DatamedWL™
Service Manual

Datamed LLC

DatamedWL™ v2.2

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CAUTIONS
This product is not intended for home use.

REGULATORY
This product is registered with the US FDA as a Class 1 medical device (MDDS). This product complies with the regulator requirements of European Directive 93/42/EEC; however, it does not meet the definition of a medical device in Europe or Canada.

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INTENDED USE

This product is middleware that sits between a DEVICE (an EKG acquisition device that will query for orders) and a SYSTEM (a system that contains the EKG orders). Its primary purpose is to be a seamless conversion conduit between these two and allow the DEVICE to send a native query to the SYSTEM and then receive back a list of orders. From the DEVICE's perspective, it is impersonating a SYSTEM from the same manufacturer; from the SYSTEM's perspective it is impersonating a DEVICE from the same manufacturer. The secondary purpose is to act as a receiver and (optionally) a transmitter for the one-way EKG transmission from the DEVICE to the SYSTEM, using DatamedFT™ for conversion. It is not intended to be used for any other purposes than those described here.

PROTECTED HEALTH INFORMATION (PHI) CONSIDERATIONS

This product is not intended as a permanent data store, but in the normal course of operation certain data elements 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:

- Debug Folder – If Debugging is enabled, the debug files are written here. This data is always encrypted.
- Windows® Registry - When combined with DatamedFT™, context information (which may contain PHI) can be stored in the registry in the DynamicFieldMappingByOrderID subkey off the DatamedFT service process key.

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CHAPTER 1 – GETTING STARTED

The DatamedWL™ application provides order query functionality between EKG acquisition devices (normally cardiographs) and storage/management systems. To use this functionality, the device operator utilizes that device's query mode (which typically includes search criteria) and initiates an order query (worklist) request. That request goes to DatamedWL™ and is then converted to the appropriate type of query for the management system. If the system has any orders that match the search criteria, the information (order information, patient demographics) is returned to DatamedWL™ where it is then passed back to the source device. DatamedWL™ appears as native management system to the source device, and it appears as a native source device to the management system. Typically, once the worklist is retrieved, an EKG will be taken and sent through DatamedFT™ to the management system to close the order.

Not all EKG devices support worklist functionality and not all that do are supported by DatamedWL™. Check the compatibility list on www.datamed.com or contact Datamed LLC to find out if your specific device is supported.

DatamedWL™ is licensed for a specific number of source devices. Licenses can be purchased and added at any time.

Definitions, Acronyms and Abbreviations

DEVICE	For clarity, this term is used to indicate the EKG acquisition device that will query for orders
DFT	DatamedFT™ Format Translator
DLLC	Datamed LLC
DWL	DatamedWL™
SYSTEM	For clarity, this indicates the system that contains the EKG orders
WLPC	The computer that DWL is installed on

CHAPTER 2 – INSTALLATION

Requirements

- **License Key.** You will receive a License Key with the software. This key is required for the software to run and it controls the licensing of the software, including the number and type of licensed translators. If the key needs to be updated (e.g. if additional licenses are purchased), see *Appendix A* for instructions on how to do so. Note that a single key is used to license both DWL and DFT.
- **Software**. CD or installation package from DLLC. In a standard installation DFT v2.2 or higher is required for DWL to function properly, so it should either be installed already or be installed subsequent to this installation.
  - For customers with GE® MAC® cardiographs, DWL will handle communications with worklist-capable models, and DatamedRcv™ DRCV01 will handle communications with non-worklist-capable models. If all of the GE® MAC® carts are worklist-capable then DRCV01 should not be installed. If both are installed, DWL and DRCV01 must be configured to listen on different ports.
  - For customers with Philips PageWriter® cardiographs, DWL will handle communications with worklist-capable models, and DatamedRcv™ DRCV02 will handle communications with non-worklist-capable models. If all of the Philips carts are worklist-capable then DRCV02 should not be installed. If both are installed, DWL and DRCV02 must be configured to listen on different ports.
- **Computer.** This software is independent of the SYSTEM and can be installed either on the SYSTEM (if permitted by the manufacturer) or anywhere with network access to the host system. The minimum specifications for the computer are: 1 GB RAM, 40 GB HD, one unused USB Port for the hardware License Key, and a LAN connection for file transmission. The following operating systems are supported: Windows 7 x86 and x64, Windows Server 2003 SP1/R2 x86 and x64, Windows Server 2008 x86 and x64, Windows Server 2008 R2, and Windows Server 2012. ***IMPORTANT NOTE: Nihon Kohden devices require the NK software package which is not compatible with 64-bit operating systems. If you are using NK devices with a 64-bit OS then you must use the Windows Compatibility Mode to allow the NK software to run. See the instructions in Chapter 5 for details.***
- **LAN considerations.** DWL only communicates over a LAN. Depending on the DEVICEs and SYSTEM supported, certain ports must be enabled on the WLPC and in any relevant firewalls. If DWL is installed on the SYSTEM, it will write files or transmit locally. Otherwise, it will be configured to transmit or write output files across the network to the SYSTEM, so that traffic must be allowed.

- **VM considerations.** DWL can be run on virtual machines. The primary consideration is access to the USB License Key. For single-server installations the key can be plugged into the host computer and assigned to the VM. For fault-tolerant configurations (e.g. vMotion®), a USB-to-Ethernet adapter such as AnywhereUSB™ should be used. Note that using AnywhereUSB™ with a modem can affect the connectivity to the License Key (http://www.digi.com/support/kbase/kbaseresultdetl?id=3039).
- **.NET.** This application requires the Microsoft .NET 3.5 Framework. The setup program will install the appropriate software.

New Installation

These instructions are for a new installation where there is no prior version of DatamedWL™ installed. This can also be used if DatamedWL™ was uninstalled. A configuration file with initial settings may or may not be supplied. If the initial configuration file is not supplied, DatamedWLConfig will need to be run after installation to update the settings.

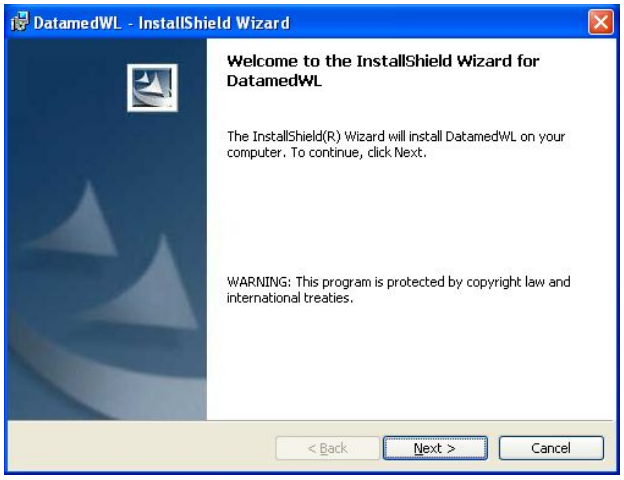
Install the hardware License Key

- Insert the hardware key into the USB port. The basic driver should be installed automatically by the operating system. We recommend using the full driver package provided by the manufacturer. The drivers that were current as of the release date are provided and can be installed manually after the installation of DatamedWL™ by using the shortcut under *Start → All Programs → Datamed → DatamedWL → Install License Key Drivers*. This driver package includes important tools used to diagnose issues. The latest driver from the manufacturer for Sentinel LDK may be downloaded directly from the SafeNet website at: http://sentinelcustomer.safenet-inc.com/sentineldownloads/.
- When the driver is properly installed the LED in the hardware key will light up.

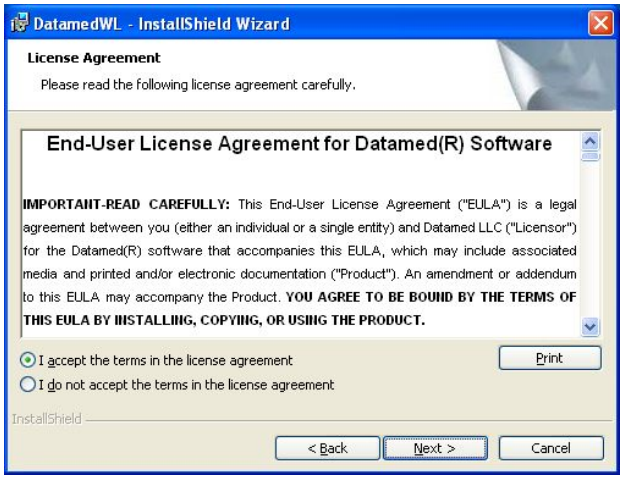
Install the DatamedWL™ Software

- The installation package can be found on the software installation CD or may be emailed. Locate *DatamedWL_Setup_v2.x.x.exe* and double click on it. The following screen should appear. Select the appropriate language and then click ***Next*** to continue.

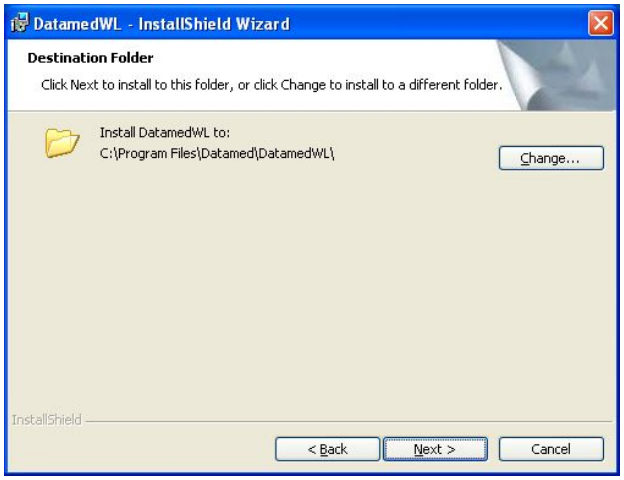
- The introduction screen will appear. Click ***Next*** to continue.



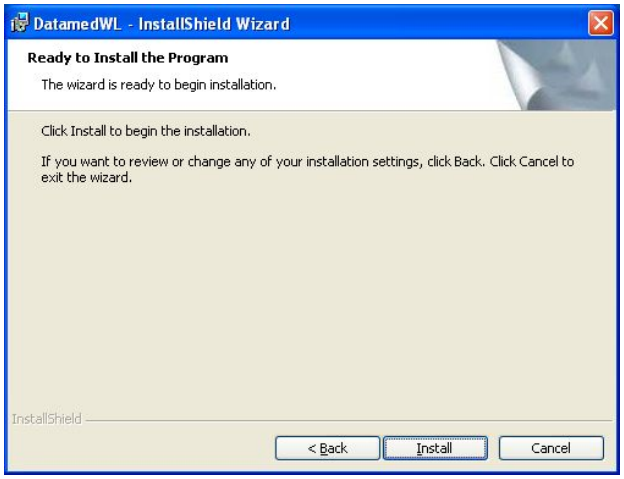
- Read the License Agreement carefully and select ***I Agree*** if you accept it. Click ***Next*** to continue.



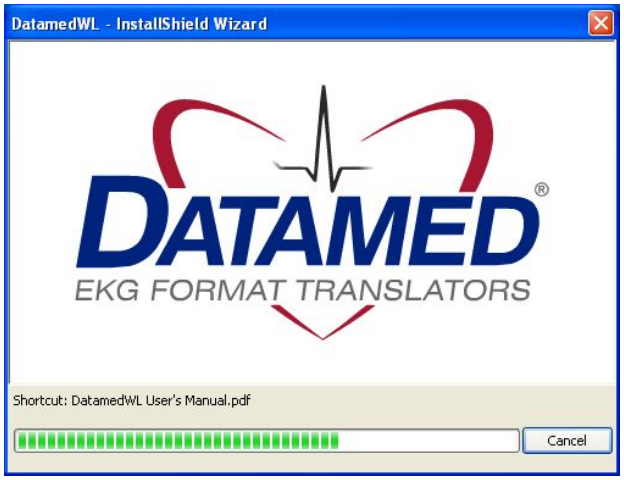
- Select the installation folder for the program and then click ***Next*** to continue.



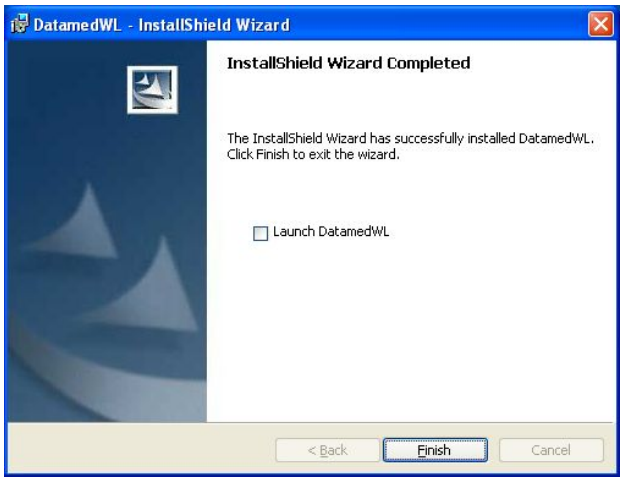
- When ready, click ***Next*** to begin the installation. Installation should take 1-2 minutes.



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



The DatamedWLConfig utility should always be run after installation. If a configuration settings file was supplied, this can be loaded from this utility. ***Note that the first process must be enabled by checking the Enabled box before it can be configured.*** The DatamedWL 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 DatamedWLStart. The job of this service is to make sure that DatamedWL runs and is restarted if it stops for any reason.

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

Updating

If DatamedWL™ v2.0 or higher is already installed, running the setup program will update it. The screens are the same as a new installation.

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

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

Uninstalling

To uninstall DatamedWL™, do one of the following: 1) from *Start → All Programs → Datamed → DatamedWL*, select *Uninstall DatamedWL*; or 2) open *Control Panel*, choose *Add or Remove Programs*, select *DatamedWL*, 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, certain settings require specific IP addresses or DNS names that are local to this site. Configuration settings are changed by using the DatamedWLConfig utility. A shortcut to this utility will be found on the desktop, and it can also be found at *Start → All Programs → Datamed → DatamedWL → DatamedWLConfig*. See *Chapter 3* for a complete description of the configuration settings.

It is very important to make sure that any configured folders are created before starting the service. The default folders shown are ***not*** automatically created during installation.

Note that the DatamedWL service will not start automatically until the computer is rebooted. It can be started immediately using the DatamedWLConfig utility. An alternative method of starting the service is to open the ***Services*** applet from *Control Panel → Administrative Tools* and start DatamedWLStart. The job of this service is to make sure that DatamedWL™ runs and is restarted if it stops for any reason.

Unless only order query functionality is used, DatamedFT™ is required to be present and running for this application to work. See *Chapter 7* for more information about setting up DFT for use with DWL.

CHAPTER 3 – CONFIGURING DATAMEDWL™

Once DatamedWL™ is installed, changes to the configuration settings can be done using the DatamedWLConfig 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 DatamedWL™ 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 (especially in Windows™ Server 2008/2012), extra permissions may be required to write to the registry. An error saving changes will indicate that this is necessary. For these installations the configuration utility must be run as an Administrator. This is possible from the right-click menu on the shortcut, or by editing the shortcut properties (Compatibility→Privilege Level). In some installations lowering UAC to "Never Notify" (which requires a reboot) may also be needed.***

Window Settings

At the top of the window there are three items:

- ***Process number***. 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. Keep in mind that DatamedFT™ would need the same 2 processes for this to work.
- ***Total configured processes***. This controls the number of processes in the drop-down list for *Process Number*. 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 DatamedWL and DatamedWLStart services. There are three possible values: ***Stopped*** – indicates that both services are not running; ***Running*** – indicates that both services are running; and ***Unknown*** – which indicates that one of the two services is running and the other is not. The *Unknown* status is a normal transition between *Stopped* and *Running*, however if the status

remains in this status then there is a problem. The most common reason for this condition is that the security key is not present or accessible.

