

#### Option Settings (see Chapter 3 for details):

*DICOM: SOP Class*. This option should be checked against the system capability.

*Transfer Syntax*. This option is rarely changed.

*Nomenclature*. This option is rarely changed.

## Cardiolex

### EC Sense

Output Format setting: *Cardiolex - EC Sense*. For this system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in a custom XML (.xml) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.cardiolex.se](http://www.cardiolex.se).

## Carestream Health, Inc.

### Carestream® Cardiology PACS

Output Format setting: *Carestream - Cardiology PACS*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. When DatamedFT™ writes the output files to the Aprima server, a utility provided by Carestream will pick up the file and load it into the database. Files will be in DICOM® (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.carestream.com](http://www.carestream.com).

#### Option Settings (see Chapter 3 for details):

*DICOM: SOP Class*. This option should be checked against the system capability.

*Transfer Syntax*. This option is rarely changed.

*Nomenclature*. This option is rarely changed.

## Cerner Corporation

### Powerchart ECG®

Output Format setting: *Cerner - Powerchart ECG*. For this management system the translator software will normally be installed on the server by the manufacturer. When DatamedFT™ writes the output files to the Cerner server, a utility provided by Cerner will pick up the file and load it into the database. Files will be in DICOM® (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.cerner.com](http://www.cerner.com).

#### Option Settings (see Chapter 3 for details):

*DICOM: SOP Class*. This option should be checked against the system capability.

*Transfer Syntax*. This option is rarely changed.

*Nomenclature*. This option is rarely changed.

## custo med<sup>®</sup> GmbH

### custo diagnostic

Output Format setting: *custo med - custo diagnostic (scp)* or *custo med - custo diagnostic (xml)*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. There are two file formats that can be used depending on the configuration of the system: SCP (.scp) file format or XML (.xml) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.customed.de](http://www.customed.de).

## DICOM<sup>®</sup>

Output Format setting: *DICOM (generic)*. EKG management systems or PACS systems that can take in resting ECGs using the *12-Lead ECG Waveform SOP Class* or the *General ECG Waveform SOP Class* are generally compatible. Note that the system must be able to read the data from a file - it is not transmitted. DLLC's DICOM Conformance Statement can be found on the website: [http://datamed.com/docs/dicom\\_conformance\\_statement.pdf](http://datamed.com/docs/dicom_conformance_statement.pdf).

### Option Settings (see Chapter 3 for details):

*DICOM: SOP Class*. This option should be checked against the system capability.

*Transfer Syntax*. This option is rarely changed.

*Nomenclature*. This option is rarely changed.

## Dräger

### Megacare

Output Format setting: *Dräger - Megacare (sie)*. Dräger has validated certain input formats and for these supported formats the DatamedFT™ translator is available as a manufacturer option. Additional licenses may be added by contacting your Dräger representative. Files will be in a proprietary (.sie) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.draeger.com](http://www.draeger.com).

For formats that are not validated and supported by Dräger, the software may be purchased directly from DLLC or through another supplier and it must be installed on a separate computer located on the network. The output files will be written across the LAN to a network share on the server. **Note that for this type of installation, support is from DLLC directly and not from Dräger.**

## Epiphany Healthcare

### Cardio Server

Output Format setting: *Epiphany - Cardio Server*. The DatamedFT™ translator is available as a manufacturer option for this management system. Additional licenses may be added by contacting your Epiphany representative. Files will be in a proprietary (.esi) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.epiphanyhealthdata.com](http://www.epiphanyhealthdata.com).

## Esaote®

### Suitestensa

Output Format setting: *Esaote - Suitestensa / Cardiology Org@nizer (esa)* or *Esaote - Suitestensa (dcm)*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files can be either in a proprietary (.esa) file format or in DICOM® (.dcm) format. For additional information about this system you can contact the manufacturer or visit their website at: [www.esaote.com](http://www.esaote.com).

### Cardiology Org@nizer

Output Format setting: *Esaote - Suitestensa / Cardiology Org@nizer (esa)*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in a proprietary (.esa) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.esaote.com](http://www.esaote.com).

