BCI Link

USER'S MANUAL

EN

4501 - 2122 – C - en - 2012/02 — P/N 4501 - 2122

BIOMÉRIEUX

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Revisions

The list of revisions below summarizes replacements or additional pages in your User's Manual.

Reference	Date of printing	Modifications	Page(s) modified
A	2010/06	Creation	All
B	2011/01	Update	2-1 to 2-4, 3-5, 3-6, 3-28
C	2012/02	Update for MYLA version 3.0.0 and higher	All

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Table of contents

4 Glossary

1 How to use this manual

Introduction

This manual deals exclusively with the ***BCI Link*** software.

IMPORTANT! ***The BCI Link software is a bi-directional communications software for communications between Laboratory Information Systems (LIS or LIMS) and MYLA® or bioMérieux Analysis Instruments (AI). It is necessarily hosted by a bioMérieux system.***

You are advised to read and understand all the instructions in this manual to be able to derive the best performance from BCI Link.

The BCI Link software should only be used by trained personnel who are authorized to do so.

How this Manual is organized

This manual is divided into **four chapters**.

Content can be seen page I-1 to I-2.

Glossary, chapter 4, gives the definition of the main technical terms used.

Note: *Screenshots, figures, and messages are given for information purposes only.*

IMPORTANT ! ***Please read this manual carefully before using BCI Link.***

Warnings

For General Warnings, see the booklet entitled
"General safety and regulatory information".

The warning messages in this manual mainly refer to:

IMPORTANT ! ***Compliance with regulations and carrying out operations, procedures, etc. in the best possible way.***

Note: *Notes giving additional information on a subject.*

2 Getting started

Introduction

The ***BCI Link*** software is used to establish communications between **MYLA®** or an AI (analysis instrument) and Laboratory Information Systems (LIS or LIMS).

Description / Aim

This User's Manual describes the functions of the ***BCI Link*** bi-directional communications software which is used to establish communications between **MYLA®** or an AI (analysis instrument) and Laboratory Information Systems (LIS or LIMS).

This manual is intended for users of **MYLA** or the AI as well as the administrators responsible for configuring the ***BCI Link*** software version 2.1.0 and higher, after installation.

Principle of operation

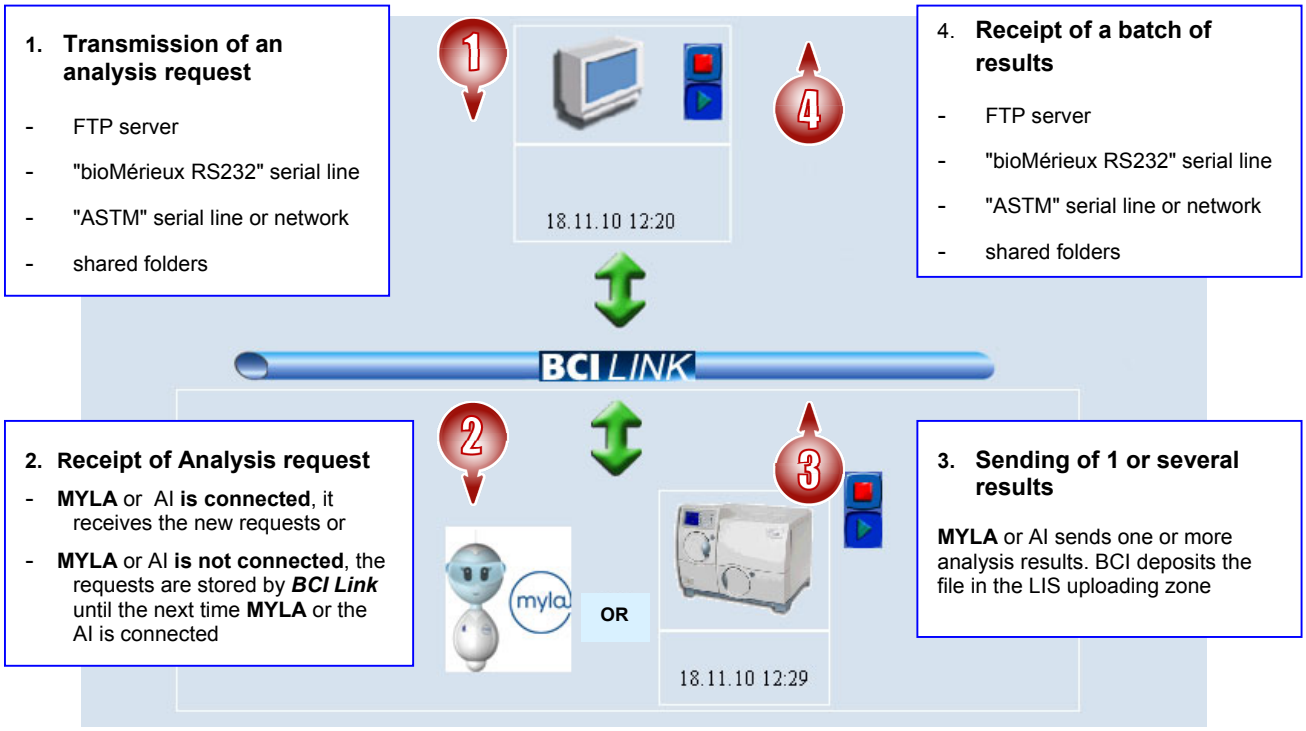
Data sheet

LIS communication Protocol	**Features**
FTP protocol on TCP/IP	Bi-directional Ethernet link
bioMérieux RS232 protocol	Bi-directional serial line
ASTM protocol (ASTM 1381 or CLSI LIS01-A2 standard)	Bi-directional serial or Ethernet link
« Shared_folder » Protocol	Files exchange in Windows shared folders
Data format	
ASTM E1394 format	Messages conform to standard ASTM E1394
ASTM-XML format	Messages with an XML structure based on ASTM E1394 attributes
"bioMérieux" format	Messages in "bioMérieux" format
"CSV" Format	Messages in "CSV" Format (Comma-separated values)
"Excel" Format	Messages in Microsoft Excel Format

	myla
Maximum number of LIS connected	20
Maximum number of AI connected	1
Dispatching options :	
Systematic dispatching: Send tests to all the AI connected	Yes

Main LIS (or LIMS) – MYLA® or AI data exchanges

The main data exchanges between the LIS and **MYLA** or the AI consist in transmitting analysis requests and receiving a batch of results as shown below:



Management of the *BCI Link* connection

The ***BCI Link*** connection is managed by a Windows service ("bciNetServer"). Communication is not affected when the graphic interface is stopped

If a problem occurs with the connection, shut down and restart the Windows "BCI Link" service as follows,

- Click "`start`", select the "`BCI Link `" program followed by the options "`Stop BCI Link Windows Service`", and "`Start BCI Link Windows Service`".

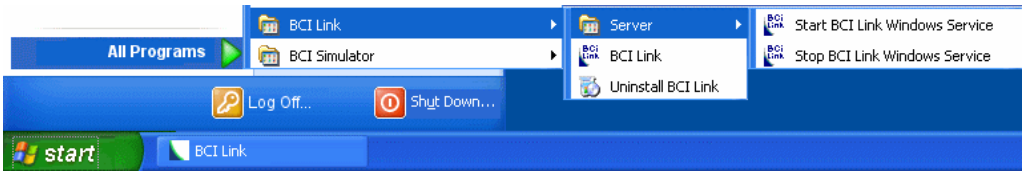


*Figure 2-1: Management of the **BCI Link** connection*

*Note: To connect to the **MYLA** server, refer to the **MYLA®** User's Manual.*

Network security for an FTP connection

The LIS must have network access on the bioMérieux computer which hosts ***BCI Link*** in order to transmit the different FTP commands.

IMPORTANT ! ***BCI Link does not filter incoming connections except FTP connections. For this reason, the user must set up a firewall in order to detect intrusions into the bioMérieux systems from the user computer.***

3 Using *BCI Link*

Introduction

IMPORTANT ! ***To start up and shut down the bioMérieux system configuration, refer to the User's Manual for* MYLA® *or the bioMérieux instrument associated with the BCI Link communications software.***

Opening a *BCI Link* session

Note: *Before opening a session, check the access rights of the user groups in the User's Manual for* **MYLA** *or the associated bioMérieux instrument.*

If the ***BCI Link*** software is closed:

- Double-click on the ***BCI Link*** software shortcut on the desktop of the ***BCI Link*** host computer.

The ***BCI Link*** initialization screen is displayed.

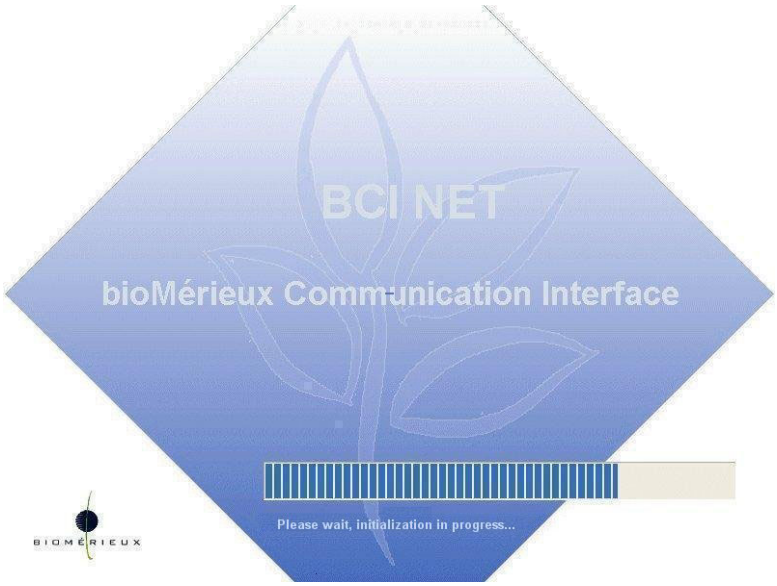
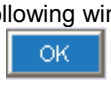


Figure 3-1: ***BCI Link*** *initialization screen*

When initialization is finished, the following window is displayed to open a session by entering the login, the password and clicking 

to validate.

Figure 3-2: Session login window

Note: The cursor is positioned by default in the "Login" entry box.

Note: The login is displayed on the right of the identification button  .

IMPORTANT ! ***If you enter an incorrect password several times in a row, you will no longer be able to open a work session. Your access rights to BCI Link will be locked. To know exactly how many times you can enter an incorrect password before the work session locks, refer to the User's Manual for* MYLA® *or the bioMérieux instrument hosting the BCI Link software.***
To unlock access rights, call the administrator.

User management

Changing users when a session is in progress

To change users when a session is in progress:

- Click on the session login/logout button to close the current session.
- Click on the "`Logout`" button.

The ***BCI Link*** Login window appears.

Note: The name of the previous user is displayed in the "`Login`" text box.

To open a new session:

- Delete the name of the previous user.
- Follow the instructions on page 3-1.

Note: Communications in progress are not interrupted.

Automatic locking of a session in progress

After 10 minutes of inactivity, the ***BCI Link*** software goes into standby mode and locks the session in progress. The ***BCI Link*** login window is displayed.

- Open the session to regain access to the current session. To do so, follow the instructions on page 3-2.

Note: Communications in progress are not interrupted.

Closing a session (logout)

To close a session:

- Click on the session login/logout button to close the current session.

The Logout dialog box is displayed.

- Click on the "`Logout`" button.

Note: Communications in progress are not interrupted.

Changing password (Windows)

Note: This functionality is only available within the context of:
- BCI Link version 2.1.0 and higher,
*- **MYLA®**.*

To change password:

- Click on the "**`Change password`**" button.

The "**`Change password`**" screen appears.

- Follow the instructions displayed on the screen.

Quitting the *BCI Link* software

Communication will not be interrupted if the graphic interface is stopped.

- Click on the session login/logout button to close the current session.

The Logout dialog box is displayed.

- Click on the "`Quit`" button.

A confirmation dialog box is displayed.

- Click "**`Yes`**" to confirm.

The software disconnects and shuts down.

Note: Button  *can also be used to quit the* **BCI Link** *software. A confirmation dialog box is displayed before disconnection.*

- *Click "**`Yes`**" to confirm.*

The software disconnects and shuts down.

