

6 Software Functions

In this chapter, the complete **LIAISON® XL** software is described in detail. Hereby, the main focus is not on the general context and the processes but on a complete description of all functions, buttons, lists etc. This chapter can therefore be considered as a reference book for the **LIAISON® XL** software.

NOTE

Software functions not described in this chapter are for field service engineers and developers only. All other users do not have access rights for these special functions.

6.1 General

In this subchapter, functions are described which can be used in the complete **LIAISON® XL** software.

Function	Symbol	Description
Cancel		Dismisses all changes and returns to the previous display.
Help		Shows the online help (see chapter 6.1.1).
Multiselect		Activate the multiselect function to select more than one entry in a list. - Opened lock: Multiselect function is deactivated (default) - Closed lock: Multiselect function is activated
OK		Confirms/saves all changes and returns to the previous display.

Print		Click on this button to show the printer dialog (see chapter 6.1.3).
Scroll buttons		Jump to the first/last page (active in case of multiple page documents).
Scroll buttons		Jump to the previous/next line (active in case of multiple page documents).
Scroll buttons		Jump to the previous/next page (active in case of multiple page documents).
Scroll buttons		Jump to the previous/next values (active in case of multiple page documents).
Search		Searches for the entered text (text field next to the button) and shows the results in the table (see chapter 6.1.2).
Store		Confirms/saves all changes and returns to the previous display.
Table sort order		Sorts the rows of a table in ascending or descending order. Click on a table headline to start the sorting. After the sorting one of the arrows are shown next to the headline. See chapter 6.1.2
Total Records		Shows the number of rows in the table.

Table 6-1: General functions

NOTE

In some cases it is not possible to select another sub or main category. In this case a function with separate tab (e.g. details) has been selected. Click on the **OK**, **Store**, or **Cancel** button to return to the sub category.

NOTE

During time consuming operations typically involving a relevant amount of data, the system time (reported on the header, see chapter 6.2) will be frozen. Once the operation has been concluded, the system will start again updating the system time.

CAUTION

Multiselection

The multiple selection is guaranteed by ensuring that the related symbol is shown in the closed status:  .

Performing multiple selections with the symbol shown in open status does not guarantee that all the selected items will be processed during the subsequent requested actions (e.g. printing).

6.1.1 On-line Help



The **Help** button provides access to all operating instructions and information necessary to run the system. The on-line help system is comprised of several section tabs:

- The **User Manual** tab shows the on-line version of this manual.
- Short instructions to use the **LIAISON® XL** system are shown on the **Quick Guide** tab.
- The **Glossary** tab shows explanations about several used technical terms.
- Help regarding issues with the **LIAISON® XL** system is available through the **Troubleshooting** tab.
- The **Assays** tab shows information about assays.
- The **Controls** tab shows information about controls (currently not provided).
- The **Consumables** tab shows information about consumables.

When selecting the [Help](#) button, the system on-line help is shown.



Figure 6-1: [Online Help](#) screen

Function	Description
< or >	Jumps to the previous or next page of the shown help.
Back	Returns to the LIAISON® XL software main screen.
Home	Jumps back to the first/main page of the shown help.
Print	Prints the shown information.
Select	Opens a file selection Dialog and allows the user to select the desired assay, consumable or control package to visualize
Acquire	Opens a file selection Dialog and allows the user to import from the main path of an external storage device instrument dedicated contents (e.g. packages containing User Manuals, Assay Protocols) to be retrieved from the DiaSorin web site.
Download	Sends a request to the DiaSorin online repository for downloading contents depending on the selected toggle. • User Manuals for the current software version if the selected toggle is any among: User Manual, Quick Guide, Glossary and Trouble Shooting • Assay Protocol and accompanying documentation (e.g IFU) if the selected toggle is: Assay • Consumables IFU and datasheet, if the selected toggle is Consumable The DiaSorin online repository will reply to the request by matching it with the available contents.

Table 6-2: Functions of the **Online Help**

6.1.1.1 Online Help - Acquire



Figure 6-2: Online Help – Acquire

Function	Description
File Selection Path	Select a file for instrument import on an available path.
Import	Import the select file.

Table 6-3: Online Help – Acquire

6.1.1.2 Online Help - Download

In User Manual, Quick Guide, Glossary and Trouble Shooting tabs:



Figure 6-3: **Online Help** – Download Dialog

Function	Description
IFU Language	Specifies the User preference for the language of the User Manuals. Default: the IFU language as defined in the System-Settings (see chapter 6.7.5). Note: the provided contents may not match with the specified language in case such a language is not available among the list of the DiaSorin approved languages for the involved country.
Download	Start the request for downloading the contents. The system will manage the download of the contents in background. A dedicated message will inform that the download completes or in case of troubles.

Table 6-4: **Online Help** – Download Dialog

In Assay and Consumable tabs:



Figure 6-4: [Online Help](#) – Download Dialog

Function	Description
Article No.	Allows to specify the Article Number of the product.
Lot No.	Allows to specify the Lot number of the product.
IFU Language	Specifies the User preference for the language of the User Manuals. Default: the IFU language as defined in the System-Settings (see chapter 6.7.5). Note: the provided contents may not match with the specified language in case such a language is not available among the list of the DiaSorin approved languages for the involved country.
Download	Start the request for downloading the contents. The system will manage the download of the contents in background. A dedicated message will inform that the download completes or in case of troubles.

Table 6-5: [Online Help](#) – Download Dialog

6.1.1.3 Online Help - Select

In Assay tab:



Figure 6-5: **Online Help** – Select Dialog

Function	Description
Article No.	Article Number
Lot No.	When selection changes, then Document and File Selection are cleared.
Document Type	Available values: IFU , MSDS , CoA and Other .
File Selection	All files with extension pdf . When selection changes, the selected file is displayed.

Table 6-6: **Online Help** – Select Dialog

In Consumables tab:

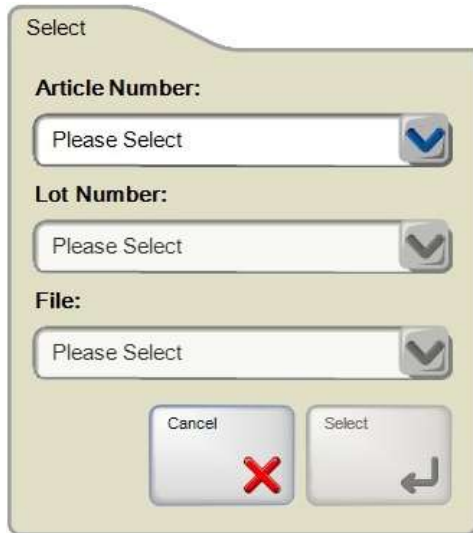


Figure 6-6: [Online Help](#) – Select Dialog

Function	Description
Article No.	Article Number
Lot No.	When selection changes, then Document and File Selection are cleared.
File Selection	All files with extension pdf . When selection changes, the selected file is displayed.

Table 6-7: [Online Help](#) – Select Dialog

In Control tab:

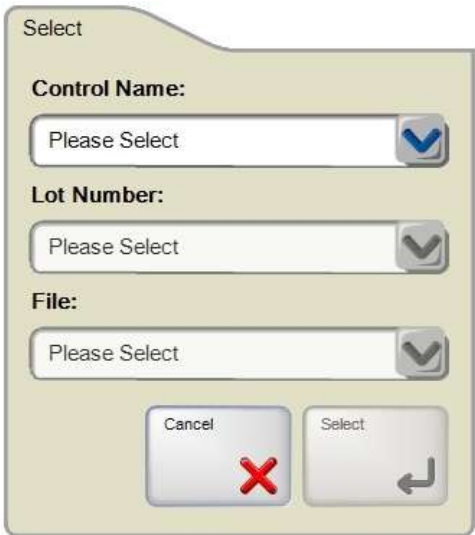
A dialog box titled "Select" with a light beige background. It contains three labels: "Control Name:", "Lot Number:", and "File:". Each label is followed by a text input field containing the placeholder text "Please Select" and a dropdown arrow icon. At the bottom of the dialog, there are two buttons: "Cancel" with a red "X" icon and "Select" with a grey arrow icon.

Figure 6-7: [Online Help](#) – Select Dialog

Function	Description
Control Name.	Control Name
Lot No.	Lot Number
File Selection	All files with extension pdf . When selection changes, the selected file is displayed.

Table 6-8: [Online Help](#) – Select Dialog

6.1.2 Sorting and Searching

This function allows the user to sort the table entries or to search for entries.

Function	Symbol	Description
<i>Search</i>		Searches for the entered text (text field next to the button) and shows the results in the table. If there are no hits, the table will be empty. Non alphanumerical characters may be ignored.
Table sort order	 	Sorts the rows of a table in ascending or descending order. Click on a table headline to start the sorting. After the sorting one of the arrows are shown next to the headline. Columns, that do not support sorting, will not show any arrow. Non alphanumerical characters may be ignored.

Table 6-9: General functions

Sorting

To view the table contents, it is possible to sort the shown entries.

Procedure:

1. Click on one of the table headlines to sort the complete table.
2. The entries will be sorted on the basis of the text in the selected column.
3. A small arrow next to the headline shows the sort order:
 -  Ascending sort order All entries are sorted from 0 to 9 and A to Z
 -  Descending sort order All entries are sorted from Z to A and 9 to 0

NOTE

For items where the logical content is more relevant than the alphabetical content, the sort order may be not alphabetical but logical (e.g. the "Status" column for test results can be sorted according to a pre-defined non alphabetical order that follows the natural sequence of status for a test).

NOTE

The sort function is case insensitive (e.g. the item "Sample_01" is equivalent to the item "SAMPLE_01").

Examples:

- Unsorted entries:

Column 1	Column 2
Sec_1_ID_2	Failed
Doc_34_ID_10	Done
Sec_1_ID_5	Failed
Sec_1_ID_22	ToDo

- Selected: Column 1 / Sort order: Ascending

Column 1 	Column 2
Doc_34_ID_10	Done
Sec_1_ID_2	Failed
Sec_1_ID_22	ToDo
Sec_1_ID_5	Failed

- Selected: Column 1 / Sort order: Descending

Column 1 	Column 2
Sec_1_ID_5	Failed
Sec_1_ID_22	ToDo
Sec_1_ID_2	Failed
Doc_34_ID_10	Done

- Selected: Column 2 / Sort order: Ascending

Column 1	Column 2 
Doc_34_ID_10	Done
Sec_1_ID_2	Failed
Sec_1_ID_5	Failed
Sec_1_ID_22	ToDo

Searching

As the system is used the result and events table's entries will increase. To find particular entries it is possible to search for these entries.

Search:

Figure 6-8: Search entry field

Procedure:

- Click on one of the table headlines to select the used column for the search process.
Note, the sort order of the column (see above).
- Select the **Search** field.
- Enter a text to search for.
Note that all search results must begin with this text.
- Click on the **Enter** key to close the keyboard from screen.
The **LIAISON® XL** software shows the first entry of the found entries. If it was already visualized, nothing on the page changes, otherwise the system scrolls the page to the first matching entry.
- Use the scroll buttons to look for the other found entries.

NOTE

The search function shows always all entries. The function jumps entirely to the first entry of the found entries.

NOTE

According to the sort order, the first found entry is the topmost entry in ascending order. The last entry is the topmost entry in descending order.

NOTE

When the search function is used, the item selection is not related to the outcome of the search.

Examples:

- Entries:
Doc_34_ID_10
Doc_39_ID_2
Sec_1_ID_5
Sec_1_ID_5
Sec_2_ID_7
Sec_2_ID_9
Sec_3_ID_4
- Search text: Sec_
- First entry found: Sec_1_ID_5
- Search text: Sec_2
- First entry found: Sec_2_ID_7
- Search text: (empty)
- First entry found: Doc_34_ID_10

6.1.3 Print Reports

It is possible to print the information (e.g. results, events, or assays) reported by the **LIAISON® XL** software.

1. Select desired entries.
 2. Click on the **Print** button.
- The **LIAISON® XL** software shows an adapted dialog.



Figure 6-9: **Print Report** dialog (e.g. result report)

3. Select the print options:
 - **Selected Records**: Prints only the selected entries
 - **Today's Records**: Prints only today's entries
 - **All Records**: Prints all entries
 - **Range**: Activates the range section to specify the printed entries, filling the fields **From** and **To**
 - **Report**: If more print templates are available, choose the preferred one.
4. Click on the **OK** button.

NOTE

In case the print queue should be deleted, it is necessary to interact with the printer itself, as the system does not allow access to the operating system functionalities related to managing the printer.

6.2 Header



Figure 6-10: Header

Function	Description
Status	Current system status, see Table 6-11: Status
Cycle	Shows the total number of operativity cycles for the instrument.
Date	Shows the current date.
Finish time	Estimated finish time of the run. If the system is performing the Resume , displays the Resume finish time.
Software Version	Release version of the LIAISON® XL software.
Start	Starts the tests in status “placed”.
Stop	Calls the STOP Menu to pause, shutdown or init the system, see chapter 6.2.1.
Support	Gives access to the On-line help, see chapter 6.1.1.
Time	Shows the current time.
Username	The currently logged in user is shown in the middle of the upper line.

