LabCollector

"Your Laboratory management solution"

User's guide

I-COLLECTOR HUB

Version 4.0 – February 2022

Summary

1) Installation of I-Collector Hub

To install I-Collector Hub follow these steps:

- Configure the IP address of I-Collector Hub
- Configure a Proxy Server in I-Collector Hub if necessary
- Configure I-Collector Hub to connect to I-Collector Server or LabCollector
- Configure the instruments or data logger to connect to I-Collector Hub

1.1) Configuration of the IP address of I-Collector Hub

Important

I-Collector Hub can only work with a static IP address that must be defined into the DHCP server of your network.

I-Collector Hub won't work with a dynamic IP address assigned by a local DHCP server that changes with time.

The MAC address of each I-Collector Hub (like 9E-B6-D0-F2-85-73 for example) is indicated on the sticker on the back of I-Collector Hub. You can use this MAC address to associate one fixed IP address in your DHCP server to the corresponding I-Collector Hub.

1) To configure I-Collector Hub IP address:
   - In your local network identify a free and fixed IP address to be assigned to I-Collector Hub. This address must not change in the future.
   - Use the MAC address of one I-Collector Hub to associate a static IP address in the DHCP server to this Hub.

2) Plug I-Collector Hub to an Ethernet cable connected to your local network where data from instruments or loggers are accessible. I-Collector Server (local or in the Cloud) should be accessible from the local network where you connect I-Collector Hub.

   Important:
   I-Collector Hub should:
   - have a direct access (or through a Proxy server) to Internet if I-Collector server or LabCollector is hosted in the Cloud,
   - If the connection to Internet goes through a Proxy server and I-Collector server or LabCollector is hosted in the Cloud, start I-Collector Hub and go to paragraph “Configuration of a Proxy server in I-Collector Hub” to configure I-Collector Hub proxy,
   - I-Collector Hub should always have access to I-Collector server or LabCollector if it is hosted in your local network.

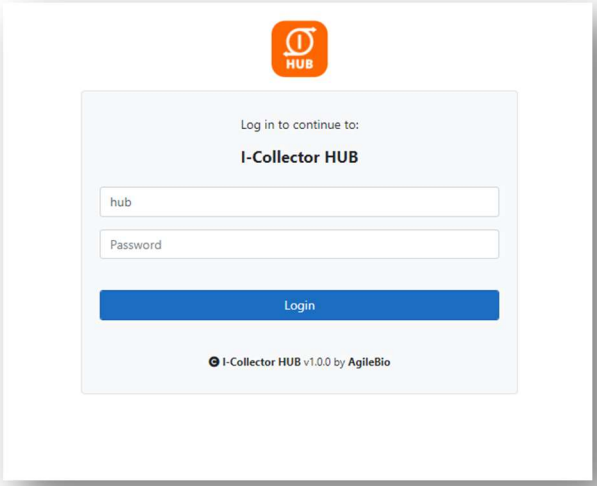
3) Plug I-Collector to the power adaptor to start it.

   If I-Collector Hub is connected to I-Collector Server through the local network and/or Internet and/or Proxy, and is already configured, it should automatically download the appropriate configuration from I-Collector Server to connect to instruments.

1.2) Configuration of a Proxy server in I-Collector Hub

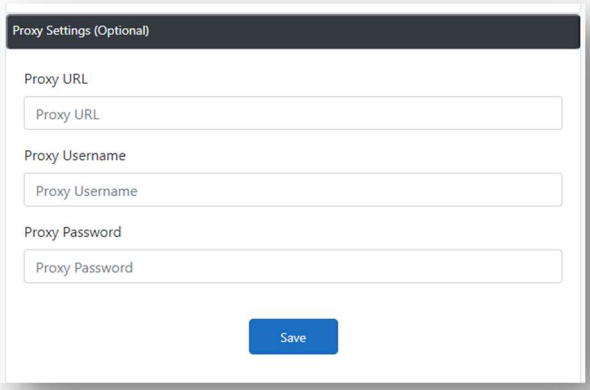
If I-Collector Hub must use a proxy server access to access Internet, configure the proxy server in I-Collector Hub:

- Configure the IP address of the Hub (see paragraph "Configuration of the IP address of I-Collector Hub")
- Wait for the IP address to be assigned and note it (WWW.XXX.YYY.ZZZ),
- In a web browser (Chrome, Edge, Firefox) connect to the IP address of the I-Collector Hub at http://WWW.XXX.YYY.ZZZ:5000 to access the I-Collector Hub configuration page,

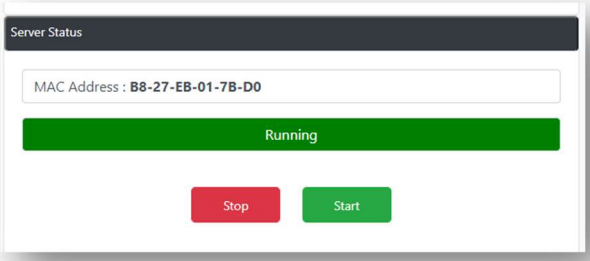


- Enter the username: hub
- Enter the password: THE_MAC_ADRESS_OF_THE_HUB (example: A0-CE-C8-39-8C-2C)

- Click Login to enter
- In the proxy section, enter the proxy settings of the proxy server, click Save



- In the Server Status section click Stop and Start (to restart the internal services of the Hub and apply the new configuration)

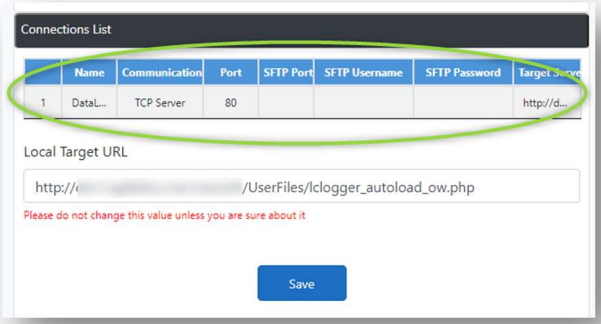


I-Collector Hub should now connect to the Internet.

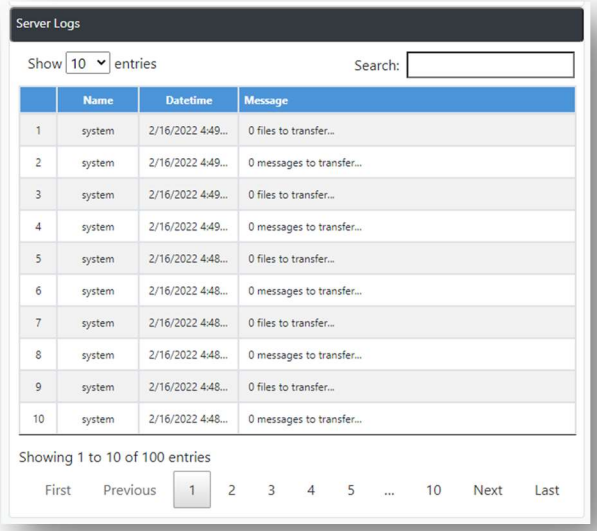
1.3) Checking the connection to I-Collector Server or LabCollector

To check if the connection between I-Collector Hub and I-Collector Server is up and running, connect to the I-Collector Hub administration page:

- In a web browser (Chrome, Edge, Firefox) connect to the IP address of the Hub at http://WWW.XXX.YYY.ZZZ:5000 to access the I-Collector Hub configuration page
- Enter the username: hub
- Enter the password: THE_MAC_ADRESS_OF_THE_HUB (example: A0-CE-C8-39-8C-2C)
- Click Login to enter
- In the Connections List section you should see the connections established by the I-Collector Hub



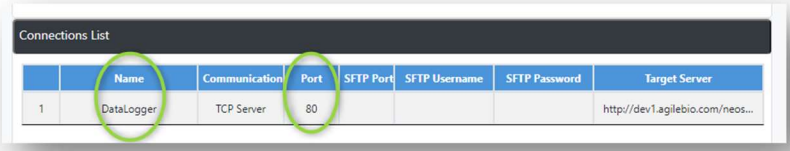
- In the Server Logs section you should see the Logs of all the transactions going through I-Collector Server