#### Option Settings when using DICOM® output (see Chapter 3 for details):

*DICOM: SOP Class*. This option should be checked against the system capability.

*Transfer Syntax*. This option is rarely changed.

*Nomenclature*. This option is rarely changed.

## Fujifilm Medical Systems

### Synapse® Cardiovascular

Output Format setting: *Fujifilm Medical Systems - Synapse Cardiovascular*. The DatamedFT™ translator is available as a manufacturer option for this management system. Additional licenses may be added by contacting your Fujifilm representative. Files will be in a proprietary (.esi) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.fujimed.com](http://www.fujimed.com).

## GE<sup>®</sup> Healthcare

### MUSE<sup>®</sup> version 7 or 8

Output Format setting: *GE - MUSE (xml)*. For this management system the translator software will be installed on a separate computer located on the network. The output files will be written across the LAN to a network share on the server. The MUSE<sup>®</sup> should have the XML option, which is obtained from GE<sup>®</sup>. Files will be in custom XML (.xml) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.gehealthcare.com](http://www.gehealthcare.com).

The translated EKG files will be dropped into the “xml” folder (typically *D:\muse\xml*), where the MUSE<sup>®</sup> will pick them up automatically and load them into the database. ***This folder must be shared, and the network share must have full-control permissions for the account under which the DatamedFT service is running or the files will not be able to be written. If not running in a domain environment, a local account can be added on the FTPC that exactly matches a local account on the MUSE<sup>®</sup> system and the service can run under this account.*** The *Output Folder* configuration setting for DatamedFT<sup>™</sup> should point to this network share.

### MUSE<sup>®</sup> versions 4B - 5E

Output Format setting: *GE - MUSE (xml)* or *GE - MUSE (ecg)*. For this management system the translator software will be installed on a separate computer located on the network. The output files will be written across the LAN to a network share on the server. If available, the MUSE<sup>®</sup> should have the XML input option (version 5D and higher) and the files will be in custom XML (.xml) file format. If that option is not available for your version, the files can be in a proprietary (.ecg) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.gehealthcare.com](http://www.gehealthcare.com).

For XML format (.xml), the translated EKG files will be dropped into the “xml” folder (typically *D:\vol000\tmp\xml*), where the MUSE<sup>®</sup> will pick them up automatically and load them into the database. For proprietary format (.ecg), the translated EKG files will be dropped into the “mlab” folder (typically *D:\vol000\tmp\mlab*), where the MUSE<sup>®</sup> will pick them up automatically and load them into the database. ***This folder must be shared, and the network share must have full-control permissions for the account under which the DatamedFT service is running or the files will not be able to be written. If not running in a domain environment, a local account can be added on the FTPC that exactly matches a local account on the MUSE<sup>®</sup> system and the service can run under this account.*** The *Output Folder* configuration setting for DatamedFT<sup>™</sup> should point to this network share.

### Option Settings (see Chapter 3 for details):

*Use Physician Name IDs if possible.* This option can be used for all MUSE versions.

**Notes:**

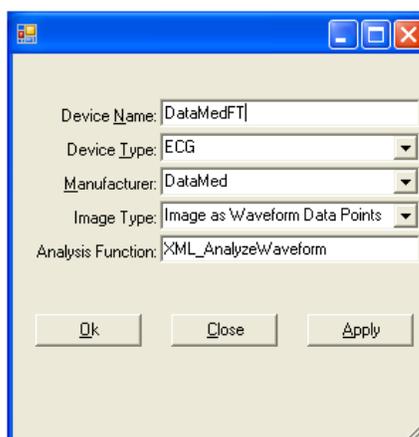
**Serial Comparison:** The Serial Comparison (SC) functionality uses a combination of various information including codes statements to automatically compare two EKGs for a patient. The comparison can only be valid if the analysis algorithm on the source device(s) and the one in MUSE is identical. For that reason, SC can never be done using the analysis sent from a non-GE device. The XML file contains an indicator to tell MUSE not to attempt SC. However if the binary format is used (for an older version) then the SC functionality must be turned OFF for the Location used with the non-GE devices. If SC is ON for that Location, incoming files may have all statements removed and replaced with the severity code statement and one other statement: *No previous EKGs available*. **Keep in mind that Serial Presentation (showing multiple EKGs on the screen or printout) will work just fine with translated EKGs.**

