

MediCollector SERVICE

Getting Started Guide

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Purpose

This document explains how to get started using the MediCollector SERVICE product.

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Overview

MediCollector SERVICE is a software product for acquiring, recording and streaming data from a connected medical device. Data can be recorded to disk and/or streamed to external systems, such as hospital information systems (HIS) or electronic medical records systems (EMR) using HL7, or it can be streamed to external applications such as Matlab and LabVIEW using a simpler TCP protocol (example code included).

The MediCollector SERVICE runs continuously, and invisibly, in the background on the computer and records and/or streams the data generated by your medical device. Because the software is installed as a “Windows Service” this means it will launch automatically and run invisibly in the background when the computer is launched. A user does not need to launch the software, because Windows launches it automatically.

This product comes with a configuration and management tool, called the “MediCollector Service Manager” which can be used to configure and monitor the service.

The MediCollector SERVICE product is somewhat like an “invisible” version of another product called MediCollector BEDSIDE. While you are evaluating and testing our products, you may want to consider installing the MediCollector BEDSIDE product first. Then, when you are ready to move into a production environment, you can switch to the MediCollector SERVICE. For advice on your approach, please [contact us](#).

Please read this document carefully to get started using the software.

Connecting your medical device

Follow these instructions to connect your device.

1. First, make sure your device is on our [list of supported devices](#).
2. On that list, find the corresponding “cable pack” required for connecting your device.
3. Review the [requirements](#) for the cable pack. For example, your device may need a special communications card.
4. Purchase the cable pack from MediCollector.
5. If your computer doesn’t have a serial port (most don’t), you should also purchase a [USB-to-Serial adapter](#).
6. Once your cables have arrived, follow the accompanying instructions to connect your device

If you are confused about cabling requirements, please [contact us](#). We’d be happy to guide you through the process.



Please Note! You can always test MediCollector software **without connecting a medical device**. As explained below in this document, you can launch a session and select “Simulated Device” and generate simulated signals without connecting a physical device.

System Requirements

Before installing the software on your computer, review the following minimum system requirements:

- Microsoft Windows 7 or newer (64 bit only)
- 2.0 GHz CPU (x86 only – ARM processors are NOT SUPPORTED)
- 1.0 GB RAM
- USB port (only required to unlock the evaluation version)
- Serial port (if your computer doesn't have one, you can use a [USB-to-serial converter](#) instead)

Installing the software

Download the latest installer from the [MediCollector website](#). The software can be installed by double-clicking on the downloaded installer file.

Because the MediCollector SERVICE runs invisibly in the background, you must use the “MediCollector Service Manager” (included in the installer) to configure and monitor the service.

Updating the software

It is recommended that you occasionally check the MediCollector website for software updates. The MediCollector Service Manager can also check for updates automatically by selecting *HELP>Check for update automatically* from the main menu.

We regularly release minor updates, improvements, and bug fixes via the website. To update an existing installation, simply download and run the latest installer. It will overwrite the existing installation automatically but will not affect your data files. There is no need to un-install the old version when upgrading. To stay up to date on the latest changes, you can also [join our mailing list](#).

Try the FREE evaluation version

After installation, the software will run in “evaluation mode”. While running in evaluation mode, there are restrictions:

1. Each recording/streaming session is limited to 2 minutes.
2. When exporting data from a file that was recorded in evaluation mode, you will only be able to export 10 seconds of data.

When you purchase a subscription, these restrictions will be removed.

Purchase a subscription

To purchase a subscription and unlock restrictions, please [see our website](#). We offer many ways to purchase a subscription (e.g. credit card, Purchase Order, wire transfer, etc). Once you have purchased a subscription, you will receive an email with instructions on how to activate your subscription. This email will contain a *License ID* and *Password* which you enter into the software to activate your subscription (see below).

Activate a subscription

To activate your subscription, follow these instructions:

1. Launch MediCollector Service Manager
2. Select *HELP>Licenses* from main menu
3. Click the *Activate* button
4. Click the *Automatic Activation* button
5. Enter the *License ID* and *Password* that was provided to you via email when you purchased the software.
If you can't find this information, please [contact us](#) and we will re-send it.
6. Click the *Activate* button
7. Your license should be activated on your computer.

You can also activate your subscription on a computer that does not have Internet access. This is done by following the instructions above but click *Manual Activation* in Step 4.