User interface

Main screen

When a session is opened, the main screen is displayed. It includes the following items:

1. A **Navigation bar** consisting of five buttons.
   Each button gives access to a software functionality (see “Presentation of *BCI Link* functionalities” page 3-6 for the presentation of these functionalities).
2. An **Alarm management button** which indicates the status of connections in progress.
3. A **Connection status identification area** (see section on Using the supervision screen, on page 3-8).
4. An **Action bar** with a set of actions available for each functionality.
5. A **Clock** indicating the system date and time.
6. A **user session** login/logoff function.
7. An area for displaying the **software name and version**.

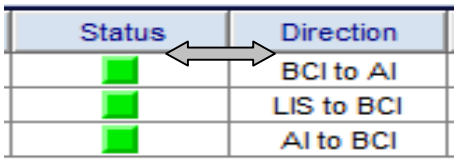
Figure 3-3: Main screen

Software screen functionalities

Customizing lists for display

Lists are presented in the form of a table. The width of each column in the table can be changed as follows:

- Position the cursor on the column header at the edge of the desired cells; the cursor changes to a double arrow.
- Click and hold down the left mouse button, move the double arrow until the column is the size you want and release the mouse button.



Note: The customization is not saved when you quit the software.

Possible operations in a table

Sort in ascending or descending order

- Position the mouse pointer on the column header.
- Click once to activate the "sort in ascending order" function.
- Press and hold down the  key. Click on the header of the column you want to sort to activate the "sort in descending order" function.

Selecting a row in a table

Note: The selection appears in reverse video.

To select a row in the table:

- Click on the desired row.

To select all the rows in the table:

- Press the `<Ctrl> + A` keys.

Several rows can be selected to perform an action on all of them at once (e.g.: exporting rows of operations, printing, etc.).

Consecutive rows:

Press and hold down the  key.

- Click on the first row you want to select and then release the mouse button.
- Click on the last row you want to select, and then release the mouse button and the key.

Non consecutive rows:

- Press and hold down the `<Ctrl>` key.
- Click on the rows you want to select and release the key.

Deselecting non consecutive rows:

- Press and hold down the `<Ctrl>` key.
- Click on one of the selected rows to cancel the selection.

Presentation of *BCI Link* functionalities

The software proposes Routine and Administration functionalities. The functionalities available from the navigation bar are summarized below.

Routine functionalities

The following buttons are shown in Figure 3-3, marks (**1**) and (**2**).

Connection supervision informs you of the status of connections between **MYLA®** or the AI and the LIS (see "Connection supervision", page 3-7).

Dispatcher configuration only available if bioMérieux dispatching has been selected (see the configuration screen, page 3-45).
Parameter setting consists in connecting the AI with the type of analyses available with each system (see Setting parameters for the dispatcher configuration, page 3-45)

Note: For **MYLA***, this functionality is not available (systematic dispatching only).*

Transaction log viewing used to view the contents of messages exchanged every day between the LIS and the AI using search or sort criteria (see "Viewing the transaction log", page 3-16).

Operation log viewing enables you to view the operations performed every day on ***BCI Link*** using simple search or sort criteria (see "Viewing the operation log", page 3-9).

Real-time communication log viewing is used to view the data exchanged in real-time between the LIS and BCI.

Alarm management A visual and audible alarm system warns you of the slightest communication error. These alarms are sorted according to their type and severity and can be easily viewed at all times (see “Alarm management”, page 3-26).

Note: The character string table sorting functions sort alphabetically and take into account the following elements:
- character strings with special character
- character strings in upper case,
- character strings in lower case.

Administration functionalities

The following buttons are shown in Figure 3-3, mark (**1**).

Software administration

Software administration is easy to understand. It consists of two modules:

- Administration of FTP, RS232, ATSM configurations and shared folders: used to create, edit, view or delete a configuration used by the LIS to connect to BCI Link.
- Software parameter setting: several parameters are available for the administrator to configure ***BCI Link***.

For further information, see "Administration procedures", page 3-28.

*Note: These functionalities are dealt with in detail in section "Using the **BCI Link** functionalities", page 3-7.*

Using the *BCI Link* functionalities

After a session is opened, you can perform various operations from the navigation bar on the main screen:

Routine operations:

1. Connection supervision.
2. Operation log viewing.
3. Transaction log viewing.
4. Real-time communication log viewing.

Administration operations:

5. Software administration.
6. Dispatcher configuration.

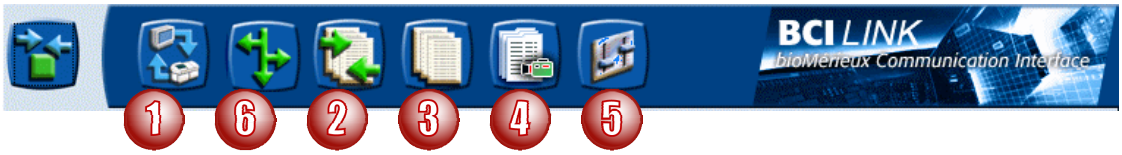


Figure 3-4: Navigation bar

Connection supervision

Supervision is the main functionality of the software. It is used to:

– Know the status of connections in progress (LIS ↔ BCI and BCI ↔ **MYLA**/AI).

– Start or shut down the communication servers.

This screen is displayed when the software is opened (See Main screen on page 3-4).

- To access it from another screen, click on  .

Using the supervision screen

The supervision screen contains the following information:

1. Identification of the connected LIS with the following details:
   - FTP account or RS232 link name.
   - Host computer name or IP address (FTP only).
   - Date and time of the last connection request.
   - Status of the communication servers ( or  , see page 3-9).
2. Status of the connection between the LIS and BCI.
3. Status of the connection between ***BCI Link*** and **MYLA®** or the AI.
4. Identification of the connected analysis system(s) with the following details:
   - Type of system (symbolized by a picture of the system).
   - System identifier.
   - Date and time of the last connection request.
   - Status of the communication servers ( or  , see page 3-9).
5. Action bar.

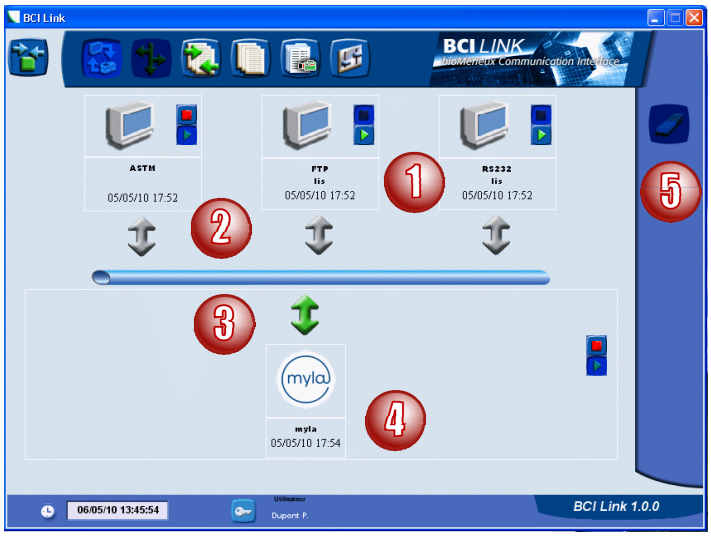


Figure 3-5: Supervision screen

The connection is symbolized by a two-way arrow. It indicates the following statuses:

 (grey)

No connection: connection between ***BCI Link*** and the host system has not been established or is not active.

 (green)

Connection established: connection between ***BCI Link*** and the host system has been established and functions correctly.

 (orange)

Warning: ***BCI Link*** has detected a potential problem with the connection. This indication warns you that a problem may arise with the host system and that you should be vigilant. It may occur if results remain in the LIS uploading zone for an extended period of time.

 (red)

Error: *BCI Link* has detected a connection error which shut down communication between ***BCI Link*** and the host system.

Communication server status :

Start the independent communication server. This action starts two separate servers:

- The FTP, RS232 or ASTM servers: required for LIS ⬅➡***BCI Link*** connections.
- The bMx server: required for **MYLA**/AI ⬅➡ ***BCI Link*** connections.

*Note: In the event of a communication problem, this action has the advantage of not interfering with one or other of the servers (e.g. the FTP server does not interfere with the message exchanges between **BCI Link** and **MYLA®** or the AI and vice versa).*

 ,

Shut down the independent communication servers (FTP, RS232 or ASTM and bMx server).

CAUTION! This operation implies that any exchanges in progress are immediately interrupted.

Possible actions:

System deletion

This action deletes **MYLA** or instruments linked with the selected dispatching mode; all the systems displayed in the supervision screen will be deleted from the configuration. They will no longer be visible on the supervision screen the next time the communication server is started.

CAUTION! In the case of bioMérieux dispatching, this action deletes the dispatcher configuration (see** Dispatcher configuration**, page 3-7).

Viewing the operation log

The operations performed every day on ***BCI Link*** are recorded in the "Operation log". This function is used to:

- Know which users have connected to ***BCI Link*** (user name, connection date and time).
- Trace ***BCI Link*** configuration modifications (user name, modification date and time).
- Trace communication server start-up and shut-down operations.
- Trace LIS session opening and closing operations.
- Trace **MYLA®** or AI session opening and closing operations. To do this:

• Click button  on the navigation bar to display the operation log viewing screen.

Using the operation log screen

The daily operation log screen includes (Figure 3-6):

1. A **log date**.
2. An **action bar**.
3. A **four-column table** with the details of each operation performed.
   The columns present from left to right:

   – Time : The operation time.

   – Status : A symbol representing the status of the operation. There are three possibilities:

   green square: the operation was successful.

   orange triangle - **Warning**: the operation may cause future operating problems for ***BCI Link***.

   red circle - **Error**: the operation failed causing major operating problems (unable to transmit).

   – Operation : The type of operation.

   – Actor : The operation actor (user or software).

Figure 3-6: Operation log

By default, the table is displayed with the information in the first column sorted chronologically (operation time).

Sorting can be performed on each of the columns (to perform a sort, refer to page 3-5 - **Sort in ascending or descending order**):

– Time : Sort operation times in chronological order.

– Status : Sort in order of severity (error, warning, successful).

– Operation : Sort operation labels in alphabetical order.

– Actor : Sort actor names (user or software) in alphabetical order.

Possible actions

The action bar on the right of the screen enables you to manage information in the log:

Update the list of operations performed during the day.

Note: After performing a sort on one or more columns, click on this button to return to the initial column sorting mode.

View operations performed on a specific date.

When you click on this button a calendar is displayed.

- Select the desired date.

Display warning or error details.

- Select a row in the operation log table which includes a warning or an error.
- Click on this button to display the details of the warning or the error. The corrective action recommended for the operation is also displayed.

Export selected rows of operations in the form of a report ("BCI Link operation tracking") to "Internet Explorer" (html format). From the navigator, you can save the report to a directory or print it.

To print a report from the navigator:

- Click on the "`File`" pull-down menu.
- Select "`Print`" or click on the print icon.

To save a report from the navigator:

- Select the "`File`", "`Save as`" pull-down menu.
- Select the desired directory.
- Click "`Save`" to confirm your choice of backup directory.

Send a test message to LIS via FTP

– Select a row in the operation log table.
– Click on this button. A message confirms that the message has been sent.

Note: For other protocols, use the  *button (see page 3-12).*

Viewing the real-time communication log

The real-time communication log displays the data exchanges between the LIS and BCI for the RS232 and ATSM protocols in real time (see RS232 protocol configuration page 3-34 and ASTM protocol configuration page 3-38).

For this purpose,

- Click on the  button in the navigation bar to display the communication viewing screen.

The communication log screen displays the following information:

1. Protocol selection tab. According to the number of protocols running, the screen can display 0 to 4 tabs for the RS232 protocols and 0 or 1 tab for the ASTM protocol.
2. Communication time.
3. Communication message and direction (send: => , receive: <=).
4. An action bar.