Table 6-10: Functions of the Header

Status Descriptions

Status	Description
Not Initialized	The system is not initialized: if the instrument is connected, the initialization will be started upon pressure of the Init button from the STOP Menu. Note: this is a non functional status. As long as the system stays in this status, there is no guarantee about the system hardware functionalities, including (but not limited to) reagent cooling, magnetic particles re-suspension, cuvette movement.
Initializing	The system performs all actions required for mechanical initialization of all modules (e.g. from un-powered start or by user request). The database integrity is also checked.
Standby	All modules are operational, but no tests are running. All subsystem temperatures are maintained at specified temperatures. The LIAISON® XL system will take the motor drivers offline (power-safe). The LIAISON® XL software allows starting a new run: the system will take care of performing the necessary activities (including primes). In Standby mode the system supports loading of reagent integrals, samples and ancillaries. Cuvette loading is limited because the incubation ring does not turn. When switching from standby mode to normal operation the power-saving subassemblies are re-initialized.
Maintenance	This status is reached in two possible situations: 1. The user requested a routine while the system was in Standby status: the system sets all assemblies in normal mode and performs automatically the priming procedures. Those priming procedures are called Resume. 2. The user requested a maintenance task: the system performs the foreseen maintenance activities, while it is not possible to navigate into the graphical interface.
Ready	The system is considered ready for assay processing. The LIAISON® XL software allows starting a new run. The LIAISON® XL system returns into Ready mode when the run is finished and can be started again after test scheduling. After a predefined timeout, the system will return in Standby mode.

Status	Description
<i>Running</i>	The LIAISON® XL system is performing tests. New tests can also be started while the system is in <i>Running</i> mode.
<i>Diagnostics</i>	The user has requested the system to perform a diagnostic task.
<i>Halted</i>	A fatal error occurred and all activities are stopped. The previous state is not recoverable. The <i>Halted</i> mode can be reached from all other states. All ongoing tests will be failed. Note: this is a non functional status. As long as the system stays in this status, there is no guarantee about the system hardware functionalities, including (but not limited to) reagent cooling, magnetic particles re-suspension, cuvette movement.

Table 6-11: Status

6.2.1 Stop Menu



Figure 6-11: **STOP** Menu

Function	Description
Pause	Pauses the pipettor. If the pipettor is paused already, then the button is labelled Continue . Click on the Continue button to restart pipetting. Tests not started yet will be set to “Placed”. Tests already started will be set to “Failed” if the pipettor would be necessary.
Shutdown	Shuts down the LIAISON[®] XL software and the computer. Any ongoing test will be interrupted and cannot be recovered. The next incoming pop-up allows to confirm or to abort the shutdown.
Init	Aborts all ongoing operations on the instrument (if the system is running) and starts a re-initialisation.
Cancel	Closes the STOP Menu and returns without any changes to the previous display.

Table 6-12: Functions of the **STOP Menu**

NOTE

While the **STOP Menu** is in the foreground the run is not stopped.

6.3 Main Category Loading

With the main category **Loading**, the LIAISON® XL system can be completely loaded and unloaded with samples, integrals and ancillaries. In addition to the loading/unloading, samples can be assigned to assays via the subcategory **Samples**.

6.3.1 Sub Category Samples

The subcategory **Samples** allows the loading and unloading of sample racks. For every sample tube in the racks, there is the possibility to assign a distinct identification number. This number is either read via bar-code scanner or entered manually. Additionally, one or more assays can be assigned to every sample. After the starting of these assays/tests, it is indicated which samples are being processed.

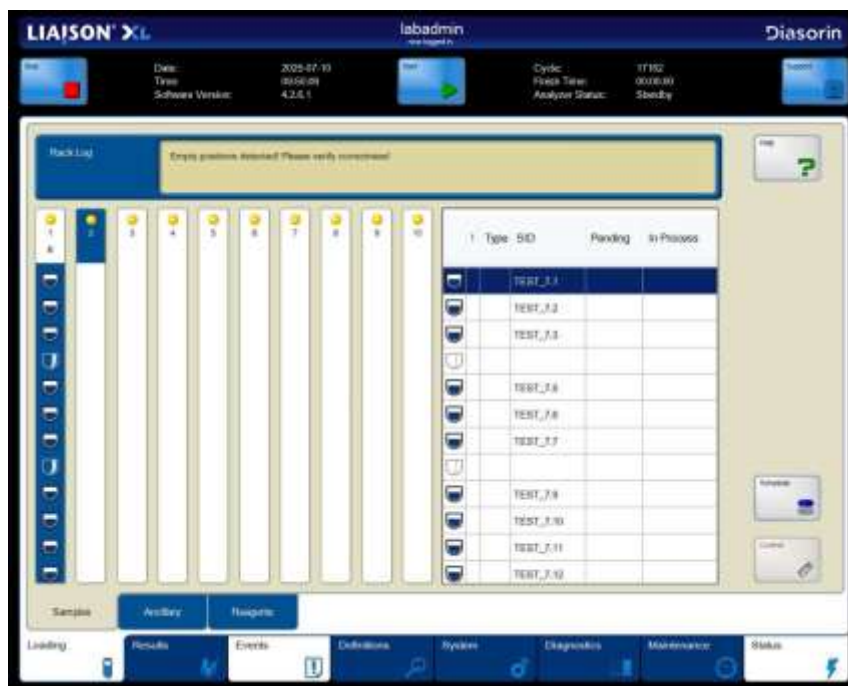


Figure 6-12: Sub category **Samples**

Function	Description
1 ... 10	Lanes of the loading bay for sample racks. The display is divided into two parts: - Upper part: Click on the upper part (lane number and indicator) of an empty lane to load a sample rack in this lane. The upper part reflects also the rack status via LEDs below the lane (see chapter 4.2.5). - Lower part: Click on the lower part (sample rack) to select a rack. All samples will be shown in the table on the right side.
Control	Opens the control picklist and allow the selection of a control or the creation of a new control definition. The bar-code of that control is assigned to the current (empty) SID field. The Control button is disabled if the SID field is not empty.
Rack log	The Rack Log field shows information about a loaded or selected sample rack. - Loading errors - Positions without bar-code or unreadable bar-code - SID problems (e.g. duplications)
Schedule	Shows the Worklist tab to create or edit worklists for samples and controls (see chapter 6.3.1.1).
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-13: Functions of the **Samples** sub category

The samples table shows all positions of the selected rack.

Column	Description
!	Shows an exclamation mark for high-priority samples (STAT).
Type	Shows an empty cell for samples or a symbol for calibrators and controls:  Calibrators  Controls  Expired controls

SID	Shows the sample ID, calibrator ID and control ID. The SID is read via bar-code scanner or entered by operator (if bar-code not present or unreadable). Notes: The SID must be unique. Two or more samples with the same SID are not allowed to be loaded at the same time. Use only the following characters: • A - Z (a - z are converted to upper case for patient samples) • 0 - 9 • minus (-), dot (.), dollar sign (\$), plus (+), percent sign (%), number sign (#), ampersand (&), equal (=), blank space (), semicolon (;) and slash (/). A SID may be 3 to 17 characters long and shall not contain heading or trailing spaces. The SID of external calibrators begins with a predefined prefix character and contains the assay abbreviation or article number. Note: The SID field is write protected, if any of the following applies: • the rack is in "Error" • the SID was read via bar-code (and accepted, i.e. not deleted because of duplication or illegal character) • the Control button was pressed for that SID at least once since the SID was recognized (i.e. un-pressing that button does not allow typing, it's necessary to unload and reload the rack) • either a workorder or a patient definition for that SID is present in the work-database (visible in the sub category All of the main category Results, see chapter 6.4.1).
Symbol	See table below.
Pending	If assays are assigned to the sample: Shows all assays in status Placed or Failed for the sample.
In Process	If assays are assigned to the sample: Shows all started assays in status Scheduled , Active or Measured for the sample.

Table 6-14: Columns of the loaded samples table

Symbol	Description
	Loaded sample tube with known SID .
	Loaded sample tube without bar-code or unreadable bar code, or no tube loaded. The SID is empty.
	Sample in process.
	Sample off-line (If a sample is off-line, unload it, check its status and reload again when OK.)

*Table 6-15: Symbols***NOTE**

Light-Check must be loaded as ancillary reagent.

Any sample beginning with the special characters (i.e. “#” or “\$”) will be displayed as control or calibrator, no matter if they will be treated as controls or calibrators or patient samples.

NOTE

The support of slash (/) as SID character requires the intervention of field service authorized representative. Please contact your local DiaSorin representatives to enable it.

6.3.1.1 Worklist Tab – for patient samples

The **Worklist** tab enables the assignment between samples/controls and assays.

This section describes the assignment for patient samples.



Figure 6-13: **Schedule** display for patient samples

Function	Description
Rack lane	Shows the lane number of the selected sample rack. This button serves also as “Select/Unselect All” button, if the “Lock button” is set to “closed”. Click on the arrow buttons next to the Rack lane button to show another available sample rack, and the sample list will be updated.
Samples list	Shows all samples, calibrators, and controls which are present in the selected rack. Note: empty positions are not shown.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-16: Functions

Column	Description
Position	Tube position in the rack.
Type	Shows an empty cell for samples or a symbol for calibrators and controls (see chapter 6.3.1).
SID	Shows the sample ID, calibrator ID and control ID.
!	Check the checkbox for high-priority samples (STAT).

Table 6-17: Columns of the rack samples table

NOTE

It is not possible to create a worklist for selected samples and controls at the same time. Select samples separately from controls.

NOTE

Use the [Lock button](#) to use the multiple selection function.

Selection Group The **Selection** group allows the user to assign assays (tests) to one or more samples.

Function	Description
Assay Selection in Group	Assays are organized in groups. First it is necessary to choose the assay group. After that it is possible to select one or more assays. The display of an assay shows its relation to the samples: • Colour: • Blue: The assay is assigned to sample(s). • Grey: The assay is not assigned to sample(s). • Shape: • Solid: An integral for the assay is loaded. • Broken with two stripes: An integral for the assay is not loaded.
Profile Selection	Enables to select a profile (contains several assays, see chapter 6.6.5). Use the arrow buttons to show all available profiles.

Table 6-18: Functions of the **Selection** group

Style	Description
	The assay is: • currently not loaded on the machine • not assigned to the selected sample
	The assay is: • currently not loaded on the machine • assigned to the selected sample
	The assay is: • currently loaded on the machine • not assigned to the selected sample
	The assay is: • currently loaded on the machine • assigned to the selected sample

Table 6-19: Assay status

NOTE

As soon as a test is started, the status changes to grey (unselected) and may be assigned again, even if the previous test is still running

Demographics Group

After having assigned assays to a sample, the **Demographics** group allows the user to enter or view detailed information about one selected sample.

Function	Description
Sample ID	Shows the sample ID (it is not possible to edit the sample ID).
Patient ID	ID of the patient.
First name	First name of the patient.
Initials	Patient name initials.
Last name	Family name of the patient.
Date of birth	Date of birth of the patient.
Patient location	Location of the patient.
Sender	Name or code of the doctor. Allows selecting among a pre-defined list of senders.
Sex	Gender of the patient (Female , Male , or Unknown).

Table 6-20: Functions of the **Demographics** group

NOTE

Detailed information of the **Demographics** group is only shown if the user has the access right "Patient Privilege" (see chapter 6.7.5.1).

Dilutions Group After having assigned assays to a sample, the **Dilutions** group allows the user to view and change dilution work orders for the corresponding sample(s)/assay(s).

Function	Description
Selected Assay(s)	Shows all selected assay(s). Note: for combi assays, the combi fathers or the combi sons will be shown, depending on specific assays.
Dilutions available for	Shows all available dilution factors. Note: for combi assays, it may be not possible to select more than one dilution or undiluted.

Table 6-21: Functions of the **Dilutions** group

Replicates Group After having assigned assays to a sample, the **Replicates** group allows to define a number of replicates different from the default number (indicated in the assay file), up to 20. The replicates can only be increased compared to the original value.

Column	Description
Assay	Name of the assay.
Replicates	Number of replicates.
+	Increments the selected replicate number.
-	Decrements the selected replicate number.

Table 6-22: Columns of the **Replicates** tab table

NOTE

For combi assays, the system may show the replicates for the combi father or for the combi sons.

For combi assays, the system may run combi sons with the same number of replicates, independently from the number of replicates defined.

6.3.1.2 Worklist Tab – for control samples

The **Worklist** tab enables the assignment between patient samples/controls and assays.
This section describes the assignment for controls.