1.4) Connection of an instrument to I-Collector Hub for Instruments

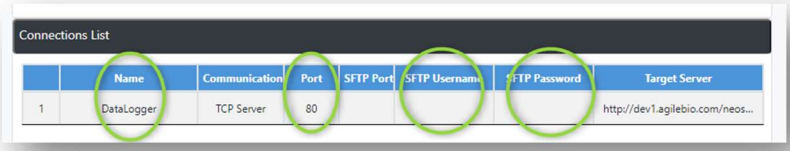
Instruments with TCP/IP connection

If the instrument is directly connected to I-Collector Hub through a TCP/IP connection in the same network, indicate in the instrument administration panel the IP address (WWW.XXX.YYY.ZZZ) of the I-Collector Hub and the Port of the connection corresponding to the instrument Name found in the Connections List section of the administration page of I-Collector Hub.



Instrument with SFTP features

If the instrument can send result files on an SFTP server, the result files should be sent to I-Collector Hub as an SFTP server with the IP address of the I-Collector Hub (WWW.XXX.YYY.ZZZ) , the Port of the connection corresponding to the instrument Name found in the Connections List section of the administration page of I-Collector Hub, the SFTP Username and Password indicated.



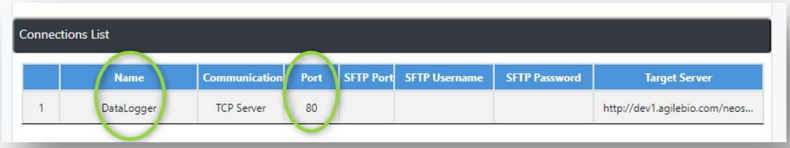
Instrument without SFTP features

If the instrument can only send result files in the local network, you must use and configure the I-Collector Client App to watch the folder and send the result files to I-Collector Hub.

To download I-Collector Client App connect to the LabCollector client area on https://labcollector.com/

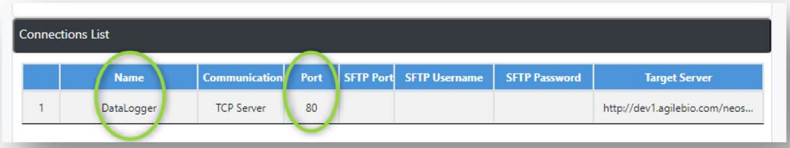
To configure I-Collector Client App please read https://labcollector.com/support/knowledge-base/how-do-i-install-and-configure-i-collector-client-app/

I-Collector Client App must be configured to send the result files produced by the instrument to the I-Collector Hub acting as an SFTP server using the correct IP address of the I-Collector Hub (WWW.XXX.YYY.ZZZ) and the Port of the connection corresponding to the instrument Name found in the Connections List section of the administration page of I-Collector Hub.



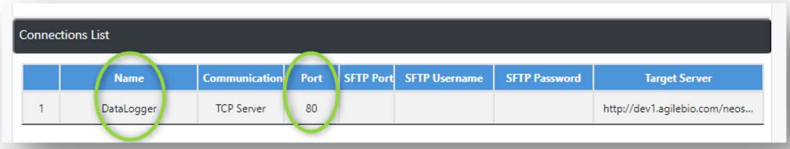
Instruments with USB connection

If the instrument can only connected by USB port, you should use an adapter to convert the USB to TCP/IP connection. Use the configuration page of the USB to TCP/IP adapter itself to send the result produced by the instrument to the I-Collector Hub via direct TCP/IP connection to the correct IP address of the I-Collector Hub (WWW.XXX.YYY.ZZZ) and the Port of the connection corresponding to the instrument Name found in the Connections List section of the administration page of I-Collector Hub.