**Site (Institution) Setting:** If the incoming source file does not set Institution ID correctly, it will need to be set with a field mapping (in the Field Mapping tab). For most customers (using Site 1 in MUSE<sup>®</sup>), the following entry will be sufficient (change the 1 as necessary):

InstitutionID="1"

**Location (Department) Setting:** Although MUSE 7 supports Locations up to 9999 and MUSE 9 supports Locations up to 65535, the XML parser for MUSE 7 and 8 will only accept Locations below 600. The XML parser in MUSE will accept Locations up to 65535 in the XML file.

**XML Configuration:** There is a MUSE configuration utility that must be set up to process XML files from DatamedFT™. In the *C:\Program Files\MUSE\* folder there should be a utility named *xmlconfig.exe* (contact GE support if it is not there). After starting the program, select *DatamedFT* from the list and click **Update Device** (or press **New Device** if it is not present). Adjust/add the settings to match these:



The MUSE XML Parser service must be restarted after updating the settings.

**Field Limitations:** User fields are not supported when going into MUSE. 15-lead ECGs are not supported and will be truncated to the standard 12 lead set.

**IMPORTANT NOTE REGARDING THE BINARY FORMAT (.ecg):** *This format is supported natively by MUSE®, however GE does not recommend or support the use of this format. We strongly recommend that all customers use the XML format exclusively. Also note that median data is only available when using the XML format.*

## HD Clinical

### Solus Gateway

Output Format setting: *HD Clinical - Solus Gateway*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in custom XML (.xml) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.hd-clinical.com](http://www.hd-clinical.com).

## HL7 aECG / FDA XML

Output Format setting: *HL7 aECG / FDA XML*. EKG management systems or PACS systems that can accept resting ECGs in HL7 aECG (FDA XML) format are generally compatible. Note that the system must be able to read the data from a file - it is not transmitted.

## Huahai Medical Info-Tech Co

### MedECG and HHECG

Output Format setting: *Huahai Medical Info-Tech - MedECG/HHECG*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in a proprietary (.ecg) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.huahai.com.cn](http://www.huahai.com.cn).

## INFINITT Healthcare Co

### INFINITT Cardiology PACS

Output Format setting: *INFINITT Cardiology PACS (dcm)* or *INFINITT Cardiology PACS (xml)*. For this management system the translator software will normally be installed on the server by the manufacturer. When DatamedFT™ writes the output files to the INFINITT server, a utility provided by INFINITT will pick up the file and load it into the database. There are two file formats that can be used depending on the configuration of the system:

DICOM® (.dcm) file format or XML (.xml) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.infinitt.com](http://www.infinitt.com).

**Option Settings when using DICOM® output (see Chapter 3 for details):**

*DICOM: SOP Class.* This option should be checked against the system capability.

*Transfer Syntax.* This option is rarely changed.

*Nomenclature.* This option is rarely changed.

## Judex A/S

### MEDtalk

Output Format setting: *Judex - MEDtalk*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in SCP (.scp) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.judex.dk](http://www.judex.dk).

## Kibi Software Solutions

### Ki:view ECG; Kibi Forte LIFE ECG Viewer

Output Format setting: *Kibi Software - Ki:view ECG / Kibi Forte LIFE ECG Viewer*. For these management systems the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in custom XML (.xml) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.kibi.fi](http://www.kibi.fi).

## LUMEDX Corporation

### HealthView ECG Manager

Output Format setting: *Lumedx - HealthView ECG Manager*. For this management system the translator software will normally be installed on the server. Files will be in a custom XML (.xml) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.lumedx.com](http://www.lumedx.com).