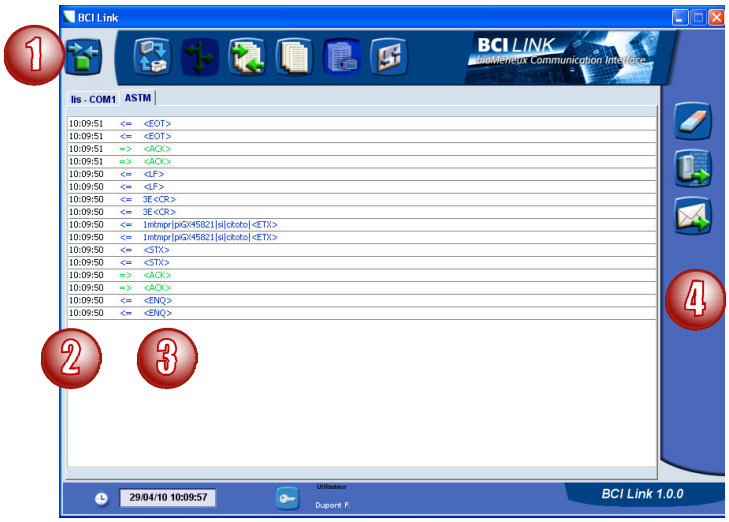


Figure 3-7: Real-time communication log

By default, the list displays the messages in chronological order.

Possible actions

An action bar on the right of the screen is used to manage log information:

Delete content from the list displayed on the screen.

Export selected rows of operations in the form of a report ("ASTM") to "Internet Explorer" (html format). From the navigator, you can save the report to a directory or print it.

Send a test message to LIS

- Click on this button. A message confirms that the file has been sent.

Possible operations on *BCI Link*

The following table presents the types of operations that can be performed with ***BCI Link*** and the possible warnings and errors for each operation.

Operation name	Description	Actor	Possible Warnings / Errors
`FTP server starting`	The FTP server in charge of communication with the LIS is starting.	***BCI Link***	`Error while FTP server is starting:` a network problem may have occurred or the port assigned to the FTP server is being used for another application. Frequency: **Occasional** – only in the event of a network failure or modification of the ***BCI Link*** configuration (incorrect port number).
`FTP server stopping`	The FTP server is shutting down.	***BCI Link***	`Error while FTP server is stopping:` the FTP server is no longer responding and cannot be shut down. Frequency: **Occasional** – only in the event of a network failure.
`LIS connection`	The LIS is connecting to ***BCI Link***.	LIS	`FTP command: Incorrect login/pwd:` the LIS has given an incorrect login and/or password. Frequency: **Rare** – only within the context of LIS connection development.
`LIS disconnection`	The LIS is disconnecting from ***BCI Link***.	LIS	N/A
`bMx communication server starting`	The bMx server in charge of communication with the AI is starting.	***BCI Link***	`Error while bMx server is starting:` a network problem, an incorrect configuration or shutdown of the "VisibrokerNameService" XP server may have occurred. Frequency: **Occasional** – only in the event of a network failure or modification of the ***BCI Link*** configuration.
`bMx communication server stopping`	The bMx communication server is shutting down.	***BCI Link***	`Error while bMx server is stopping:` the bMx server is no longer responding and cannot be shut down. Frequency: **Occasional** – only in the event of a network failure.

Operation name	Description	Actor	Possible Warnings / Errors
RS232 server starting	The RS232 server for the selected link is starting.	***BCI Link***	Error while LIS server is starting: a problem may have occurred or the port assigned to the server is being used for another application. Frequency: Occasional – only in the event of a modification of the BCI configuration (incorrect port).
RS232 server stopping	The RS232 server for the selected link is shutting down.	***BCI Link***	Error while LIS server is stopping: The RS232 server is no longer responding and cannot be shut down. Frequency: Occasional
ASTM server starting	The ASTM server in charge of communication with the LIS is starting.	***BCI Link***	Error while ASTM server is starting: a problem may have occurred or the port assigned to the server is being used for another application. Frequency: Occasional – only in the event of a network failure or modification of the BCI configuration (incorrect port).
ASTM server stopping	The ASTM server is shutting down.	***BCI Link***	Error while ASTM server is stopping: the ASTM server is no longer responding and cannot be shut down. Frequency: Occasional
Shared Folders server starting	The Shared Folders server is starting.	***BCI Link***	Error while LIS server is starting: BCI server cannot access to the folders defined in the configuration. Frequency: Occasional – check that Windows BCI service (and not only the user in the current session) has access to the related folders.
Analysis system connection	A bMx AI is connecting to ***BCI Link***.	bMx AI	The analysis system identifier is incorrect: This means that the identifier includes special characters; only alphanumeric characters are accepted. Frequency: **Rare** – only within the context of connection development or a new AI configuration. Incorrect analysis system features: the system features sent when connection was requested are not usable (incorrect identifier, invalid test type, or invalid instrument type). Frequency: **Rare** – only within the context of connection development. Too many analysis system connections: connection is refused if the number of connections allowed has been exceeded (***BCI Link*** allows **5** simultaneous connections). *Note : the **TEMPO**® analysis instrument allows only one connection.* Frequency: **Rare** – only within the context of connection development.
Analysis system disconnection	A bMx AI is disconnecting from ***BCI Link***.	bMx AI	Invalid analysis system session: the AI requests disconnection when there is no valid connection to ***BCI Link***. Frequency: **Rare** – only within the context of connection development.

Operation name	Description	Actor	Possible Warnings / Errors
`New analysis system configuration`	An AI currently connected is sending a new configuration to ***BCI Link***.	bMx AI	⚠ `Incorrect analysis system features:` the system features sent are not usable (incorrect identifier, invalid test type, or invalid instrument type). Frequency: **Rare** – only within the context of connection development. ● `Invalid analysis system session:` the AI requests configuration update when there is no valid connection to ***BCI Link***. Frequency: **Rare** – only within the context of connection development.
`BCI login`	A user has been authenticated and is opening a ***BCI Link*** session.	User	N/A – Only successful authentications are added to the log.
`BCI logout`	The current user has disconnected.	User	N/A
`BCI Net Exit`	The user is quitting the ***BCI Link*** application. Communications in progress are interrupted.	User	N/A
`BCI configuration saving`	The administrator has saved a new ***BCI Link*** configuration.	Adminis-trator	● `Internal error:` this error occurs when the file containing configuration data can no longer be saved to the hard disk. Frequency: **Rare** – occurs with unstable systems.
`Dispatching configuration deletion`	The administrator has deleted all the AI linked with the current "dispatcher".	Adminis-trator	● `Internal error:` this error occurs when the file containing dispatcher configuration data can no longer be erased from the hard disk. Frequency: **Rare** – occurs with unstable systems.
`Dispatcher configuration saving`	The administrator has saved a new ***BCI Link*** dispatcher configuration.	Adminis-trator	● `Internal error:` this error occurs when the file containing configuration data can no longer be saved to the hard disk. Frequency: **Rare** – occurs with unstable systems.

Operations with a "bioMérieux Dispatcher" configuration			
`New analysis system features`	An AI sends a new list of tests when connection is requested or when its configuration is being updated.	A Administrator	`The dispatcher configuration has been changed`: an AI has sent a list of tests that differs from the current one. The administrator should update the dispatcher configuration according to this new list. Frequency: **Occasional** – only when tests are updated on the AI or when a new AI is connected. `Unknown presentation:` this error occurs when the AI is configured with a message presentation unknown to ***BCI Link***. Frequency: **Rare** – only within the context of connection development. `One or more instruments have different presentation types:` this error occurs when the AI imposes a different type of presentation to the one used for the AI currently connected. Frequency: **Rare** – only within the context of connection development.

Viewing the transaction log

All the messages exchanged between the LIS and **MYLA®** or the AI are recorded in a "Transaction log" which is intended for:

- Obtaining the status of transmitted messages according to simple criteria such as message direction or transmission time.
- Diagnosing a problem when messages are momentarily lost. By performing a search using keywords in the message, you can restore the path of a message from the LIS to the **MYLA** or AI and vice versa. To do this,

- Click button  on the navigation bar to display the screen for browsing the ***BCI Link*** transaction log.

Using the transaction log screen

The transaction log is presented as a seven-column table containing the following information.

1. Time at which the message was sent.
2. A symbol representing the status of the transaction. There are three possibilities:

   green square: The message was transmitted successfully.

   orange triangle - **Warning**: The message was not transmitted within the time allowed – the recipient is not connected.

   red circle - **Error**: Communication error – Transmission failure.

3. Direction of the message – Four possible directions:
   - LIS to ***BCI Link***
   - ***BCI Link*** to bMx system
   - bMx system to ***BCI Link***
   - ***BCI Link*** to LIS
4. Name of the file containing the message.
5. Size of the message in bytes.
6. ID of the host.
   - If the message is sent to or from the **MYLA**/AI, only the **MYLA®** or AI identifier is displayed.
   - If the message is sent to or from the LIS, only the FTP account name is displayed.
7. Name of the protocol.

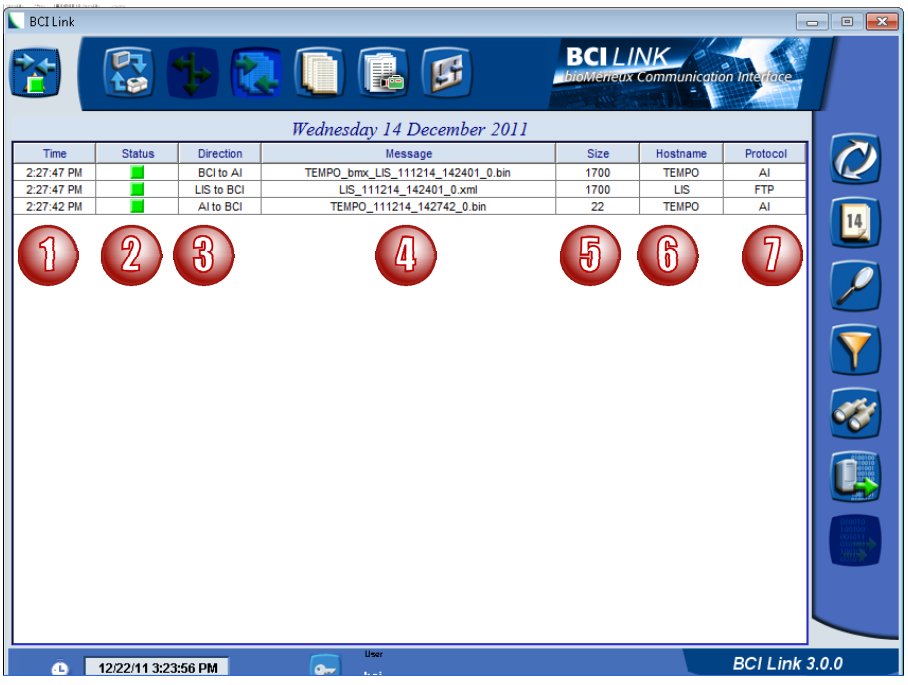


Figure 3-8: Transaction log

By default the information displayed is sorted in chronological order. However, there are other possibilities for sorting information in each column of the table:
see page 3-5 - **Sort in ascending or descending order**.

Possible actions

The action bar on the right of the screen enables you to manage the following information:

Update the list of transactions performed during the day

Note: After performing a sort on one or more columns, click on this button to return to the initial column sorting mode.

View transactions performed on a specific date

When you click on this button a calendar is displayed.

- Select the desired date.

Display the contents of a message

- Select a row in the transaction log table which contains a message ("Message" column).
- Click on this button to display the contents of the message. The message also contains a description of the warnings or errors linked with the selected row.

Apply one or more log filters

This button can be used to apply one or more log filters so that only the rows corresponding to the predefined filters are displayed. The filters proposed are:

- Direction of the message: you can select the transactions according to one or more of the following four directions: LIS ➔ ***BCI Link***, ***BCI Link*** ➔ **MYLA®**/AI, **MYLA**/AI ➔ ***BCI Link***, ***BCI Link*** ➔ LIS.
- Time range: you can select only the messages sent during this period of time.

Enter a keyword and display the transactions that contain this keyword (at least once) in their messages

Note: When the message is displayed, the words which are found are highlighted.

Export selected rows of operations in the form of a report to "Internet Explorer" (html format)

From the navigator, you can save the report to a directory or print it. To do this, follow the instructions on page 3-11.