Instruments with Serial connection

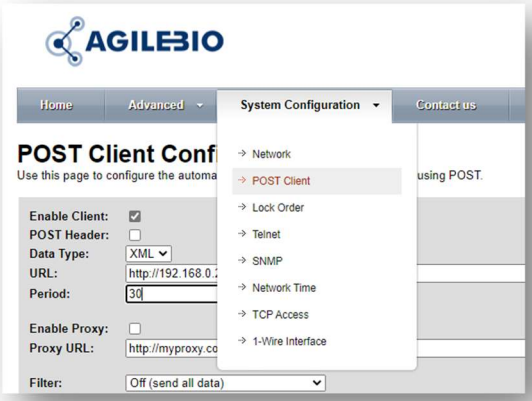
If the instrument can only be connected by Serial (RS232) port, you should use an adapter to convert the Serial(RS232) to TCP/IP connection. Use the configuration page of the Serial to TCP/IP adapter itself to send the result produced by the instrument to the I-Collector Hub via direct TCP/IP connection, using the correct IP address of the I-Collector Hub (WWW.XXX.YYY.ZZZ) and the Port of the connection corresponding to the instrument Name found in the Connections List section of the administration page of I-Collector Hub.



1.5) Connection of AgileBio Data Logger to I-Collector Hub for Data Logger

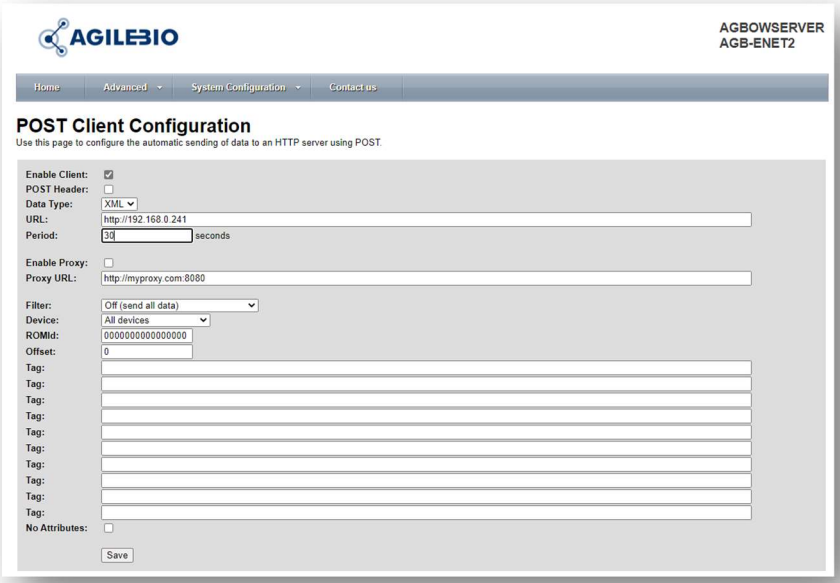
To configure the connection of an AgileBio Data Logger to a I-Collector Hub:

- In a web browser (Chrome, Edge, Firefox) enter the IP address of the Data Logger to connect to the configuration panel of the Data Logger
- Go to the menu System Configuration -> POST Client



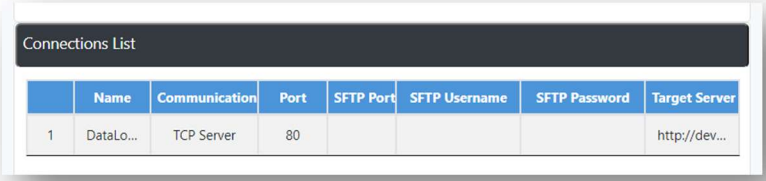
- In the URL field indicate the IP address of I-Collector Hub without any port

- *<u>Important: Uncheck POST Header</u>*



- Click Save

In the administration page of I-Collector Hub you should see only one connection in the Connection List



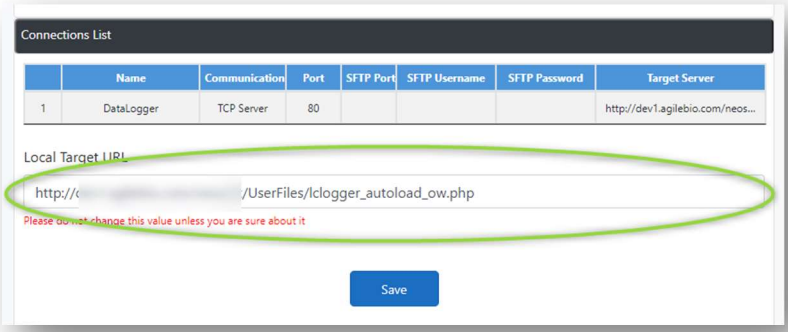
1.6) Configuration of I-Collector Hub with a local I-Collector Server with an Internet connection

If the local I-Collector Server has been installed by AgileBio, I-Collector Hub will automatically download from the Cloud the correct configuration to connect to the local I-Collector Server.