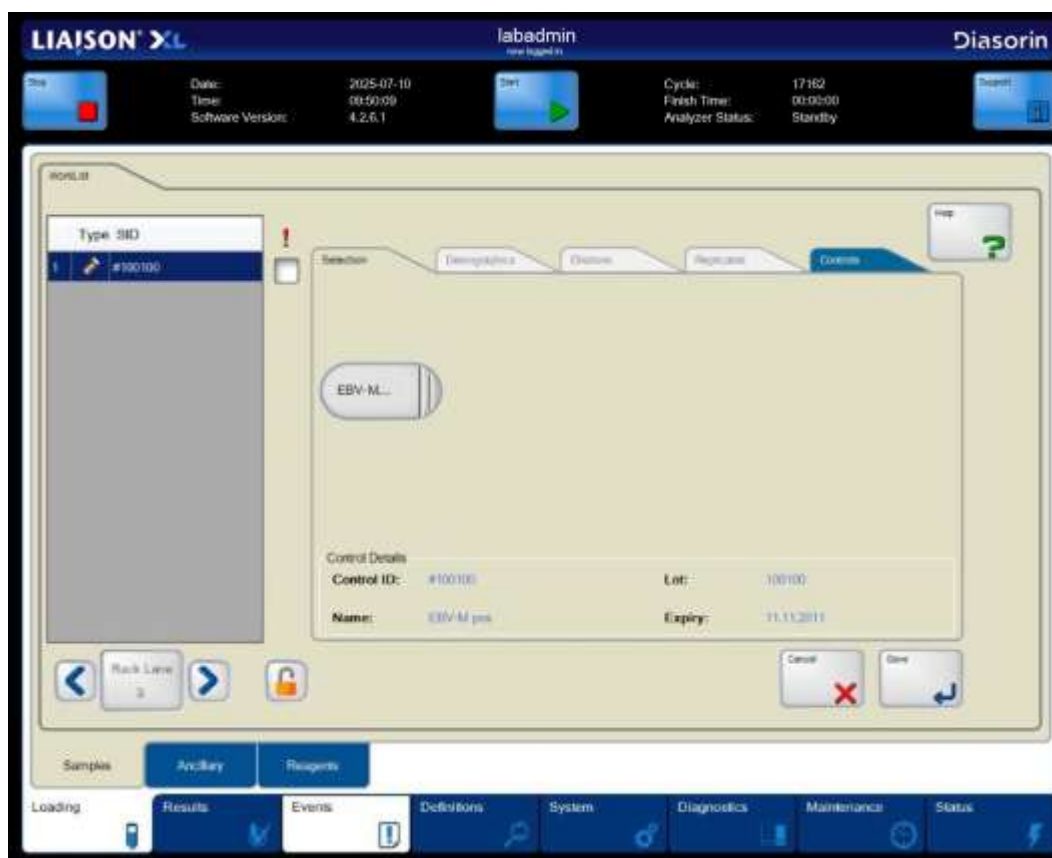


Figure 6-14: **Schedule** display for controls

Function	Description
Rack lane	Shows the lane number of the selected sample rack. This button serves also as “Select/Unselect All” button, if the “Lock button” is set to “closed”. Click on the arrow buttons next to the Rack lane button to show another available sample rack, and the sample list will be updated.
Samples list	Shows all samples, calibrators, and controls which are present in the selected rack. Note: empty positions are not shown.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-23: Functions

Column	Description
Position	Tube position in the rack.
Type	Shows an empty cell for samples or a symbol for calibrators and controls (see chapter 6.3.1).
SID	Shows the sample ID, calibrator ID and control ID.
!	Check the checkbox for high-priority samples (STAT).

Table 6-24: Columns of the rack samples table

NOTE

It is not possible to create a worklist for selected samples and controls at the same time. Select samples separately from controls.

NOTE

Use the **Lock button** to use the multiple selection function.

Selection Group The **Selection** group allows the user to assign assays to one or more controls.

Function	Description
Assay Selection	Assays that are available for that control are listed and can be selected. The display of an assay shows its relation to the samples: • Colour: • Blue: The assay is assigned to sample(s). • Grey: The assay is not assigned to sample(s). • Shape: • Solid: An integral for the assay is loaded. • Broken with two stripes: An integral for the assay is not loaded.
Control Details	The Control Details section shows the ControlID, ControlName, Control Lot and Expiration Date for the selected control.

Table 6-25: Functions of the **Selection** group

Style	Description
	The assay is: • currently not loaded on the machine • not assigned to the selected sample
	The assay is: • currently not loaded on the machine • assigned to the selected sample
	The assay is: • currently loaded on the machine • not assigned to the selected sample
	The assay is: • currently loaded on the machine • assigned to the selected sample

*Table 6-26: Assay status***NOTE**

As soon as a test is started, the status changes to grey (unselected) and may be assigned again, even if the previous test is still running

Controls Group The **Control** group allows the user to select a particular reagent integral for the ordered control tests.

Function	Description
Control ID	The control ID (i.e. the content of the bar-code).
Name	The name of that control.
Lot	The control lot number.
Expiry	The control expiration date.
Assay	The list of all assays that are have been assigned to that control in the Selection Group. Note: select an assay to use the “These kits” option for that assay.
Range	The expected concentration range in user units, separated with “...”.
Any kit/ These kits	When Any kit is selected, then the system will decide which integral to use to run the control. When These kits is selected, then it is possible to decide and pick one or more integrals from the integral list for the assay selected in the Assay list. The selected integrals will be used to run that control. If no integral is loaded, then Any kit will be selected and These kits is disabled.
All/None	If not all inserted kits are selected, then this button selects all. If all are selected, then this button unselects all. In any case, the option These kits will become selected.
Lot	The lot number of each integral that is loaded for the selected assay.
Kit	The kit number of each integral that is loaded for the selected assay.
Lane	The lane number where each integral is loaded for the selected assay.
Tests	The number of available determinations of each integral that is loaded for the selected assay.

Table 6-27: Functions of the “Control” group

6.3.2 Sub Category Ancillary

The sub category **Ancillary** shows the ancillary reagents that are currently loaded on the instrument.

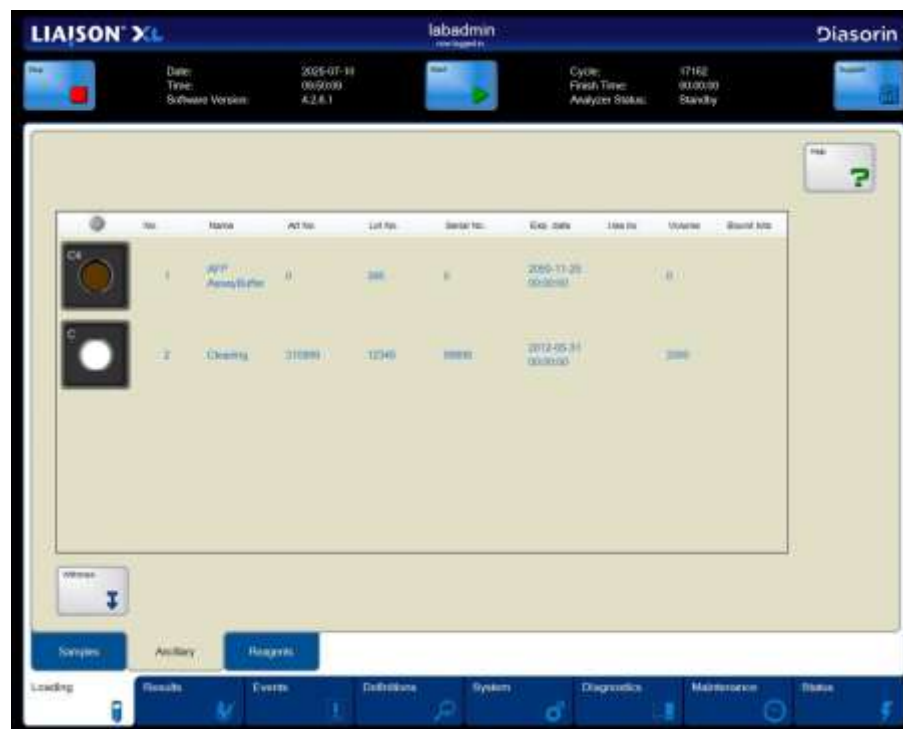


Figure 6-15: Sub category **Ancillary**

Function	Description
Withdraw	If it is necessary to remove the ancillary rack during a run, press this button to suspend the pipettor access. Re-insert the used ancillaries as soon as possible. Note: this could lead to test failures.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-28: Functions of the **Ancillary** sub category

Column	Description
No	Position of the ancillary reagent in the ancillary rack.
Name	Name of the ancillary reagent.
Art No.	Article number of the ancillary reagent (the colour represents the cap colour).
Lot No.	Lot number of the ancillary reagent.
Serial No.	Serial number of the ancillary reagent.
Exp. date	Date and time when the ancillary reagent will expire.
Use by	Onboard stability expiration date.
Volume	Available liquid volume in the bottle.
Bound lots	If there is an entry, it is possible to use integrals of the related assay with the reported lot number.

Table 6-29: Columns of the **Ancillary** sub category table

Off-line Status

If an ancillary reagent is off-line, the descriptive text is displayed in grey.

Possible reasons:

- No liquid found.
- The expiration date is exceeded.
- The ancillary reagent has a data recognition issue.

6.3.3 Sub Category Reagents

The sub category **Reagents** can be divided into the **Integrals** group (in the lower part) showing the reagent integrals that are currently loaded on the instrument, and into the **Details** group displaying detail information for any integral that is currently selected. Moreover, the sub category **Reagents** provides a button to start a calibration, and a button to view the calibrations.



Figure 6-16: Sub category **Reagents**

NOTE

See chapter 5.7.1.1 for details about the integral status display.

Function	Description
Calibrate	Starts the calibration of a selected integral. For assays that share calibration within a kit lot, this calibration will be available for all integrals of that kit lot, no matter if loaded on-board or not. If calibration cannot be done (e.g. external calibrators not loaded) a pop-up will inform. In this case, no calibration will be created, and no jobs will be scheduled.
View Calibrations	Shows the calibration dialog and selects the valid calibration for the selected integral, if any.
Info	Opens the Online Help and displays the documents related to the selected integral.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-30: Functions of the **Reagents** sub category

CAUTION

A calibration cannot be started if any of the following occurs:

- another calibration is ongoing for the same integral
- another calibration is ongoing for another integral of the same lot (if that assay shares the Working Curve)
- the calibrators are external and not present onboard
- starters, calibrators, reagents are missing or empty
- starters or reagents are expired

Integrals Group	Function	Description
	1 ... 30	Shows the integrals in the reagent loading bay lanes. Click on a loaded integral to show details (see 'Group Details').

Table 6-31: Functions of the **Integrals** group

Details Group	Function	Description
	Abbreviation	Abbreviation of the assay.
	Article No.	Identification code of the selected integral that allows the LIAISON® XL system to associate the integral to an assay.
	Booked Tests	Assigned but not started tests.
	Calibration Status	Status of the calibration (e.g. valid, not valid).
	Expiry Date	Date and time when the reagent integral will expire. Note: this is the last day when that reagent integral is allowed to be used.
	Integral Layout	Parameter that allows the LIAISON® XL system to identify the geometric characteristics of the integral
	Integral Status	Status of the integral availability: • Online: The integral is useable • Offline: The integral cannot be used. The abbreviation is displayed in grey. Possible reasons: • No liquid found. • The expiration date is exceeded. • The ancillary reagent has a data recognition issue. • The compatible assay protocol version is not loaded.
	Kit No.	Kit number of the reagent integral.
	LIS alias	Assay name on the LIS system.
	Lot No.	Lot number of the reagent integral.

Master Curve ID	The ID of the calibration mastercurve used for this reagent integral.
On-board expiry date	Last date when the reagent integral can be used once it has been inserted on-board.
Original No. of tests	Max. number of tests with a new integral.
Remaining Calibrations	Remaining number of calibrations.
Remaining Tests	Remaining number of determinations for the selected integral. The number is updated (decremented by one) as soon as the first aspiration event for a determination occurs.

Table 6-32: Functions of the **Details** group

6.4 Main Category Results

The results of the sample tests or calibrations can be accessed via the main category **Results** as well as its several sub categories.

Sorting and Searching

See chapter 6.1.2.

6.4.1 Sub Category All

The sub category **All** shows all entries of applied, started, and finished worklists. This sub category does not include calibrations and archived results.

All items that are here can be found also in one or more of the sub categories: **Worklist**, **Ongoing**, **Done**, **Failed** or **Controls**.