Resend data

- Select one or more rows of data.
- Click on this button to resend the selected data to the following destinations:

MYLA/AI to BCI:	the data are resent to the LIS
BCI to **MYLA**/AI:	the data are resent to the **MYLA**/AI
LIS to BCI :	the data are resent to the **MYLA**/AI

Example of a search for analysis requests from the transaction log

Search for transactions from LIS to BCI:

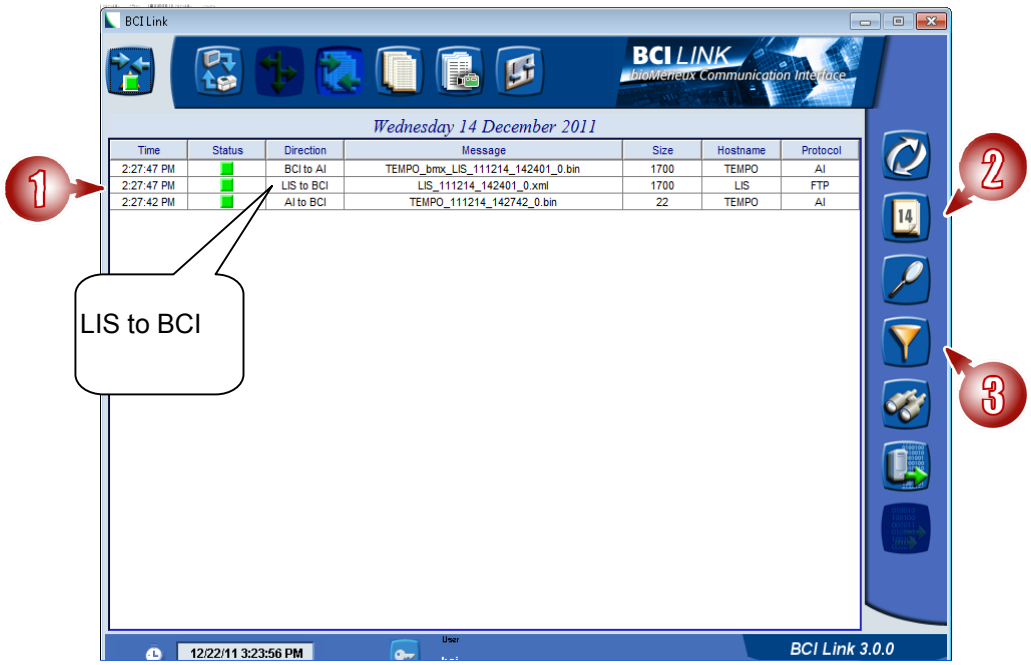
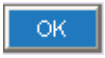


Figure 3-9: Transaction log

1. Select a transaction, e.g. "LIS to BCI".
2. Click on the  button to select a search date.

- Select the month with the drop-down menu, the year with the  button and the desired date by clicking with the left mouse button.
- Click  to confirm.

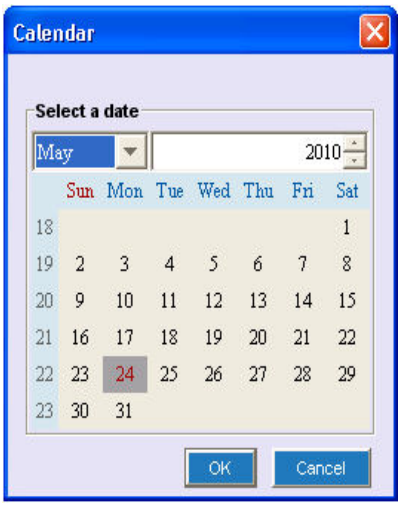


Figure 3-10: Calendar, example of how to select a date

3. Click on the  button to select the direction of the request.

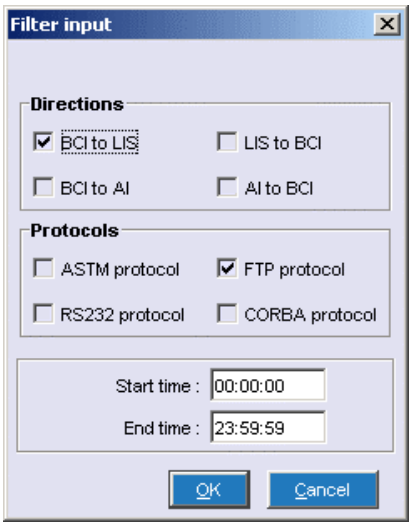
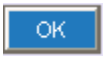


Figure 3-11: Filter input: example of a direction

All directions and all the protocols are checked by default. It is possible to select one or more directions and one or more protocols.

To do this,

- Uncheck the direction(s) not wanted.
- Uncheck the protocol(s) not wanted.
- Enter the start and end times.
- Click on  to confirm.

The analysis requests that meet the different search criteria are displayed.

Note: **MYLA®** *is considered to be an AI.*

Example of a search for results

Search for transactions in the direction AI to BCI on a given date for a given test

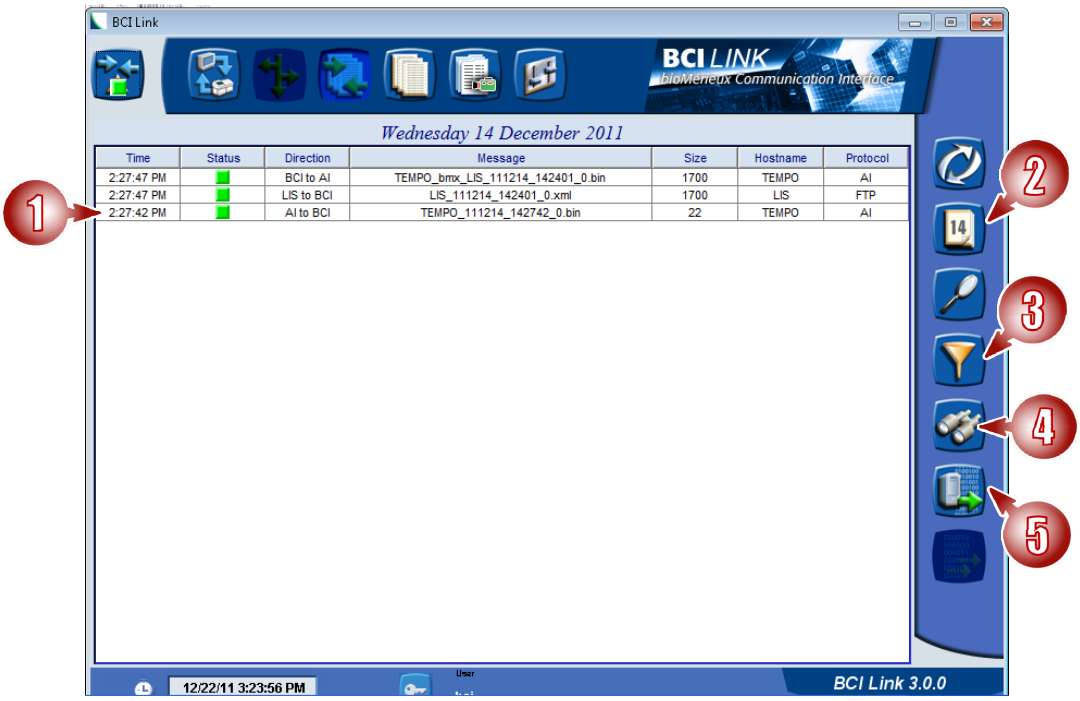
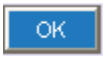


Figure 3-12: Transaction log

1. Select a transaction, e.g. "AI to BCI".
2. Click on the  button to select a search date .
3. Click on the  button to select the direction of the request.
4. Click on the  button to search for a specific test:

Figure 3-13: Keyword input – example: FER

- Enter the name of the test or the product code (e.g.: FER).
- Click on 

to confirm.
- The results that meet the different search criteria are displayed.

5. If you want to export or print the details of the alarm: click on the button  . This function exports the alarm details window in the form of a report to the "Internet Explorer" navigator (html format) that can be printed (see page 3-11).

Figure 3-14 : Alarm details: sample report

Transactions possible with *BCI Link*

The following table presents the types of transactions that can be performed with ***BCI Link*** and the possible warnings and errors for each transaction.

Type of transaction	Description	Host	Possible Warnings / Errors
LIS to ***BCI Link***	A message is sent from the LIS to ***BCI Link***.	LIS	`Tried to copy a file outside the download area (\"download\" directory)`: this error occurs when the LIS tries to deposit a message in a directory other than the "`download`" directory. The error code FTP 550 is sent to the LIS. Frequency: **Rare** – only within the context of LIS connection development. `Tried to copy a file with an invalid file name`: this error occurs when the LIS tries to deposit a message with an incorrect name. The error code FTP 451 is sent to the LIS. Frequency: **Rare** – only within the context of LIS connection development. `FTP error`: This error occurs when communication between the LIS and ***BCI Link*** is interrupted during transmission of the message. Frequency: **Occasional** – in the event of a network failure. `Internal error`: this error occurs when the file deposited by the LIS on the ***BCI Link*** server is not readable. Frequency: **Rare** – occurs with unstable systems.

Type of transaction	Description	Host	Possible Warnings / Errors
			`A message cannot be read`: this error occurs when the file submitted by the SIL on a shared directory cannot be read by the server BCI Link. Frequency: **Rare** – occurs only through the development of connection with the SIL.
BCI Link to AI	A message is sent by ***BCI Link*** to a bioMérieux AI.	bioMérieux AI	`The pending period for a message is over`: the storage period for a message stored on ***BCI Link*** expired before the message could be sent to the AI. This generates an error for the message. You should connect the implicated AI and send another message from the alarm window. Frequency: **Occasional** – only if the LIS sent messages to ***BCI Link*** while the AI was down for an extended period of time. `Analysis system communication error:` this error occurs when ***BCI Link*** sends a message to an AI that does not respond within the time allowed. Frequency: **Occasional** – in the event of a network failure or when an AI is suddenly shut down without being disconnected from ***BCI Link***. `The analysis system has rejected the message:` this error occurs when an AI is unable to satisfy the request (storage capacity problem, invalid message, etc.). Refer to AI error management to know the reason for rejection. Frequency: **Occasional** `Internal error:` an error occurred during storage of a queued message. Frequency: **Rare** – occurs with unstable systems.
AI to ***BCI Link***	A message is sent from an AI to ***BCI Link***.	bioMérieux AI	`Invalid analysis system session:` the AI tried to send a message although it does not have a valid session open on ***BCI Link***. Frequency: **Rare** – only within the context of LIS connection development. `Internal error:` an error occurred during storage of a message from the AI. Frequency: **Rare** – occurs with unstable systems.
BCI Link to LIS	A message is sent from ***BCI Link*** to the LIS. In actual fact, the LIS should periodically upload the messages stored by ***BCI Link*** in the "`upload`" directory.	LIS	`One or more messages were not uploaded:` the storage period for a message stored on ***BCI Link*** expired before the message could be uploaded by the LIS. Frequency: **Occasional** – only if the AI sent messages to ***BCI Link*** while the LIS was down for an extended period of time. `Tried to upload a file outside the upload area (\"upload\" directory) or with an invalid name:` the AI tried to upload a file with an incorrect path or file name (FTP codes 550 or 451). Frequency: **Rare** – only within the context of connection development. `Internal error:` an error occurred during reading of the transmitted file. Frequency: **Rare** – occurs with unstable systems.