Renew a subscription


As your subscription approaches expiration, you will begin to receive emails providing a simple way to renew your subscription. The MediCollector Service Manager software will also prompt you to renew your subscription. We offer many ways to renew. The easiest way to renew your subscription is login to our [License Portal](#) and purchase a renewal online using a credit card. Your software installation will then automatically detect the renewal and extend your subscription immediately. We also accept Purchase Orders and Wire Transfers and other methods for renewal. Please [contact us](#) for assistance.

Using the software

Follow the instructions below to begin using the MediCollector SERVICE software.

Configuring your installation

The first thing you need to do is to configure the service. This is done using the MediCollector Service Manager. Run the MediCollector Service Manager and click on the CONFIGURE button to configure it. This will launch a wizard which will guide you through the process. Once configured, you can launch the service by clicking the START button to begin recording/streaming.

 **IMPORTANT!** The MediCollector SERVICE is designed to run continuously in the background. If your computer goes to sleep in the middle of a session, this will disrupt communications with your connected medical device and generate errors when the computer wakes up again. To prevent this, make sure you configure the POWER & SLEEP SETTINGS in Windows such that the computer **never goes to sleep**.

Monitoring the service

The MediCollector SERVICE has no user interface. It runs invisibly in the background. However, to interact with it, you can use the MediCollector Service Manager, as seen below.

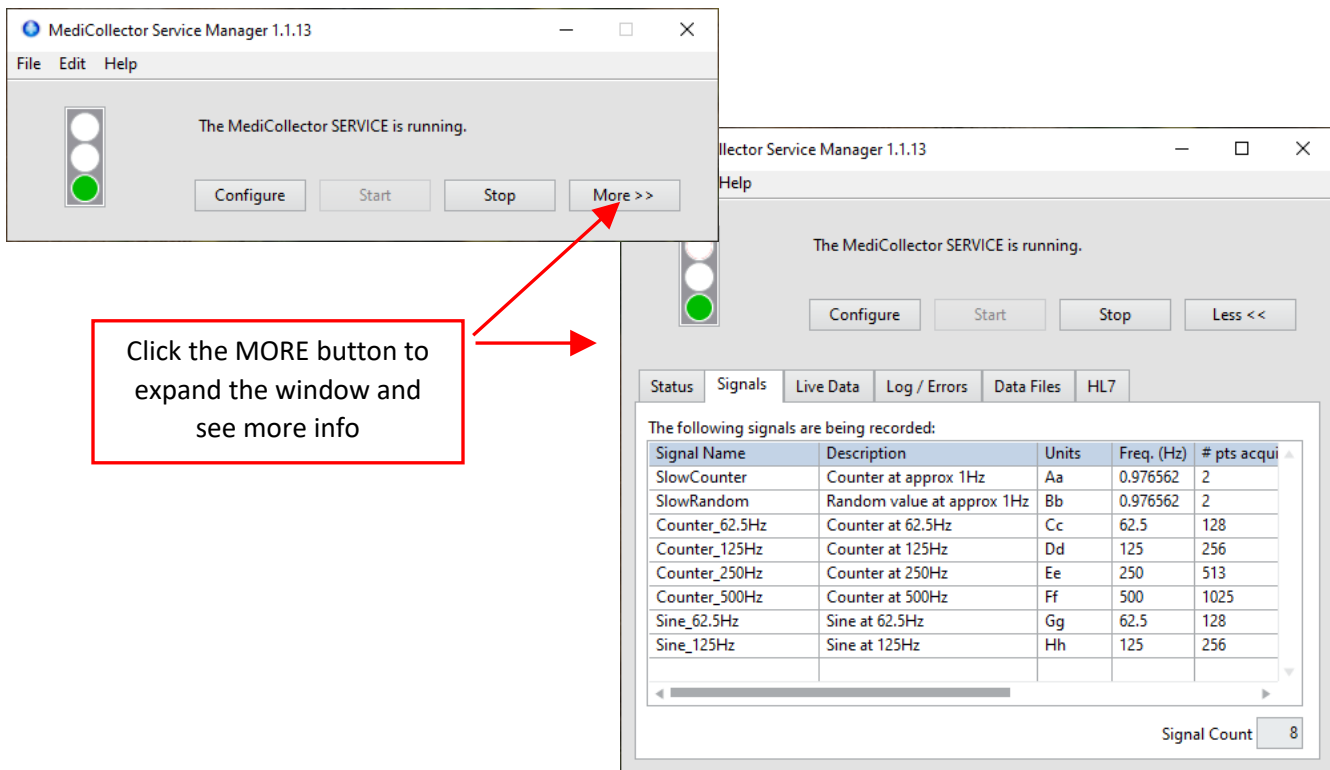


Figure 1 MediCollector Service Manager

The MediCollector Service manager has numerous functions, such as:

1. Monitoring the status of the service
2. Viewing live data generated by the service
3. Monitoring which signals are being recorded/streamed
4. Reviewing the log file for errors, etc.
5. Managing recorded datafiles and opening them for viewing
6. Monitoring streaming activity
7. Monitoring HL7 activity

Recording data

To record data using the MediCollector SERVICE, you must configure the service to enable recording. This is done by clicking the CONFIGURE button in the MediCollector Service Manager and following the instructions in the wizard that appears. After configuring the software, you should launch the service (click the START button in the MediCollector Service Manager). You can then view live data using the MediCollector Service Manager.

By default, data is recording into the Data Directory located here:

C:\Program Files\MediCollector SERVICE\data

Using the MediCollector Service Manager, you can manage the files in the Data Directory and double-click on a file to view recorded data.

Viewing live data

Once the service is launched, you can view live data by clicking the MORE button and using the SIGNALS and LIVE DATA tabs as shown below.

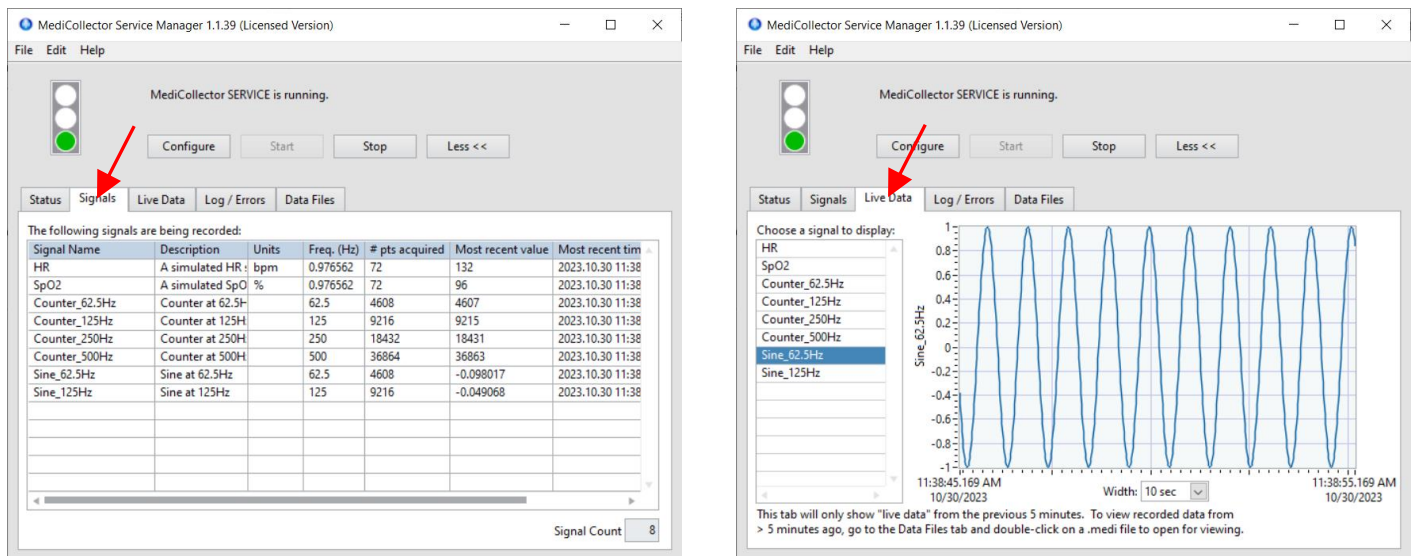


Figure 2 Viewing live data

Viewing recorded data

If you configured the service to record data, it will save data to files that ends with a “.medi” extension. These files will be stored in the Data Directory (as explained above). To manage your .medi files, click on the DATA FILES tab in the Service Manager. You can then double-click on a datafile to open the file and view recorded data as shown below.