**Option Settings (see Chapter 3 for details):**

*Set output lead format.* This option can be used to specific the display/print format.

## McKesson Corporation

### McKesson Cardiology™

Output Format setting: *McKesson Cardiology*. For this management system the translator software will normally be installed on the server by the manufacturer. Files will be in the proprietary (.mck) file format, or in special circumstances McKesson may configure it to use the DICOM® (.dcm) file fo. For additional information about this system you can contact the manufacturer or visit their website at: [www.mckesson.com](http://www.mckesson.com).

Field mapping should be used to get fields that are not showing up in the system. McKesson support will normally set these up during the initial configuration. *Note that Order Number will always be assigned to User Field 1.*

## MedEx Tech Trade Corp

### MEMRS

Output Format setting: *MedEx Tech Trade Corp - MEMRS*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. When DatamedFT™ writes the output files to the MEMRS server, a utility provided by MedEx Tech will pick up the file and load it into the database. Files will be in DICOM® (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.medexotech.com](http://www.medexotech.com).

#### Option Settings (see Chapter 3 for details):

*DICOM: SOP Class*. This option should be checked against the system capability.

*Transfer Syntax*. This option is rarely changed.

*Nomenclature*. This option is rarely changed.

## Medical Micrographics

### Cardiac Profiler

Output Format setting: *Medical Micrographics - Cardiac Profiler*. The DatamedFT™ translator is available as a manufacturer option for this management system. Additional licenses may be added by contacting your Medical Micrographics representative. Files will be in a proprietary (.phc) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.medicalmicrographics.com](http://www.medicalmicrographics.com).

## Medimatic

### ComPACS™

Output Format setting: *Medimatic - ComPACS*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in the DICOM® (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.medimatic.com](http://www.medimatic.com).

#### Option Settings (see Chapter 3 for details):

*DICOM: SOP Class*. This option should be checked against the system capability.

*Transfer Syntax*. This option is rarely changed.

*Nomenclature*. This option is rarely changed.

## Mortara Instrument, Inc. (including Cardiac Science Corporation)

### Pyramis®

Output Format setting: *Mortara (CSC) - Pyramis*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in Burdick custom SCP (.raw) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.mortara.com](http://www.mortara.com). **IMPORTANT NOTE: Files going into Pyramis must not have a filename longer than 80 characters or it can cause the system to crash. Some incoming formats (e.g. Mortara XML) produce files with long names, so for those inputs it is important to use the Original Filename or Formatted Filename setting.**

## Neagen Oy

### Neagen PACS

Output Format setting: *DICOM (generic)*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. When DatamedFT™ writes the output files to the server, a utility provided by Neagen will pick up the file and load it into the database. Files will be in DICOM® (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.neagen.com](http://www.neagen.com).

#### Option Settings (see Chapter 3 for details):

*DICOM: SOP Class*. This option should be checked against the system capability.

*Transfer Syntax*. This option is rarely changed.

*Nomenclature.* This option is rarely changed.

## Novarad<sup>®</sup> Corporation

### NovaCardio<sup>®</sup> ECG

Output Format setting: *Novarad - NovaCardio ECG*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in the DICOM<sup>®</sup> (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.novarad.net](http://www.novarad.net).

#### Option Settings (see Chapter 3 for details):

*DICOM: SOP Class.* This option should be checked against the system capability.

*Transfer Syntax.* This option is rarely changed.

*Nomenclature.* This option is rarely changed.

## Philips Healthcare

### IntelliSpace<sup>®</sup> ECG; TraceMasterVue Release C.02 and later

Output Format setting: *Philips - IntelliSpace ECG / TraceMasterVue (xml 1.04)*. Philips has validated certain input formats and for these supported formats the DatamedFT<sup>™</sup> translator is available as a manufacturer option. Additional licenses may be added by contacting your Philips representative. Files will be in XML (.xml) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.medical.philips.com](http://www.medical.philips.com).