Type of transaction	Description	Host	Possible Warnings / Errors
LIS to BCI or BCI to LIS	The LIS and BCI are exchanging data (analysis request or results). The communication protocol may be bmx RS232 or ASTM.	LIS, BCI	`A "timeout" occurred`: BCI detected a timeout, i.e. the LIS did not send the data quickly enough to BCI. Frequency: **Occasional** – in the event of de-synchronization between the LIS and BCI or during BCI configuration.
			`All "retries" have been performed`: BCI has used all the retries authorized by the protocol (and/or configuration) and has not succeeded in restoring communication with the LIS. Frequency: **Occasional** – in the event of de-synchronization between the LIS and BCI or during BCI configuration.
			`The protocol cannot be written in serial or TCP-IP mode`: BCI cannot send data. The serial port has a problem or the network configuration has changed (e.g. socket ASTM). Frequency: **Rare** – BCI configuration.
LIS to BCI or BCI to LIS	The LIS and BCI are exchanging data (analysis request or results). The communication protocol is bmx RS232.	LIS, BCI	`An RS232 task has failed`: a problem occurred during communication with the LIS. Frequency: **Occasional** – in the event of de-synchronization between the LIS and BCI or during BCI configuration.
BCI to LIS	The LIS and BCI are exchanging data (analysis request or results). The communication protocol is bmx RS232.	LIS, BCI	`Error occurred while sending a message via the RS232 protocol`: a message could not be sent to the LIS. Frequency: **Occasional** – in the event of de-synchronization between the LIS and BCI or during BCI configuration.
LIS to BCI	The LIS and BCI are exchanging data (analysis request or results). The communication protocol is bmx RS232.	LIS, BCI	`Error occurred while downloading a message via the RS232 protocol`: a message could not be received by BCI. Frequency: **Occasional** – in the event of de-synchronization between the LIS and BCI or during BCI configuration.
AI to BCI or AI BCI with **MYLA®** as AI	BCI is converting data from the LIS for the AI/**MYLA**.	AI, BCI	`The message contains erroneous data`: one or more items in the message are not in the format defined by bioMérieux. These items are deleted from the message before transmission to the various AI or LIS, or the data mapping process defined by the user could not be correctly applied. Frequency **Rare** – only within the context of connection development.

Operation with a "bioMérieux Dispatcher" configuration			
BCI Link to AI			 `The message sent by the LIS contains erroneous data`: one or more items in the message are not in the format defined by bioMérieux. These items are deleted from the message before transmission to the various AI. Frequency: **Rare –** only within the context of connection development.  `Invalid test order:` one or more tests in the message from the LIS are unknown to ***BCI Link***. No AI is able to perform the analyses for the requested tests. Frequency: **Rare** – only within the context of connection development.  `No available presentation:` no AI declared itself to ***BCI Link***. Consequently, no type of presentation was assigned. Frequency: **Occasional** – After starting the ***BCI Link*** software, connect the instruments before authorizing the LIS to send messages. This may occur after installation of the software.
Operation with a "Laboratory Dispatcher" configuration			
BCI Link to AI			 `The message sent by the LIS contains erroneous data`: one or more items in the message are not in the format defined by bioMérieux. These items are deleted from the message before transmission to the various AI. Frequency: **Rare –** only within the context of connection development.  `One or more analysis systems defined in the message are unknown to BCI Net`: No AI is able to perform the analyses for the requested tests. Check that the message is properly structured and that the names of the bioMérieux AI are correct. Frequency: **Rare –** only within the context of connection development if the LIS sends incompatible messages or if it references unknown instrument identifiers.  `No available presentation:` no AI declared itself to ***BCI Link***. Consequently, no type of presentation was assigned. Frequency: **Occasional** – After starting the ***BCI Link*** software, connect the instruments before authorizing the LIS to send messages. This may occur after installation of the software.

Alarm management

Alarm management is used to diagnose problems linked with the operations performed using ***BCI Link*** and to take the corrective action.

- Click on the alarm button  in the navigation bar to obtain the list of current warnings or errors.

Using the alarm screen

The alarm button changes according to the following three statuses:

No alarm has been generated.

Note: If you click on this button, the message "No alarm detected" is displayed.

At least one warning has been generated.

At least one error has been generated and possibly some warnings.

The list of alarms is divided into two parts. One part contains the warnings and errors linked with the operations performed using ***BCI Link*** and the other contains the warnings and errors linked with transactions.

1. "`Transactions`" tab

- Click the "`Transactions`" tab to view the **transactions** that have generated an error. The information available is identical to that of the **transaction log** except for the first column which contains the date and time of the error.

2. "`Operations`" tab

- Click the "`Operations`" tab to view the **operations** that have generated an error. The information available is identical to that of the **operation log** except for the first column which contains the date and time of the error.

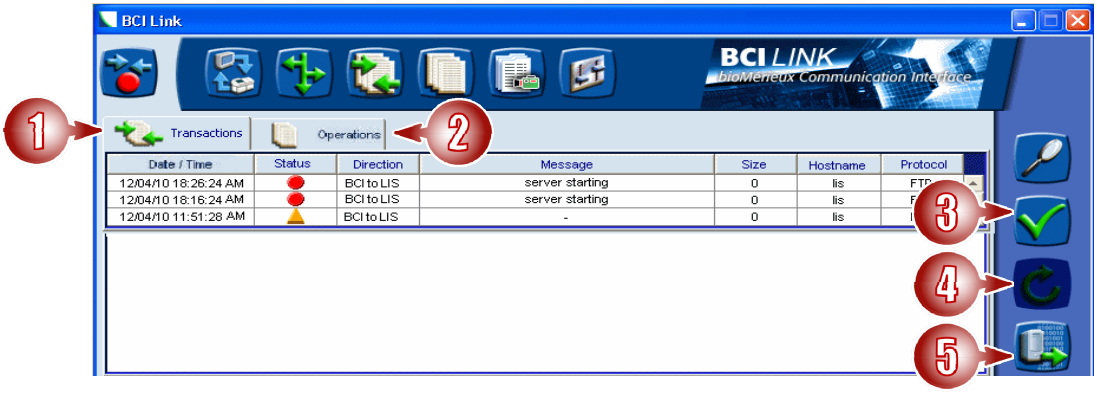


Figure 3-15: Alarm screen

The actions that are possible within the context of alarm management are described in sections: Using the operation log screen, page 3-10 and Using the transaction log screen, page 3-17.

Three additional actions are available which are only linked with alarms. Once you have been informed of the problem and taken the corrective action,

3. Click on  to **acknowledge the alarm** (deletion of the row from the list of alarms).

   After you have checked that all the problems have been taken into account, you should acknowledge all the alarms in order to return to a status '"without errors".

4. If any transactions have failed in the **direction *BCI Link* ➔ MYLA®/AI** only, click on  to **retransmit** the message to the recipient analysis system.

5. Click on  to export the selected alarms into an html format report.

Example of alarm management

The following example details the steps used to search and acknowledge an alarm using the actions described on page 3-26.

In the event of an alarm, the alarm management button flashes and displays the alarm status:  or  . . Proceed as follows:

1. Click  ou  . The alarms screen is displayed.

2. Select the alarm.

3. Click  to display the type of alarm and the instructions to follow to resolve the problem. The alarm details window is displayed.

4. Click  to exit the alarm details window and return to the alarms screen.

5. If you want to export or print the details of the alarm, click  button. This function exports the alarm details window in the form of a report to the "Internet Explorer" navigator (printable html format see page 3-11).

6. Click on the acknowledge alarm button: the message disappears.

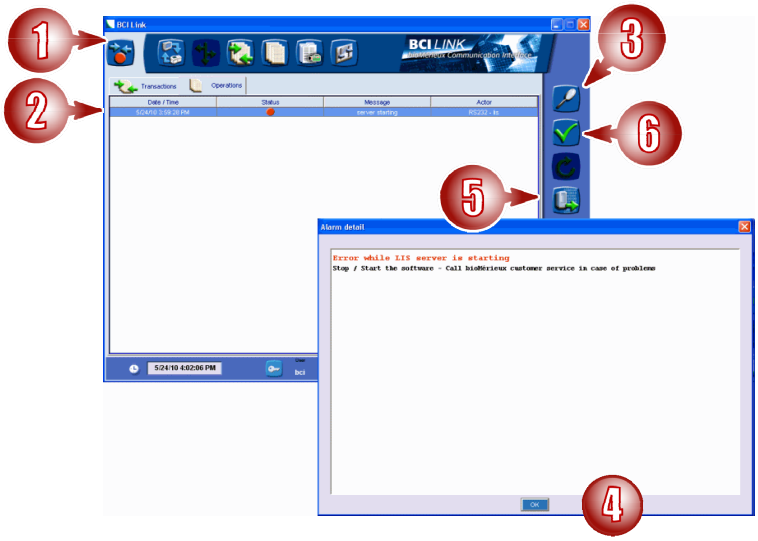


Figure 3-16: Example of alarm management

Note: After acknowledgement, the alarm message can no longer be exported.

Administration procedures

Administration of users and groups

Note: The administration functionalities are only for use by an administrator or a person with administrator rights.

The software uses the user base on the local domain of the computer. Therefore,

– To access the Routine software functionalities (connection supervision, log and alarm viewing), users must belong to the "**BCI_ROUTINE**" group.

– To access all the software functionalities (administration and routine), users must belong to the two groups: "**BCI_ROUTINE**" and "**BCI_ADMIN**".

*Note: To start the **BCI Link** application, the user must at least belong to the "**BCI_ROUTINE**" group.*

Refer to the manuals for the bioMérieux system hosting ***BCI Link*** to obtain information on how to create groups and users.

Software administration

Software administration enables:

- Software parameter setting
- LI(M)S account management,

- Click button  on the navigation bar (See Figure 3-4) to display the ***BCI Link*** configuration screen.

Setting software parameters

BCI Link has a set of parameters which can be modified by an administrator. Software parameters can only be set when the communication server is shut down.

From the following parameters screen, the administrator can modify up to 6 parameters.

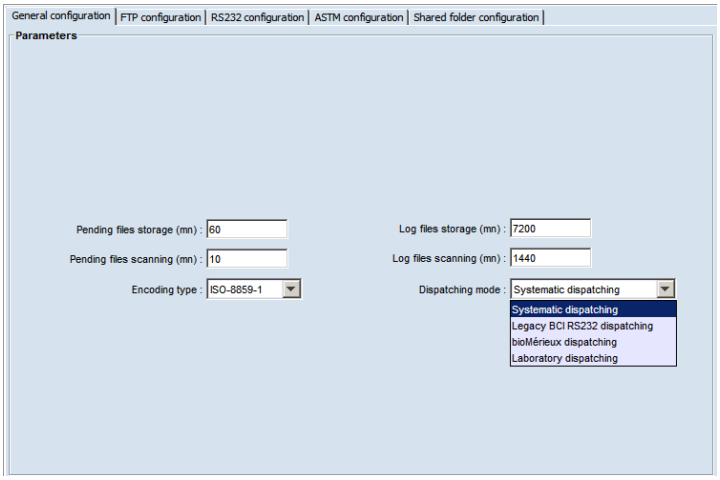


Figure 3-17: Parameters screen

Note: The  *key can be used to move between input fields in the various configuration screens.*

Each parameter is described below:

Pending files storage

The storage period (in minutes) should be defined for messages waiting to be sent to **MYLA®** or an AI that is not connected. If the system is still not connected after the specific storage period, an alarm informs you that transmission has failed.

By default, pending messages are stored for one hour before the alarm is generated.

Note: There are no limits to the storage period but it is advisable to set a value that is high enough to avoid repetitive errors (value greater than or equal to 30 minutes).
It is also advisable not to define a value of several hours in order to avoid prolonged storage of pending messages and thus indirect use of transient messages.

Pending files scanning

Time (in minutes) between two scans of the pending message storage directory.

By default, all the pending messages are analyzed every ten minutes and messages which have been pending for more than one hour are moved to the failed area.
The time value must be less than or equal to the value set for storage of pending messages (see **Pending files storage**, page 3-29).

Note: To save system resources, the minimum recommended value is 5 minutes.

Encoding type

This is the encoding used by the LIS to write messages. This option is not used for XML messages, as the encoding type is defined within the actual message.

By default, for bioMérieux messages the encoding type is "ISO-8859-1".

Log file storage

The log file (transaction and operation logs) storage period before archiving should be defined.

By default, 5 history days are available (7200 minutes). Logs which are more than 5 days old are archived and are no longer accessible (a restore procedure is required to view them).

Note: It is advisable to keep the default value unless the laboratory has any specific requirements.

Log file scanning

Time (in minutes) between two scans of the logs.

By default, all the stored logs are analyzed every 24 hours (1440 minutes) and logs which are more than 5 days old (default value) are automatically archived.

Note: To save system resources, the minimum recommended value is 12 hours (720 minutes).