Figure 3 Viewing recorded data

Exporting data

To export data to a 3rd party application such as Matlab or Excel, you must first open the .medi file for viewing (see above). Once the file is open, select FILE>EXPORT from the main menu. Or click the EXPORT button in the toolbar. An export wizard will then appear to guide you through the process. Please note the following about exporting data:

- **Choose how to group the signals**

When exporting your data, the first question you will encounter in the Export Wizard is how to group your exported signals. You must choose whether you want to group your signals into one file, or to export one file for each signal. This choice is up to you. Your choice will depend on how to want to work with your data after exporting it.

- **File format**

MediCollector can export data in 3 different file formats. The advantages and disadvantages of these file formats are explained below:

- TXT/CSV (Delimited Text File)

Text files are exported as universal tab-delimited files (also known as CSV files). Choosing this format will allow you to import your data into virtually any third-party application like Excel, Matlab, R, and SAS. The downside is that text files consume a lot of disk space, and the export process is fairly slow.

- EDF

EDF and EDF+ files are a common way of storing physiological signal recordings. EDF files can be imported into many third-party applications, but they are not as widely accepted as text files. The advantage to EDF and EDF+ files is that they consume less disk space and the export process is very fast. If you choose EDF, annotations will be exported as a separate text file.

- EDF+

The only difference between EDF and EDF+ formats is that annotations are included inside EDF+ files.

Streaming data to external systems (e.g. using HL7)

In addition to recording data, the MediCollector SERVICE can stream live data to external systems such as Matlab or LabVIEW or even to hospital information systems (HIS) such as electronic medical records systems (EMR) systems using HL7. To enable streaming, launch a session and enable streaming as shown in Figure 4 below. For more information about streaming, read the [TCP & HL7 Streaming Guide](#) (also available via the main menu: *HELP>TCP & HL7 Streaming Guide*).

When enabling streaming, you will need to choose which protocol to use when streaming data:

- **HL7 2.6:** Choose HL7 2.6 (Health Level 7) to stream data to a hospital information systems (HIS), electronic medical records systems (EMR), or integration engine, etc. The HL7 interface is explained in more detail in the [TCP & HL7 Streaming Guide](#).
- **HL7 FHIR:** Choose HL7 FHIR to stream your data in bundles of FHIR Resources to an external FHIR Server.
- **MediCollector Format:** Choose the MediCollector Format to stream data quickly and easily to external applications such as Matlab or LabVIEW (example code included). The MediCollector Format is explained in more detail in the [TCP & HL7 Streaming Guide](#).

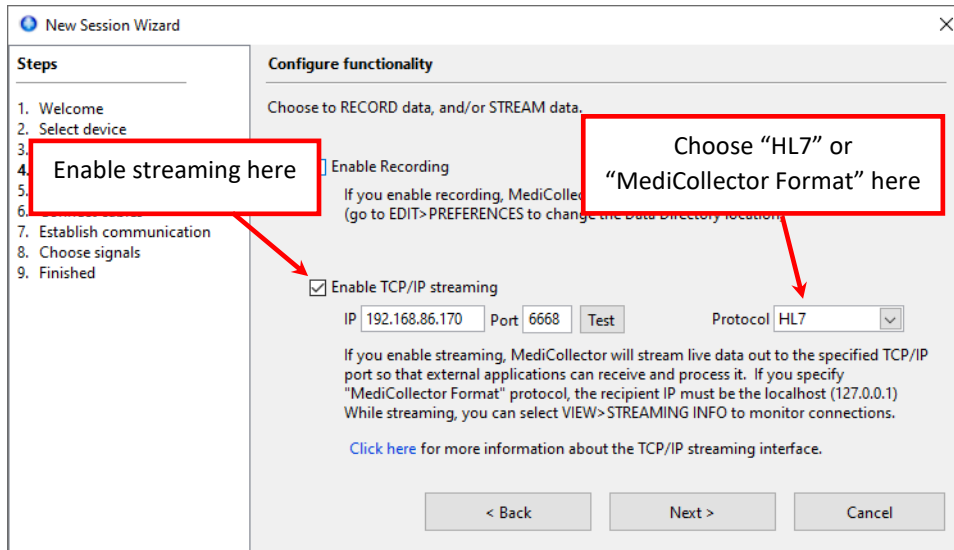


Figure 4 How to enable streaming

Launching & Querying the Service

By default, the MediCollector SERVICE is configured to launch automatically when the computer starts up. This means that the computer will launch the service and begin communicating with your medical device as soon as Windows launches (no login required). This is convenient because it will autorecover from power loss or rebooting the computer and begin recording again immediately.