Sample ID	Assay	Measured Date	Status	Stratum Factor	RLI	Flags
HCVNS	HCVNS		False			
BHCVNSA	HCVNS	2010-07-19 11:15:58	Measured		151205	
BHCVNSA	HCVNS	2010-07-19 15:45:12	Measured		160803	
301	HCVNS	2010-07-19 16:23:16	Measured		302	C
302	HCVNS	2010-07-19 16:23:36	Measured		309	C
303	HCVNS	2010-07-19 16:23:58	Measured		300	C
304	HCVNS	2010-07-19 16:24:18	Measured		305	C
305	HCVNS	2010-07-19 16:24:38	Measured		321	C
306	HCVNS	2010-07-19 16:25:00	Measured		306	C
307	HCVNS	2010-07-19 16:25:20	Measured		298	C
308	HCVNS	2010-07-19 16:25:42	Measured		302	C
309	HCVNS	2010-07-19 16:26:02	Measured		300	C
310	HCVNS	2010-07-19 16:26:23	Measured		309	C
311	HCVNS	2010-07-19 16:26:43	Measured		322	C
312	HCVNS	2010-07-19 16:27:08	Measured		292	C

Figure 6-17: Sub category **All**

Function	Description
Delete	Deletes one or more entries (see chapter 6.4.1.4). Note: only entries in status “to do”, “placed”, “measured”, “done” and “failed” can be deleted.
Details	Opens the Result Details display for the selected entry (see chapter 6.4.1.3).
Download	Sends a "query all" message to a LIS system to initiate transmission of workorders. The LIAISON® XL software shows an information dialog about the progress and errors.
Export	Opens the Export display to export one or more entries to a file (see chapter 6.4.1.2).
Filter	Opens the Select Filter display (see chapter 6.4.1.5).
New Workorders	Opens the New Workorder display (see chapter 6.4.1.1)
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-33: Functions of the **All** sub category

Column	Description
Sample ID	Shows the sample ID.
Assay	Shows the assigned assay.
Measured Date	Expected result date and time.
Status	Shows the status of the entry (To do , Placed , Scheduled , Active , Measured , Done , Failed), see below.
Dilution Factor	Multiplication factor for the result (only for diluted tests).
RLU	Shows the raw results (in Relative Light Units).
Flags	List of flags. For details about the flags see chapter 5.9.5.

Table 6-34: Standard columns of the **All** sub category

Result Status
Descriptions

Status	Description
<i>To do</i>	sample not present on board, not started yet
<i>Placed</i>	sample present on board, not started yet
<i>Scheduled</i>	starting soon
<i>Active</i>	under performance
<i>Measured</i>	completed but no dose received
<i>Done</i>	successfully completed
<i>Failed</i>	unsuccessfully completed

*Table 6-35: Result status descriptions***NOTE**

In case a sample test is performed with two or more replicates and its status is “failed”, and there are some replicates that still need to be started, they may be restarted when a new routine is started. In this case, the entire sample test would become “active” again.

6.4.1.1 New Workorders

This feature allows assigning assays to samples that are not loaded on the sample area.



Figure 6-18: New worklist display

Function	Description
Select All/Unselect All	Works as “Select/Unselect All” button, if the “Lock button” is set to “closed”.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-36: Functions

Column	Description
Type	Shows an empty cell for samples or a symbol for calibrators and controls (see chapter 6.3.1).
SID	Shows the sample ID. Note: the sample ID must be unique.
!	Shows an exclamation mark for samples with STAT priority.

Table 6-37: Columns of the worklist table

Selection Tab
(Patient Samples)

Function	Description
Assay Selection in Group	Assays are organized in groups. First it is necessary to choose the assay group. After that it is possible to select one or more assays.
Profile Selection	Enables to select a profile (contains several assays, see chapter 6.6.5). Use the arrow buttons to show all available profiles.

Table 6-38: Functions of the **Selection** tab – Patient Samples

Selection Tab (Control Samples)

Function	Description
Assay Selection	Assays that are available for that control are listed and can be selected.
Control Details	The Control Details section shows the ControlID, ControlName, Control Lot and Expiration Date for the selected control.

Table 6-39: Functions of the [Selection](#) tab– Control Samples

NOTE

It is necessary to assign at least an assay to at least one sample in order to have access to the other features of the [New Workorder](#) display.

Demographics Tab

Function	Description
Sample ID	Shows the sample ID (it is not possible to edit the sample ID).
Patient ID	ID of the patient.
First Name	First name of the patient.
Initials	Patient name initials.
Last Name	Family name of the patient.
Date of Birth	Date of birth of the patient.
Patient Location	Location of the patient.
Sender	Name or code of the doctor. Allows to select among pre-defined list of senders.
Sex	Gender of the patient (Female , Male , or Unknown).

Table 6-40: Functions of the [Demographics](#) tab

NOTE

Detailed information of the [Demographics](#) group is only shown if the user has the access right “Patient Privilege” (see chapter 6.7.5.1).

NOTE

This tab is not available for control samples.

Dilutions Tab

Function	Description
<i>Dilutions available for</i>	Shows all available dilution factors. Note: for combi assays, the combi fathers or the combi sons will be shown, depending on specific assays.
<i>Selected Assay(s)</i>	Shows all selected assay(s).

Table 6-41: Functions of the **Dilutions** tab

NOTE

This tab is not available for control samples.

Replicates Tab

Column	Description
<i>Assay</i>	Shows the assigned assay.
<i>Replicates</i>	Number of replicates (1 to 20). The replicates can only be increased compared to the original value.
+	Increments the selected replicate number.
-	Decrements the selected replicate number.

Table 6-42: Columns of the **Replicates** tab table

NOTE

This tab is not available for control samples.

6.4.1.2 Export

The **Export** display allows the exporting of one or more entries to a file.

Figure 6-19: **Export** display

Selection Group	Function	Description
	All Records	Exports all entries from the list.
	Range	Exports only entries with the specified conditions <i>By</i> , <i>From</i> , and <i>To</i> from the list.
	Selected Records	Exports only the selected entries from the list.
	Today's Records	Exports only today's entries from the list.

Table 6-43: Functions of the **Selection** group

Export Settings Group	Function	Description
	Export To	The selected items shall be exported either to a File .
	Format	Format (Text) in which results shall be exported.
	Browse	Opens the Select file dialog to select a folder. This folder name will be displayed in the field next to the browse button. If a file with the same name, extension and path is already present, the system will prompt a pop-up asking if the file shall be overwritten or not.

Table 6-44: Functions of the **Export Settings** group

6.4.1.3 Result Details

The **Result Details** display is used to display all available information for a test.

Note: the layout may vary depending on the sample and assay characteristics.



Figure 6-20: **Result Details** display

Function	Description
Assay	Shows the assigned assay.
Dilution Factor	Dilution factor for the result (only for diluted tests).
Position in Rack	Tube position in sample rack where the sample was aspirated from.
Rack lane	Lane in the loading bay for sample racks where the sample rack was located.
Result Time	The date/time when the result was measured or the expected result time if the test is Active .
Sample ID	Shows the sample ID.
Status	Shows the status of the entry (To do , Placed , Scheduled , Active , Measured , Done , Failed), see chapter 6.4.1.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-45: Functions of the **Result Details** display

Depending on the used assay(s) the **LIAISON® XL** software will show the following details/values:

	Regular assay	Combi assay
Assay	Yes	Yes
Dilution Factor	Yes	List of the dilutions for each combi son
Position in Rack	Yes	Yes
Rack lane	Yes	Yes
Result Time	Yes	Calculation date/time
Sample ID	Yes	Yes
Status	Yes	Yes (combining the status of the combi sons)

Table 6-46: Shown details/values

Results Group

Function	Description
Result (Average)	Calculated mean RLU result in user units, adjusted with the dilution factor. Below the mean result, the qualitative label is shown (only if defined for the used assay).
Result CV	Shows the coefficient of variation (%) for the concentration result.
RLU (Average)	Shows the mean RLU result.
RLU CV	Shows the coefficient of variation (%) of the RLU result.

Table 6-47: Functions of the **Result** group

	Description
Flag Summary	List of all flags associated to this specific test, displayed as complete description. For details about the flags see chapter 5.9.5.
Replicate Results	List containing all replicate concentration results in user units (calculated and converted for each single replicate RLU result).
Replicate RLU	List containing all replicate RLU results.
Flags	List of flags per replicate. For details about the flags see chapter 5.9.5.

Table 6-48: Columns of the **Result** group tables

Depending on the used assay(s) the **LIAISON® XL** software will show the following result details/values:

	Regular assay	Combi assay
Result (Average)	Dose, Qualitative label	Dose and/or Qualitative label
Result CV	Yes	No
RLU (Average)	Yes	No
RLU CV	Yes	No
Flag Summary	Yes	Yes
Replicate Results	Yes	No
Replicate RLU	Yes	No
Flags	Yes	Yes

Table 6-49: Shown result details/values

Reagents Group	Function	Description
	Ancillary on-board expiration date	Onboard stability expiration date for the ancillary reagent (if present). Note: ancillaries expire at midnight of the displayed date.
	Ancillary reagents kit No.	Kit number of the used ancillary reagent (if present).
	Ancillary reagents lot No.	Lot number of the used ancillary reagent (if present).
	Calibration expiration date	Expiration date of the calibration used for result calculation. Note: calibrations expire at midnight of the displayed date.
	Calibration ID	Unique identifier of the calibration used for result calculation.
	Kit expiration date	Shelf expiration date of the used reagent integral. Note: kits expire at midnight of the displayed date.
	Kit Lot No.	Kit lot number of the used reagent integral.
	Kit No.	Kit number of the used reagent integral.
	Kit on-board expiration date	On-board stability expiration date of the used reagent integral. Note: kits expire on-board at midnight of the displayed date.
	Starter 1 lot No.	Lot number of the used starter 1.
	Starter 2 lot No.	Lot number of the used starter 2.

Table 6-50: Functions of the **Reagents** group**NOTE**

For Combi Assays, this tab contains all the combi sons information.

Process Group	Function	Description
	<i>Archived by</i>	Name of the user, who was logged in when the result was archived.
	<i>Archiving Time</i>	Date and time when the result was archived.
	<i>Calculated by*</i>	Name of the user, who was logged in when the result calculation was done.
	<i>Calculation Time*</i>	Date and time when the result was calculated.
	<i>Processed by*</i>	Name of the user, who was logged in when the test was started.
	<i>Processing Time*</i>	Date and time when the first aspiration occurred for the test. Note: In case of two or more replicates this time refers to the first replicate.
	<i>Sent by</i>	Name of the user, who was logged in when the result was sent to LIS.
	<i>Sent to LIS</i>	Date and time when the result was sent to LIS.
	<i>STAT [y/n]*</i>	Shows "Y" for samples with STAT priority, "N" for normal priority samples.

Table 6-51: Functions of the **Process** group

NOTE

For the fields marked with *, in case of Combi Assays, this tab contains the information for each combi son.

Patient Group	Function	Description
	<i>Date of birth</i>	Date of birth of the patient.
	<i>Sender</i>	Name or code of the doctor who will analyse the result.
	<i>Gender</i>	Gender of the patient (<i>Female</i> , <i>Male</i> , or <i>Unknown</i>).
	<i>Location</i>	Location of the sample provenience.
	<i>Name</i>	Patient name.
	<i>Pat.-ID</i>	Unique ID used to identify the patient on a LIS system.

Table 6-52: Functions of the **Patient** group

6.4.1.4 Delete Data



Figure 6-21: Delete Data display

Function	Description
All Records	Deletes all entries from the list.
Range	Deletes only entries with the specified conditions <i>By</i> , <i>From</i> , and <i>To</i> from the list.
Selected Records	Deletes all selected entries from the list.
Today's Records	Deletes all entries from this day from the list.

Table 6-53: Functions of the Delete Data display

6.4.1.5 Select Filter



Figure 6-22: Select Filter display

Function	Description
All Records	Selects all entries from the list.
Range	Selects only entries with the specified conditions <i>By</i> , <i>From</i> , and <i>To</i> from the list.
Today's Records	Selects all entries from this day from the list.

Table 6-54: Functions of the Select Filter display

6.4.2 Sub Category Worklist

The sub category **Worklist** shows only entries of applied and started tests with status **To do** and **Placed**.

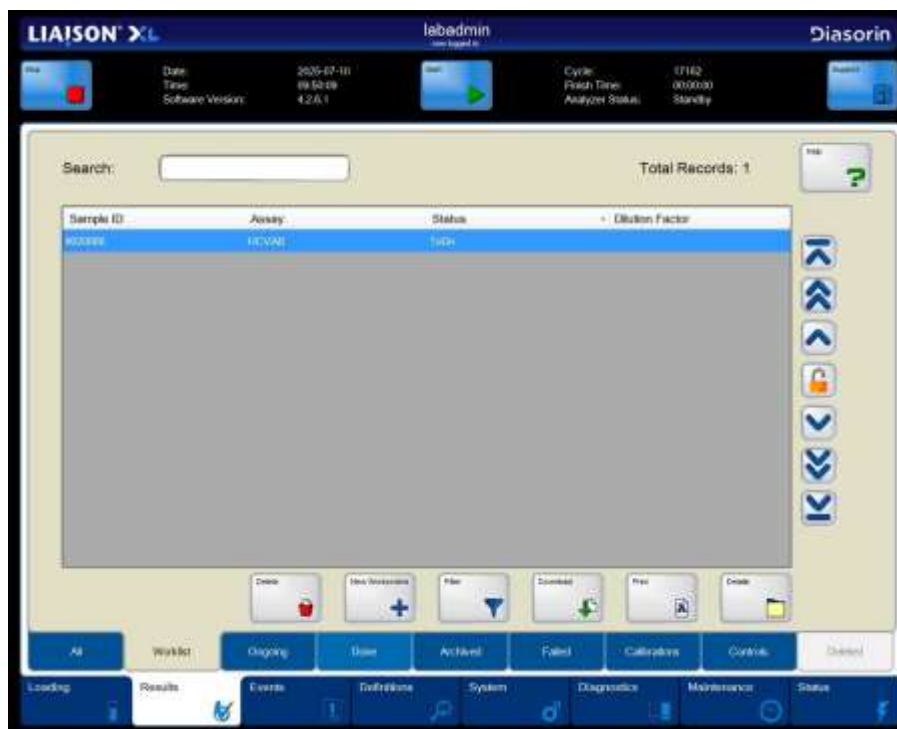


Figure 6-23: Sub category **Worklist**

Function	Description
Delete	Deletes one or more entries (see chapter 6.4.1.4).
Details	Opens the Result Details display for the selected entry (see chapter 6.4.1.3).
Download	Sends a "query all" message to a LIS system to initiate transmission of workorders. The LIAISON® XL software shows an information dialog about the progress and errors.
Filter	Opens the Select Filter display (see chapter 6.4.1.5).
New Workorders	Opens the New Workorder display (see chapter 6.4.1.1).
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-55: Functions of the **Worklist** sub category

Column	Description
Sample ID	Shows the sample ID.
Assay	Shows the assigned assay.
Status	Shows the status of the entry (To do , Placed).
Dilution Factor	Multiplication factor for the result (only for diluted tests).