Dispatching mode This option is used to select the dispatching mode. Three modes are currently available:

- **Systematic dispatching**: test requests are sent to all the connected systems. This dispatching mode is used with **MYLA®** or a single AI.
- **bioMérieux dispatching**: ***BCI Link*** carries out dispatching according to a dispatching configuration. This configuration (see **Dispatcher configuration**, page 3-6) associates each connected AI with the tests it should process in ***routine mode*** and ***confirmation mode.*** This dispatching mode is recommended for connected systems which use the same analysis technique. For **quality controls**, the test requests are sent to all the instruments which are configured for these tests (whether it be routine mode or confirmation mode).

Note: *This type of dispatching is not available for* **MYLA** *(systematic dispatching only).*

- **Laboratory dispatching**: dispatching is carried out by the laboratory. This means that the LIS indicates the name of the instrument that should perform each test. This dispatching mode is recommended for connected systems which use different analysis techniques.

Note: *This type of dispatching is not available for* **MYLA** *(systematic dispatching only).*

- **BCI RS232 compatible dispatching**: ***BCI Link*** carries out dispatching identically to **BCI RS232** dispatching**.** This dispatching mode is recommended only when replacing a **BCI RS232 by a BCI Link if more than one LIS is connected.**

Note: *This type of dispatching is not available for* **MYLA** *(systematic dispatching only).*

Possible actions

Back up the configuration.

IMPORTANT ! ***The configuration must be backed up before you can view a newly created or modified FTP account on the supervision screen.***

Backup can only be performed when the communication server is shut down.

Export settings to "Internet Explorer" in html format.

From the navigator, you can save the report to a directory or print it. To do this, follow the instructions on page 3-11.

Administration of FTP configuration

IMPORTANT! ***FTP accounts can only be created, modified or deleted when the communication server is shut down. If the communication server is running, buttons (2) and (4) are shaded and disabled.***

An LIS connects to ***BCI Link*** using an FTP authentication. Authentication will succeed if the login and password provided by the LIS belong to one of the FTP accounts defined within ***BCI Link***. To view the list of FTP accounts:

1. **Add a new account:** Click on FTP configuration. Only letters (a-z and A-Z), digits, "-" and "_" are allowed.
2. Click on Add... and follow steps **7** to **9** in Figure 3-19 to add an account.
3. **Delete an account:** Select the row corresponding to the account.
4. Click on Delete and confirm.
5. **Display the properties of an account** for viewing or modification: select the row corresponding to the account.
6. Click on Properties... and follow steps **7** to **9** in Figure 3-22 to modify the account.

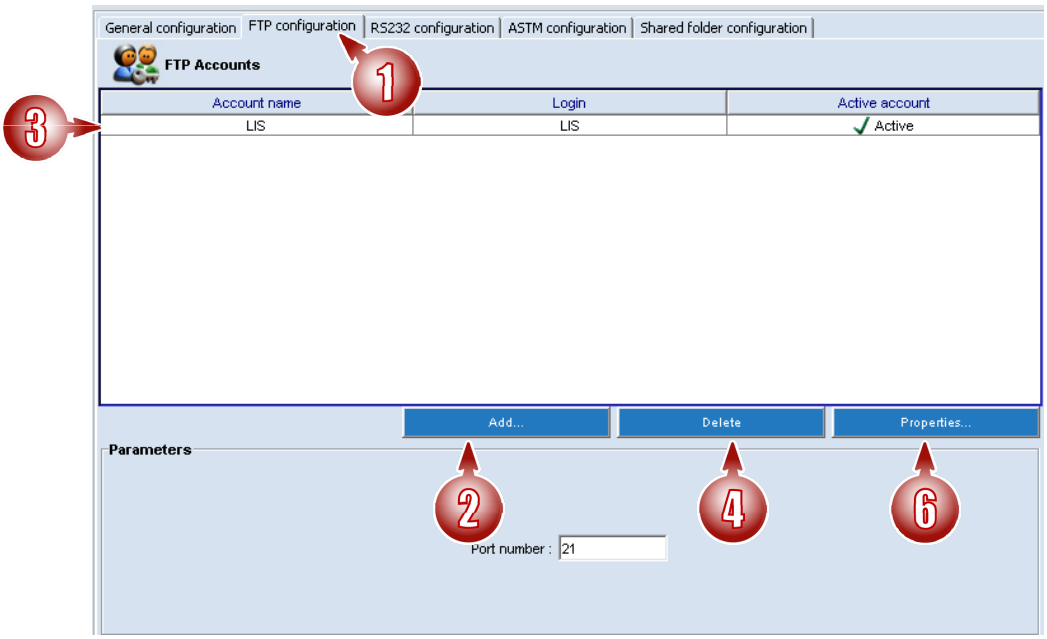


Figure 3-18: FTP configuration

When an account is created (**2**) or modified (**6**), the "FTP Account Management" window is displayed:

7. Fill in all the text boxes for parameter data entry. Follow instructions concerning the number and type of characters.
8. Enable the Active account check box if the account should be active.
9. Click OK to validate creation or modification of the account when you have finished entering the data.

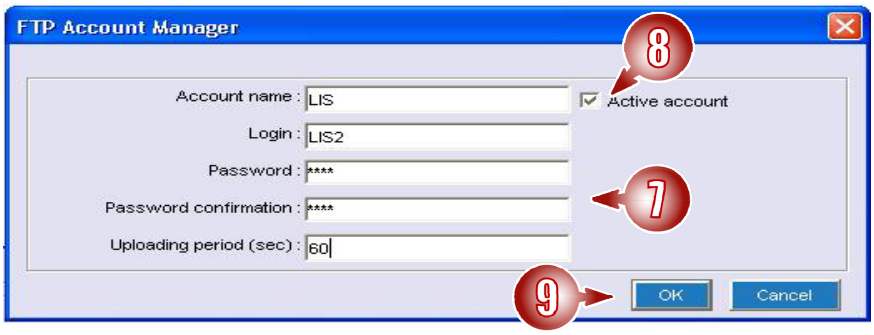


Figure 3-19: FTP Account management

IMPORTANT ! ***The configuration must be backed up before you can view a newly created or modified FTP account on the supervision screen.***
Backup can only be performed when the communication server is shut down.

- Click  button to export the FTP files to "Internet Explorer" in html format.
  From the navigator, you can save the report to a directory or print it. To do this, follow the instructions on page 3-11.

The dialog box in Figure 3-19 can be used to define the parameters of the FTP account.

The following table describes the available configuration settings.

Parameters	Description
Account name:	Identification of the FTP account by a character string. There is no limit to the number of characters that you can enter, but a maximum of 20 is generally recommended.
Login:	Entry of the FTP user's identifier (login). This parameter is used by the LIS for the FTP "USER" command.
Password:	Entry of the password used by the LIS for the FTP "PASS" command.
Password confirmation:	Verification of the password. In the event of an error, a dialog box informs you that an incorrect password has been entered.
Note: These parameters only accept alphanumeric characters.	

Parameters	Description
Uploading period:	Time (in seconds) between two scans of the "`upload`" directory containing the results to be uploaded. It is important to define this uploading period so that any possible LIS failures are detected and a warning generated when the messages stored in the directory exceed the defined period (see "Transaction log" – Warning: *`One or more messages were not uploaded`*, page 3-23).
	There are no limits for the uploading period, the value depends on the LIS transmission rate. However, the minimum recommended value is 60 seconds to avoid untimely errors.
p	**EXAMPLE**: If the uploading period is two seconds and 30 result files have been stored in the "`upload`" directory for more than two seconds, ***BCI Link*** will generate a warning every two seconds until the files have been uploaded by the LIS. On the other hand, it is advisable not to define too long a period in order to avoid prolonged storage of results in ***BCI Link***. Therefore, if the LIS uploads results in real time, it is recommended to leave 60 seconds as the default value. If the period is defined as zero, no alarm will be generated.
Active account (Yes/No)	Only active accounts are taken into consideration for the LIS connections (see the figure below). *Note: **BCI Link** allows a maximum of 20 active accounts. The inactive accounts are not shown on the screen.*

BCI Link periodically controls the "upload" directory to delete result files which have already been uploaded by the LIS. The control is performed every ten minutes if all the LIS uploading periods are set to zero. If they are not, the period retained is the longest period for all the FTP accounts declared as "active".

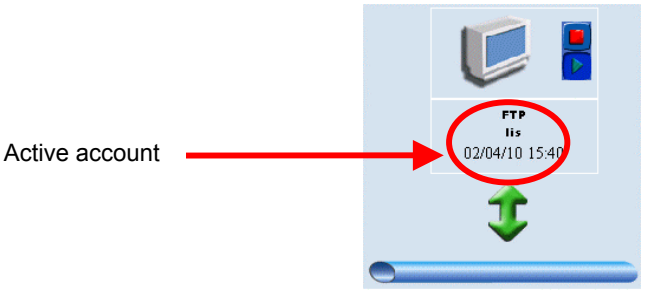


Figure 3-20: Active FTP account

Administration of RS232 configuration

IMPORTANT! ***RS232 links can only be created, modified or deleted when the communication server is shut down. If the communication server is running, buttons (2) and (4) are shaded and disabled.***

1. **View the list of RS232 links:** Click on RS232 configuration.
2. **Add a link:** Click on Add... and follow steps **7** to **9** Figure 3-22 to add an RS232 link.
3. **Delete a link:** Select the row corresponding to the link.
4. Click on Delete and confirm.
5. **Display the properties of a link** for viewing or modification: select the row corresponding to the account.
6. Click on Properties... and follow steps **7** to **9 in** Figure 3-22 to modify an RS232 link.

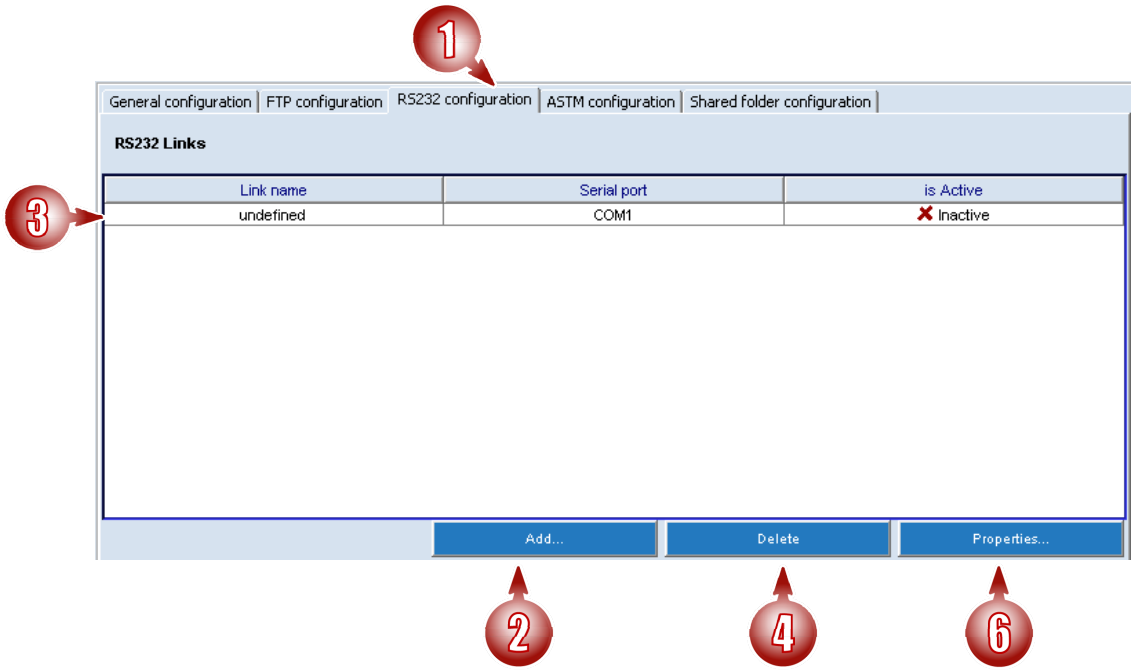


Figure 3-21 : RS232 configuration

When an account is created (**2**) or modified (**6**), the "RS232 link management" window is displayed.

The information relating to the RS232 link is configured by default, to add or modify this link:

7. Enter the name of the link (depends on the **AI** connected, e.g. "lis").
8. Check is Active if the link is to be enabled.