For formats that are not validated and supported by Philips, the software may be purchased directly from DLLC or through another supplier and it must be installed on a separate computer located on the network. The output files will be written across the LAN to a network share on the server. ***Note that for this type of installation, support is from DLLC directly and not from Philips.***

The translated EKG files will be dropped into the “*inbound*” folder (typically *C:\TraceMasterVue\inbound*), where the TraceMasterVue will pick them up automatically and load them into the database. ***This folder must be shared, and the network share must have full-control permissions for the account under which the DatamedFT service is running or the files will not be able to be written. If not running in a domain environment, a local account can be added on the FTPC that exactly matches a local account on the iECG/TraceMasterVue system and the service can run under this account.*** The *Output Folder* configuration setting for DatamedFT<sup>™</sup> should point to this network share.

### TraceMasterVue Release A - C.01

Output Format setting: *Philips - TraceMasterVue (xml 1.03)* or *Philips - IntelliSpace ECG / TraceMasterVue (xml 1.04)*. For this management system the translator software will be installed on a separate computer located on the network. The output files will be written across the LAN to a network share on the server. Files will be in XML (.xml) file format and the *Output format* must be set to the “1.04” selection for release B.02 and later, or to the “1.03” selection for older releases. For additional information about this system you can contact the manufacturer or visit their website at: [www.medical.philips.com](http://www.medical.philips.com).

The translated EKG files will be dropped into the “*inbound*” folder (typically *C:\TraceMasterVue\inbound*), where the TraceMasterVue will pick them up automatically and load them into the database. ***This folder must be shared, and the network share must have full-control permissions for the account under which the DatamedFT service is running or the files will not be able to be written. If not running in a domain environment, a local account can be added on the FT/PC that exactly matches a local account on the TraceMasterVue system and the service can run under this account.*** The *Output Folder* configuration setting for DatamedFT™ should point to this network share.

### TraceMaster (NT or OS/2)

Output Format setting: *Philips - TraceMaster NT*. For this management system the translator software will be installed on a separate computer located on the network. The output files will be written across the LAN to a network share on the server. Files will be in a proprietary file format (with an 8.3 filename). For additional information about this system you can contact the manufacturer or visit their website at: [www.medical.philips.com](http://www.medical.philips.com).

The translated EKG files will be dropped into the “*inbound*” folder (typically *C:\lems\inbound*), where the TraceMaster will pick them up automatically and load them into the database. ***This folder must be shared, and the network share must have full-control permissions for the account under which the DatamedFT service is running or the files will not be able to be written. If not running in a domain environment, a local account can be added on the FT/PC that exactly matches a local account on the TraceMaster system and the service can run under this account.*** The *Output Folder* configuration setting for DatamedFT™ should point to this network share.

### Option Settings (see Chapter 3 for details):

***Center source sample.*** This option is rarely used and applies only to TraceMaster NT or OS/2.

***Add rate statement.*** This option is ON by default and applies only to TraceMaster NT or OS/2.

***Add buzz marks on output.*** This option is ON by default and applies only to TraceMaster NT or OS/2.

**Set output lead format.** This option applies to all TraceMaster versions. It is important when Cabrera output is desired.

**HP Statement Type.** This option is rarely used and applies only to TraceMaster NT or OS/2.

**HP Version Signature.** This option is rarely used and applies only to TraceMaster NT or OS/2.

**Notes:**

Intellispace® ECG and TraceMasterVue™ support up to 16 leads but only in specific lead combinations. Arbitrary extended leads that don't match a supported lead set will be discarded. Contact your Philips support representative if more details are required.

## RVC BV

### RVC Clinical Assistant

Output Format setting: **RVC Clinical Assistant**. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in the DICOM® (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.rvc-software.com](http://www.rvc-software.com).

#### Option Settings (see Chapter 3 for details):

**DICOM: SOP Class.** This option should be checked against the system capability.

**Transfer Syntax.** This option is rarely changed.

**Nomenclature.** This option is rarely changed.

## Schiller AG

### SEMA™ ECG Management System

Output Format setting: **SCHILLER - SEMA**. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in XML (.xml) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.schiller.ch](http://www.schiller.ch).