- ***Start***. This button will start the services. Since DatamedWLStart is responsible for bringing DatamedWL up, this button actually starts DatamedWLStart first, and then DatamedWL if it isn't started.
- ***Stop***. This button will stop the services. Since DatamedWLStart is responsible for bringing DatamedWL down, this button actually only stops DatamedWLStart first, and then DatamedWL if it isn't stopped.
- ***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.

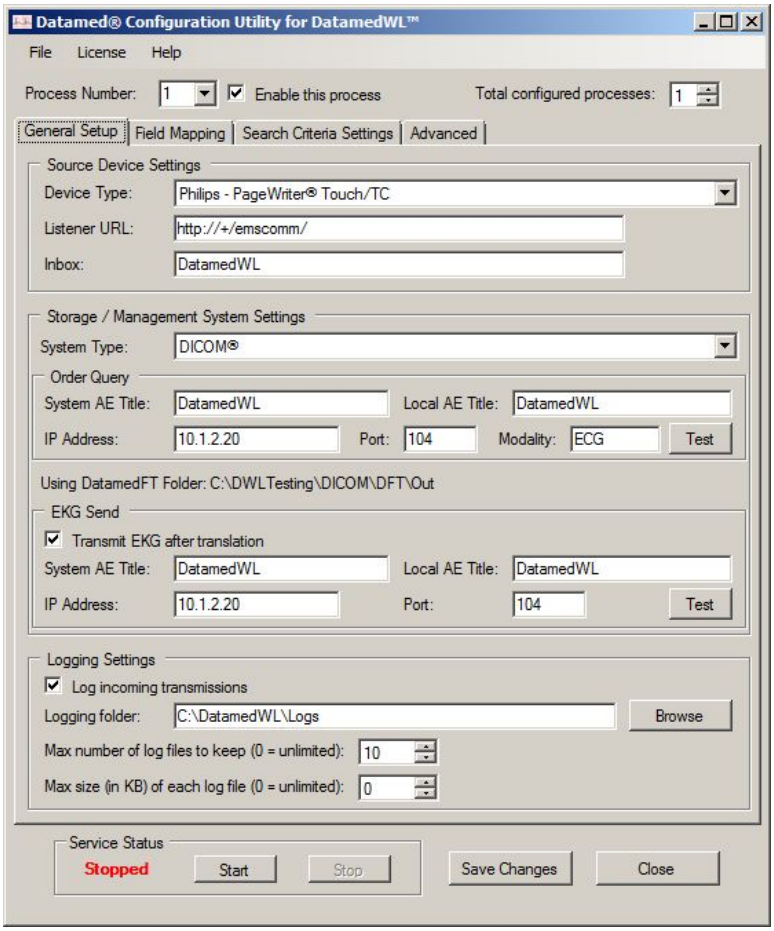
Menu Options

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 DatamedWL Settings (.dwl) 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 DatamedWL Settings (.dwl) 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 security key license 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 security key license, 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 → About***. This will open a window that displays the program version, security key serial number, license information, and copyright information.

General Setup Tab

This tab contains the primary settings for the selected *Process Number*, including device and system types. Most customers will only need to use this tab. Each setting is described below.



Input Settings:

- ***Device Type***. This is a drop-down list of all possible DEVICEs, including ones that are not licensed for this installation. When this selection is made, the rest of this group of controls will change to one of the following:

  Specific settings for Device Type ***DICOM®***:

  - ***C-Find AE Title***. This is the AE Title for DWL when acting as a DICOM SCP (Service Class Provider) that will service the C-FIND request.
  - ***Port***. This is the port that DWL is listening on for C-FIND requests.

- ***C-Store AE Title***. This is the AE Title for DWL when acting as a DICOM SCP (Service Class Provider) that will service the C-STORE request.
- ***Port***. This is the port that DWL is listening on for C-STORE requests.

Specific settings for Device Type ***Edan - SE***:

- ***Listener IP***. This is the IP address of this computer.
- ***Port***. This is the port that DWL is listening on for order requests from the DEVICE.
- ***EKG Input Folder***. This is the folder that will be monitored for incoming EKG files. The FTP server must be configured to write to this folder, which must be a local folder. The ***Browse*** button allows you to browse for the folder to use (or create one).

Specific settings for Device Type ***GE® - MAC® (Built-in LAN port)***:

- ***Cart Addresses***. This is the IP Addresses and port for each GE® cart that will be connected with the built-in LAN port. Connections are initiated by this application. The format of each entry is: ***<IP Address>:<Port>***.
- ***Validate***. Pressing this button will validate each entry in the *Cart Addresses* list and remove any that are not the right format. **NOTE: This does not validate the connection to the cart.**

Specific settings for Device Type ***GE® - MAC® (Serial-to-LAN adapter)***:

- ***Listener IP.*** This is the IP address of this computer.
- ***Port***. This is the port that DWL is listening on for connections from GE® carts.

Specific settings for Device Type ***Mortara - Burdick® Atria®***:

- ***Listener URL***. This is the URL that the Atria® cardiographs will connect to. This value must match the configuration setting in the carts.

Specific settings for Device Type ***Mortara – Eclipse™ Premier***:

- ***Listener IP.*** This is the IP address of this computer.
- ***Port***. This is the port that DWL is listening on for connections from Eclipse™ Premier carts.

Specific settings for Device Type ***Mortara - ELI®-series***:

- ***C-Find AE Title***. This is the AE Title for DWL when acting as a DICOM SCP (Service Class Provider) that will service the C-FIND request from ELI® Link.
- ***Port***. This is the port that DWL is listening on for C-FIND requests from ELI® Link.

- ***EKG Input Folder***. This is the folder that will be monitored for incoming EKG files. ELI® Link must be configured to write XML-MI or DICOM files to this folder, which must be a local folder. The ***Browse*** button allows you to browse for the folder to use (or create one).

Specific settings for Device Type ***Nihon Kohden Cardiofax® ECG***:

- ***Input Folder***. This is the folder that will be monitored for incoming order requests and EKG files. The EctpCore service must be configured to write to this folder, which must be a local folder. The ***Browse*** button allows you to browse for the folder to use (or create one).

Specific settings for Device Type ***Philips - PageWriter® Touch/TC***:

- ***Listener URL***. This is the URL that the Philips PageWriter® cardiographs will connect to. This value must match the configuration setting in the carts.
- ***Inbox***. This is a search criteria used by the Philips PageWriter® cardiographs and is typically used to specify the department. This value is supplied to the cart. Normally only one value is entered, however multiple entries can be entered when separated by a comma.

Specific settings for Device Type ***SCHILLER - CARDIOVIT®***:

- ***Listener URL***. This is the URL that the SCHILLER cardiographs will connect to. This value must match the configuration setting in the carts.

Storage / Management System Settings:

- ***System Type***. This is a drop-down list of all possible SYSTEMs, including ones that are not licensed for this installation. All processes should have the same destination system. When this selection is made, the rest of this group of controls will change.
- ***Order Query***. These settings are used for the query.

  Specific settings for System Type ***Cerner Powerchart ECG®***, ***DICOM®***, ***Epiphany Cardio Server®***, ***Esaote® Suitestensa***, ***INFINITT Cardiology PACS***, ***Lumedx CardioECG™***, ***McKesson Cardiology™***, ***Medimatic - ComPACS™***, or ***ScImage® PicomEnterprise®***:

  - ***System AE Title***. This is the AE Title of the DICOM SCP (Service Class Provider) that will service the C-FIND request.
  - ***Local AE Title***. This is the AE Title for DWL when acting as an SCU (Service Class User) making the C-FIND request.
  - ***IP Address*** and ***Port***. This is the host name or IP address and the port for the DICOM SCP that will service the C-FIND request.
  - ***Modality***. This is the modality that will be queried for. It is always "ECG" but can be changed if needed.

- ***Test***. When this button is pressed it will generate a DICOM ECHO transmission to confirm that the server is available and listening.

Specific settings for System Type ***GE® - MUSE®***:

- ***System URL***. This is the URL to the MUSE® server.
- ***Site #***. This is the Site on MUSE® that will be queried. This must be the same as the *IntitutionID* field mapping in DFT.
- ***User*** and ***Password***. This is the user and password values sent to the MUSE® server for authentication.

Specific settings for System Type ***Philips TraceMasterVue™***:

- ***System URL***. This is the URL to the Philips server.
- ***User*** and ***Password***. This is the user and password values sent to the server for authentication.

Specific settings for System Type ***TriKardia CardioCenter***:

- ***System URL***. This is the URL to the TriKardia server.
- ***User*** and ***Password***. This is the user and password values sent to the server for authentication.

- ***Using DatamedFT Folder***. This label shows the Output Folder from DFT, which is where the converted EKGs will be picked up.
- ***EKG Send***. These settings are used when sending the EKG that was recorded.

  Specific settings for System Type ***Cerner Powerchart ECG®***, ***DICOM®***, ***INFINITT Cardiology PACS***, ***Medimatic - ComPACS™***, or ***ScImage® PicomEnterprise®***:

  - ***Transmit EKG after translation***. This controls what happens after the EKG is handed off to DatamedFT™. If it is checked then the converted file is picked up and transmitted to the SYSTEM. If not then DatamedWL™ is done with the EKG. This selection also controls the rest of the controls in this group: if checked then they are enabled, otherwise they are disabled.
  - ***System AE Title***. This is the AE Title of the DICOM SCP (Service Class Provider) that will service the C-STORE request.
  - ***Local AE Title***. This is the AE Title for DWL when acting as an SCU (Service Class User) making the C- STORE request.
  - ***IP Address*** and ***Port***. This is the host name or IP address and the port for the DICOM SCP that will service the C- STORE request.
  - ***Test***. When this button is pressed it will generate a DICOM ECHO transmission to confirm that the server is available and listening.

Specific settings for System Type ***GE® - MUSE®***, ***Philips TraceMasterVue™***, or ***TriKardia CardioCenter***:

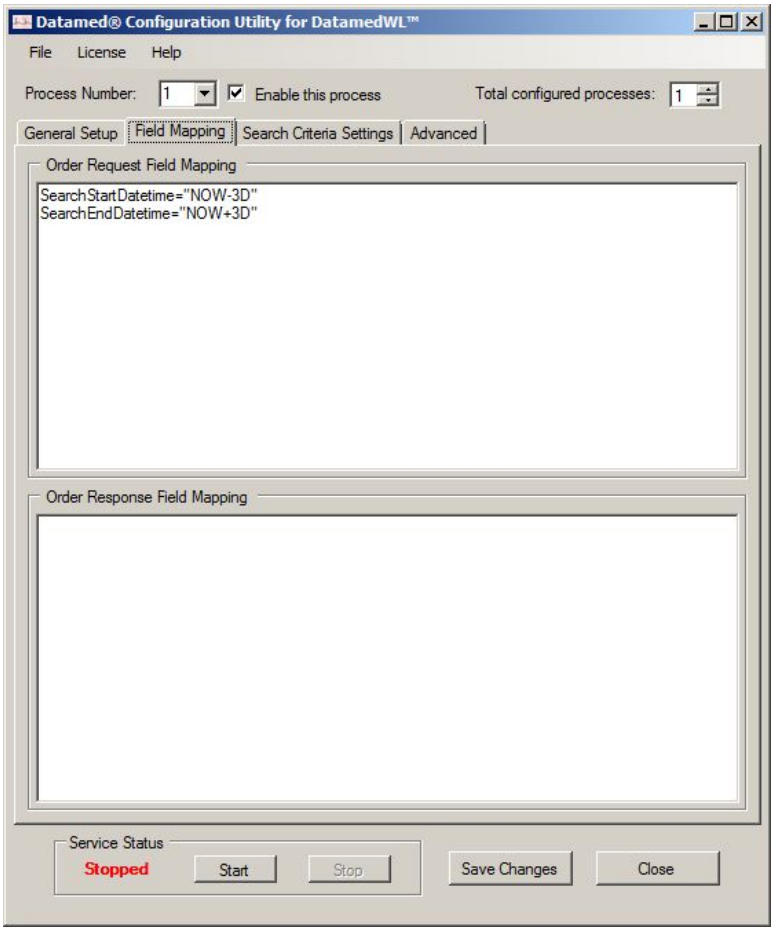
- ***Copy EKG to the Output Folder after translation***. This controls what happens after the EKG is handed off to DatamedFT™. If it is checked then the converted file is picked up and written to the SYSTEM. If not then DatamedWL™ is done with the EKG. This selection also controls the rest of the controls in this group: if checked then they are enabled, otherwise they are disabled.
- ***Output Folder***. This is the shared folder on the MUSE® where XML files are written 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 basic statistical information in a log file. This file is user-readable and contains time-stamped entries for each query and sent EKG. 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.***
- ***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 DatamedWL 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 KB) 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 1,024K (1MB). As indicated by the label, setting this to zero (0) will disable the checking.

Field Mapping

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

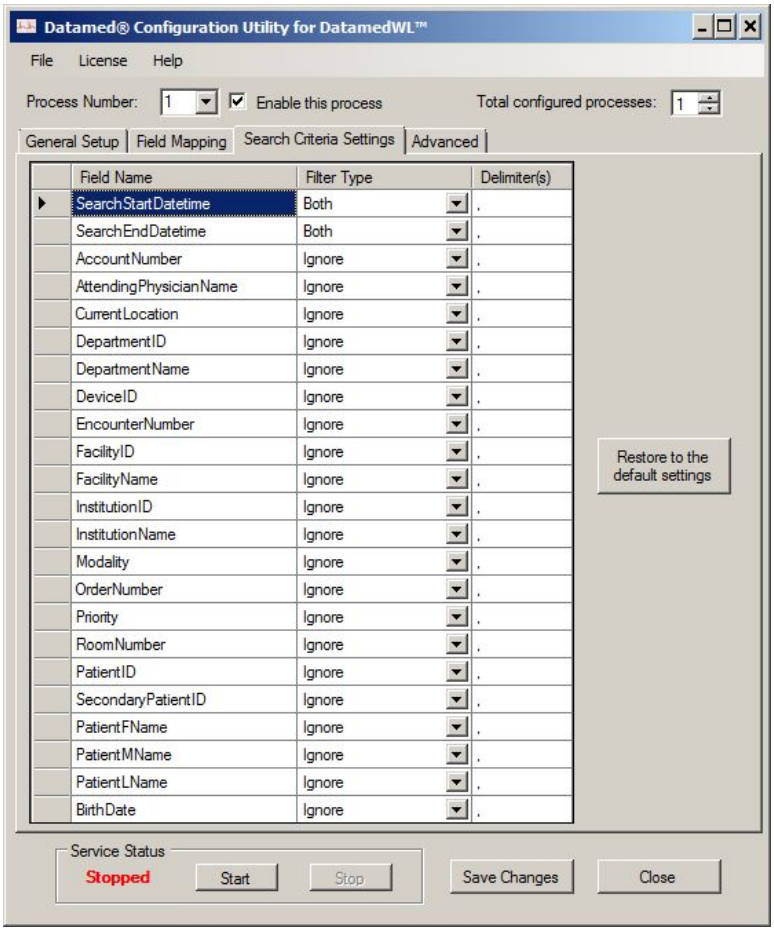


Field Mapping Settings:

- ***Order Request Field Mapping***. These mappings are applied to each incoming Order Request from the DEVICE. *NOTE: The two entries shown above for the search date range are filled in by default and should only be edited, not removed.*
- ***Order Response Field Mapping***. These mappings are applied to each Order Response that came from the SYSTEM. Be very careful with these because they will apply to ***every*** order returned from DWL.