9. Click OK to confirm addition or modification of the link.

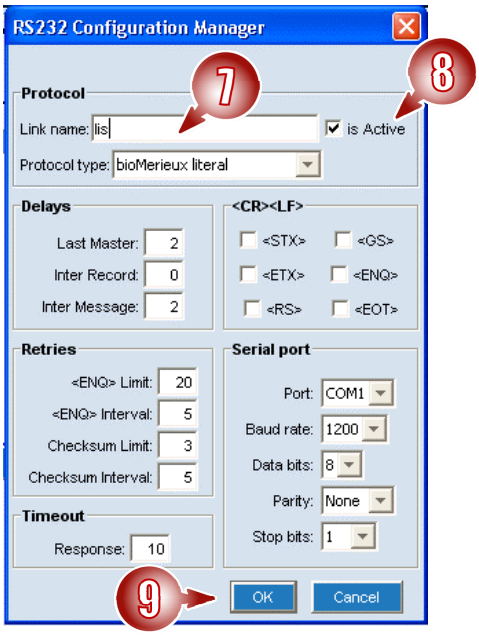


Figure 3-22: Example of RS232 link management

IMPORTANT ! ***A new or modified RS232 link will be taken into account (displayed on the supervision screen) once the configuration has been backed up.***

Backup is only authorized when the communication server is shut down.

The supervision screen displays the active link.

Active link

Figure 3-23 : Active RS232 link

Note: The parameter settings must take into account the characteristics of the connection protocol developed by your computer company. For further information, call bioMérieux Technical Assistance.

The following table lists the available configuration parameters.

Parameters	Description	Possible values	Default value
Link name	Free text. Never use spaces.	Only letters (a-z and A-Z), digits, "-" and"_" are allowed.	
Protocol	• bioMérieux literal: this is a proprietary protocol developed by bioMérieux. • bioMérieux literal alternate: same protocol as above except that all messages are dealt with after receipt of the <ETX> character. This means that the answer to the checksum is expected after <ETX>.	Choose between "literal" and "literal alternate" protocols.	Literal
Link management	• **Receipt activated**: Allows to activate or deactivate receipt of data from the LIS to BCI (a warning is generated if data is nonetheless received from the LIS). • **Transmission activated**: Allows to activate or deactivate transmission of data from BCI to the LIS.		
Delays:			
Last Master	Amount of time ***RS232*** will wait before starting another session. It sends an <ENQ> when it was master of the last session.	Possible values range from 0 to 99 seconds.	2
Inter Record	Delay between transmission of 2 recordings (<RS>) by ***RS232***.	Possible values range from 0 to 99 seconds.	0
Inter Message	Delay between transmission of 2 messages (<STX>.....<ETX>) by ***RS232***.	Possible values range from 0 to 99 seconds.	2
Retries:			
<ENQ> Limit	Number of times ***RS232*** tries to open a session. When this limit is reached, ***RS232*** records an error message and places the data in a waiting list. If the LIS responds, ***RS232*** empties the waiting list and records a new message saying that the LIS responded. If the LIS does not respond, ***RS232*** tries to send the message indefinitely and records an error message at each unsuccessful attempt. To stop these uploads, delete messages on hold in the log.	Possible values range from 0 to 99 seconds.	20
<ENQ> Interval	Amount of time ***RS232*** will wait before the next transmission of an **<**ENQ> following a negative response or no response.	Possible values range from 0 to 99 seconds.	5

Parameters	Description	Possible values	Default value
Checksum Limit	***RS232*** will retransmit the entire packet if it receives a <NACK> for the transmitted checksum, or if the checksum Timeout expires. This limit is the maximum number of packet retransmissions by ***RS232*** to try to obtain acknowledgement of the checksum. When this limit is reached, ***RS232*** records an error message and attempts to resend the entire message until it is accepted by the LIS or deleted from the messages on hold.	Possible values range from 0 to 99 retries.	3
Checksum Interval	Amount of time ***RS232*** will wait before retransmitting the packet following receipt of a <NACK> in response to the checksum or if a negative response is received.	Possible values range from 0 to 99 seconds.	5
<CR><LF>			
<STX>		Addition of **<CR><LF>** after the character.	without
<ETX>		Addition of **<CR><LF>** after the character.	without
<RS>		Addition of **<CR><LF>** after the character.	without
<GS>		Addition of **<CR><LF>** after the character.	without
<ENQ>		Addition of **<CR><LF>** after the character.	without
<EOT>		Addition of **<CR><LF>** after the character.	without
Serial Port			
Port	Serial port used by the link.	Depending on the available COM ports.	First COM port displayed in the list.
Baud	Transfer speed.	Between 110 and 9600 baud.	Depending on the AI.
Data bits	Number of bits per character.	Between 5 and 8 bits.	8
Parity	Select one of the possible values.	Between : • None • Odd • Even • Mark • Space.	none
Stop bits	Select one of the possible values.	Between 1, 1.5 and 2	1
Timeouts			
Host response	Maximum time allowed (to send or receive data) by BCI to receive expected data from the LIS (e.g. <ACK>). If the time expires before the LIS has sent data BCI sends an <EOT> message and the complete package must be resent.	Define as required. Possible values range from 0 to 99 seconds.	10

Administration of ASTM protocol

1. Click on ASTM configuration.
2. The ASTM is configured by default to the TCP port.
3. Check is Active if the protocol is to be enabled.
4. In the TCP/IP input field, select the running mode:
   - Client: enter the IP address of the LIS and the TCP connection port.
     or
   - Server: enter the LIS connection reception port.

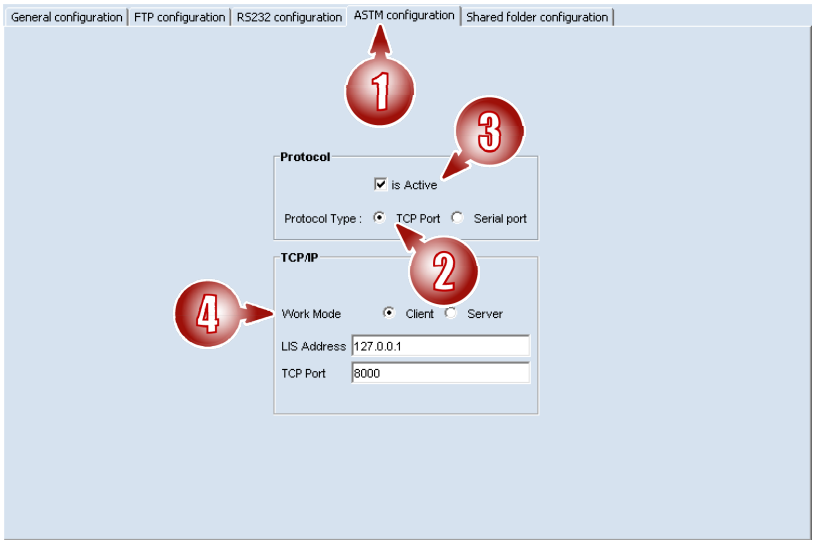


Figure 3-24: ASTM configuration – TCP port

5. To use the serial port, click on "Serial port".
6. The "Serial port" field displays the default settings.

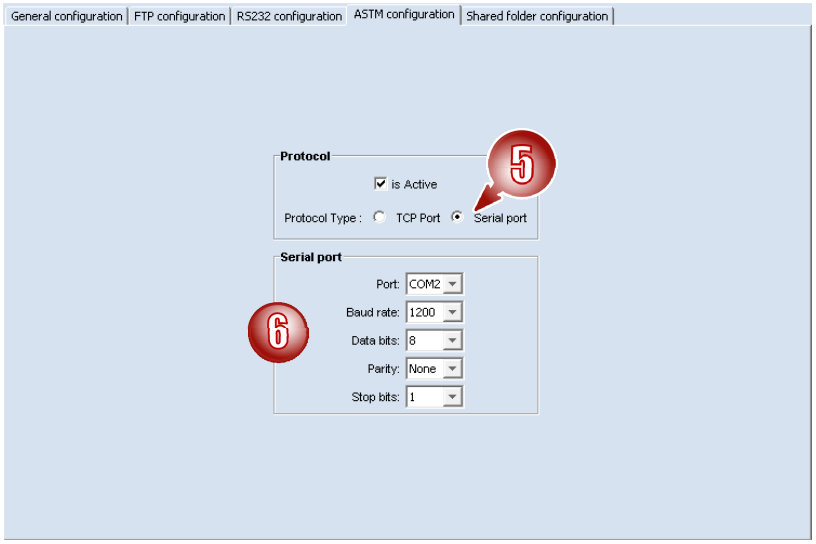


Figure 3-25: ASTM configuration – Serial port

The supervision screen displays the active link.

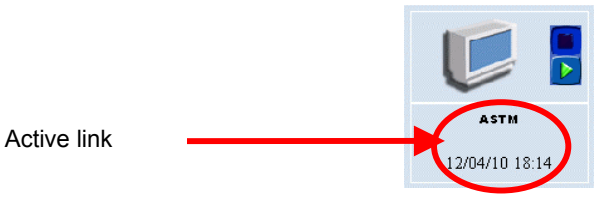


Figure 3-26: Active ASTM protocol

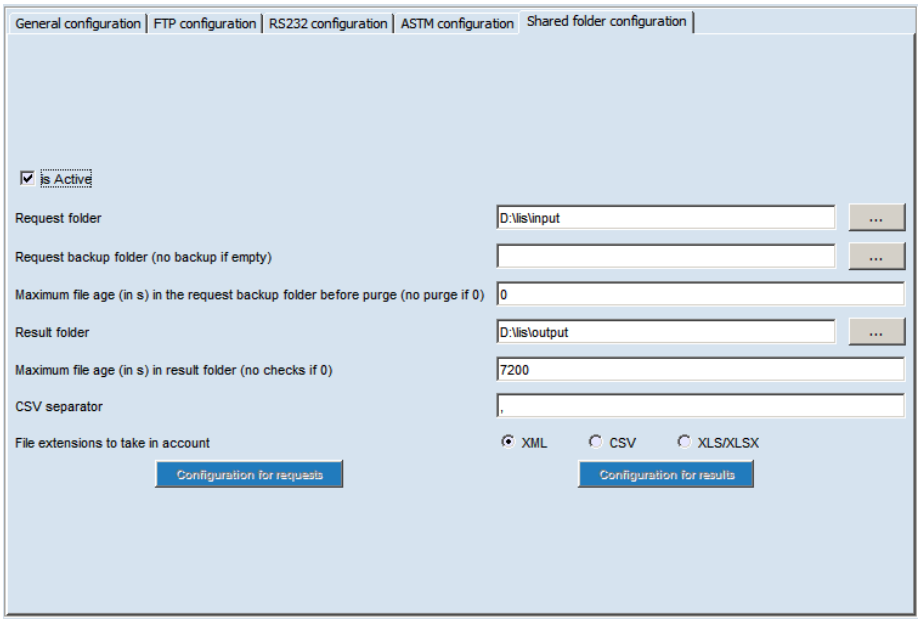
The following table lists the available configuration parameters.

Parameters	Description	Possible values	Default value
Serial Port			
Port	Serial port used by the link.	Depending on the available COM ports.	First COM port displayed in the list.
Baud	Transfer speed.	Between 110 and 9600 baud.	Depending on the AI.
Data bits	Number of bits per character.	Between 5 and 8 bits.	8
Parity	Select one of the possible values.	Between: • None • Odd • Even • Mark • Space.	None.
Stop bits	Select one of the possible values.	Between 1, 1.5 and 2.	1

Administration of "Shared Folder" protocol

IMPORTANT! ***FTP accounts can only be created, modified or deleted when the communication server is shut down.***

- Click on "Shared folder configuration".
- Select the box is Active if the protocol needs to be activated.
- Configure the directory as needed.
- Select the shared folder.
- If necessary, configure the shared folders content.
- Save configuration.



The supervision screen displays the active link.

The following table lists the available configuration parameters.