## ScImage®

### PicomEnterprise™

Output Format setting: **ScImage - PicomEnterprise (dcm)** or **ScImage - PicomEnterprise (sci)**. The DatamedFT™ translator is available as a manufacturer option for this management system. Additional licenses may be added by contacting your ScImage®

representative. Files can either be in a proprietary (.sci) file format, or they can be in DICOM® (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.scimage.com](http://www.scimage.com).

**Option Settings when using DICOM® output (see Chapter 3 for details):**

*DICOM: SOP Class.* This option should be checked against the system capability.

*Transfer Syntax.* This option is rarely changed.

*Nomenclature.* This option is rarely changed.

## Spacelabs Healthcare

### Sentinel®

Output Format setting: *Spacelabs - Sentinel (sdif)* or *Spacelabs - Sentinel (dmr)*. For this management system the translator software will normally be installed on the server by the manufacturer. Files will use the proprietary (.sdif) format (for newer systems) or the proprietary (.dmr) file format (for older systems). For additional information about this system you can contact the manufacturer or visit their website at: [www.spacelabshealthcare.com](http://www.spacelabshealthcare.com).

## TriKardia LLC

### CardioCenter®

Output Format setting: *TriKardia - CardioCenter*. For this management system the translator software will normally be installed on the server by the manufacturer. Files will use the proprietary XML (.xml) format. For additional information about this system you can contact the manufacturer.

## VidiStar® LLC

### VidiStar® PACS and Online Reporting Software

Output Format setting: *VidiStar PACS*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in the DICOM® (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.vidistar.com](http://www.vidistar.com).

**Option Settings (see Chapter 3 for details):**

*DICOM: SOP Class.* This option should be checked against the system capability.

*Transfer Syntax.* This option is rarely changed.

*Nomenclature.* This option is rarely changed.

## VISUS Technology Transfer GmbH

### JiveX<sup>®</sup> ECG

Output Format setting: *VISUS - JiveX ECG*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in the DICOM<sup>®</sup> (.dcm) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.visus.com](http://www.visus.com).

#### Option Settings (see Chapter 3 for details):

*DICOM: SOP Class*. This option should be checked against the system capability.

*Transfer Syntax*. This option is rarely changed.

*Nomenclature*. This option is rarely changed.

## Welch Allyn<sup>®</sup>, Inc

### CardioPerfect<sup>®</sup> Workstation

Output Format setting: *Welch Allyn - CardioPerfect Workstation*. For this management system the translator software may be installed on the server (if permitted) or on another computer located on the network. If it is on a separate computer, the output files will be written across the LAN to a network share on the server. Files will be in the SCP (.scp) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.welchallyn.com](http://www.welchallyn.com).

## Witt (Philips)

### Calysto for Cardiology

Output Format setting: *Philips - Calysto for Cardiology [Witt]*. The DatamedFT<sup>™</sup> translator is available as a manufacturer option for this management system. Additional licenses may be added by contacting your Philips representative. Files will be in a proprietary (.wit) file format. For additional information about this system you can contact the manufacturer or visit their website at: [www.medical.philips.com](http://www.medical.philips.com).

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## CHAPTER 7 - TROUBLESHOOTING

**W**hen DatamedFT™ is installed, a new Windows™ service named DatamedFT 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 DatamedFTConfig 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 open, 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 several depending on the number of processes that are set up. 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. In this case make sure that the key is available.

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.

There should be one message for each process that gives the process number and the input and output formats. Make sure each one says that it has started. There should also be a message that says how many processes there are and gives the code version and License Key information along with the license details. This shows that the License Key is installed properly and the proper license was obtained.

When working with DLLC support personnel, a key piece of information is the configuration settings. To export these to a file to email DLLC, start the DatamedFT™ Configuration Utility and select *File* → *Export settings to file* on the menu.