Table 6-56: Standard columns of the worklist table

6.4.3 Sub Category Ongoing

The sub category **Ongoing** shows only entries of started worklists with status **Scheduled**, **Active**, and **Measured**.

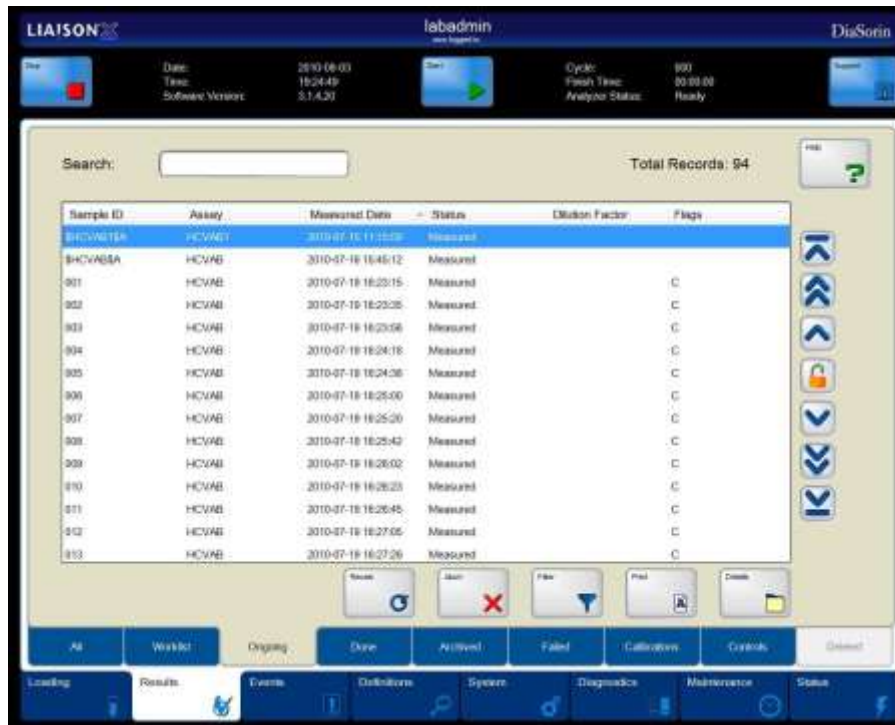


Figure 6-24: Sub category **Ongoing**

Function	Description
Details	Opens the Result Details display for the selected entry (see chapter 6.4.1.3).
Filter	Opens the Select Filter display (see chapter 6.4.1.5).
Abort	Turns the test into “failed” and aborts the related processing (see chapter 6.4.1.5).
Recalc	Recalculates the currently selected entries, using the most recent calibration for the assigned assay. For Combi Assays, all results for the same assay family are recalculated. Note: do not use for “Active” tests.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-57: Functions of the **Ongoing** sub category

Column	Description
Sample ID	Shows the sample ID.
Assay	Shows the assigned assay.
Measured Date	Expected result date and time.
Status	Shows the status of the entry.
Dilution Factor	Dilution factor for the result (only for diluted tests).
Flags	List of all flags. For details about the flags see chapter 5.9.5.

Table 6-58: Columns of the ongoing tests table

6.4.4 Sub Category Done

The sub category **Done** shows only entries of finished worklists with status **Done**.

The screenshot shows the LIAISON XL software interface. At the top, there's a header with the LIAISON XL logo and some status information. Below the header, there's a search bar and a 'Total Records: 20' indicator. The main area displays a table with the following columns: Sample ID, Assay, Measured, Units, RLU, Result, Unit, Qualitative, and Flags. The table contains 20 rows of data, all with a 'Done' status in the Qualitative column. At the bottom, there are navigation buttons for 'All', 'Worklist', 'Import', 'View', 'Action', 'Filter', 'Calculate', and 'Cancel'.

Sample ID	Assay	Measured	Units	RLU	Result	Unit	Qualitative	Flags
01-P-001	HCNAB	2010-01-18 L		3000	0.001	0.001	Yes	
01-P-002	HCNAB	2010-01-18 L		31190	2.3	0.001	POS	
01-P-003	HCNAB	2010-01-18 L		2100	0.001	0.001	Yes	
01-P-004	HCNAB	2010-01-18 L		21000	2.3	0.001	POS	
HCNAB-01001	HCNAB	2010-01-18 L		3000	0.001	0.001	Yes	
HCNAB-01002	HCNAB	2010-01-18 L		30125	0.0	0.001	POS	
HCNAB-01003	HCNAB	2010-01-18 L		4100	0.000	0.001	Yes	
HCNAB-01004	HCNAB	2010-01-18 L		4101	0.000	0.001	Yes	
HCNAB-01005	HCNAB	2010-01-18 L		001000	0.1	0.001	POS	
HCNAB-01006	HCNAB	2010-01-18 L		000	0.000	0.001	Yes	
HCNAB-01007	HCNAB	2010-01-18 L		00007	0.4	0.001	POS	
HCNAB-01008	HCNAB	2010-01-18 L		001001	0.0	0.001	POS	
HCNAB-01009	HCNAB	2010-01-18 L		00000	0.0	0.001	POS	
HCNAB-01010	HCNAB	2010-01-18 L		00010	0.0	0.001	Yes	
HCNAB-01011	HCNAB	2010-01-18 L		000	0.001	0.001	Yes	

Figure 6-25: Sub category **Done**

Function	Description
Archive	Archives the currently selected entries. The archived entries will be shown in the sub category Archived . Note: This button is available only if automatic archiving is not enabled.
Delete	Deletes one or more entries (see chapter 6.4.1.4). Note: only entries in status “to do”, “placed”, “measured”, “done” and “failed” can be deleted.
Details	Opens the Result Details display for the selected entry (see chapter 6.4.1.3).
Export	Opens the Export display to export one or more entries to a file (see chapter 6.4.1.2).
Filter	Opens the Select Filter display (see chapter 6.4.1.5).
Recalc	Recalculates the currently selected entries, using the most recent calibration for the assigned assay. For Combi Assays, all results for the same assay family are recalculated.
Rerun	Reschedules one or more entries, opening a selection display (see chapter 6.4.1.5). Note: the entries will be set either to “placed” (if the sample is present on board) or to “to do” (if the sample is not present on board).
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-59: Functions of the **Done** sub category**NOTE**

Dose calculation will be done automatically by the system as soon as a valid calibration is available, provided that all the following conditions are met:

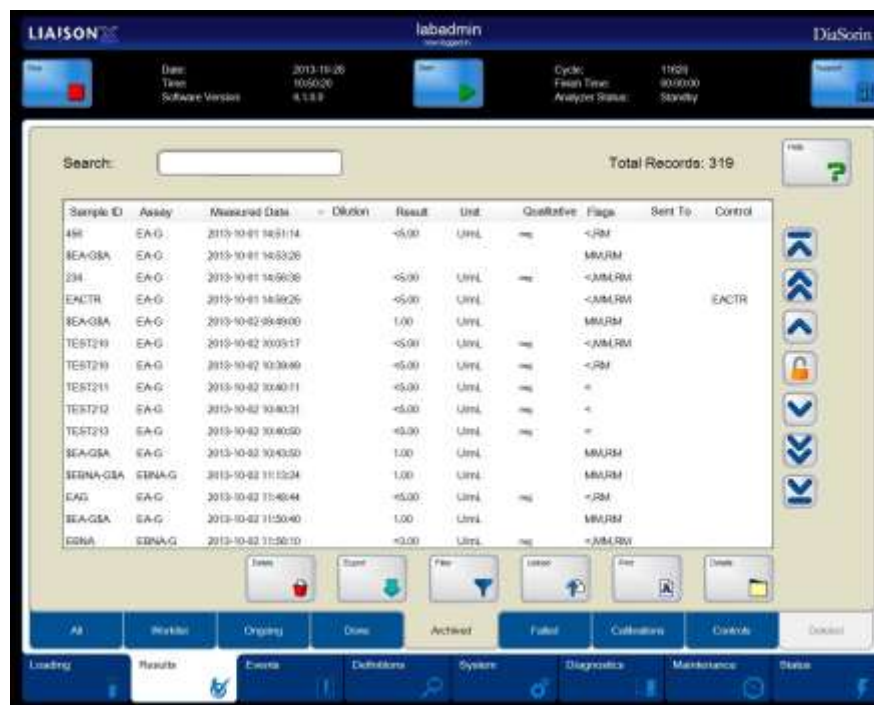
- the samples are successfully analyzed but without a dose (i.e. in status **Measured**),
- the samples were tested with the same kit (if the curve is not shared) or with a kit from the same lot (if the curve is shared),
- the sample RLU results were obtained no more than 18 hours before the calibration.

Column	Description
<i>Sample ID</i>	Shows the sample ID.
<i>Assay</i>	Shows the assigned assay.
<i>Measured Date</i>	Date and time when the test was measured.
<i>Dilution Factor</i>	Dilution factor for the result (only for diluted tests).
<i>RLU</i>	Shows the raw result (in Relative Light Units).
<i>Result</i>	Shows the dose result in user units. For some Combi Assays, this may be replaced by a qualitative result.
<i>Unit</i>	User units.
<i>Qualitative Label</i>	Shows the qualitative label for the result (if defined for the assay).
<i>Flags</i>	List of all flags. For details about the flags see chapter 5.9.5.

Table 6-60: Standard columns of the tests done table

6.4.5 Sub Category Archived

The sub category **Archived** shows only archived tests. The shown entries are not present in the sub category **All**.



The screenshot shows the LIAISON XL software interface with the 'Archived' subcategory selected. The table displays the following data:

Sample ID	Assay	Measured Date	Dilution	Result	Unit	Qualitative	Flags	Sent To	Control
486	EA-G	2013-10-01 14:51:14		<5.00	U/mL	neg	<RM		
BEA-GSA	EA-G	2013-10-01 14:53:26					MAURM		
234	EA-G	2013-10-01 14:56:06		<5.00	U/mL	neg	<JMLRM		
EACTR	EA-G	2013-10-01 14:58:26		<5.00	U/mL	neg	<JMLRM		EACTR
BEA-GSA	EA-G	2013-10-02 09:49:00		1.00	U/mL	neg	MAURM		
TEST219	EA-G	2013-10-02 10:03:17		<5.00	U/mL	neg	<JMLRM		
TEST219	EA-G	2013-10-02 10:30:46		<5.00	U/mL	neg	<RM		
TEST211	EA-G	2013-10-02 10:40:11		<5.00	U/mL	neg	<		
TEST212	EA-G	2013-10-02 10:40:31		<5.00	U/mL	neg	<		
TEST213	EA-G	2013-10-02 10:40:50		<5.00	U/mL	neg	<		
BEA-GSA	EA-G	2013-10-02 10:43:50		1.00	U/mL	neg	MAURM		
BEA-GSA	EBNA-G	2013-10-02 11:15:34		1.00	U/mL	neg	MAURM		
EAG	EA-G	2013-10-02 11:48:44		<5.00	U/mL	neg	<RM		
BEA-GSA	EA-G	2013-10-02 11:50:40		1.00	U/mL	neg	MAURM		
EBNA	EBNA-G	2013-10-02 11:50:10		<5.00	U/mL	neg	<JMLRM		

Figure 6-26: Sub category **Archived**

Function	Description
Delete	Deletes one or more entries (see chapter 6.4.1.4).
Details	Opens the Result Details display for the selected entry (see chapter 6.4.1.3).
Export	Opens the Export display to export one or more entries to a file (see chapter 6.4.1.2).
Filter	Opens the Select Filter display (see chapter 6.4.1.5).
Upload	Tries to transmit the selected entries to the LIS system (see chapter 6.4.1.2). The LIAISON® XL software shows an information dialog about the progress and errors.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-61: Functions of the **Archived** sub category

Column	Description
Sample ID	Shows the sample ID.
Assay	Shows the assigned assay.
Measured Date	Result date and time.
Dilution Factor	Dilution factor for the result (only for diluted tests).
Result	Shows the dose result in user units.
Unit	User defined units.
Qualitative label	Shows the qualitative label for the result (if defined for the assay).
Flags	List of all flags. For details about the flags see chapter 5.9.5.
Sent To LIS	Date and time when the result was sent to LIS.
Control Name	Name of the control.