Parameters	Description	Possible values	Default value
Request folder	Folder in which the LI(M)S stores the request files. *Note: only the file with the requested extension will be considered by BCI. The other files will be ignored (thus it is possible to create temporary files using another extension)*	A valid folder name.	None
Request backup folder (no backup if empty)	If the field is filled in, it is the folder in which BCI transfers the request files once they are processed by the BCI. If the field is empty, the request files are suppressed once they are processed by the BCI.	None or valid folder name.	None
Maximum file age in the request backup folder before purge	If the value is above 0: BCI will purge the files in the backup folder once they reach the specified age (in seconds). If the value is 0: no purge.	A number of seconds.	0
Result folder	The folder in which BCI saves the files containing analysis results.	Valid folder name.	None
Maximum file age in result folder	If the value is above 0: BCI will generate a warning if the age of the files exceeds the value (in seconds). If the value is 0: BCI will not perform a verification in the results folder.	Number of seconds.	0
CSV separator	Indicates the separator to use if the files exchanged with the LI(M)S are CSV files.	One character.	,
File extensions	Allow to select the type of files exchanged with the LIS: • XML: the files exchanged will be in ASTM-XML format • CSV: The files exchanged will be CSV files • XLS/XLSX: The files exchanged will be Excel files. ".xls" and ".xlsx" files are acceptable for analysis requests. For results, only".xls" files will be generated.	One of the values proposed.	XML

If the user selects XML, no additional configuration is required.

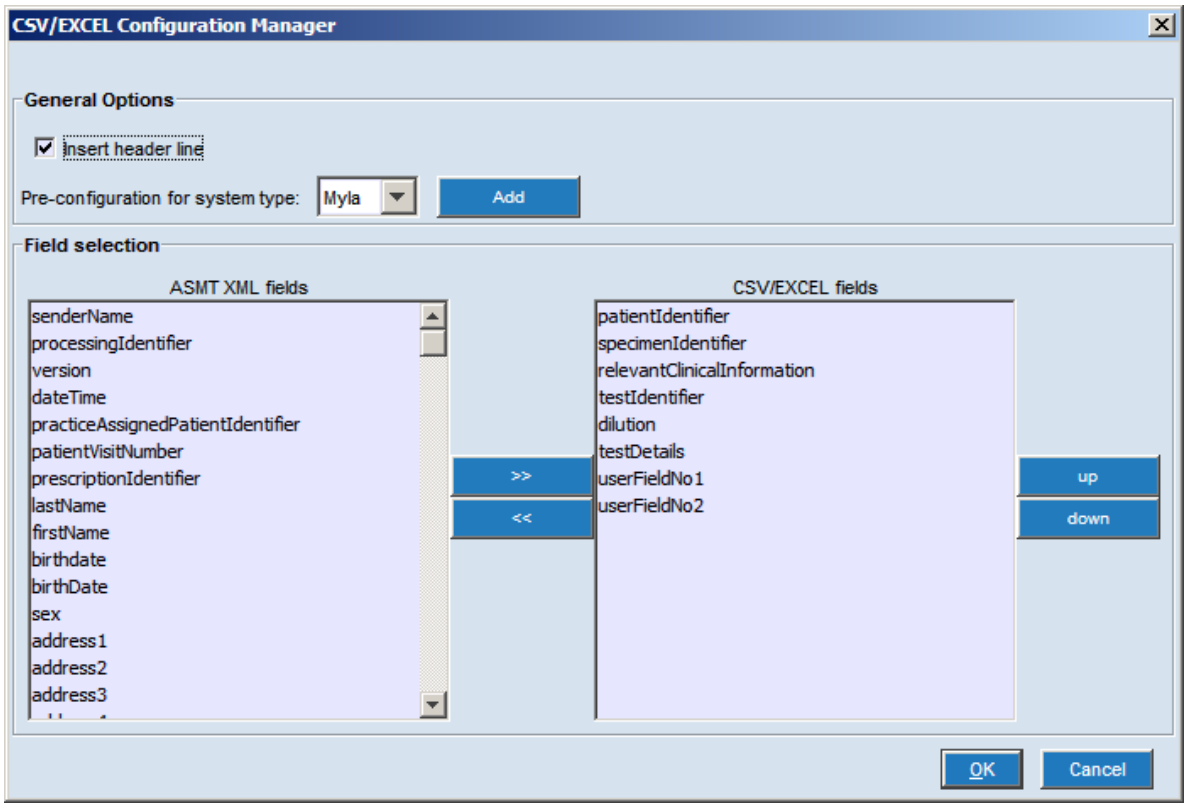
If the user selects CSV or XLS/XSLX, it is necessary to configure the columns that will be included in the request files and the results files.

Configuration of CSV/Excel request files

Request files are configured by clicking on the “Requests configuration” button.

Click on the acknowledge alarm button: the message disappears. The "Serial port" field displays the default settings.

The following dialog box is displayed:



This box is used to select the columns present in the analysis request file edited by the LI(M)S.

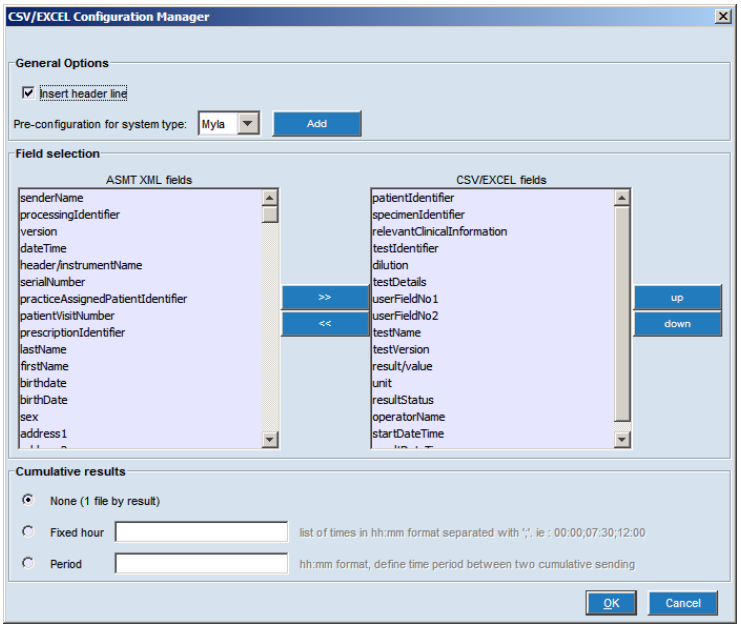
Note: Each column in the request file is linked to a data field. Both designations are used in the description.

Parameters	Description	Possible values	Default value
Insert header line	Checked: The request file contains a header line. This line will be ignored. Unchecked: The file does not contain a header line, all the lines will be treated as data lines.	Checked / unchecked	Unchecked
Pre-configuration for system type	Allows to select a bioMérieux system and to add CSV/Excel to the list of fields selected by default for the chosen system.	NA	NA
Field selection:			
ASTM/XML fields	The list of fields available for all the bioMérieux systems.	NA	NA
CSV/EXCEL fields	The columns in the CSV/Excel analysis request file (files edited by the LI(M)S). The columns must be in the order that they appear in the file. The ">>" button can be used to add one or more fields which are selected from the list of ASTM-XML fields. The "<<" button can be used to remove one or more fields from the list of CSV/Excel fields. The "up" and "down" buttons are used to sort the CSV/Excel fields.	All the fields available in the " ASTM/XML fields" list.	Empty list

Configuration of CSV/Excel result files

Result files are configured by clicking on the "Results configuration" button.

The following dialog box is displayed:



This box is used to select the columns present in the results file edited by the BCI.

Note: Each column in the request file is linked to a data field. Both designations are used in the description.

Parameters	Description	Possible values	Default value
Insert header line	Checked: A header line will be inserted in the result file. Unchecked: The result file will not contain a header line.	Checked / unchecked.	Unchecked.
Pre-configuration for system type	Allows to select a bioMérieux system and to add CSV/EXCE to the list of fields selected by default for the chosen system.	NA	NA
Field selection			
ASTM/XML fields	The list of fields available for all the bioMérieux systems.	NA	NA
CSV/EXCEL fields	The columns in the CSV/Excel analysis request file (files edited by the LI(M)S). The columns must be in the order that they appear in the file. The ">>" button can be used to add one or more fields which are selected from the list of ASTM-XML fields. The "<<" button can be used to remove one or more fields from the list of CSV/EXCEL fields. The "up" and "down" buttons are used to sort the CSV/Excel fields.	All of the fields available in the "ASTM/XML fields" list.	Empty list.
Cumulative results			
None	In this mode, there is one result file per result received from the instrument.	Checked / unchecked	Checked
Fixed hour	This mode is used to generate result files at a set time. These files will contain all the results received from the instrument from the moment the last file was generated. A list of times must be defined. *Note: A file will not be generated if no results have been received from the instrument.*	Checked / unchecked List of times in "HH:MM" format separated by ",".	Unchecked
Period	This mode is used to generate result files at regular intervals. These files will contain the results received from the instrument from the moment the last file was generated. A period of time must be defined. *Note: A file will not be generated if no results have been received from the instrument.*	Checked / unchecked. A period of time in "HH:MM" format.	Unchecked

Setting parameters for the dispatcher configuration

The dispatcher configuration is used to select the list of tests that each identified AI is allowed to perform in routine mode or configuration mode.

- Click  button on the navigation bar (Figure 3.4) to obtain the dispatcher configuration screen.

Note: The dispatcher configuration is only accessible when "bioMérieux" dispatching is used.

Color codes

The status of the dispatcher configuration is indicated by a color code.

– The shaded cells indicate tests which are not managed by an AI.

– The tests displayed in red are not configured for any of the AI recognized by ***BCI Link***.

An example of a color code is presented below.

– Test1 and test2 are not managed by SYSTEM2, but are configured by SYSTEM1 "in routine".

– Test3 is managed by SYSTEM1 and SYSTEM2, but is configured by SYSTEM1 "in routine".

– Test4 is not managed by SYSTEM1 but is configured by SYSTEM2 "in routine".

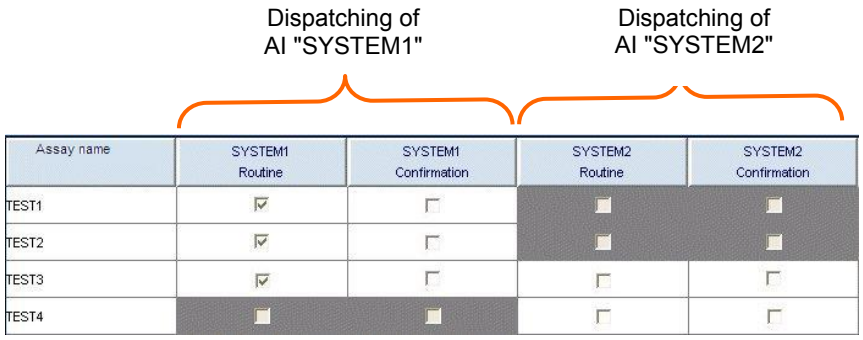


Figure 3-27: Example of a color code

By default, the test names are sorted in alphabetical order. Sorts can be performed on each column of the table. To do this,

- Place the cursor on the header of the column to be sorted,
- Click once to activate the sort function.

*Note: Once you have performed a sort, click on button "**Test**" to return to the initial column sorting mode.*

IMPORTANT! ***The new configuration can be saved at ANY time. The information is immediately taken into account (whatever the status of the server).***

- Click  button o to export the dispatcher configuration to "Internet Explorer" in html format.

From the navigator, you can save the report to a directory or print it. To do this, follow the instructions on page 3-11.

4 Glossary

Abbreviations and acronyms

BCI	**bioMérieux Communication Interfaces**
AI	**bioMérieux Analyses Instrument**
FTP	**File Transfer Protocol**
IIOP	**Internet Inter-ORB Protocol**
LIS	**Laboratory Information System**
LIMS	**Laboratory Information Management System**
TCP/IP	**Transport Control Protocol / Internet Protocol**

Glossary

ASTM E1394	Standard specification for transferring information between clinical instruments and computer systems, published in the early 90's by the E31 committee and the American Society for Testing and Materials.
Attribute	Characteristic element.
ASTM-XML representation	Specifications of messages relating to the transfer of data between the bioMérieux analyzers and the LIS. This specification, elaborated by bioMérieux, is based on the ASTM 1394 attributes with an XML message structure.
Data representation	Type of description used to structure messages for data transfer between analysis instruments and the laboratory information systems.
IIOP protocol	Communication protocol which integrates and networks applications of different origins.
XML	Abbreviation of "Extensible Markup Language". XML is a markup specification language for structuring documents.


BIOMÉRIEUX