### Troubleshooting Steps

When files are not appearing in the destination system a step-by-step approach is the best way to narrow down the problem. Follow these steps to test each “leg” of the process:

1. Confirm that the files are arriving:
  - a. Stop the DatamedFT service.
  - b. Send a test ECG and check to see if it appears in the *Input Folder*.
  - c. If it does not appear then the problem is occurring prior to DatamedFT™ and the search should move upstream.

2. Confirm that the conversion is successful:
  - a. In the configuration utility, change the *Output Folder* to a local folder that is not being used (e.g. C:\Temp).
  - b. Save the settings and start the DatamedFT service, then check to see if a converted file appears in the local folder.
  - c. If it does not appear then there is a problem in the conversion. Check the log file and Application Event Log. This is a good time to turn on debugging and try it again to capture the debug file for DLLC to analyze.
3. When the Output folder is a network share, the most common reason for failure is that the service is not set up to run under an account with access to the share. Confirm that the output file can be written:
  - a. Log into the computer using the same account that the DatamedFT service is configured to run as. To find out what that is, open the *Services* applet, right-click on the DatamedFT service and select *Properties*, then check the *Log On* tab.
  - b. Open Windows Explorer and copy the path from the *Output Folder* setting to the address bar. Press *Enter* and confirm that Explorer can access the share.
  - c. Copy the converted file from step 2.b to the shared folder. Note that b and c can also be done from a command prompt.
  - d. Because the file will probably be loaded and deleted from the Output Folder by the management system, it may not be possible to observe the file in that folder, even briefly. If the copy is not successful there will normally be an error message shown.
  - e. On some systems, files that don't load successfully will be renamed, while on others they are always deleted. Check the shared folder for any remaining files (such as files with an extension of .BAD).
4. Locate the test ECG in the management system.
  - a. On some systems, files that don't load successfully will be renamed, while on others they are always deleted. Check the shared folder for any remaining files (such as files with an extension of .BAD).
  - b. If the file was converted and written successfully but you can't locate it in the management system, contact the manufacturer for assistance.

## Commons Issues

Here are some common issues and answers:

- **Symptom: The License Key cannot be located**
  - The License Key is required for the DatamedFT 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 DatamedFT™ 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 HASP Admin Control Center. If you do not see this, use the shortcut under *Start* → *All Programs* → *Datamed* → *DatamedFT* → *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 License Key still can't be located, please contact DLLC support.
- **Symptom: The DatamedFT service is stopping and restarting continuously**
  - This condition is very rare, however it is almost always caused by a file in the *Input folder* that is causing the DatamedFT service to crash. Check the *Input folder* for files and move them to a temporary folder to see if that resolves the restarting issue. There should be at least one file with an extension of .ip, which is the most likely culprit. If there are additional files, they can be moved back to the *Input folder* one at a time. If they become "stuck" again, move them back to the temp folder. The file(s) that cause the problem should be uploaded to DLLC for analysis and resolution.
  - Another condition that can cause this is if Visual Studio or another debugger program is running on the FT/PC. If that is the case, simply close the program.
- **Symptom: File(s) in the Input Folder with the extension .LoadFileFailed**
  - This indicates that the file cannot be loaded by DatamedFT™. Check the permissions on the file to make sure the service can read it.
- **Symptom: File(s) in the Input Folder with the extension .InternalError**
  - This indicates an internal error inside DatamedFT™. Contact DLLC if you see this.
- **Symptom: File(s) in the Input Folder with the extension .UnsupportedFormat**
  - This indicates that the file is a known format but the format is not yet supported. If this file is supposed to be a compatible EKG record, contact DLLC.
- **Symptom: File(s) in the Input Folder with the extension .FormatNotLicensed**
  - This indicates that you do not have the license for this type of file. Contact DLLC to add licenses.
- **Symptom: File(s) in the Input Folder with the extension .UnknownFormat or .UnknownOrUnlicensed**
  - This indicates that the file format does not match any known formats and cannot be processed by DatamedFT™. If this file is supposed to be a compatible EKG record, contact DLLC.