Table 6-62: Columns of the archived tests table

NOTE

The system automatically performs a back-up and clean-up of archived results. Such results can be retrieved via the External Backup Viewer (see 6.11).

6.4.6 Sub Category Failed

The sub category **Failed** shows only entries of finished tests with status **Failed**.

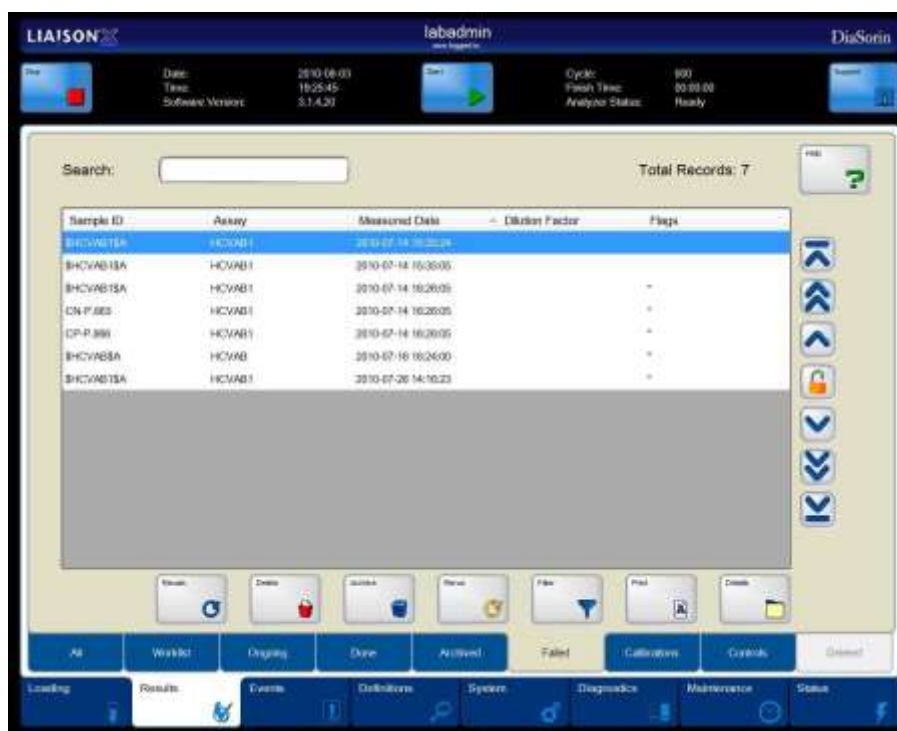


Figure 6-27: Sub category **Failed**

Function	Description
Archive	Archives the currently selected entries. The archived entries will be shown in the sub category Archived . Note: This button is available only if automatic archiving is not enabled.
Delete	Deletes one or more entries (see chapter 6.4.1.4).
Details	Opens the Result Details display for the selected entry (see chapter 6.4.1.3).
Filter	Opens the Select Filter display (see chapter 6.4.1.5).
Recalc	Recalculates the currently selected entries, using the most recent calibration for the assigned assay. For Combi Assays, all results for the same assay family are recalculated.
Rerun	Reschedules one or more entries, opening a selection display (see chapter 6.4.1.5). Note: the entries will be set either to “placed” (if the sample is present on board) or to “to do” (if the sample is not present on board).
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

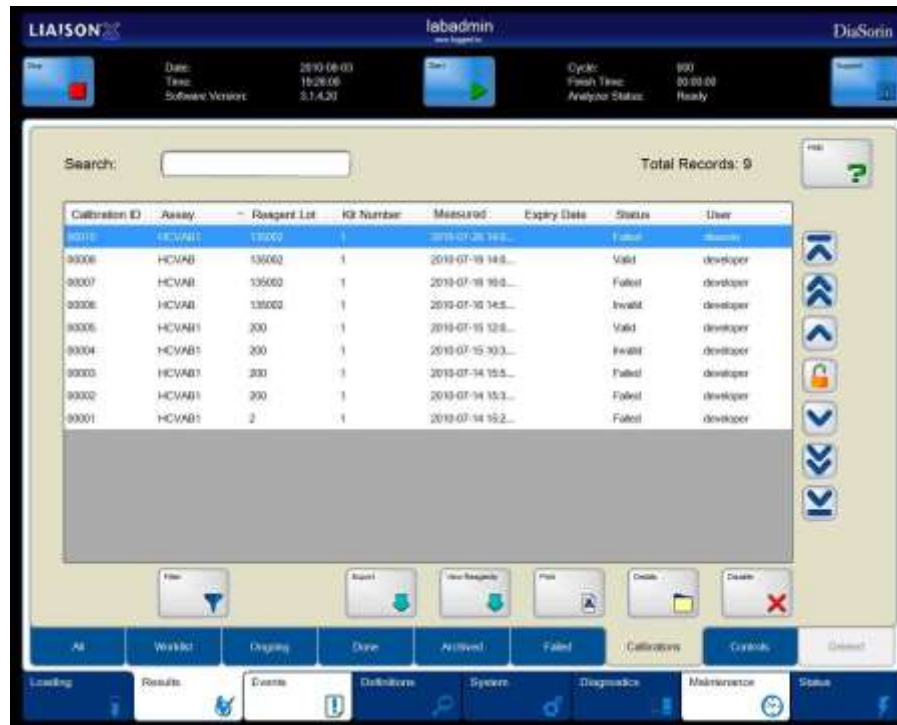
Table 6-63: Functions of the **Failed** sub category

Column	Description
Sample ID	Shows the sample ID.
Assay	Shows the assigned assay.
Measured Date	Result date and time.
Dilution Factor	Dilution factor for the result (only for diluted tests).
Flags	List of all flags. For details about the flags see chapter 5.9.5.

Table 6-64: Standard columns of the failed tests table

6.4.7 Sub Category Calibrations

The sub category **Calibrations** shows only calibration entries (in any possible status).



The screenshot shows the LIAISON XL software interface. At the top, there's a header with 'LIAISON XL' and 'Diasorin'. Below the header, there's a status bar showing 'Date: 2010-06-03', 'Time: 15:28:06', 'Software Version: 3.1.4.20', 'Cycle: 890', 'Time Time: 00:00:00', and 'Analyse Status: Ready'. The main area displays a table of calibration records. The table has columns: Calibration ID, Assay, Reagent Lot, Kit Number, Measured, Expiry Date, Status, and User. There are 9 records listed. Below the table, there are buttons for 'Filter', 'Print', 'New Requests', 'Find', 'Create', and 'Delete'. At the bottom, there's a navigation bar with buttons for 'All', 'Worklist', 'Ongoing', 'Done', 'Archived', 'Failed', 'Calibrations', 'Controls', and 'Default'.

Calibration ID	Assay	Reagent Lot	Kit Number	Measured	Expiry Date	Status	User
90019	HCVAB1	135003	1	2010-07-26 14.5...		Failed	developer
90006	HCVAB	135002	1	2010-07-19 14.5...		Valid	developer
90007	HCVAB	135002	1	2010-07-19 19.5...		Failed	developer
90008	HCVAB	135002	1	2010-07-19 14.5...		Invalid	developer
90005	HCVAB1	200	1	2010-07-15 12.8...		Valid	developer
90004	HCVAB1	200	1	2010-07-15 30.3...		Invalid	developer
90003	HCVAB1	200	1	2010-07-14 15.5...		Failed	developer
90002	HCVAB1	200	1	2010-07-14 15.3...		Failed	developer
90001	HCVAB1	2	1	2010-07-14 15.2...		Failed	developer

Figure 6-28: Sub category **Calibrations**

Function	Description
Details	Opens the Calibration Details display for the selected entry (see chapter 6.4.7.1).
Disable	Disables one or more selected calibration entries, i.e. changes the status of all "valid" or "created" calibrations among the selected ones to "not used". Note: all related integrals will need to be recalibrated if used for new testing.
Export	Opens the Export display to export one or more entries to a file (see chapter 6.4.1.2).
View Reagents	Opens the sub category Reagents (see chapter 6.3.3).
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-65: Functions of the **Calibrations** sub category

Column	Description
Calibration ID	Internal unique ID assigned to this calibration record. This ID will be not reused even after the calibration has been deleted.
Assay	Shows the assigned assay.
Reagent Lot	Lot number of the used reagent integral.
Kit Number	Kit number of the used reagent integral.
Measured Date	The date and time when the calibration RLU results were measured.
Expiry Date	Date when the calibration will expire. Note: calibrations expire at midnight of the displayed date.
Status	Shows the status of the entry (Created , Failed , Invalid , Valid , Expired , NotUsed), see below.
User	Name of the user, who was logged in when the calibration was started.

Table 6-66: Columns of the calibrations table

Calibration
Status
Descriptions

Status	Description
Created	The Calibration is just created, not yet measured.
Failed	One of the calibrators is failed. Note: a failed calibrator replicate out of three could be treated as outlier, and the calibration could result as valid.
Invalid	The calibrators were processed, but the calibration result has been rejected by the software.
Valid	The Calibration was successfully measured and calculated.
Expired	The Calibration was valid but the expiration period is over.
NotUsed	The status "not used" arises in any of the following situations: • when a newer calibration is validated; • when the calibration is manually disabled via the button "Disable"; • when the calibration is automatically disabled because of a starter lot change.

Table 6-67: Calibration status descriptions

6.4.7.1 Calibration Details

NOTE

All calibration values are not editable.



Figure 6-29: Calibration details display

Function	Description
Assay	Assay abbreviation.
Calibration ID	Internal unique ID assigned to this calibration record. This ID will be not reused even after the calibration has been deleted.
Expiry Date	Date when the calibration will expire. Note: calibrations expire at midnight of the displayed date.
Lot No.	Lot number of the used reagent integral.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.
Status	Shows the status of the entry (Created , Failed , Invalid , Valid , Expired , NotUsed), see chapter 6.4.7.

Table 6-68: Functions

Results Group

Function	Description
Backfit (Dose)	Displays the calibrator doses calculated on the new working curve.
CV% (RLU)	Displays the percent variation coefficient for RLU results of calibrator 1 or 2.
Deviation% (RLU)	Displays the percent deviation from the nominal RLU value for calibrator 1 or 2. If the mean RLU is out of the tolerance range, the mean RLU value and the exceeded limit are shown in red. In this case, the calibration will be invalid.
Expected (Dose)	Displays the nominal values of the dose of calibrator 1 or 2.
MaxCV% (RLU)	Displays the assay max RLU CV% for calibrator 1 or 2.
Mean (RLU)	Displays the mean RLU value for calibrator 1 or 2. If the mean RLU is out of the tolerance range, the mean RLU value and the exceeded limit are shown in red . In this case, the calibration will be invalid.
Range (Geometric Curve Check)	The allowed range for the Ratio field of the Geometric Curve Check, when defined.

Function	Description
Ratio (Geometric Curve Check)	The ratio between the RLU values of two given points of the working curve, when defined a range is defined. The range limits are shown in red if the ratio exceeds the tolerance range. In this case, the calibration will be invalid.
Target (RLU)	Shows the nominal values of the RLU results of calibrator 1 or 2 (if applicable).
Tolerances% (RLU)	The tolerance range for RLU values of calibrator 1 or 2.

Table 6-69: Functions of the **Results** group

Graphics Group The **Graphics** group shows the plot of the actual working curve (black) and the acceptance limits derived from the master curve (green). The concentration values are reported in user units. The graphic is available only for quantitative calibrations.

The software automatically adjusts the X and Y axis, in order to fit the obtained working curve.

Function	Description
Graphic	Displays the obtained working curve. X-Axis - Concentration (unit: in user unit depends on assay settings; scale: logarithmic) Y-Axis - RLU (scale: linear)
User Unit	User unit.
Master Curve ID	The ID of the master curve used for this calibration.

Table 6-70: Functions of the **Graphics** group

Traceability Group	Function	Description
	Ancillary lot No.	Lot number of the used ancillary reagent. Only visible if there are ancillaries in the reagent setup.
	Ancillary kit No.	Kit number of the used ancillary reagent. Only visible if there are ancillaries in the reagent setup.
	Expiry Date (Kit)	Shelf expiration date of the used reagent integral. Note: calibrations expire at midnight of the displayed date.
	Flag list	List of relevant result flags obtained for this calibration. For details about the flags see chapter 5.9.5.
	No. (Kit)	Kit number of the used reagent integral.
	On-board Expiry Date (Kit)	On board stability: Last date when the reagent integral can be used once it has been inserted on-board (check the product Instruction for Use for additional information). Note: reagents expire at midnight of the displayed date.
	Operator	Name of the user, who was logged in when the calibration was started.
	Run date/time	The date and time when the calibration RLUs were measured.
	Starter lot No.	Lot number of the used starter 1 or 2.