Search Criteria

This tab allows detailed control of the search criteria functionality for the selected *Process Number*.



Search Criteria Settings:

- The list shows all of the internal fields that can be used as criteria in the Order Query. The criteria are inclusive filters, meaning that orders with matching criteria will be returned and others will be discarded. It is important to note that each SYSTEM supports only a subset of these fields and if a field is not supported in the query to the SYSTEM then it will only be supported internally. Here is a description of each column in the list:
    a. ***Field Name*** is the internal field name (from *Chapter 4*) and cannot be changed.

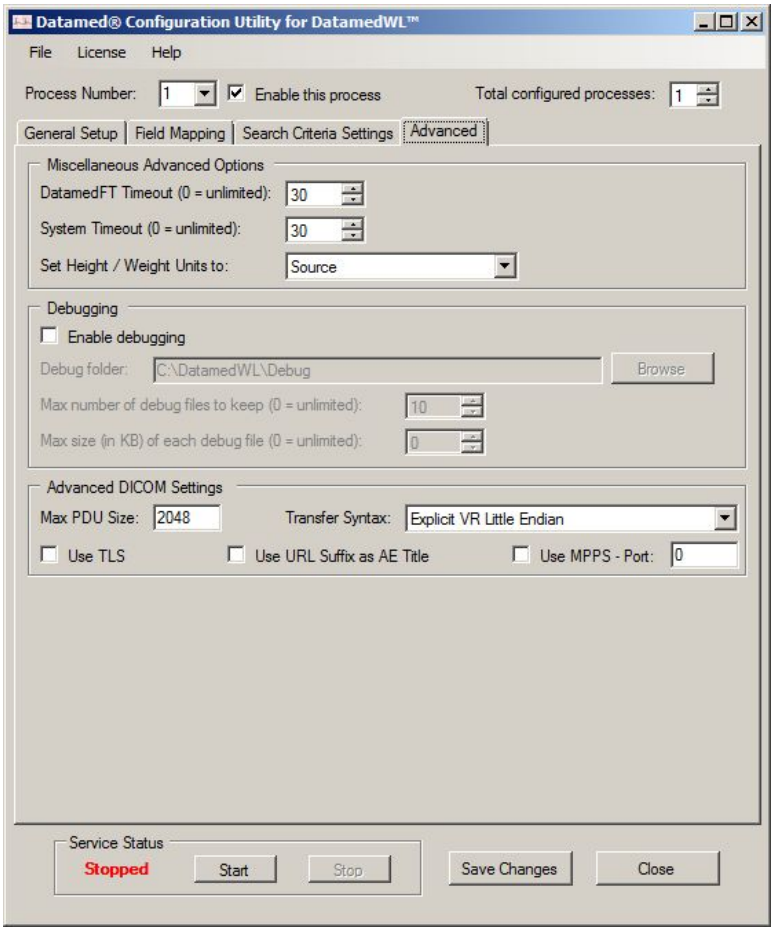
b. ***Filter Type*** is a selection list that has the following choices:
   i. ***Both*** – This selection means that the value coming from the DEVICE will be passed to the SYSTEM (if possible) and it will also be used internally to filter the data in the Order Response.
   ii. ***Internal*** – This selection means that the value coming from the DEVICE will be used internally to filter the data in the Order Response.
   iii. ***Multiple*** – This selection means that the value coming from the DEVICE will be used internally to filter the data in the Order Response, but first it will be split into multiple choices using the character(s) in the *Delimiter(s)* column. For example, if the incoming value is "ER,ICU" and the *Delimiter(s)* setting is a comma (the default), any Order that contains either "ER" or "ICU" in that field will be allowed through and all others will be discarded. *Multiple* can now be used with REGMAP lookups but the restriction is that both the Source field and the Destination field must be set to *Multiple* and the *Delimiter(s)* for both fields must be the same. See the example in *Chapter 4*.
   iv. ***External*** – This selection means that the value coming from the DEVICE will be passed to the SYSTEM (if possible).
   v. ***Pattern*** – As with ***Internal***, this selection means that the pattern value coming from the DEVICE will be used internally to filter the data in the Order Response. The difference is this will force DWL to use Regular Expression pattern matching which allows wildcards and arbitrarily complex patterns. ***The pattern will match any substring in the value.*** This means that a pattern of "123" will match "12345" or "ABC123DEF". Regular Expression syntax can be quite complex so involving DLLC support personnel is a good idea when using this. If the DEVICE doesn't support text entry then a field mapping entry can be used to fill in the pattern.
   vi. ***Ignore*** – This selection means that the value coming from the DEVICE will be discarded. This is the default because it is the most permissive.

c. ***Delimiter(s)*** – This column is editable and will contain the character(s) used to split an incoming value into multiple choices. It is only used when ***Filter Type*** is set to *Multiple*. The default is a comma.

- ***Restore to the default settings***. If this button is pressed, all of the list entries will be reset to the default settings, which is ***Filter Type*** set to ***Ignore*** and ***Delimiter(s)*** all commas.

Advanced Tab

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



Miscellaneous Advanced Options:

- ***DatamedFT Timeout (0 = unlimited)***. When using DFT for translating the EKG, this is amount of time (in seconds) that DWL will wait for the translation to be completed. If it is not done within this time frame then a failure will be returned to the cardiograph and the intermediate file will be removed.
- ***System Timeout (0 = unlimited)***. This is amount of time (in seconds) that DWL will wait for the SYSTEM to return the order response. If it is not done within this time frame then a failure will be returned to the cardiograph and the intermediate file will be removed.

- ***Set Height / Weight Units to***. This controls the handling of units for Height and Weight. Some SYSTEMS always return Imperial or Metric values regardless of the local norm, while others always return both. If this setting is "Source" then the units returned from the SYSTEM are preserved, with Imperial selected when both are present. If either "Imperial" or "Metric" is selected then the values are converted to those units (if needed) when returning the order list to the DEVICE. The possible settings are "Source", "Imperial" (in/lbs) or "Metric" (cm/kg).

Debugging:

- ***Enable debugging***. In the event that there is a problem with the application, DLLC support personnel may want to collect detailed technical information. After checking this option and restarting the service, 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. Enabling debugging will reduce the processing speed. See *Chapter 7* for more details.
- ***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 DatamedWL 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 KB) 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 8,192K (8MB). As indicated by the label, setting this to zero (0) will disable the checking.

Advanced DICOM Options: This group is disabled unless *System Type* is ***DICOM®***, ***Medimatic - ComPACS™*** or ***McKesson Cardiology™***

- ***Max PDU Size***. This defines the maximum size of the Protocol Data Units. The default is 2048 and should not be changed.
- ***Transfer Syntax***. This is used to specify what Transfer Syntax will be used in the output: "Explicit VR Little Endian" (default) or "Implicit VR Little Endian".
- ***Use TLS***. If enabled, Transport Layer Security is used in the network communications.

- ***Use URL Suffix as AE Title***. If enabled, this will allow the DEVICE to send in an AE Title on the inbound URL. Currently it is only needed when *Device Type* is ***Philips - PageWriter® Touch/TC*** and *System Type* is ***McKesson Cardiology™***.
- ***Use MPPS - Port***. If enabled, this will cause DWL to include Modality Performed Procedure Step messages in the storage process. Since MPPS is not useful for a 10-seond exam nor is it supported by the source devices, the MPPS steps are sent immediately following one another, which simulates the MPPS sequence. These steps are sent in order: NCREATE, CSTORE, NACTION, and then NSET to complete the sequence. When MPPS is used, enter the port that DWL will listen for the NSET message from the system.

CHAPTER 4 – FIELD MAPPING

The DatamedWL™ Configuration utility provides for field mapping to control the data as it is processed. Fields can be set to specific values or to values from other fields. Unlike with DatamedFT™, using field mapping in this application is not typical. It should be used with caution.

To use the field mapping, open the DatamedWL™ Configuration utility, select the process (number) that needs to be configured, and select the Field Mapping tab. There are two text entry sections: one for the Order Query and one for the Order Responses. These sections allow for multiple field mapping entries.

The field mapping entries consists of a series of single-line entries with the form ***Destination=Source***. The order is important and the mapping is done sequentially. This allows for complex data manipulation, especially in conjunction with the TMPSTR and TMPINT temporary fields. The terms ***Destination*** and ***Source*** are relative to the direction of the data flow. For an Order Query (initiated by a request from the DEVICE), ***Source*** represents the data coming from the DEVICE and ***Destination*** represents the data going to the SYSTEM. For an Order Response (returned by the SYSTEM), ***Source*** represents the data coming back from the SYSTEM and ***Destination*** represents the data going back to the DEVICE. 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 ***Destination*** (left side of the '=' sign) data:

FieldName
This is one of the Internal Field Names from the table below.

TMPINT1 – TMPINT9
These are temporary holding locations for integer values. All values assigned to these placeholders are converted to integers.

TMPSTR1 – TMPSTR9
These are temporary holding locations for values (max 256 characters).

?
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).

!
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).

The following describes the format of the ***Source*** (right side of the '=' sign) data:

FieldName

This is one of the Internal Field Names from the table below.

FieldName{StartPos,Length}

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 (0 = to the end of the string, otherwise 1-n)

FieldName{Format,Length}

FieldName must be one of the integer placeholders (TMP1 – TMPINT9)

Format is one of the following:

FRZ = Fixed length (value will be padded or truncated), Right-justified, and padded with zeros

FLS = Fixed length (value will be padded or truncated), Left-justified, and padded with spaces

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}

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 below), 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.

TMPINT1 – TMPINT9

These are temporary holding locations for integer values - they must have been used as a destination field first or they will be "0".

TMPSTR1 – TMPSTR9

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

"FixedText"

Text in double quotes will be used as written.

"NOW[+/-]##[D/H]"

This is a special option that can only be used in the Order Query field mapping with *SearchStartDatetime* and *SearchEndDatetime*. It produces a date/time value relative to the query execution time, offset plus or minus a specified number of days or hours. Examples: **"NOW-1D"**, **"NOW+2D"**, or **"NOW+6H"**. When using the "D" designator, the time value will always be set to midnight (00:00:00), but when using the "H" designator it will use the current time. So if the current date/time is January 4th at 1pm, -1D would be January 3rd at midnight (37 hours backward), +1D would be January 5th at midnight (11 hours forward), and +6H would be January 4th at 7pm.

+

Concatenate fields. The fields can be any of the other formats listed above except for “NOW”.

Examples

The following examples demonstrate the syntax:

- To hardcode the Device ID as “1”:
  DeviceID="1"
- To copy the MMDD portion of the Order Request Date to Department Name:
  DepartmentName=OrderRequestDate{6,0}
- To copy Current Location to Bed Number:
  BedNumber=CurrentLocation
- To copy Department Name to Department ID only if Department ID is empty:
  ?DepartmentID=DepartmentName
- To create a registry mapping to translate the Department ID coming from the DEVICE to a Current Location name:

  First create the registry mapping. This can be anywhere in the registry, but is typically in the DatamedWL registry Key. The values can be REG_DWORD or REG_SZ data types. Here is the sample mapping data:

DepartmentID from DEVICE	CurrentLocation for SYSTEM
11	ER
12	ICU
13	CCU

  Here are the registry entries for this sample:

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\DatamedWL\DepartmentIDMapping]
"11"="ER"
"12"="ICU"
"13"="CCU"
```

  And here is the Order Query Field Mapping entry:

```
CurrentLocation=DepartmentID{REGMAP,
    SYSTEM\CurrentControlSet\Services\DatamedWL\DepartmentIDMapping}
```

  If you need to combine the REGMAP lookup with the *Multiple* Search Criteria, make sure that both the source and destination fields (in this example CurrentLocation and DepartmentName) are set to *Multiple* with the same delimiters. With this configuration, if the cart sent “11,13” as the DepartmentID then only orders with “ER” or “CCU” as the CurrentLocation would be allowed through.

  Registry mapping can be complex to understand and implement so it is recommended that DLLC be involved to assist with this configuration.

Field List

Order Query

This is the complete list of possible fields contained in the order query message which originates in the DEVICE and is sent to the SYSTEM. The field mapping is done after the DEVICE data is converted to the internal fields. Each format supports only a subset of the fields. In the table below, the data type and maximum size or allowed values are listed for each field.

Internal Field	Data Type / Values
Authentication Fields (not searchable)	
Domain	String (Max 64 characters)
UserName	String (Max 64 characters)
Password	String (Max 64 characters)
Version	String (Max 64 characters)
Search Control Fields	
MaxRecords	Integer – default 100
SearchStartDatetime	String – YYYY-MM-DD HH:MM:SS
SearchEndDatetime	String – YYYY-MM-DD HH:MM:SS
Order Information Search Fields	
AccountNumber	String (Max 64 characters)
AttendingPhysicianName	String (Max 32 characters)
CurrentLocation	String (Max 64 characters)
DepartmentID	String (Max 64 characters)
DepartmentName	String (Max 64 characters)
DeviceID	String (Max 64 characters)
EncounterNumber	String (Max 64 characters)
FacilityID	String (Max 64 characters)
FacilityName	String (Max 64 characters)
InstitutionID	String (Max 64 characters)
InstitutionName	String (Max 64 characters)
Modality	String (Max 64 characters) – default “ECG”
OrderNumber	String (Max 64 characters)
Priority	String (Max 64 characters)
RoomNumber	String (Max 64 characters)
Patient Information Search Fields	
PatientID	String (Max 64 characters)

SecondaryPatientID	String (Max 64 characters)
PatientFName	String (Max 64 characters)
PatientMName	String (Max 64 characters)
PatientLName	String (Max 64 characters)
BirthDate	String – YYYY-MM-DD

Order Response

This is the complete list of possible fields contained in the order response message which originates in the SYSTEM and is returned to the DEVICE. ***Because the Order Response normally consists of multiple orders, it is very important to remember that the field mapping will be done to each instance of the order list, so only fill in values that should go in each list record.*** The field mapping is done after the SYSTEM data is converted to the internal fields. Each format supports only a subset of the fields. In the table below, the data type and maximum size or allowed values are listed for each field.

Internal Field	Data Type / Values
Order Information Fields	
AccountNumber	String (Max 64 characters)
AttendingPhysicianName	String (Max 64 characters)
BedNumber	String (Max 64 characters)
CurrentLocation	String (Max 64 characters)
DeviceID	String (Max 64 characters)
DepartmentID	String (Max 64 characters)
DepartmentName	String (Max 64 characters)
EncounterNumber	String (Max 64 characters)
FacilityID	String (Max 64 characters)
FacilityName	String (Max 64 characters)
InstitutionID	String (Max 64 characters)
InstitutionName	String (Max 64 characters)
LocationID	String (Max 64 characters)
MessageID	String (Max 64 characters)
Modality	String (Max 64 characters)
OrderBillingCode	String (Max 64 characters)
OrderNumber	String (Max 64 characters)
OrderReason	String (Max 64 characters)
OrderRequestDate	String YYYY-MM-DD
OrderRequestTime	String HH:MM:SS
OrderStatus	String (Max 64 characters)

PerformingPhysicianID	String (Max 64 characters)
PerformingPhysicianName	String (Max 64 characters)
Priority	String (Max 64 characters)
RecordUniqueID	String (Max 64 characters)
ReferringPhysicianID	String (Max 64 characters)
ReferringPhysicianName	String (Max 64 characters)
RequestingPhysicianID	String (Max 64 characters)
RequestingPhysicianName	String (Max 64 characters)
RoomNumber	String (Max 64 characters)
TechnicianID	String (Max 64 characters)
TechnicianName	String (Max 64 characters)
UnitNumber	String (Max 64 characters)
Patient Information Fields	
PatientID	String (Max 64 characters)
SecondaryPatientID	String (Max 64 characters)
PatientFName	String (Max 64 characters)
PatientMName	String (Max 64 characters)
PatientLName	String (Max 64 characters)
Age	Integer
AgeUnits	Values: 'Hours', 'Days', 'Weeks', 'Months', 'Years'
BirthDate	String YYYY-MM-DD
BirthTime	String HH:MM:SS
Gender	Values: 'Female', 'Male', 'Unknown'
Race	Values: 'Unknown', 'Eskimo', 'American Indian', 'Black', 'Hawaiian', 'Hispanic', 'Oriental', 'Pacific Islander', 'Caucasian', 'Other Race'
ImperialMetricUnits	Values: 'Imperial', 'Metric', '<blank>'
HeightIN	Integer
HeightCM	Integer
WeightLB	Integer
WeightKG	Integer

CHAPTER 5 – DEVICE TYPES

The DatamedWL™ application will accept order queries and sent EKGs from a number of cardiographs. All of these devices transmit via LAN, but the exact method differs. The following sections describe each supported device and detail any special installation/configuration requirements. ***The information presented is for use in configuration of DatamedWL™ and does not imply endorsement of the referenced vendor.***

DICOM®

For a device that supports DICOM® Modality Worklist functionality, configure the C-STORE and C-FIND functionality to match the settings configured in DWL. The Remote or System AE Title in the device must match the ones in DWL.

The most common search criterion is the DepartmentName field, which comes from DICOM tag (0008,1040) Institutional Department Name. If a cart is always in one department then it should be configured in the cart settings. If the cart can move between departments then it should be changes as needed before querying for a worklist. If ***all*** carts of this type are in a single department, field mapping can be used to hardcode the department setting.

Some devices may use (0038,0300) Current Patient Location to represent the department. If that is the case, you can use this Order Request Field Mapping entry:

DepartmentName=CurrentLocation

Supported Fields

These are the DWL fields supported for this Device Type. Be aware that each manufacturer may support more or fewer fields than this list. Consult the device's DICOM Conformance Statement to confirm what it does and does not support. Keep in mind that not all SYSTEMs can return all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list. Also recognize that the search fields in the Order Request will only be used if they are not blank and if the SYSTEM returns data in the corresponding response field.

- **Order Request**
  - *Order Information Search Fields*
    - AttendingPhysicianName *(0032,1032) Requesting Physician*
    - CurrentLocation *(0038,0300) Current Patient Location*
    - DepartmentName *(0008,1040) Institutional Department Name*
    - EncounterNumber *(0038,0010) Admission ID*
    - InstitutionName *(0008,0080) Institution Name*
    - Modality *(0008,0060) Modality*
    - OrderNumber *(0008,0050) Accession Number*

        - Priority *(2200,0020) Request Priority*
        - RoomNumber *(0038,0400) Patient's Institutional Residence*
    - *Patient Information Search Fields*
        - PatientID *(0010,0020) Patient ID*
        - SecondaryPatientID *(0010,1000) Other Patient IDs*
        - PatientFName *(0010,0010) Patient's Name*
        - PatientMName *(0010,0010) Patient's Name*
        - PatientLName *(0010,0010) Patient's Name*
        - BirthDate *(0010,0030) Patient's Birth Date*
        - Gender *(0010,0040) Patient's Sex*
- **Order Response**
    - *Order Information Fields*
        - AttendingPhysicianName *(0008,1048) Physician(s) of Record*
        - CurrentLocation *(0038,0300) Current Patient Location*
        - DeviceID *(0018,1003) Station Name*
        - DepartmentName *(0008,1040) Institutional Department Name*
        - EncounterNumber *(0020,000D) Study Instance UID*
        - InstitutionName *(0008,0080) Institution Name*
        - Modality *(0008,0060) Modality*
        - OrderNumber *(0008,0050) Accession Number*
        - OrderReason *(0008,1030) Study Description*
        - OrderRequestDate *(0040,0002) Scheduled Procedure Step Start Date*
        - OrderRequestTime *(0040,0003) Scheduled Procedure Step Start Time*
        - PerformingPhysicianName *(0008,1050) Performing Physician's Name*
        - Priority *(0040,1003) Requested Procedure Priority*
        - RecordUniqueID *(0020,000D) Study Instance UID*
        - ReferringPhysicianName *(0008,0090) Referring Physician's Name*
        - RequestingPhysicianName *(0032,1032) Requesting Physician*
        - RoomNumber *(0038,0400) Patient's Institutional Residence*
        - TechnicianName *(0008,1070) Operator's Name*
    - *Patient Information Fields*
        - PatientID *(0010,0020) Patient ID*
        - SecondaryPatientID *(0010,1000) Other Patient IDs*
        - PatientFName *(0010,0010) Patient's Name*
        - PatientMName *(0010,0010) Patient's Name*
        - PatientLName *(0010,0010) Patient's Name*
        - Age *(0010,1010) Patient's Age*
        - BirthDate *(0010,0030) Patient's Birth Date*
        - BirthTime *(0010,0032) Patient's Birth Time*
        - Gender *(0010,0040) Patient's Sex*
        - Race *(0010,2160) Ethnic Group*
        - HeightCM *(0010,1020) Patient's Size*
        - WeightKG *(0010,1030) Patient's Weight*

Edan Instruments, Inc.

SE-1201/1200E(Basic)/1200E/12E, SE-601A/B/C, SE-3 series and SE-300 series cardiographs

These cardiographs use a TCP/IP connection directly to DWL for the order query, and an FTP connection to send the EKG. The FTP Server built into Windows Server with IIS can be used; however, if Philips carts are also in use then IIS Web Services must be disabled. We have tested the open source program FileZilla and it works very well for this purpose, but any other FTP server should also work. All of the instructions below are presented as a general configuration guide and intended to help with the setup and operation of the device. However, this information is only general help and firmware changes or device option settings may introduce differences. Always refer to the device's user manual or your Edan representative for the approved instructions.

The most common search criterion is the DepartmentName field. If a cart is always in one department then it should be configured in the cart settings. If the cart can move between departments then it should be changes as needed before querying for a worklist. If ***all*** carts of this type are in a single department, field mapping can be used to hardcode the department setting.

Set up the desired FTP server, then add a user and set the home path to match the *EKG Input Folder* configured in DWL, and then set the permissions to full control (read/write/delete). The user and password will be used below.

IMPORTANT NOTE: The Edan cart has a very short timeout that is not configurable in the current firmware. Some systems are not quick enough or take longer for the first query because of caching. In these cases the cart may timeout, especial on the first query. Normally querying a second time will get the data back. If the system is returning a large number of orders it may not be possible to get the list back at all.

To configure the cart for use with DWL:

1. From the main screen, press the ***Set Up*** button to go to the overall settings for this cart.
2. Touch ***Transmission*** and then **Transmission Mode** for ***Ethernet***. Select DHCP or set up a static IP address, subnet mask, and gateway for the cart.
3. Enter the IP address of the WLPC as *Server IP*.
4. Enter the name and password that the user account in the FTP server was set up with.
5. Select *Auto Transmission* and set it to *On.*
6. Leave the *FTP Path* blank.

To retrieve the list of orders:

1. Touch the arrow button, then ***Order***, then ***Load*** to query for orders.

To record an exam from the worklist and send it:

1. From the order list, select the desired entry, touch **Examine,** then **Record**. If *Auto Transmission* was set to "On" then that EKG will be sent to the WLPC automatically.
2. If *Auto Transmission* was set to "Off":
    a. Press the ***Esc*** button to back out, then the arrow button, and then ***File*** to see the EKG.
    b. Press ***Select*** on that EKG and then press ***Trans*** to transmit the EKG.

IMPORTANT NOTE: These devices can retrieve an order list and use that information when recording an EKG; however they do not supply the Order Number in the EKG that is sent so it may not be possible to automatically tie out the order as completed depending on the SYSTEM capabilities. This is a very important consideration when setting up the order workflow.

Supported Fields

These are the DWL fields supported by this Device Type. Keep in mind that not all SYSTEMs can return all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list. Also recognize that the search fields in the Order Request will only be used if they are not blank and if the SYSTEM returns data in the corresponding response field.

- **Order Request**
    - *Order Information Search Fields*
        - AttendingPhysicianName *Performing Physician*
        - DepartmentName
    - *Patient Information Search Fields*
        - PatientID
        - PatientFName
        - PatientMName
        - PatientLName
- **Order Response (shown on the cart and/or in the recorded EKG)**
    - *Order Information Fields*
        - OrderNumber
        - OrderRequestDate
    - *Patient Information Fields*
        - PatientID
        - PatientFName
        - PatientMName
        - PatientLName
        - Age
        - AgeUnits
        - BirthDate

- Gender

GE® Healthcare

MAC® 800, MAC® 2000, MAC® 3500, MAC® 5000, MAC® 5500, and MAC® 5500HD cardiographs

There are two options when connecting to these cardiographs. These have important differences and advantages/disadvantages:

- Using the built-in LAN port. This provides wired LAN capability. For this type of connection choose ***GE® - MAC® (Built-in LAN port)*** for the *Device Type*. These connections are initiated from the server so the IP address of each cardiograph (and a port) must be entered in the *Cart Addresses* list during configuration.
- Using the built-in serial port with a serial-to-LAN adapter. This can provide wired or wireless LAN capability. For this type of connection choose ***GE® - MAC® (Serial-to-LAN adapter)*** for the *Device Type*. During configuration the *IP address* and *Port* is specified and a listener is started. Each cardiograph initiates a connection to DWL when a transmission is made.

All of the instructions below are presented as a general configuration guide and intended to help with the setup and operation of the device. However, this information is only general help and firmware changes or device option settings may introduce differences. Always refer to the device's user manual or your GE® representative for the approved instructions.

When starting a search in the *Order Mgr* screen, the cart will pop up a window to get the Location Number(s) (*DepartmentID*) to search for. Although the message indicates that multiple number or even a range can be entered, that functionality is not available for queries from non-GE systems. You must enter a single number or nothing into that field. Many systems do not support searching by *DepartmentID*, so you may need to set up an Order Request field mapping entry and REGMAP table to map the numbers to department names. The destination field would normally either be *DepartmentID* or *CurrentLocation*. *Chapter 4* has an example of how to set up the REGMAP functionality for this purpose.