1.7) Configuration of I-Collector Hub with a local I-Collector Server without Internet connection

In the Connections List section of the administration page of I-Collector Hub:

- Indicate the Local Target URL corresponding to the right location of I-Collector Server on your network
- Click Save



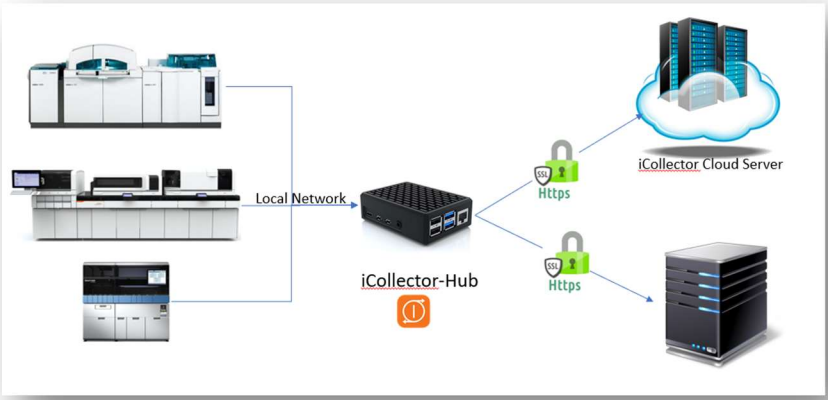
Note: If the local I-Collector Server has been installed by AgileBio, the provided I-Collector Hub may be shipped already configured.

4) Usage

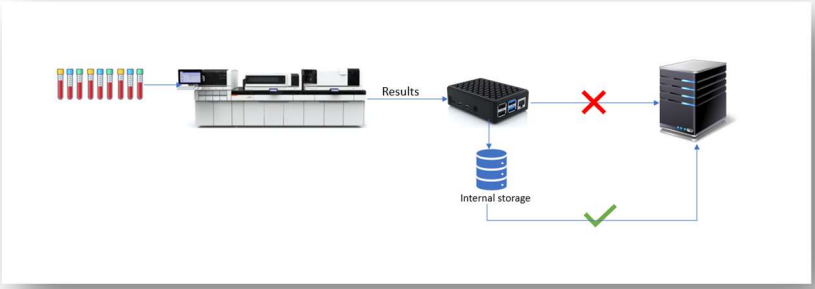
I-Collector Hub is used to connect instruments or data loggers locally and send data to a LabCollector instance or I-Collector server (locally or in the Cloud) acting as a security HTTP/HTTPS bridge and buffering data;

I-Collector Hub is made for uni-directional communication only:

- I-Collector Hub is sending data from Instruments to i-Collector Server
- I-Collector Hub can't send data from I-Collector Server to the instrument because generally I-Collector Server can't connect directly to I-Collector Hub through a firewall.