The service can also be launched manually by clicking the START button as shown below.

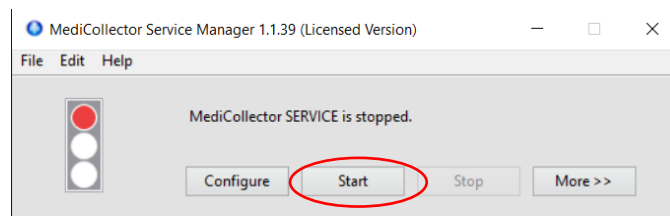


Figure 5 Starting the service

If you do not want the service to launch automatically, you can change the startup type as shown below.

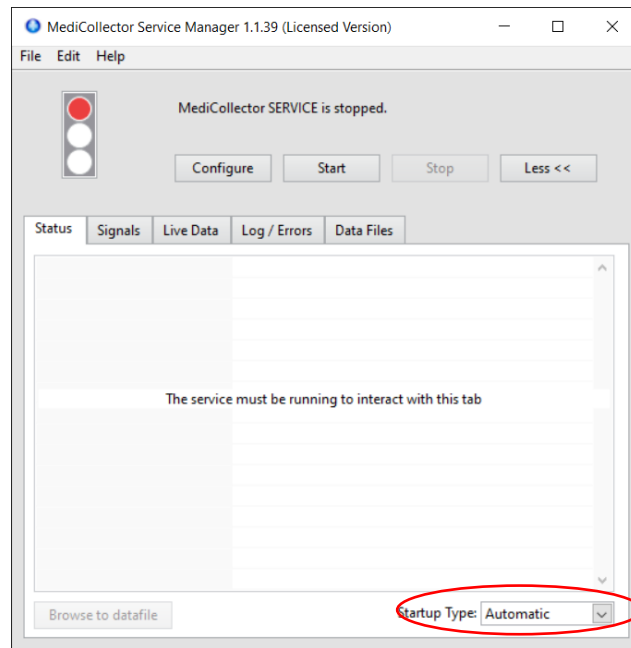


Figure 6 Changing how the MediCollector SERVICE launches

The following startup types are supported:

1. Delayed Start.

The computer will launch the MediCollector SERVICE automatically, but will wait approximately 2 minutes before doing so. This delay can be convenient because it gives other critical services time to launch.

2. Automatic.

The computer will launch the MediCollector SERVICE automatically

3. Manual

The service must be manually (or programmatically)

4. Disabled

The service can not be launched in this mode.

If you would prefer to programmatically start/stop the service from your own application, you can use either the NET or SC command lines. To start and stop the service, use these commands:

```
net start medicollector  
net stop medicollector
```

or

```
sc start medicollector  
sc stop medicollector
```

The *net* command is synchronous, meaning it will wait while the service starts. The *sc* command is asynchronous, so it will send a command to start the service and then return without waiting for the service to start.

Both the net and sc commands have numerous other capabilities for managing and querying services. For example, the sc command is useful for querying the MediCollector service:

```
sc query medicollector
```

This command will return information about the service, such as:

```
SERVICE_NAME: medicollector
      TYPE                : 10  WIN32_OWN_PROCESS
      STATE                : 1  STOPPED
      WIN32_EXIT_CODE      : 1066 (0x42a)
      SERVICE_EXIT_CODE   : 0   (0x2)
      CHECKPOINT          : 0x0
      WAIT_HINT           : 0x0
```

The most useful information in this query is the STATE, which is:

SERVICE_STOPPED	0x00000001	The service is stopped.
SERVICE_START_PENDING	0x00000002	The service is starting.
SERVICE_STOP_PENDING	0x00000003	The service is stopping.
SERVICE_RUNNING	0x00000004	The service is running.
SERVICE_CONTINUE_PENDING	0x00000005	The service continue is pending.
SERVICE_PAUSE_PENDING	0x00000006	The service pause is pending.
SERVICE_PAUSED	0x00000007	The service is paused.

Please keep in mind that starting and stopping services requires Administrator privileges.

An additional tool for monitoring the service is available through the TCP streaming interface. If connected to the service and receiving data via TCP, a status packet is sent every 5 seconds indicating the state of the service. More information on the TCP streaming interface is available in the [TCP & HL7 Streaming Guide](#).