Another value used for searches is the Site number (*InstitutionID*). This value is entered in the *System Setup->Basic System->Miscellaneous Setup* screen. As with *DepartmentID*, *InstitutionID* may not be a searchable field, so you may need to set up a REGMAP table to map the numbers to names and put the name in *InstitutionName*.

The order list screen on these carts displays the Order Request Time but not the Order Request Date. This is important to some customers and a workaround is to put MMDD from the date into the Location field. This Order Response Field Mapping entry will do that:

DepartmentName=OrderRequestDate{6,0}

These carts will only support Order Numbers up to 9 digits long. Many systems (e.g. Cerner PowerChart ECG) use longer Order Number values. If a longer Order Number comes back

from the SYSTEM then DWL will automatically generate an alternate Order Number for the cart. This simulated number will be 3 digit sequence number and the last 6 characters of the actual Order Number. This can be confusing if you check the Order Number on the cart. But when the ECG is sent, DFT will restore the original Order Number.

Barcode scanning is compatible but at this time it will only work if the barcode contains the Patient ID, not the Visit Number. Firmware v10A.1 and higher will send the Patient ID in the query AND filter it internally; lower firmware will only filter internally.

In the instructions below, when entering *System Setup* you will need to enter the system password. If you don't have this please contact GE for assistance.

To configure the cart for use with DWL using the LAN port:

1. Go to the *System Setup* menu and choose *Basic System*, then *Transmission*.
2. Set *Type* to ***MUSE NETWORK***, and set *Default Location* to ***Ethernet (MUSE)***.
3. Back up to the *Basic System* menu and choose *Network Setup*.
4. Enter the *IP Address*, *Subnet Mask*, *Gateway*, and *Port Number* that is assigned to this cart.
5. For DWL, set *Device Type* to ***GE® - MAC® (Built-in LAN port)***, then enter this *IP Address* and *Port Number* into the *Cart Addresses* list.

To configure the cart for use with DWL using a serial-to-LAN adapter (GE® MobileLink™):

1. Go to the *System Setup* menu and choose *Basic System*, then *Transmission*.
2. Set *Type* to ***MUSE NETWORK***, and set *Default Location* to ***Serial Line (MUSE)***.
3. Follow the instructions that came with the MobileLink™ product to install and configure the adapter. ***Another resource for configuration information is the DatamedRcv™ DRCV01 Service Manual chapters 3 and 4.***
4. For DWL, set *Device Type* to ***GE® - MAC® (Serial-to-LAN adapter)***. The *Listener IP* and *Port* must be used in the MobileLink™ configuration as the destination IP and port.

To retrieve the list of orders:

1. Select *Order Mgr Int*. This will load the Order Manager screen.
2. Select *Load Orders*.
3. The cart will ask for Location number(s). You can leave this blank for all orders or enter a value to search using *DepartmentID* as a search criteria (typically with REGMAP to a name).
4. When you press OK the cart will query for the list of orders from DWL and present a list. On this screen, select one or more orders and then press *Load Orders* to load the orders.
5. Alternatively, you can search for a specific patient by entering the Patient ID on the Find Patient screen. This is how the barcode functionality works.

To record an exam from the worklist and send it:

1. From the Order Manager screen, press *Select*, select an order from the list, and then press *Continue* to go to the ECG screen. Alternatively you can select *Patient Data* and then press *Return* to go to the ECG screen.
2. If the cart is configured to automatically transmit (*System Setup->ECG->ECG Analysis->Auto ECG Transmission*) then the ECG will be transmitted after completion. Otherwise you will need to manually transmit from the File Manager screen.

IMPORTANT NOTE: DatamedRcv™ DRCV01 must not be running on the WLPC when using GE® carts with the Serial-to-LAN adapter and DWL. If it is installed then it must be disabled or removed.

Supported Fields

These are the DWL fields supported by this Device Type. Keep in mind that not all SYSTEMs can return all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list. Also recognize that the search fields in the Order Request will only be used if they are not blank and if the SYSTEM returns data in the corresponding response field.

- **Order Request**
  - *Order Information Search Fields*
    - DepartmentID — *Location number*
    - InstitutionID — *Site number*
- **Order Response (shown on the cart and/or in the recorded EKG)**
  - *Order Information Fields*
    - AccountNumber
    - BedNumber
    - DepartmentID
    - DepartmentName
    - EncounterNumber — *Visit Number*
    - OrderNumber
    - ReferringPhysicianID
    - ReferringPhysicianName
    - RequestingPhysicianID
    - RequestingPhysicianName
    - RoomNumber
  - *Patient Information Fields*
    - PatientID
    - SecondaryPatientID
    - PatientFName
    - PatientLName
    - Age

- AgeUnits
- BirthDate
- Gender
- Race
- HeightIN
- HeightCM
- WeightLB
- WeightKG

Mortara Instrument, Inc.

Burdick® Atria® 6100 and 8500 cardiographs

These cardiographs communicate using a TCP/IP connection directly to DWL. All of the instructions below are presented as a general configuration guide and intended to help with the setup and operation of the device. However, this information is only general help and firmware changes or device option settings may introduce differences. Always refer to the device's user manual or your Mortara representative for the approved instructions.

To configure the cart for use with DWL:

1. Press *Setup* and then choose *Network Connection*. Enter the network values assigned to this cart.
2. Press *Back* and then choose *Printer and ECG destinations*.
3. Choose *Add a new destination*.
4. For *Destination type* select ***Pyramis/Heartcentrix***.
5. For *Destination name* enter ***Heartcentrix***.
6. For *URL/IP* enter the URL you configured as the *Listener URL* in the DWL configuration.
7. For *Institution number* enter the fixed value you want in this search field.

To retrieve the list of orders:

1. Press *Send/Receive* and the choose *Get patient orders*.
2. Enter the query criteria as desired and then press *Send/Receive* to run the query.
3. Select an order from the list and press *Send/Receive* again to load this to the open orders directory.

To record an exam from the worklist and send it:

1. In the directory, choose *View list of open orders*.
2. Select the order and then choose *Acquire new ECG*.
3. Record the ECG and then on the pop-up screen choose *Send ECG to EMR*.

Supported Fields

These are the DWL fields supported by this Device Type. Keep in mind that not all SYSTEMs can return all of the supported Order Response fields, so the actual data

returned to the DEVICE will typically be a subset of the Order Response list. Also recognize that the search fields in the Order Request will only be used if they are not blank and if the SYSTEM returns data in the corresponding response field.

- **Order Request**
  - *Order Information Search Fields*
    - DepartmentName
    - InstitutionID
    - OrderNumber
  - *Patient Information Search Fields*
    - PatientID
    - PatientFName
    - PatientLName
- **Order Response (shown on the cart and/or in the recorded EKG)**
  - *Order Information Fields*
    - AccountNumber
    - AttendingPhysicianName
    - DepartmentName
    - InstitutionID
    - OrderNumber
    - OrderReason
    - OrderRequestDate
    - OrderRequestTime
    - OrderStatus
    - Priority
    - ReferringPhysicianID
    - ReferringPhysicianName
    - RequestingPhysicianID
    - RequestingPhysicianName
    - RoomNumber
  - *Patient Information Fields*
    - PatientID
    - PatientFName
    - PatientLName
    - BirthDate
    - BirthTime
    - Gender
    - Race

Eclipse™ Premier cardiographs

These cardiographs communicate using a TCP/IP connection directly to DWL. All of the instructions below are presented as a general configuration guide and intended to help with the setup and operation of the device. However, this information is only general help

and firmware changes or device option settings may introduce differences. Always refer to the device's user manual or your Mortara representative for the approved instructions.

To configure the cart for use with DWL:

1. Configure the Wireless Client Bridge (WCB) to point to the *Listener IP* and *Port* that is configured in DWL. This is the most difficult part of the configuration and is usually done by connecting the WCB to a standalone computer.

To retrieve the list of orders:

1. From the Main Menu, select *Directory* and then *Get Requisitions*.
2. Enter the query criteria as desired and then run the query. The keyboard shortcut for this 2-step sequence is: M D Q Q.
3. Select an order from the list and press *OK* to select this order.

To record an exam from the worklist and send it:

1. Choose *Acquire EKG* to get to the editing screen, then press the blue button to record the ECG.
2. From the main menu press *Send* to transmit.

Supported Fields

These are the DWL fields supported by this Device Type. Keep in mind that not all SYSTEMs can return all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list. Also recognize that the search fields in the Order Request will only be used if they are not blank and if the SYSTEM returns data in the corresponding response field.

- **Order Request**
  - *Order Information Search Fields*
    - DepartmentID
    - InstitutionID
    - OrderNumber
- **Order Response (shown on the cart and/or in the recorded EKG)**
  - *Order Information Fields*
    - DeviceID
    - DepartmentID
    - DepartmentName
    - EncounterNumber
    - OrderNumber
    - OrderReason
    - OrderRequestDate
    - OrderRequestTime
    - OrderStatus
    - RoomNumber
  - *Patient Information Fields*
    - PatientID

- PatientFName
- PatientLName
- Age
- AgeUnits
- BirthDate
- Gender
- Race
- HeightIN
- HeightCM
- WeightLB
- WeightKG

ELI®-series cardiographs

These cardiographs communicate using a TCP/IP connection directly to a utility named ELI® Link. This must be obtained from Mortara and the cardiograph must have the DICOM® option. ELI® Link will be configured to communicate using a TCP/IP connection directly to DWL for the order query, and to write EKG files to a local folder. All of the instructions below are presented as a general configuration guide and intended to help with the setup and operation of the device. However, this information is only general help and firmware changes or device option settings may introduce differences. Always refer to the device's user manual or your Mortara representative for the approved instructions.

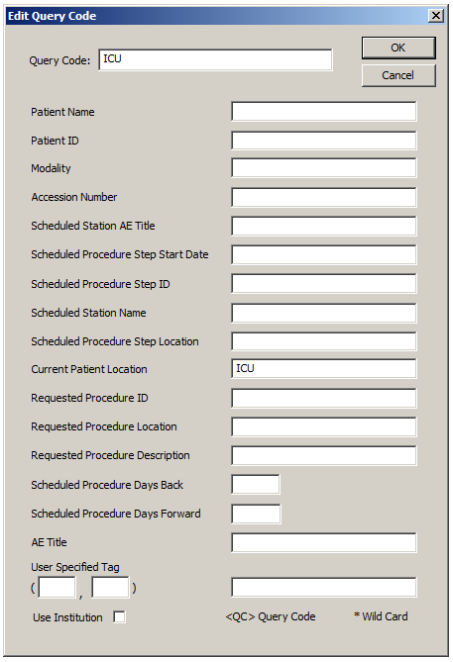
There are two EKG format options available when using the Mortara cardiographs: DICOM® or XML. We recommend using the DICOM® format because there are several fields that are only included in this format and not in the XML format. Details are below in the Supported Fields list.

For the Mortara carts, the search criteria are configured in ELI® Link on the Query Code screens. Since the query is set up centrally and you can set up multiple saved queries, the carts are able to pick from the available queries when retrieving a worklist. See the ELI® Link manual for more details on setting up the Query Codes (saved queries).

The most common search criterion is the DepartmentName field. Although this field is not shown on the Query Code screens, you can use the edit field for *Current Patient Location* on this screen as the Department Name for the query and then add this Order Request Field Mapping entry:

DepartmentName=CurrentLocation

This is an example of what the Query Code screen would look like with this setting:



These instructions are for an ELI® 150 and the exact steps can vary by model – always consult the device user manual. To configure the cart for use with DWL:

1. Install ELI® Link on the WLPC. If the DICOM® configuration component is not enabled, contact Mortara.
2. Run the ELI® Link configuration utility and set up the following:
    a. On the *General* tab, select only *Enable Network Comm* and set the *Port* to 5101.
    b. Still on the *General* tab, press the *DICOM Configuration* button. On the popup screen, the MWL group settings have to be filled in:
        i. Remote Host Name: localhost
        ii. Local AE: MORTARA
        iii. Remote Port Number: 104 (This must match the *Port* setting in DWL)
        iv. Remote AE: DatamedWL (This must match the *C-Find AE Title* setting in DWL)
    c. On the *Export Folders* tab, click on *Edit Set* if there is an entry present or *Add Set* if not. On the popup screen, locate the line labeled *XML-MI* and press the *Browse* button, then navigate to the folder specified as *EKG Input Folder* in DWL.
    d. Set up the *Query Codes* tab entries as desired per the ELI® Link manual.
3. Make sure the cart is plugged into the LAN and turn it on. Then do the following:

a. Hit ***F6*** (More), then ***3*** (Set Date/Time), then ***UpArrow+Alt+C*** together. The cart should ask for a password. Contact Mortara or DLLC for the password.
b. Press ***Page*** until you get to page 6. Either turn on DHCP or set up the Cart IP Address, Gateway, and Subnet Mask. Enter the Host IP Address (WLPC's address), and Port # (5101).
c. Press ***F6*** (Exit) to save the settings.
d. Refresh the cart settings from ELI® Link by pressing ***F6*** (More), then ***7*** (Custom ID download). Make sure you see the message "Connected", and then "Custom ID downloaded".

To retrieve the list of orders:

1. On the cart, press ***F6*** (More) and then ***6*** (Modality Worklist). The screen should allow you to select the desired Query Code and then press ***F2*** (Yes) to confirm the order request. Press ***STOP*** to return to the previous screen.

To record an exam from the worklist and send it:

1. Press ***F1*** (ID), then ***F4*** (MWL) and select the desired order. Press ***AUTO12*** to record the EKG.
2. Press ***XMT*** to transmit the EKG.

Supported Fields

These are the DWL fields supported by this Device Type. Keep in mind that not all SYSTEMs can return all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list. Also recognize that the search fields in the Order Request will only be used if they are not blank and if the SYSTEM returns data in the corresponding response field. For the Order Request, the fields with DICOM tags below would need to be entered as a *User Specified Tag*, while the others are named fields on the screen.

- **Order Request**
  - *Order Information Search Fields*
    - AttendingPhysicianName *(0032,1032) Requesting Physician*
    - CurrentLocation *Current Patient Location*
    - DepartmentName *(0008,1040) Institutional Department Name*
    - EncounterNumber *(0038,0010) Admission ID*
    - InstitutionName *(0008,0080) Institution Name*
    - Modality *Modality*
    - OrderNumber *Accession Number*
    - Priority *(2200,0020) Request Priority*
    - RoomNumber *(0038,0400) Patient's Institutional Residence*
  - *Patient Information Search Fields*
    - PatientID *Patient ID*
    - SecondaryPatientID *(0010,1000) Other Patient IDs*
    - PatientFName *Patient Name*

- PatientMName *Patient Name*
- PatientLName *Patient Name*
- BirthDate *(0010,0030) Patient's Birth Date*
- Gender *(0010,0040) Patient's Sex*

- **Order Response (shown on the cart and/or in the recorded EKG)**
  - *Order Information Fields*
    - InstitutionName *[Configured in ELI® Link – not in XML]*
    - OrderNumber *[Not in XML unless Accession Number is added to the Custom Header]*
    - RecordUniqueID *[Not in XML]*
    - RequestingPhysicianName *[Not in XML]*
    - RoomNumber *[Not in XML]*
  - *Patient Information Fields*
    - PatientID
    - SecondaryPatientID *[Not in XML]*