Table 6-71: Functions of the **Traceability** group

6.4.8 Sub Category Controls

The sub category **Controls** shows the results of the controls.

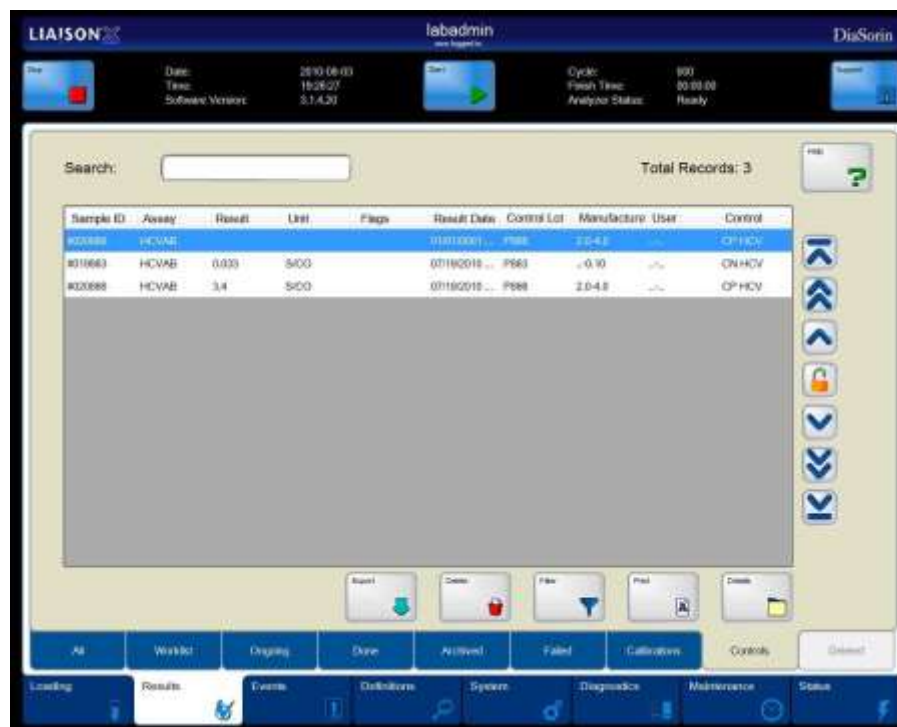


Figure 6-30: Sub category **Controls**

Function	Description
Delete	Deletes one or more entries (see chapter 6.4.1.4).
Details	Opens the Result Details display for the selected entry (see chapter 6.4.8.1).
Export	Opens the Export display to export one or more entries to a file (see chapter 6.4.1.2).
Filter	Opens the Select Filter display (see chapter 6.4.1.5).
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-72: Functions of the **Controls** sub category

Column	Description
Sample ID	Shows the sample ID.
Assay	Shows the assigned assay.
Range	The manufacturer range for the assigned assay.
Control Lot Number	The lot number of the control.
Result	The dose result of the control.
Unit	User units.
Flags	List of all flags. For details about the flags see chapter 5.9.5.
Result Date	Result date and time.

Table 6-73: Standard columns of the controls table

6.4.8.1 Control Details

The **Result Details** display is used to display all available information for a control.

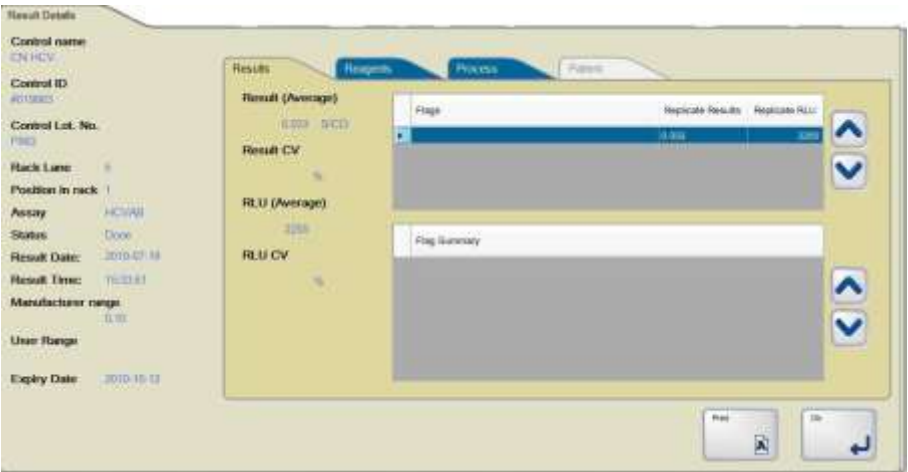


Figure 6-31: **Result Details** display

Function	Description
Assay	Shows the assigned assay.
Control ID	SID of the control
Control Lot. No.	Lot number of the used control.
Control name	Name of the control.
Expiry Date	Shelf expiration date of the control. Note: controls expire at midnight of the displayed date.
Manufacturer range	The low and high limits of this control for the assigned assay, in user units.
Position in Rack	Tube position in sample rack where the control was aspirated from.

Function	Description
Rack lane	Lane in the sample area where the sample rack was loaded when result was obtained.
Result Date	The date when the result was measured or the expected result date if the test is Active . For Combi Assays, it is the calculation date.
Result Time	The time when the result was measured or the expected result time if the test is Active . For Combi Assays, it is the calculation time.
Status	Shows the status of the entry (To do , Placed , Scheduled , Active , Measured , Done , Failed), see chapter 6.4.1. For Combi Assays, this combines the status of the combi sons.
User Range	The low and high limit of the reference range for this control, in user unit.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-74: Functions of the **Result Details** display

Results Group

Function	Description
Result (Average)	Calculated mean RLU result in user defined units. Below the mean result, the qualitative label is shown (only if defined for the used assay).
Result CV	Shows the coefficient of variation (%) for the concentration result.
RLU (Average)	Shows the mean RLU result.
RLU CV	Shows the coefficient of variation (%) of the RLU result.

Table 6-75: Functions of the **Result** group

Column	Description
Flag Summary	List of all flags associated to this specific control, displayed as complete description. For details about the flags see chapter 5.9.5.
Replicate Results	List containing all replicate concentration results in user units (calculated and converted for each single replicate RLU result).
Replicate RLU	List containing all replicate RLU results.
Flags	List of flags per replicate. For details about the flags see chapter 5.9.5.

Table 6-76: Columns of the **Results** group tables

Depending on the used assay(s) the **LIAISON® XL** software will show the following result details/values:

	Regular assay	Combi assay
Result (Average)	Dose	Dose
Result CV	Yes	No
RLU (Average)	Yes	No
RLU CV	Yes	No
Flag Summary	Yes	Yes
Replicate Results	Yes	No
Replicate RLU	Yes	No
Flags	Yes	Yes

Table 6-77: Shown result details/values

Reagents Group	Function	Description
	Ancillary on-board expiration date	Onboard stability expiration date. Note: ancillaries expire at midnight of the displayed date.
	Ancillary reagents kit No.	Kit number of the used reagent integral.
	Ancillary reagents lot No.	Reagent lot number of the used ancillary reagents.
	Calibration expiration date	Expiration date of the calibration used for result calculation. Note: calibrations expire at midnight of the displayed date.
	Calibration ID	Unique ID of the calibration used for result calculation.
	Kit expiration date	Shelf expiration date of the used reagent integral. Note: integrals expire at midnight of the displayed date.
	Kit Lot No.	Lot number of the used reagent integral.
	Kit No.	Kit number of the used reagent integral.
	Kit on-board expiration date	On-board stability expiration date of the used reagent integral. Note: integrals expire on-board at midnight of the displayed date.
	Starter 1 lot No.	Lot number of the used starter 1.
	Starter 2 lot No.	Lot number of the used starter 2.

Table 6-78: Functions of the **Reagents** group**NOTE**

For Combi Assays, this tab contains all the combi sons information.

Process Group	Function	Description
	<i>Archived by</i>	Name of the user, who was logged in when the result was archived.
	<i>Archiving Time</i>	Date and time when the result was archived or empty as long as it is not archived.
	<i>Calculated by</i>	Name of the user, who was logged in when the result calculation was done.
	<i>Calculation Time</i>	Date and time when the result was calculated or recalculated.
	<i>Processed by</i>	Name of the user, who was logged in when the control was started.
	<i>Processing Time</i>	Date and time when the first aspiration occurred for the job. Note: In case of two or more replicates this time refers to the first replicate.

Table 6-79: Functions of the **Process** group

6.5 Main Category Events

In the main category **Events**, all messages and errors occurred are listed according to their type.

When the main category **Events** is opened, then that sub category will be opened too, which has new content in it, i.e.:

1. the sub category **Messages** will be opened as long as there are unacknowledged messages,
2. the sub category **Event Log** will be opened.

In case of any fatal error a pop up is immediately and automatically displayed.

Sorting and Searching

See chapter 6.1.2.

6.5.1 Sub Category Event Log

The sub category **Event Log** lists in real time, any event that occurs on the system. This includes errors, log in data, result failures and other information that may help troubleshooting activities.

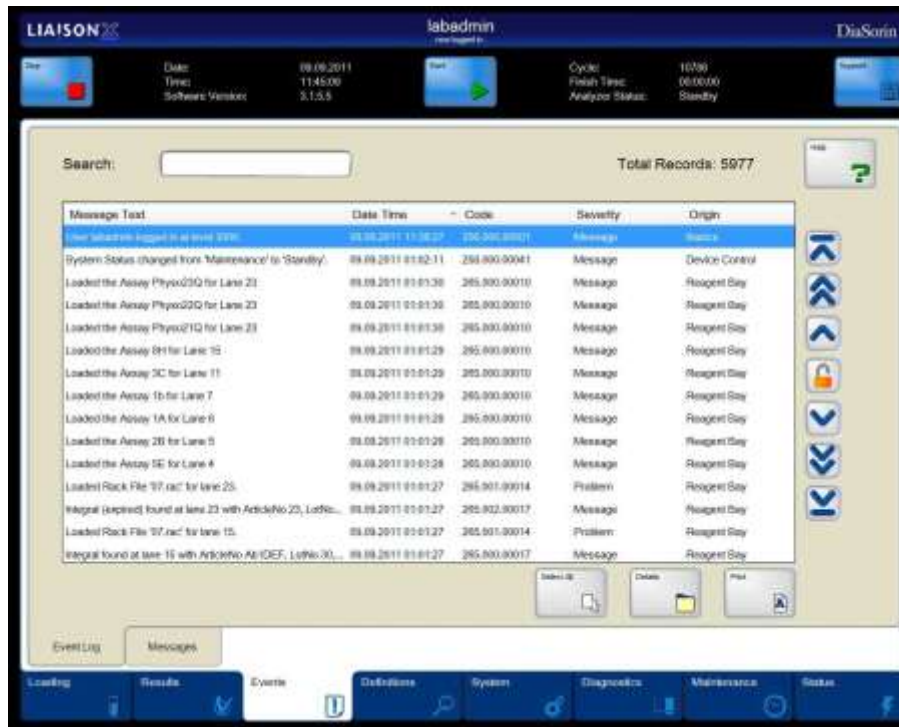


Figure 6-32: Sub category **Event Log**

Function	Description
Details	Shows details about the selected entry.
Select All	Select all event log entries.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-80: Functions of the [Event Log](#) sub category

Column	Description
Message Text	Shows the event message.
Date Time	Shows the date and time when the event occurred.
Code	Shows the code of the message.
Severity	Shows the level of the event (Message , Critical event , Warning).
Origin	Shows the name of the module which originated the event.

Table 6-81: Columns of the event log table

When the [Event Log](#) sub category is opened, the event log table is sorted chronologically in descending order. The sort order can be changed by clicking onto the headline of a column. Then the content of this column will be used as sort criterion. The sort direction can be toggled between ascending and descending by clicking onto this headline repeatedly.

NOTE

Events are described in chapter 9.1.

6.5.2 Sub Category Messages

The sub category **Messages** shows all messages that have not yet been acknowledged. Messages are special events containing information that shall be acknowledged by the user.

Every result flag will be shown first as an error message (see chapter 5.9.5).