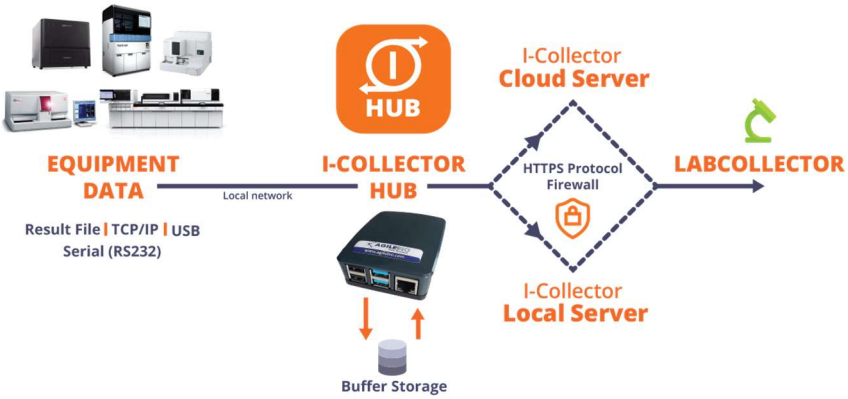
I-Collector Hub is sending HTTPS data



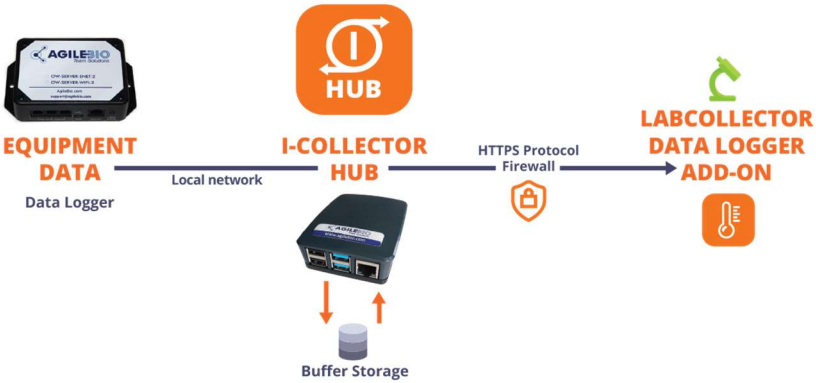
I-Collector Hub is can store data locally in case the connection to I-Collector Server is not working

There are two types of I-Collector Hub:

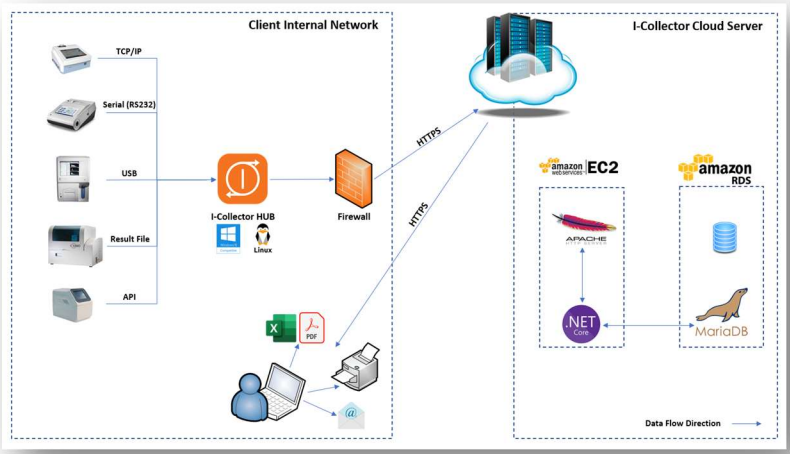
- I-Collector Hub for Instruments
- I-Collector Hub for Data logger



I-Collector Hub for Instrument



I-Collector Hub for Data Logger



Example of usage of I-Collector Hub with I-Collector server in the Cloud

The main benefits of using I-Collector Hub are:

- Full Automation; when correctly configured I-Collector Hub can:
    - connect to I-Collector server via Internet
    - retrieve the connection configurations of your instruments from I-Collector server based on client ID defined in I-Collector server.
    - Auto start receiving connection and data from instruments
- Buffering data
    - I-Collector hub receive data (from data logger or instrument) and send them to LabCollector/I-Collector Server
    - When Internet is not available it stores data (for a week maximum before deletion) and send them to LabCollector/I-Collector Server when Internet is back
    - The buffering function secures the connection between the source of data (instruments, logger) and the target (I-Collector Server/LabCollector)
    - I-Collector hub stores buffered data in a very powerful and stable database server (MySQL)
    - I-Collector hub avoid data loss from instruments/loggers due to bad Internet connection
- Security
    - I-Collector Hub receive data locally with HTTP protocol
    - I-Collector Hub send data (to I-Collector Server / LabCollector) with secure HTTPS
    - I-Collector Hub acts as a SECURITY BRIDGE for instruments to Internet