    - PatientFName
    - PatientMName *[Not in XML]*
    - PatientLName
    - Age
    - BirthDate
    - Gender

Nihon Kohden Corporation

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

These cardiographs use a TCP/IP connection directly to a customer receiver utility (EctpCore service), in combination with an FTP connection for both the order queries and to send the EKG. The FTP Server built into Windows Server with IIS can be used; however, if Philips carts are also in use then IIS Web Services must be disabled. We have tested the open source program FileZilla and it works very well for this purpose, but any other FTP server should also work. All of the instructions below are presented as a general configuration guide and intended to help with the setup and operation of the device. However, this information is only general help and firmware changes or device option settings may introduce differences. Always refer to the device's user manual or your Nihon Kohden representative for the approved instructions.

The most common search criterion is the DepartmentName field, but this DEVICE doesn't support that field. You can use DeviceID for this instead with the following Order Request Field Mapping entry:

DepartmentName=DeviceID

Alternatively, if ***all*** carts of this type are in a single department, field mapping can be used to hardcode the department setting. You can also use the REGMAP functionality to convert numbers to names – see *Chapter 4* for an example.

Along with the software from DLLC, the *NK EctpCore Setup* program will be supplied. This software was written by Nihon Kohden (Japan) and other than the information presented here DLLC has no other information or control over it. This utility application runs as a Windows service.

Special note for 64-bit operating systems: The *EctpCore* software package is not compatible with 64-bit operating systems; however 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.

To set up *EctpCore*, do the following:

1. Run the provided setup program and follow the prompts to install it.
2. From the *Start* menu, select *All Programs → NIHON KOHDEN Corporation → Ectk-SDK → Registrations*. This sets up the application.
3. From the *Start* menu, select *All Programs → NIHON KOHDEN Corporation → Ectk-SDK → Configuration*. This will open a window with the settings. Configure as specified below and then press ***OK***.
    a. In the ECTP section, *Output Directory* and *Work Directory* must match the *Input Folder* setting in DWL.
    b. *Log Directory* should be set to a different folder. This folder will accumulate log information from the utility **and must be cleaned out periodically.**
    c. *Port* is always ***30003***.
    d. *Timeout* must be set to ***60000***. If this value is too small the order query will not work.
    e. In the FTP section, *IP Address* should be left as the loopback address (127.0.0.1).
    f. The *User Name* and *Password* are usually left as the default values but may be changed as needed. This must match the user account set up the FTP server.
    g. *Alias* should be left as the default.
4. Open the Services applet and locate the EctpCore service. Make sure the Startup Type is Automatic and then manually start the service.

Set up the desired FTP server, then add a user and set the home path to match the *Input Folder* configured in DWL, and then set the permissions to full control (read/write/delete). For the user account, use the name and password configured above.

To configure the cart for use with DWL:

1. Press ***Menu*** and then ***System Settings***.
2. Select ***Communication Settings***.
3. Select ***Ethernet Settings***.
4. Enter the IP address of the WLPC in both the *Ordering Server Address* and *File Server Address*.
5. Make sure that *Ordering Server Port* and *File Server Port* are set to ***30003***.
6. Use ***Register*** to exit each of the screens back to the main menu.
7. Press ***Exit*** on the main menu.

To retrieve the list of orders:

1. Press ***ID*** (a physical button).

To record an exam from the worklist and send it:

1. Select an order from the list that appeared, and press the big green button.
2. After an EKG is taken, the buttons on the screen will change. Touch ***File*** and then ***Transfer*** to transmit the EKG. 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***.

Supported Fields

These are the DWL fields supported by this Device Type. Keep in mind that not all SYSTEMs can return all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list. Also recognize that the search fields in the Order Request will only be used if they are not blank and if the SYSTEM returns data in the corresponding response field.

- **Order Request**
  - *Order Information Search Fields*
    - DeviceID
  - *Patient Information Search Fields*
    - PatientID
    - BirthDate
    - Gender
- **Order Response (shown on the cart and/or in the recorded EKG)**
  - *Order Information Fields*
    - DepartmentName
    - OrderNumber
    - RequestingPhysicianName
    - RoomNumber
  - *Patient Information Fields*
    - PatientID
    - PatientFName
    - PatientMName

- PatientLName
- Age
- AgeUnits
- BirthDate
- Gender
- Race
- HeightCM
- WeightKG

Philips Healthcare

PageWriter® Touch and PageWriter® TC cardiographs

These cardiographs communicate using a TCP/IP connection directly to DWL. All of the instructions below are presented as a general configuration guide and intended to help with the setup and operation of the device. However, this information is only general help and firmware changes or device option settings may introduce differences. Always refer to the device's user manual or your Philips representative for the approved instructions.

When configuring DWL and this DEVICE for queries, it is important to understand the term ***Inbox***. The ***Inbox*** corresponds to the *DepartmentName* field in DWL, and it is possible to have multiple entries in the configuration field (see *Source Devices Settings* in Chapter 3). During the DEVICE described below, the list of ***Inboxes*** (normally just one) will be supplied by DWL to the DEVICE. The DEVICE will, in turn, use the selected ***Inbox*** value when the user requests a worklist. The list of orders returned by the SYSTEM will be filtered so that only orders marked for that Department Name will be returned. Note that the Philips devices do not allow a single query for multiple departments.

Set up DWL and make sure it is running before setting up the carts because it is needed for step 15. The default *Listener URL* should be used unless there is a specific reason not to.

To configure the cart for use with DWL:

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. 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 WLPC.
    d. The *User Name* and *Password* are not used. *Computer Name* should be set to the name of the WLPC.
    e. The four buttons on the right should all be ***OFF***.
    f. Under *ECG Mgmt Version – Filtered ECG*, choose ***TraceMasterVue C.02***. Users familiar with DFT will be used to setting this to one of the ***Other EMS – XML*** choices, but the cart will not allow order queries when set to one of those.
    g. Touch ***Save Settings*** to save the changes.
14. Press the ***OrderVue Settings*** tab and select the *TraceMaster Server* that you just configured.
15. Under the ***Available Outboxes*** press the ***Refresh*** button. This will retrieve the selection(s) entered as *Inbox* in the DWL configuration. If nothing appears, there is a problem in the DWL configuration or the cart communication settings.
16. Select the desired inbox and press the right arrow button to move it to the ***Selected Outboxes*** area. Press ***Save Settings*** and name this configuration.
17. Touch ***Exit*** and then ***Exit*** again to return to the main screen.

To retrieve the list of orders:

1. On the main screen touch ***ID***.
2. Choose the ***Worklist*** tab, select the *Inbox* that you set up and press ***Get Worklist***. This will query DWL which will in turn query the Output System for the actual list of orders. **IMPORTANT NOTE: If you have taken any orders from the worklist and saved them to the Archive but not sent them, you will get an error when you retrieve the worklist again. This is because the same orders are being returned in the worklist. Once you have sent the exam to the Output System, you should manually delete all of the orders and then re-query for them when ready. The order that was completed will not be returned in the next worklist query**.
3. Optionally, you may enter specific query criteria on the ***Find Patient*** tab. You will still need to select the *Inbox* that you set up, but you can also enter various criteria.
4. You should now have a list of orders on the screen which can be taken as needed.

To record an exam from the worklist and send it:

1. From the worklist screen, choose a list item and then press the ***Select*** button at the bottom. This will load the patient information and return you to the main screen.
2. Record the exam normally (using the ***ECG*** button). On the displayed exam, you can either save it to the archive for later transmission (using the ***Save*** button), or transmit it immediately (using the ***Transfer*** button).

IMPORTANT NOTE: Neither IIS Web Services nor DatamedRcv™ DRCV02 can be running on the WLPC when using Philips carts with DWL. If either of these is installed, it must be disabled or removed.

Supported Fields

These are the DWL fields supported by this Device Type. Keep in mind that not all SYSTEMs can return all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list. Also recognize that the search fields in the Order Request will only be used if they are not blank and if the SYSTEM returns data in the corresponding response field.

- **Order Request**
  - *Order Information Search Fields*
    - AccountNumber
    - DepartmentName *Inbox*
    - OrderNumber
    - Priority
    - RoomNumber
    - UnitNumber
  - *Patient Information Search Fields*
    - PatientID
    - PatientFName
    - PatientMName
    - PatientLName
    - BirthDate
    - Gender
- **Order Response (shown on the cart and/or in the recorded EKG)**
  - *Order Information Fields*
    - AccountNumber *Returned in the EKG as PatientMRN*
    - BedNumber
    - DepartmentID
    - DepartmentName
    - EncounterNumber
    - FacilityID
    - FacilityName
    - OrderBillingCode

- OrderNumber
- OrderStatus *Returned in the EKG as TestReason*
- ReferringPhysicianName
- RequestingPhysicianName
- RoomNumber

o *Patient Information Fields*

- PatientID
- PatientFName
- PatientMName
- PatientLName
- Age
- AgeUnits
- BirthDate
- Gender
- Race
- ImperialMetricUnits
- HeightCM/HeightIN
- WeightKG/WeightLB

SCHILLER AG

CARDIOVIT® AT-10 plus, AT-102, AT-102 plus, AT-104 PC, CS-200, CS-200 Touch, CS-200 Excellence, MS-2007, MS-2010, and MS-2015 cardiographs

These cardiographs communicate using a TCP/IP connection directly to DWL. All of the instructions below are presented as a general configuration guide and intended to help with the setup and operation of the device. However, this information is only general help and firmware changes or device option settings may introduce differences. Always refer to the device's user manual or your SCHILLER representative for the approved instructions.

The most common search criterion is the DepartmentName field, but this DEVICE doesn't support that field. You can use DeviceID for this instead with the following Order Request Field Mapping entry:

DepartmentName=DeviceID

Alternatively, if ***all*** carts of this type are in a single department, field mapping can be used to hardcode the department setting. You can also use the REGMAP functionality to convert numbers to names – see *Chapter 4* for an example.

When setting up DWL, the default *Listener URL* will normally match the default cart setting, but both can be changed as desired. The instructions below assume the default setting.

To configure the cart for use with DWL:

1. From the main screen, touch the ***Menu*** button 2x fast to reveal the ***Settings*** button and press it.
2. Touch ***System***, then ***Communication.***
3. Touch ***Interface*** and choose "Ethernet/WLAN".
4. Touch ***Com-Type*** and choose "---".
5. Touch ***Server*** and enter the following:
    a. The IP address of the WLPC and set the port to ***8080***.
    b. The Page should be ***/SCS/SCSServlet***.
    c. The User Name and Password should be pre-configured.
6. Touch ***TCP/IP Settings*** or WLAN as appropriate and enter the IP Address/Net Mask/Gateway to assign to this cart.
7. Touch ***Back*** to return to ***System Settings***.
8. Touch ***Software*** and then ***Save as Default*** to load the changes you just made on the cart, you will see a scroll bar indicating it is saving the changes. Touch ***Back*** to get out of the screen.

To retrieve the list of orders:

1. On the main screen touch ***Menu***, ***Worklist***, and then ***Sync***.

To record an exam from the worklist and send it:

1. On the main screen touch ***Menu*** and then ***Worklist.*** Touch the desired order to select it and there will be a pop-up screen for that order. Touch ***Perform*** and then touch ***Start***.
2. The screen will go back to the Worklist screen and the order that was just taken should be highlighted in green. Touch ***Sync*** to send the order.
3. Note that orders that are taken are not saved to memory.

Supported Fields

These are the DWL fields supported by this Device Type. Keep in mind that not all SYSTEMs can return all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list. Also recognize that the search fields in the Order Request will only be used if they are not blank and if the SYSTEM returns data in the corresponding response field.

- **Order Request**
    - *Order Information Search Fields*
        - DeviceID
    - *Patient Information Search Fields*
        - PatientID
- **Order Response (shown on the cart and/or in the recorded EKG)**
    - *Order Information Fields*
        - RecordUniqueID
        - OrderNumber
        - ReferringPhysicianID

        - RoomNumber
    - *Patient Information Fields*
        - PatientID
        - SecondaryPatientID
        - PatientFName
        - PatientMName
        - PatientLName
        - Age
        - AgeUnits
        - BirthDate
        - Gender
        - HeightCM
        - WeightKG

CHAPTER 6 – SYSTEM TYPES

The DatamedWL™ application will communicate with a number of host systems. The following sections describe each supported system and detail any special installation/configuration requirements. ***The information presented is for use in configuration of DatamedWL™ and does not imply endorsement of the referenced vendor.***

Note for systems using DICOM® EKG storage: These systems normally require that the Study Instance UID (SIUID) sent in the order list be returned in the EKG that is stored. If these don't match then the system cannot associate the order and EKG properly. Most non-DICOM® devices are not able to receive the SIUID in the order list and return it in the EKG, and some carts put a value in this field that is not a valid UID at all. To handle this requirement, DWL saves data from the order list and DFT updates certain values (including SIUID) as the EKG record is converted to DICOM® format. EKGs initiated using the order list will have the correct SIUID retrieved from context automatically, but for ad-hoc EKGs (entered manually from the cart) there is no context. Because of that, if the cart sends an invalid UID then the SYSTEM will reject the EKG. To clear any invalid UID and force DFT to generate a valid SIUID (according to our Conformance Statement), two settings are required on the Field Mapping tab in the DFT configuration. First you must enable the *Allow multiple field mapping entries for a single destination field* setting, and second you must add this field mapping entry:

```
EKGUniqueID=""
```

These SYSTEMs have been validated with DatamedWL™.

Carestream Health, Inc.

Carestream® Cardiology PACS

This management system is the same as ScImage® PicomEnterprise™. In DWL set the *System Type* to ***ScImage® PicomEnterprise™*** and refer to the information for that system later in this chapter.

Cerner Corporation

Powerchart ECG®

This management system supports DICOM® Modality Worklist (C-FIND) functionality and has been validated to work with DatamedWL™. It also supports the C-STORE transactions and can properly render ECG Waveform object. The software may be installed on the server (if permitted) or on another computer located on the network. Transmission to the system is via standard DICOM® network protocols. Be sure to review the note for DICOM® systems at the beginning of this chapter.

To control the data returned in the order query, you will normally use the institution and department. For carts that only send a number (such as GE® MAC® carts) the number must be converted to a name and put in the right field. These two Order Request Field Mapping entries will by typical:

CurrentLocation=DepartmentID{REGMAP,...}
InstitutionName=InstitutionID{REGMAP,...}

The "..." portions should be the appropriate registry path. See *Chapter 4* for an example of what to enter and how to set up the registry map table. For this system, the registry map entries can contain wildcards (e.g. "ER*"), but in that case the field on the Search Criteria tab (*CurrentLocation* or *InstitutionID*) **must** be set to *External*. This configuration can be confusing at first so we recommend allowing DLLC support to assist in getting it all set up.

Supported Fields

These are the DWL fields returned by this SYSTEM. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
  - *Order Information Fields*
    - AttendingPhysicianName *(0008,1048) Physician(s) of Record*
    - CurrentLocation *(0038,0300) Current Patient Location*
    - DeviceID *(0018,1003) Station Name*
    - DepartmentName *(0008,1040) Institutional Department Name*
    - EncounterNumber *(0020,000D) Study Instance UID*
    - InstitutionName *(0008,0080) Institution Name*
    - Modality *(0008,0060) Modality*
    - OrderNumber *(0008,0050) Accession Number*
    - OrderReason *(0008,1030) Study Description*
    - OrderRequestDate *(0040,0002) Scheduled Procedure Step Start Date*
    - OrderRequestTime *(0040,0003) Scheduled Procedure Step Start Time*
    - PerformingPhysicianName *(0008,1050) Performing Physician's Name*
    - Priority *(0040,1003) Requested Procedure Priority*
    - RecordUniqueID *(0020,000D) Study Instance UID*
    - ReferringPhysicianName *(0008,0090) Referring Physician's Name*
    - RequestingPhysicianName *(0032,1032) Requesting Physician*
    - RoomNumber *(0038,0400) Patient's Institutional Residence*
    - TechnicianName *(0008,1070) Operator's Name*
  - *Patient Information Fields*
    - PatientID *(0010,0020) Patient ID*
    - SecondaryPatientID *(0010,1000) Other Patient IDs*
    - PatientFName *(0010,0010) Patient's Name*
    - PatientMName *(0010,0010) Patient's Name*
    - PatientLName *(0010,0010) Patient's Name*

- Age *(0010,1010) Patient's Age*
- BirthDate *(0010,0030) Patient's Birth Date*
- BirthTime *(0010,0032) Patient's Birth Time*
- Gender *(0010,0040) Patient's Sex*
- Race *(0010,2160) Ethnic Group*
- HeightCM *(0010,1020) Patient's Size*
- WeightKG *(0010,1030) Patient's Weight*

DICOM®

This setting is for any other management system that supports DICOM® Modality Worklist (C-FIND) functionality. The software may be installed on the server (if permitted) or on another computer located on the network. Transmission to the system is via standard DICOM® network protocols. Be sure to review the note for DICOM® systems at the beginning of this chapter.

For the EKG Send functionality, the management system must support the DICOM® C-STORE transaction. And more importantly, it must be able to understand and render (for display or print) an ECG Waveform object. Any DICOM®-based system will probably be able to receive and store the EKG, but not all can render them.

Supported Fields

These are the DWL fields returned by this System Type. Be aware that each manufacturer may support more or fewer fields than this list. Consult the system's DICOM Conformance Statement to confirm what it does and does not support. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
  - *Order Information Fields*
    - AttendingPhysicianName *(0008,1048) Physician(s) of Record*
    - CurrentLocation *(0038,0300) Current Patient Location*
    - DeviceID *(0018,1003) Station Name*
    - DepartmentName *(0008,1040) Institutional Department Name*
    - EncounterNumber *(0020,000D) Study Instance UID*
    - InstitutionName *(0008,0080) Institution Name*
    - Modality *(0008,0060) Modality*
    - OrderNumber *(0008,0050) Accession Number*
    - OrderReason *(0008,1030) Study Description*
    - OrderRequestDate *(0040,0002) Scheduled Procedure Step Start Date*
    - OrderRequestTime *(0040,0003) Scheduled Procedure Step Start Time*
    - PerformingPhysicianName *(0008,1050) Performing Physician's Name*

- Priority *(0040,1003) Requested Procedure Priority*
- RecordUniqueID *(0020,000D) Study Instance UID*
- ReferringPhysicianName *(0008,0090) Referring Physician's Name*
- RequestingPhysicianName *(0032,1032) Requesting Physician*
- RoomNumber *(0038,0400) Patient's Institutional Residence*
- TechnicianName *(0008,1070) Operator's Name*

o *Patient Information Fields*

- PatientID *(0010,0020) Patient ID*
- SecondaryPatientID *(0010,1000) Other Patient IDs*
- PatientFName *(0010,0010) Patient's Name*
- PatientMName *(0010,0010) Patient's Name*
- PatientLName *(0010,0010) Patient's Name*
- Age *(0010,1010) Patient's Age*
- BirthDate *(0010,0030) Patient's Birth Date*
- BirthTime *(0010,0032) Patient's Birth Time*
- Gender *(0010,0040) Patient's Sex*
- Race *(0010,2160) Ethnic Group*
- HeightCM *(0010,1020) Patient's Size*
- WeightKG *(0010,1030) Patient's Weight*

Epiphany Healthcare

Cardio Server®

This management system supports DICOM® Modality Worklist (C-FIND) functionality and has been validated to work with DatamedWL™. The software is normally installed on the Epiphany server. For EKG Send functionality, the *Output Format* in DatamedFT™ must be configured to ***Epiphany – Cardio Server®***, and the *Output Folder* must be set to the folder that Cardio Server® is monitoring for incoming EKGs.

This system uses the concept of "Device ID" to segment data. In the Order Query, this Device ID comes from the DICOM® field *Institution Name*. To get data back there must be a value in this field. If the cart doesn't send this value and there is no REGMAP lookup table to get this value, add the following Order Request Field Mapping entry:

InstitutionName="DatamedWL"

On the *Search Criteria* tab leave *InstitutionID* as ***Ignore*** and set both *InstitutionName* and *OrderNumber* to ***External***.

Epiphany support personnel will assist in configuring Cardio Server® properly to handle these queries. When using multiple *InstitutionName* values to get subsets of data, the *SearchStartDatetime* and *SearchEndDatetime* must NOT be sent to Cardio Server®. To handle this, change both fields to ***Internal*** on the *Search Criteria* tab.

Supported Fields

These are the DWL fields returned by this SYSTEM. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
  - *Order Information Fields*
    - AttendingPhysicianName *(0008,1048) Physician(s) of Record*
    - CurrentLocation *(0038,0300) Current Patient Location*
    - DeviceID *(0018,1003) Station Name*
    - DepartmentName *(0008,1040) Institutional Department Name*
    - EncounterNumber *(0020,000D) Study Instance UID*
    - InstitutionName *(0008,0080) Institution Name* ***[Device ID]***
    - Modality *(0008,0060) Modality*
    - OrderNumber *(0008,0050) Accession Number*
    - OrderReason *(0008,1030) Study Description*
    - OrderRequestDate *(0040,0002) Scheduled Procedure Step Start Date*
    - OrderRequestTime *(0040,0003) Scheduled Procedure Step Start Time*
    - PerformingPhysicianName *(0008,1050) Performing Physician's Name*
    - Priority *(0040,1003) Requested Procedure Priority*
    - RecordUniqueID *(0020,000D) Study Instance UID*
    - ReferringPhysicianName *(0008,0090) Referring Physician's Name*
    - RequestingPhysicianName *(0032,1032) Requesting Physician*
    - RoomNumber *(0038,0400) Patient's Institutional Residence*
    - TechnicianName *(0008,1070) Operator's Name*
  - *Patient Information Fields*
    - PatientID *(0010,0020) Patient ID*
    - SecondaryPatientID *(0010,1000) Other Patient IDs*
    - PatientFName *(0010,0010) Patient's Name*
    - PatientMName *(0010,0010) Patient's Name*
    - PatientLName *(0010,0010) Patient's Name*
    - Age *(0010,1010) Patient's Age*
    - BirthDate *(0010,0030) Patient's Birth Date*
    - BirthTime *(0010,0032) Patient's Birth Time*
    - Gender *(0010,0040) Patient's Sex*
    - Race *(0010,2160) Ethnic Group*
    - HeightCM *(0010,1020) Patient's Size*
    - WeightKG *(0010,1030) Patient's Weight*

Esaote®

Suitestensa

This management system supports DICOM® Modality Worklist (C-FIND) functionality and has been validated to work with DatamedWL™. For EKG Send functionality, the *Output Format* in DatamedFT™ must be configured to ***Esaote® - Suitestensa / Cardiology Org@nizer® (esa)***, and the *Output Folder* must be set to the folder that Suitestensa is monitoring for incoming EKGs.

Supported Fields

These are the DWL fields returned by this SYSTEM. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
  - *Order Information Fields*
    - AttendingPhysicianName *(0008,1048) Physician(s) of Record*
    - CurrentLocation *(0038,0300) Current Patient Location*
    - DeviceID *(0018,1003) Station Name*
    - DepartmentName *(0008,1040) Institutional Department Name*
    - EncounterNumber *(0020,000D) Study Instance UID*
    - InstitutionName *(0008,0080) Institution Name* ***[Device ID]***
    - Modality *(0008,0060) Modality*
    - OrderNumber *(0008,0050) Accession Number*
    - OrderReason *(0008,1030) Study Description*
    - OrderRequestDate *(0040,0002) Scheduled Procedure Step Start Date*
    - OrderRequestTime *(0040,0003) Scheduled Procedure Step Start Time*
    - PerformingPhysicianName *(0008,1050) Performing Physician's Name*
    - Priority *(0040,1003) Requested Procedure Priority*
    - RecordUniqueID *(0020,000D) Study Instance UID*
    - ReferringPhysicianName *(0008,0090) Referring Physician's Name*
    - RequestingPhysicianName *(0032,1032) Requesting Physician*
    - RoomNumber *(0038,0400) Patient's Institutional Residence*
    - TechnicianName *(0008,1070) Operator's Name*
  - *Patient Information Fields*
    - PatientID *(0010,0020) Patient ID*
    - SecondaryPatientID *(0010,1000) Other Patient IDs*
    - PatientFName *(0010,0010) Patient's Name*
    - PatientMName *(0010,0010) Patient's Name*
    - PatientLName *(0010,0010) Patient's Name*
    - Age *(0010,1010) Patient's Age*
    - BirthDate *(0010,0030) Patient's Birth Date*
    - BirthTime *(0010,0032) Patient's Birth Time*

- Gender *(0010,0040) Patient's Sex*
- Race *(0010,2160) Ethnic Group*
- HeightCM *(0010,1020) Patient's Size*
- WeightKG *(0010,1030) Patient's Weight*

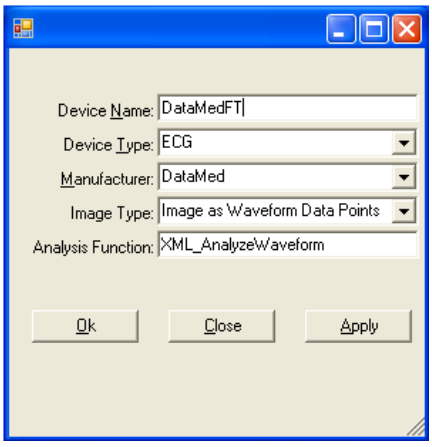
GE® Healthcare

MUSE® v7.1.1 or higher with the MUSEAPI3™ option

For this management system the software will be installed on a separate computer located on the network. DWL communicates with MUSE® using its proprietary TCP/IP interface. To set up the MUSE®, install MUSEAPI3™ and the XML Input Option. The \muse\xml folder must be shared using a domain account, and the DWL service set up to run under the same domain account. **This step is critical to allow the DWL service to write EKGs to the shared folder.**

MUSEAPI3 Configuration: Once MUSEAPI3™ is installed there is a MUSEAPI3™ configuration utility that sets up the End Point to listen for requests from DWL. In the *C:\Program Files\MUSE* folder there should be a utility named MUSEAPIServiceconfig.exe (contact GE support if it is not there). This program can be used to configure MUSEAPI3™ End Points after it has been installed. The default end point and port that DWL uses is HTTP and 8100. The DWL Configuration System URL must be appropriately configured to match this setting. The MUSEAPI3 service must be restarted after updating the settings.

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 will need to be restarted after updating the settings.

Currently, orders are not automatically routed when the EKG is sent. To do this, do the following:

1. In *Edit/Retrieve*, double-click the EKG record.
2. Go to the *Clerical* tab and locate the ***Order*** button.
3. Press Order and it will bring up a small window with the order information.
4. Select the order and press ***OK***.
5. When you exit the record, ***Save*** the changes or ***Confirm and Route***.

Supported Fields

These are the DWL fields returned by this System Type. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
  - *Order Information Fields*
    - DepartmentID *Location ID*
    - DepartmentName *Location Name*
    - EncounterNumber
    - OrderNumber
    - OrderRequestDate
    - OrderRequestTime
    - OrderStatus
    - Priority
    - RecordUniqueID
    - RoomNumber
  - *Patient Information Fields*
    - PatientID
    - PatientFName
    - PatientLName
    - Age
    - AgeUnits
    - BirthDate
    - Gender
    - Race
    - HeightIN
    - HeightCM
    - WeightLB
    - WeightKG

INFINITT Healthcare

INFINITT Cardiology PACS

This management system supports DICOM® Modality Worklist (C-FIND) functionality and has been validated to work with DatamedWL™. It also supports the C-STORE transactions and can properly render ECG Waveform object. The software may be installed on the server (if permitted) or on another computer located on the network. Transmission to the system is via standard DICOM® network protocols. Be sure to review the note for DICOM® systems at the beginning of this chapter.

Supported Fields

These are the DWL fields returned by this SYSTEM. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
  - *Order Information Fields*
    - AttendingPhysicianName *(0008,1048) Physician(s) of Record*
    - CurrentLocation *(0038,0300) Current Patient Location*
    - DeviceID *(0018,1003) Station Name*
    - DepartmentName *(0008,1040) Institutional Department Name*
    - EncounterNumber *(0020,000D) Study Instance UID*
    - InstitutionName *(0008,0080) Institution Name*
    - Modality *(0008,0060) Modality*
    - OrderNumber *(0008,0050) Accession Number*
    - OrderReason *(0008,1030) Study Description*
    - OrderRequestDate *(0040,0002) Scheduled Procedure Step Start Date*
    - OrderRequestTime *(0040,0003) Scheduled Procedure Step Start Time*
    - PerformingPhysicianName *(0008,1050) Performing Physician's Name*
    - Priority *(0040,1003) Requested Procedure Priority*
    - RecordUniqueID *(0020,000D) Study Instance UID*
    - ReferringPhysicianName *(0008,0090) Referring Physician's Name*
    - RequestingPhysicianName *(0032,1032) Requesting Physician*
    - RoomNumber *(0038,0400) Patient's Institutional Residence*
    - TechnicianName *(0008,1070) Operator's Name*
  - *Patient Information Fields*
    - PatientID *(0010,0020) Patient ID*
    - SecondaryPatientID *(0010,1000) Other Patient IDs*
    - PatientFName *(0010,0010) Patient's Name*
    - PatientMName *(0010,0010) Patient's Name*
    - PatientLName *(0010,0010) Patient's Name*
    - Age *(0010,1010) Patient's Age*
    - BirthDate *(0010,0030) Patient's Birth Date*

- BirthTime *(0010,0032) Patient's Birth Time*
- Gender *(0010,0040) Patient's Sex*
- Race *(0010,2160) Ethnic Group*
- HeightCM *(0010,1020) Patient's Size*
- WeightKG *(0010,1030) Patient's Weight*

LUMEDX

CardioECG™

This management system supports DICOM® Modality Worklist (C-FIND) functionality and has been validated to work with DatamedWL™. The software is normally installed on the Lumedx server. For EKG Send functionality, the *Output Format* in DatamedFT™ must be configured to ***Lumedx – CardioECG™***, and the *Output Folder* must be set to the folder that CardioECG™ is monitoring for incoming EKGs.

Supported Fields

These are the DWL fields returned by this SYSTEM. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
  - *Order Information Fields*
    - AttendingPhysicianName *(0008,1048) Physician(s) of Record*
    - CurrentLocation *(0038,0300) Current Patient Location*
    - DeviceID *(0018,1003) Station Name*
    - DepartmentName *(0008,1040) Institutional Department Name*
    - EncounterNumber *(0020,000D) Study Instance UID*
    - InstitutionName *(0008,0080) Institution Name* ***[Device ID]***
    - Modality *(0008,0060) Modality*
    - OrderNumber *(0008,0050) Accession Number*
    - OrderReason *(0008,1030) Study Description*
    - OrderRequestDate *(0040,0002) Scheduled Procedure Step Start Date*
    - OrderRequestTime *(0040,0003) Scheduled Procedure Step Start Time*
    - PerformingPhysicianName *(0008,1050) Performing Physician's Name*
    - Priority *(0040,1003) Requested Procedure Priority*
    - RecordUniqueID *(0020,000D) Study Instance UID*
    - ReferringPhysicianName *(0008,0090) Referring Physician's Name*
    - RequestingPhysicianName *(0032,1032) Requesting Physician*
    - RoomNumber *(0038,0400) Patient's Institutional Residence*
    - TechnicianName *(0008,1070) Operator's Name*
  - *Patient Information Fields*
    - PatientID *(0010,0020) Patient ID*

- SecondaryPatientID *(0010,1000) Other Patient IDs*
- PatientFName *(0010,0010) Patient's Name*
- PatientMName *(0010,0010) Patient's Name*
- PatientLName *(0010,0010) Patient's Name*
- Age *(0010,1010) Patient's Age*
- BirthDate *(0010,0030) Patient's Birth Date*
- BirthTime *(0010,0032) Patient's Birth Time*
- Gender *(0010,0040) Patient's Sex*
- Race *(0010,2160) Ethnic Group*
- HeightCM *(0010,1020) Patient's Size*
- WeightKG *(0010,1030) Patient's Weight*

McKesson Corporation

McKesson Cardiology™

This management system supports DICOM® Modality Worklist (C-FIND) functionality and has been validated to work with DatamedWL™. The software is normally installed on the McKesson server. For EKG Send functionality, the *Output Format* in DatamedFT™ must be configured to ***McKesson Cardiology™***, and the *Output Folder* must be set to the folder that McKesson Cardiology™ is monitoring for incoming EKGs.

Multi-Facility Filtering with Philips cardiographs: There are some special configuration settings that allow a Philips cart to request orders only from a specific Facility. This functionality uses a different AE Title for each Facility, as configured in the MMC MWL Authorized Clients in McKesson Cardiology™. Note that the AE Title **cannot** contain spaces.