- **Symptom: File(s) in the Input Folder with the extension .FromFmtFailed**
  - This indicates that there is a fatal error with the source data. You will need to contact DLLC support and send this file to them for analysis.
- **Symptom: File(s) in the Input Folder with the extension .InvalidData**
  - This indicates that there was a fatal error during internal data validation. You will need to contact DLLC support and send this file to them for analysis.
- **Symptom: File(s) in the Input Folder with the extension .MissingConfDate**
  - This can only happen for *Output format* "Pyramis" and it indicates that the file is marked as Confirmed but there is no Confirm Date. Since the system will not accept the file, conversion fails.
- **Symptom: File(s) in the Input Folder with the extension .ToFmtFailed**
  - This indicates that there is a fatal problem converting the data to the output format. You will need to contact DLLC support and send this file to them for analysis.
- **Symptom: File(s) in the Input Folder with the extension .OutputFailed**
  - This indicates that the output file could not be written to the *Output folder*. This is nearly always caused by a network permissions problem. You can confirm this by changing the *Output folder* to a local folder on the FTPC and re-running the file. As stated earlier, the account that the DatamedFT service runs under MUST have permissions to the network and to the remote share. To re-run the file, rename it to the original filename or at least the original extension.
- **Symptom: EKG records are going through but can't be found in the management system**
  - The first thing to look at here is the management system's logs to see if the record was imported but may have had a problem. Also check the *Output folder* to see if the file is waiting to be loaded. If you find files there make sure you are putting them in the right location for that system.
  - For a MUSE® system, one common problem is that the Institution ID (Site) is not correct. For most systems, the Site is fixed for all incoming translated EKGs, so it can be set to a fixed value using field mapping. Contact the BioMed department or GE representative to get the appropriate value. The syntax for the field mapping (for Site 1) is: `InstitutionID="1"`.

*DLLC support can be reached by email at [support@datamed.com](mailto: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).*

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## 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:

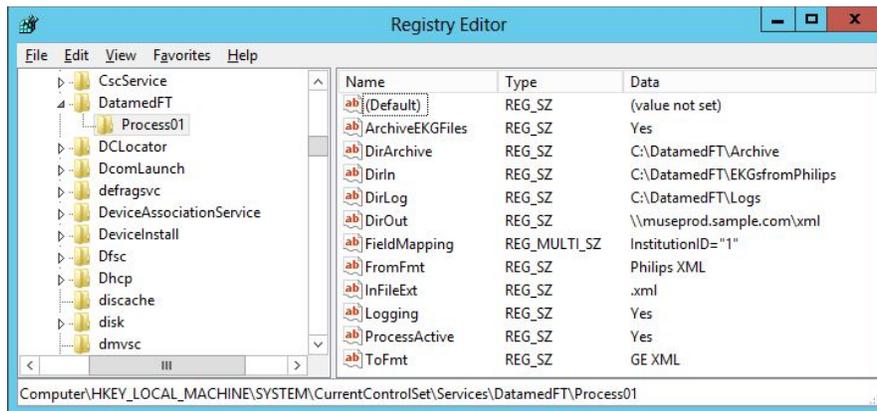
1. Use the Configurator utility. This is the normal method and is described in detail below.
2. Use DatamedLicenseUtil. This utility displays the license details, just like the About screen in the Configurator. It has functions just like the ones described below.
3. Use DatamedSentinelUtility. This utility 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 DatamedFT 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](mailto: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 DatamedFT Configuration Utility select *License* → *Load License Update* on the menu. Navigate to the saved update file and press *Open* to load the license.
- Step 5:** 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 DatamedFT™ after installation, the DatamedFTConfig 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\DatamedFT. It should look similar to this:



Most of the settings must not be changed or the operation of DatamedFT will be affected. If any setting is changed the service must be restarted. A complete description of all configuration settings can be found in Chapter 3, and DLLC personnel will give instructions on what setting needs to be changed manually.

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## 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](http://www.datamed.com)). The following EULA was current at the time of this printing.

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