    - I-Collector hub stores buffered data in a very powerful and stable database server (MySQL)
- Ease of use of I-Collector Hub on Raspberry PI
    - I-Collector Hub on Raspberry PI is small
    - I-Collector Hub on Raspberry PI needs very little maintenance
    - Raspberry PI hardware is easy to replace because I-Collector Hub is contained on an SD Card
    - I-Collector Hub on Raspberry PI is easy to update because it is forward/backward compatible with Raspberry PI (from v3 <-> v4)

5) Assistance

I-Collector Hub doesn't start

In case I-Collector Hub does not start (no light), unplug and plug the power supply again. If I-Collector Hub does not start, check the power supply:

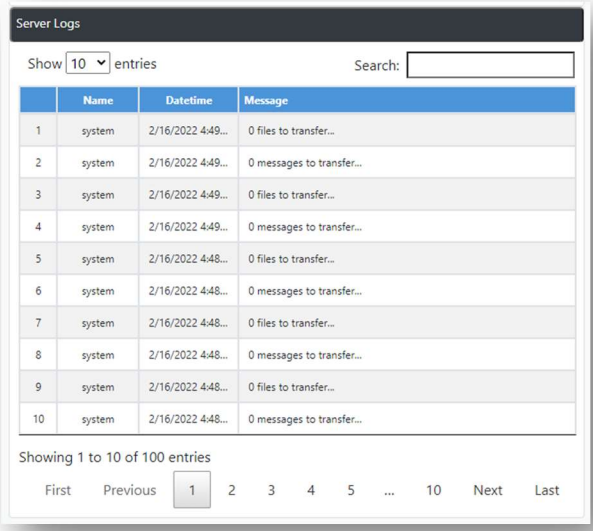
- If you have a spare I-Collector Hub, try the spare power supply.
- If the I-Collector Hub does not start with the spare power supply, contact our support

Checking the connection of I-Collector Hub to I-Collector Server / LabCollector

To check if I-Collector Hub is sending data to I-Collector Server/LabCollector, connect to the I-Collector Hub administration panel and check the Server Logs section:

- The list of the last 100 messages sent to I-Collector Server is indicated.

- The Date of the message is indicated in the Datetime column

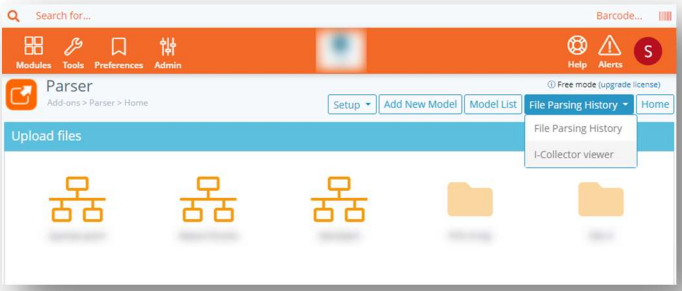


I-Collector Hub does not send data to I-Collector Server / LabCollector

If I-Collector Hub does not send data to I-Collector or LabCollector:

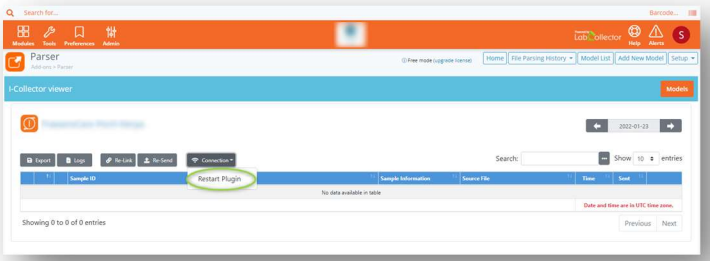
- Check I-Collector Hub is plugged and started,
- Check I-Collector Hub is connected to your local network by sending a ping request to its IP address for example,
- Check the instruments and/or data logger(s) are sending data to the network data repository (directory) or I-Collector Hub,