1. In DatamedWLConfig, select ***Philips – PageWriter® Touch/TC*** as the *Device Type*, and then change the *Listener URL* from http://+/emscomm/ to http://+/. In the *Order Query* section set *Local AE Title* to ***[URLPath]***.
2. On the Philips cart, the desired Facility's AE Title will be configured in place of ***"emscomm"*** as part of the *Server URL* described in 13.c of the Philips DEVICE instructions above. For example, if the WLPC has an IP address of 10.1.4.22 and the Facility's AE Title is ***DWL_Hospital1***, the *Server URL* should be set to http://10.1.4.22/DWL_Hospital1.
3. In the McKesson Cardiology™ Facility Management screen, make sure the Facility's AE Title is assigned to the appropriate Facility Code.

Supported Fields

These are the DWL fields returned by this SYSTEM. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
  - *Order Information Fields*
    - AttendingPhysicianName *(0008,1048) Physician(s) of Record*
    - CurrentLocation *(0038,0300) Current Patient Location*
    - DeviceID *(0018,1003) Station Name*
    - DepartmentName *(0008,1040) Institutional Department Name*
    - EncounterNumber *(0020,000D) Study Instance UID*
    - InstitutionName *(0008,0080) Institution Name*
    - Modality *(0008,0060) Modality*
    - OrderNumber *(0008,0050) Accession Number*
    - OrderReason *(0008,1030) Study Description*
    - OrderRequestDate *(0040,0002) Scheduled Procedure Step Start Date*
    - OrderRequestTime *(0040,0003) Scheduled Procedure Step Start Time*
    - PerformingPhysicianName *(0008,1050) Performing Physician's Name*
    - Priority *(0040,1003) Requested Procedure Priority*
    - RecordUniqueID *(0020,000D) Study Instance UID*
    - ReferringPhysicianName *(0008,0090) Referring Physician's Name*
    - RequestingPhysicianName *(0032,1032) Requesting Physician*
    - RoomNumber *(0038,0400) Patient's Institutional Residence*
    - TechnicianName *(0008,1070) Operator's Name*
  - *Patient Information Fields*
    - PatientID *(0010,0020) Patient ID*
    - SecondaryPatientID *(0010,1000) Other Patient IDs*
    - PatientFName *(0010,0010) Patient's Name*
    - PatientMName *(0010,0010) Patient's Name*
    - PatientLName *(0010,0010) Patient's Name*
    - Age *(0010,1010) Patient's Age*
    - BirthDate *(0010,0030) Patient's Birth Date*
    - BirthTime *(0010,0032) Patient's Birth Time*
    - Gender *(0010,0040) Patient's Sex*
    - Race *(0010,2160) Ethnic Group*
    - HeightCM *(0010,1020) Patient's Size*
    - WeightKG *(0010,1030) Patient's Weight*

Medimatic

ComPACS™

This management system supports DICOM® Modality Worklist (C-FIND) functionality and has been validated to work with DatamedWL™. It also supports the C-STORE transactions and can properly render ECG Waveform object. The software may be installed on the server (if permitted) or on another computer located on the network. Transmission to the system is

via standard DICOM® network protocols. Be sure to review the note for DICOM® systems at the beginning of this chapter.

Supported Fields

These are the DWL fields returned by this SYSTEM. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
  - *Order Information Fields*
    - AttendingPhysicianName *(0008,1048) Physician(s) of Record*
    - CurrentLocation *(0038,0300) Current Patient Location*
    - DeviceID *(0018,1003) Station Name*
    - DepartmentName *(0008,1040) Institutional Department Name*
    - EncounterNumber *(0020,000D) Study Instance UID*
    - InstitutionName *(0008,0080) Institution Name*
    - Modality *(0008,0060) Modality*
    - OrderNumber *(0008,0050) Accession Number*
    - OrderReason *(0008,1030) Study Description*
    - OrderRequestDate *(0040,0002) Scheduled Procedure Step Start Date*
    - OrderRequestTime *(0040,0003) Scheduled Procedure Step Start Time*
    - PerformingPhysicianName *(0008,1050) Performing Physician's Name*
    - Priority *(0040,1003) Requested Procedure Priority*
    - RecordUniqueID *(0020,000D) Study Instance UID*
    - ReferringPhysicianName *(0008,0090) Referring Physician's Name*
    - RequestingPhysicianName *(0032,1032) Requesting Physician*
    - RoomNumber *(0038,0400) Patient's Institutional Residence*
    - TechnicianName *(0008,1070) Operator's Name*
  - *Patient Information Fields*
    - PatientID *(0010,0020) Patient ID*
    - SecondaryPatientID *(0010,1000) Other Patient IDs*
    - PatientFName *(0010,0010) Patient's Name*
    - PatientMName *(0010,0010) Patient's Name*
    - PatientLName *(0010,0010) Patient's Name*
    - Age *(0010,1010) Patient's Age*
    - BirthDate *(0010,0030) Patient's Birth Date*
    - BirthTime *(0010,0032) Patient's Birth Time*
    - Gender *(0010,0040) Patient's Sex*
    - Race *(0010,2160) Ethnic Group*
    - HeightCM *(0010,1020) Patient's Size*
    - WeightKG *(0010,1030) Patient's Weight*

Philips

TraceMasterVue™

For this management system the software will be installed on a separate computer located on the network. DWL communicates with OrderVue™ on the TraceMasterVue™ (TMV) server using its proprietary TCP/IP interface. For EKG Send functionality, the *Output Format* in DatamedFT™ must be configured to ***Philips – IntelliSpace® ECG / TraceMasterVue (xml 1.04)***. DFT will handle the ECG after DWL has received it.

Philips will need to configure OrderVue™ and then provide the URL for the DWL configuration, along with the username and password.

Supported Fields

These are the DWL fields returned by this SYSTEM. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
  - *Order Information Fields*
    - AccountNumber
    - BedNumber
    - DepartmentID
    - DepartmentName
    - DeviceID
    - EncounterNumber
    - FacilityID
    - FacilityName
    - InstitutionID
    - InstitutionName
    - OrderBillingCode
    - OrderNumber
    - OrderReason
    - OrderRequestDate
    - OrderRequestTime
    - OrderStatus
    - PerformingPhysicianID
    - PerformingPhysicianName
    - Priority
    - RecordUniqueID
    - ReferringPhysicianID
    - ReferringPhysicianName
    - RequestingPhysicianID
    - RequestingPhysicianName
    - RoomNumber

        - TechnicianID
        - TechnicianName
        - UnitNumber
    - *Patient Information Fields*
        - PatientID
        - PatientFName
        - PatientMName
        - PatientLName
        - Age
        - AgeUnits
        - BirthDate
        - BirthTime
        - Gender
        - Race
        - HeightIN
        - HeightCM
        - WeightLB
        - WeightKG

ScImage®

PicomEnterprise™

This management system supports DICOM® Modality Worklist (C-FIND) functionality and has been validated to work with DatamedWL™. It also supports the C-STORE transactions and can properly render ECG Waveform object. The software may be installed on the server (if permitted) or on another computer located on the network. Transmission to the system is via standard DICOM® network protocols. Be sure to review the note for DICOM® systems at the beginning of this chapter.

Supported Fields

These are the DWL fields returned by this SYSTEM. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
    - *Order Information Fields*
        - AttendingPhysicianName *(0008,1048) Physician(s) of Record*
        - CurrentLocation *(0038,0300) Current Patient Location*
        - DeviceID *(0018,1003) Station Name*
        - DepartmentName *(0008,1040) Institutional Department Name*
        - EncounterNumber *(0020,000D) Study Instance UID*
        - InstitutionName *(0008,0080) Institution Name*

- Modality *(0008,0060) Modality*
- OrderNumber *(0008,0050) Accession Number*
- OrderReason *(0008,1030) Study Description*
- OrderRequestDate *(0040,0002) Scheduled Procedure Step Start Date*
- OrderRequestTime *(0040,0003) Scheduled Procedure Step Start Time*
- PerformingPhysicianName *(0008,1050) Performing Physician's Name*
- Priority *(0040,1003) Requested Procedure Priority*
- RecordUniqueID *(0020,000D) Study Instance UID*
- ReferringPhysicianName *(0008,0090) Referring Physician's Name*
- RequestingPhysicianName *(0032,1032) Requesting Physician*
- RoomNumber *(0038,0400) Patient's Institutional Residence*
- TechnicianName *(0008,1070) Operator's Name*

o *Patient Information Fields*

- PatientID *(0010,0020) Patient ID*
- SecondaryPatientID *(0010,1000) Other Patient IDs*
- PatientFName *(0010,0010) Patient's Name*
- PatientMName *(0010,0010) Patient's Name*
- PatientLName *(0010,0010) Patient's Name*
- Age *(0010,1010) Patient's Age*
- BirthDate *(0010,0030) Patient's Birth Date*
- BirthTime *(0010,0032) Patient's Birth Time*
- Gender *(0010,0040) Patient's Sex*
- Race *(0010,2160) Ethnic Group*
- HeightCM *(0010,1020) Patient's Size*
- WeightKG *(0010,1030) Patient's Weight*

TriKardia

CardioCenter

For this management system the software will normally be installed on the CardioCenter server. DWL communicates with CardioCenter using its proprietary TCP/IP interface. For EKG Send functionality, the *Output Format* in DatamedFT™ must be configured to ***TriKardia – CardioCenter***. DFT will handle the ECG after DWL has received it.

TriKardia will need to configure the system and then provide the URL for the DWL configuration, along with the username and password.

Supported Fields

These are the DWL fields returned by this SYSTEM. Keep in mind that not all DEVICESs will accept all of the supported Order Response fields, so the actual data returned to the DEVICE will typically be a subset of the Order Response list.

- **Order Response**
  - *Order Information Fields*
    - AccountNumber
    - BedNumber
    - DepartmentID
    - DepartmentName
    - DeviceID
    - EncounterNumber
    - FacilityID
    - FacilityName
    - InstitutionID
    - InstitutionName
    - OrderNumber
    - OrderReason
    - OrderRequestDate
    - OrderRequestTime
    - Priority
    - RecordUniqueID
    - RequestingPhysicianID
    - RequestingPhysicianName
    - RoomNumber
    - TechnicianID
    - TechnicianName
    - UnitNumber
  - *Patient Information Fields*
    - PatientID
    - PatientFName
    - PatientMName
    - PatientLName
    - Age
    - AgeUnits
    - BirthDate
    - Gender
    - Race
    - HeightCM
    - WeightKG

These SYSTEMs support DICOM® Modality Worklist and should be compatible with DatamedWL™; however they have not yet been validated. Transmission to the system is via standard DICOM® network protocols. Each of them is compatible with DatamedFT™ and can accept the EKG records.

Philips Healthcare

IntelliSpace ECG® with IntelliBridge Enterprise (IBE)

RVC BV

RVC Clinical Assistant

CHAPTER 7 – CONFIGURING DATAMEDFT™

The DWL application uses DFT to translate the EKG data from the source format to the destination format. By leveraging DFT in this way, an extremely flexible installation can be configured, including devices that are supported by DWL as well as devices that are not. Proper operation of this application depends on certain specific settings in the DFT configuration.

For each DWL process, a corresponding process must be configured in DFT. ***These must be the same Process Number in both DWL and DFT or it will not work.*** If there are other devices used with DFT that are not used with DWL then those processes must be set up after the DWL-corresponding processes. Here is an example to make this clearer:

- The source devices are Edan, HP, and Philips cardiographs and the management system is McKesson.
- Set up DWL with Process 1 being Edan to McKesson. Set up DFT with Process 1 being Edan (scp) to McKesson.
- Set up DWL with Process 2 being Philips to McKesson. Set up DFT with Process 2 being Philips XML to McKesson.
- There is no process 3 in DWL. Set up DFT with Process 3 being HP to McKesson.

These are the key settings that must be configured in DFT:

- The ***Input format*** should be set to the equivalent value as the DWL ***Device Type***.
- The ***Input folder*** can be anything but must be a local folder.
- The ***Look in subfolders for files*** setting must be disabled.
- The ***Output format*** should be set to the equivalent value as the DWL ***Output System***.
- The ***Output folder*** can be anything but must be a local folder.
- The ***File naming*** option must be set to ***Original Filename***. Note that DFT does not allow underscores in the filename event with this setting, so DWL will change any underscores to hyphens. Note that for the Lumedx CardioECG, Philips TraceMasterVue, and TriKardi CardioCenter outputs, this setting is disabled.
- Archiving will typically be turned on but this is not required.
- If the ***Output System*** is DICOM then on the ***Options*** tab the ***DICOM: SOP Class*** and ***Transfer Syntax*** options must match the settings on the ***Advanced*** tab in DWL.

CHAPTER 8 – TROUBLESHOOTING

When DatamedWL™ is installed, two new Windows™ services are created: DatamedWL and DatamedWLStart. The functions of DatamedWLStart are to start and stop DatamedWL, as well as to monitor it. If DatamedWL stops for some reason unrelated to the hardware security key, DatamedWLStart will restart it. During installation DatamedWL's startup type will be set to *Manual*, and DatamedWLStart's startup type will be set to *Automatic*. DatamedWL should never be started or stopped directly. When DatamedWLStart is started or stopped it will take care of DatamedWL. The DatamedWLConfig utility should be used to start, stop, and monitor the services.

If there is a problem, the first place to look is the ***Event Viewer***, which can be accessed from **Control Panel → Administrative Tools**. 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 one from DatamedWLStart (*Service started successfully*), and then several from DatamedWL 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 hardware key could not be contacted, both DatamedWL and DatamedWLStart will log *Error* messages describing the condition. In this case make sure that the key is inserted properly and the red light is on.

The other reason that the services 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 as it starts. There should also be a message that says how many processes there are and gives the code version and security key serial number. This shows that the hardware security 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 DatamedWL™ Configuration Utility and select *File → Export settings to file* on the menu.

Another very helpful diagnostic tool is the *Help → About* screen in the Configurator. This screen will show you the product version, and if it can connect to the license key it will show the Serial Number, license count, licensed devices, and licensed systems. If it cannot connect to the license key then it will display Unable to access the Security Key.

Commons Issues

Here are some common issues and answers:

- **Symptom: The Security Key cannot be located**

- The Security Key is required for the DatamedWL service to run. Whether the Security 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 DatamedWL™ Configuration Utility and select *Help → About* on the menu. After a moment it should show the Security Key serial number.
  - Open a browser and connecting to this address: http://localhost:1947. If the complete driver package is properly installed you should see the Sentinel Admin Control Center. If you do not see this, use the shortcut under *Start → All Programs → Datamed → DatamedWL → Install License Key Drivers* or download and install the latest driver, which can be found at:

    http://sentinelcustomer.safenet-inc.com/sentineldownloads/
- On the key is a light that should be on if the driver is working.
- If the Security Key still can't be located, please contact DLLC support.

- **Symptom: The Service Status is stuck on *Unknown***
  - This status is displayed when the DatamedWLStart service is running and the DatamedWL service is not running. Check the Application Event Log to see what messages are there to explain why DatamedWL won't start. The most likely cause is that it cannot connect to the Security Key. See the previous note for steps to make sure the key is working.
- **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 DatamedFT's logs and the troubleshooting list for DatamedFT™ in the service manual.

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

APPENDIX A – UPDATING THE LICENSE KEY

Licensing for Datamed® software applications is controlled using a hardware or software license key. The advantage of the hardware key is that the software can be moved to another computer easily; however a USB port is required. In contrast, a software key is tied to a specific computer and cannot easily be moved, however there is no hardware involved. At the time of this writing software keys are not yet available, but when they are the update procedures will be the same.

Upon delivery of the Datamed® software, the license key will already be programmed with the appropriate licensing information. If additional connection licenses are purchased, the key can be updated remotely to activate the new licenses. A single license key (hardware or software) may be used for any number of licenses for Datamed® software applications on a single computer (physical or virtual). Previous versions used a separate update utility, however starting with version 2.0.6 the update functionality is built into the Configuration Utility. On the License menu 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 DatamedWL Configuration Utility and select *License → Create License Update Request File* on the menu. You will be able to select a folder and filename to write the file to. Note that the license key must be present on this computer.

Step 2: A file will be created in the location specified with an extension of "**.c2v**". Email this file to DLLC at support@datamed.com.

Step 3: DLLC will generate an update file (with an extension of "**.v2c**") and email it back. Save this file.

Step 4: In the DatamedWL 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.

Instead of the loading the license update file, DLLC will (on request) create a small update executable program that will do perform the update. This .exe can simply be clicked to update the key.

APPENDIX B – REGISTRY SETTINGS

If it is necessary to change the settings for DatamedWL™ after installation, the DatamedWLConfig 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\DatamedWL.

Most of the settings must not be changed or the operation of DatamedWL will be affected. If any setting is changed DatamedWLStart 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.

APPENDIX C – OPEN SOURCE LICENSE

Along with the software, a separate MDCM DLL is installed to handle the DICOM communications. This module is open source and is provided under the GNU Lesser General Public License (https://www.gnu.org/licenses/lgpl.html) with the following notice:

APPENDIX D – END USER LICENSE AGREEMENT AND LIMITED WARRANTY

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

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

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