- Check I-Collector Hub is connected to instruments or data logger(s),
- Check I-Collector Hub is correctly configured to receive data from instruments or data logger(s),
- Check I-Collector Hub can connect and send data to I-Collector Server, through your local network or through Internet.
- In your LabCollector installation, restart the Plugin corresponding to the instrument:
    - Connector to the LabCollector Parser add-on
    - Go to the menu File Parsing History -> I-Collector viewer



    - Select the instrument that is not correctly connected

- Click the submenu Connection -> Restart Plugin



- This will restart the Plugin of I-Collector Server dedicated to the connection of the instrument

6) Specifications

6.1) Hardware

I-Collector Hub is installed on a tiny Linux computer called Raspberry PI https://www.raspberrypi.com/:

- *Raspberry PI* 3 (1 Gb memory) for I-Collector Hub for Data Logger
- *Raspberry PI* 4 (4 Gb memory) for I-Collector Hub for Instruments

Raspberry PI contains:

- 1 or more HDMI port to connect a display
- 2 or more USB ports to connect a keyboard, or can be used for update if network is unavailable
- 1 RJ45 Ethernet port to connect to the network
- 1 Wifi receiver/emitter to connect to the local Wifi
- 1 power port (220/110 V) (USB-C or micro-USB)

- 1 SD-Card of 16 GB as a disk

6.2) Data buffering

I-Collector Hub is buffering data received from instruments/logger in a MySQL database. In MySQL, data are deleted by I-Collector Hub one week after reception (data rotation).

In case of correct connection to I-Collector Server/LabCollector :

- Data are temporary stored in the MYSQL database
- Data are sent by batch every 10s to I-Collector Server/LabCollector

In case of interrupted connection to I-Collector Server/LabCollector:

- I-Collector Hub waits for the return of the connection to send data
- Then all pending data are sent to I-Collector Server/LabCollector

Maximum volume of data buffer

The size of the database buffering data is limited by the size of the disk of I-Collector Hub (SD Card in case of Raspberry PI).

Example of usage:

- For 2 dataloggers connected to 1 I-Collector Hub
- The 2 dataloggers sending one record every 5 seconds,
- The dataloggers sending data for 1 week
- => The MySQL database will be 500 MB after one week.

6.3) Software Updates

There is no planned update for I-Collector Hub on Raspberry PI. Updates will be performed by hardware replacement if necessary.

6.4) Connection protocols

HTTP/HTTPS connection

Instruments and data loggers connect by HTTP to I-Collector Hub. I-Collector Hub is connected by HTTPS to I-Collector Server / LabCollector

Instrument with Direct TCP/IP connection

Connection of the instrument to I-Collector Hub is done by direct TCP/IP connection.

Instrument with Serial (RS232) connection

Connection of the instrument to I-Collector Hub is done by direct TCP/IP connection with an RS232->TCP/IP adapter.

Instrument with USB connection

Connection of the instrument to I-Collector Hub is done by direct TCP/IP connection with an USB->TCP/IP adapter.

Result File on the network

Connection of the instrument to I-Collector Hub is done by using I-Collector Client App (https://labcollector.com/support/knowledge-base/how-do-i-install-and-configure-i-collector-client-app/) to send data from the network to I-Collector HUB acting as an SFTP server.

6.5) Connection limits

I-Collector Hub for Instrument

One I-Collector Hub for Instrument can be connected to a maximum of five instruments.

One I-Collector Hub for Instrument can't be connected to a Data Logger.

I-Collector Hub for Instrument v1 can act as an SFTP server but not as an FTP server to receive files.

I-Collector Hub for Data Logger

One I-Collector Hub for Data Logger can be connected to an unlimited number of Data Loggers.

One I-Collector Hub for Data Logger can't be connected to an instrument.

7) Support

To contact support please connect to LabCollector.com and open a ticket in your client area.

8) Version

I-Collector Hub user manual	
Version of the manual:	4.0
Date:	21 February 2022
Manual applies to version:	I-Collector Hub v1

Product name:	I-Collector Hub for Data Loggers
AgileBio product reference:	ICOL-HUB-LOG
Product name:	I-Collector Hub for Instruments
AgileBio product reference:	ICOL-HUB-INS

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