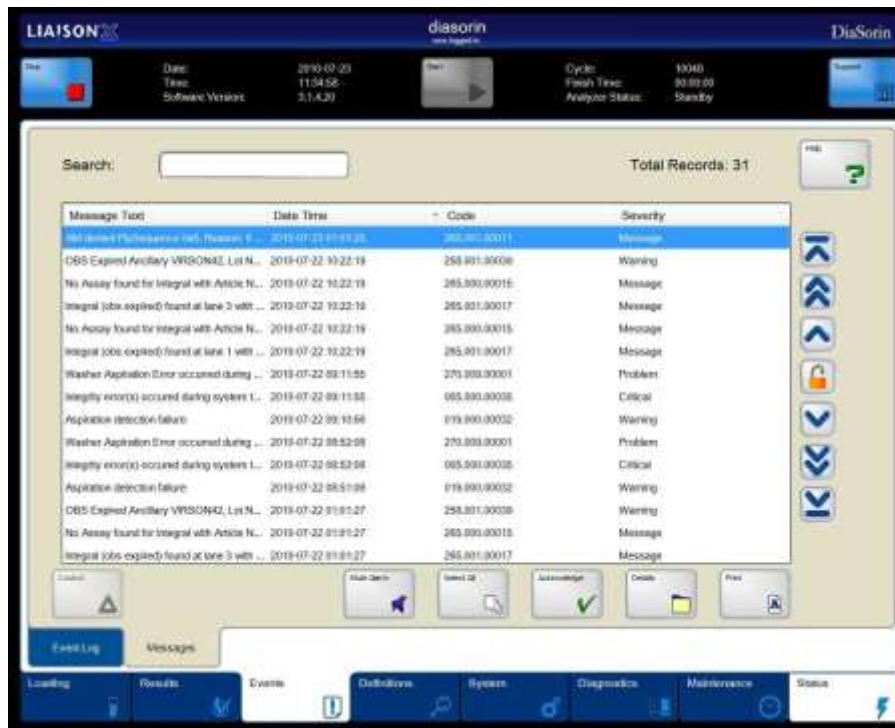


Figure 6-33: Sub category **Messages**

Function	Description
Acknowledge	To accept a selected message by clicking on the Acknowledge button. The message will be removed from the list, but it is still available in the sub category Event Log .
Details	Opens the Details Event display for the selected message.
Mute Alarm	Switches off the instrument beeper.
Control	Displays the sub category Controls . The button is only enabled if there are a “control out of range” events in the message list or upon login if such messages are still present. The button is disabled after it is pressed.
Select All	To select all message entries.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-82: Functions of the **Messages** sub category

Column	Description
Message Text	Shows the event message.
Date Time	Shows the date and time when the event occurred.
Code	Shows the code of the message.
Severity	Shows the level of the event (Message , Critical , Warning).

Table 6-83: Columns of the messages table

When the **Messages** sub category is opened, the messages table is sorted chronologically in descending order. The sort order can be changed by clicking onto the headline of a column. Then the content of this column will be used as sort criterion. The sort direction can be toggled between ascending and descending by clicking onto this headline repeatedly.

NOTE

Error messages are described in chapter 9.1.

NOTE

If the error re-occurs, please call local support.

NOTE

Every message triggers the audible alarm to beep. The emitted noise depends on the severity of the error. Some errors trigger also the visible alarm, if provided.

For errors that trigger the alarms repeatedly on, use the button **Mute Alarm** to turn them off. Acknowledging a message does not turn the alarms off.

NOTE

Pressing the **Help** button when the **Details Event** dialog is open will bring directly to the User Manual description for that message.

6.5.3 Fatal Errors

Fatal errors are a particular category of error messages that are given if the routine has been interrupted and cannot be recovered. The error message will be shown as soon as possible.

Name	Data
Description	Left arm, Z-axis, timeout when moving to home sensor
Comment	
Operator N...	diasorin
Event Date	17.11.2011 09:24:45
Severity	Fatal
EventID	253.000.00112
Origin	Pipettor
Cycle	0
Micro Cycle	209

OK

Figure 6-34: Error Message

6.6 Main Category Definitions

In the main category **Definitions**, its subcategories are; information on assays, controls, assay groups, rerun rules and profiles which can be accessed. Additionally, there are several editing possibilities available.

6.6.1 Sub Category Assay

In the subcategory **Assay**, all assays available in the **LIAISON® XL** system at that moment are indicated. In the table, the assay names and the article numbers and the assignment to an assay group are indicated. There is the possibility to access further information on the individual assays.

For loading new assays into the system, an import function is available.

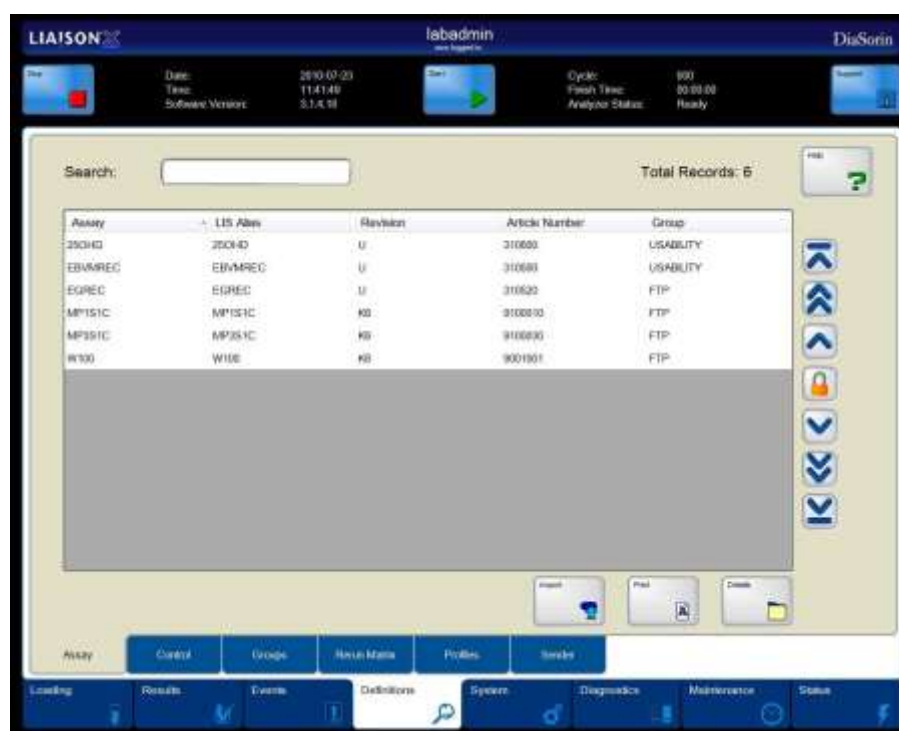


Figure 6-35: Sub category **Assay**

Function	Description
Details	Shows details about a selected assay (see chapter 6.6.1.1).
Import	Imports one or more assays from a file. This function is only available if the instrument is not running.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-84: Functions of the [Assay](#) sub category

NOTE

If an already existing assay is imported into the **LIAISON® XL** system, only those parameters of that assay will be overwritten which are not user editable. Parameters, which are user editable, will be maintained, unless differently explained by the system.

Column	Description
Assay	Assay name.
LIS Alias	Assay name on the LIS system.
Revision	Revision number of the assay.
Article Number	Article number of the assay.
Group	Organisation groups.

Table 6-85: Columns of the assays table

6.6.1.1 Assay Details

Figure 6-36: Details display

NOTE

If an already existing assay is imported into the **LIAISON® XL** system, only those parameters of that assay will be overwritten, which are not user editable. Parameters, which are user editable, will be maintained.

Function	Description
Abbreviation	Abbreviation property of the assay.
Article No.	Article number of the assay.
Control Replicates	Number of replicates for control samples, up to 20. It is only allowed to increase the number of replicates, and after to decrease but no lower than the default number (provided in the assay file).
Country Code	Country code of the assay.
Creation Date	Creation date of the assay.

LIS Alias	Assay name on the LIS system.
Name	Assay name.
Priority	Scheduling priority (1 to 200) of the assay. Assays with the highest priority number (starting from 200) will be processed before assays with lower priority number (up to 1) for samples within a rack (in case of Random Access mode) or within the entire sample area (in case of Batch mode).
Revision	Revision number of the assay. Only integrals compatible with this revision can be used.
Sample Replicates	Number of replicates for patient samples, up to 20. It is only allowed to increase the number of replicates, and after to decrease but no lower than the default number (provided in the assay file).
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-86: Functions

NOTE

Changing an assay priority would trigger changes in the order of assay execution, with the possible consequence of throughput changes.

NOTE

For combi assays, the system may run combi sons with the same number of replicates, independently from the number of replicates defined.

Column	Description
Groups	Organization groups. List of all groups, which the assay belongs to.

Table 6-87: Columns of the details table

Calibration Group	Function	Description
	Calibration Interval	Shows the validity period for calibrations.
	Calibrator Replicates	Shows the number of replicates to be run for calibrations.
	Calibration shared within kit lot	Yes: - The calibration is valid for kit lot (“Shared Working Curve” approach). No: - The calibration is valid for the specific integral (“Not Shared Working Curve” approach). If the default setting is No , it is not allowed to select Yes .

Table 6-88: Functions of the **Calibration** group

Calculation Group	Function	Description
	Conversion Factor	Conversion factor between default unit and user defined unit. Example: - Default unit: g/l - User defined unit: mg/l - Conversion factor: 1000
	Default Unit	Default unit.
	Digits	Shows the number of significant digits to be reported for the result and related ranges/thresholds.
	Result Aspect for host transmission	Selection for the result transmission to the host (Dose , Label , Both)
	Send replicates to host	Selection for the result transmission of the replicates to the host (Yes , No). Enabled only if one out of Sample Replicates and Sample Replicates is 2 or higher.
	User Unit	User defined unit (e.g. mg/l). See Conversion Factor above.

Table 6-89: Functions of the **Calculation** group

NOTE

Changes of the user unit and the conversion factor affect only new results.

All dose-related ranges are shown according to the user units, as the software automatically converts them.

It is necessary to completely save the changed user unit and the conversion factor and close the Assay detail page, before changing the Normal Range. Changing the Normal Range before closing the Assay detail page may result in a successive update of the Normal Range performed automatically by the system, based on the new user unit and the conversion factor.

Ranges Group

Function	Description
User Unit	User defined unit.
Normal Range	The low and high limit of the normal range for the assay, in user defined unit and adjusted for the dilution factor. When a result falls into this range, it will be provided with the corresponding flag. The low value must be smaller than the high value. The low limit is included and the high limit is excluded. If a limit field is left empty, the LIAISON® XL software will handle this as "do not care". This allows to define one-sided ranges ("0 ... X" or "Y .. +infinity") as well as "0 .. +infinity".
Assay Range	Shows the low and high limit of the assay range for the assay, in user defined unit and not adjusted for the dilution factor. When a result falls into this range, it will be provided with the corresponding flag; it will be shown as "<" followed by the low limit or ">" followed by the high limit. The low limit is included and the high limit is excluded. If a limit field is left empty the LIAISON® XL software will handle this as "do not care". This allows to define one-sided ranges ("0 ... X" or "Y .. +infinity") as well as "0 .. +infinity".
Overdilution Point	Shows the overdilution point for that assay, in user defined unit. If results get lower than the overdilution point it will be considered not valid and therefore the results will not reported (i.e. dose not given).
Font	Opens the Select Font display to pick up a font to be assigned to the currently selected qualitative label.
Color	Opens the Select Color dialog to pick up a color to be assigned to the currently selected qualitative label.

Table 6-90: Functions of the **Ranges** group

Column	Description
Range, Low Limit and Range, High Limit ,	The low and high limit for that corresponding qualitative range, in user defined units, for up to 5 qualitative settings. The low limit is included and the high limit is excluded. If a limit field is left empty the LIAISON® XL software will handle this as "do not care". This allows to define one-sided ranges ("0 ... X" or "Y .. +infinity") as well as "0.. +infinity". Example: Low: empty; high: 1; Label: neg Low: 1; high: 10; Label: eq Low: 10; high: empty; Label: POS
Label	The qualitative label to be applied to results within this range. That label is displayed using the dedicated font and color defined for that label.

Table 6-91: Columns of the ranges table

Dilutions Group Shows all (0.. max. 9) sample dilution factors, which are defined for the assay.

Function	Description
Delete	Deletes the currently selected sample dilution from the list of sample dilutions for the assay. A dilution can not be deleted if it is used in a rerun rule or in an existing worklist entry (To do, Placed, In process or Measured).

Table 6-92: Functions of the **Dilutions** group

Column	Description
<i>Factor</i>	Shows the dilution ratio as integer. The range can be 1 to 2500 or 1 to 900 depending on the settings defined by service personnel during setup of the analyzer.
<i>No.</i>	Shows the number of the factor.

*Table 6-93: Columns of the dilutions table***Audit Trails
Group**

Shows the history of changes of the:

- User unit/Conversion factor
- Sample replicates
- Normal range
- Calibration shared within kit lot

If the user changes one value out of those, or imports a new assay revision, then the **Audit Trails** group is activated and the user is prompted to type in a reason for the change. The audit trails are maintained after a new assay revision was imported.

Column	Description
<i>User</i>	Name of the user, who changed an entry.
<i>Date</i>	Shows the date when the change was made.
<i>Item</i>	Shows the changed field/function.
<i>From</i>	Original value.
<i>To</i>	New value.
<i>Reason</i>	Shows the reason of change.

Table 6-94: Columns of the dilutions table

6.6.2 Sub Category Control

In the subcategory **Control**, detailed information on the control definitions can be accessed.

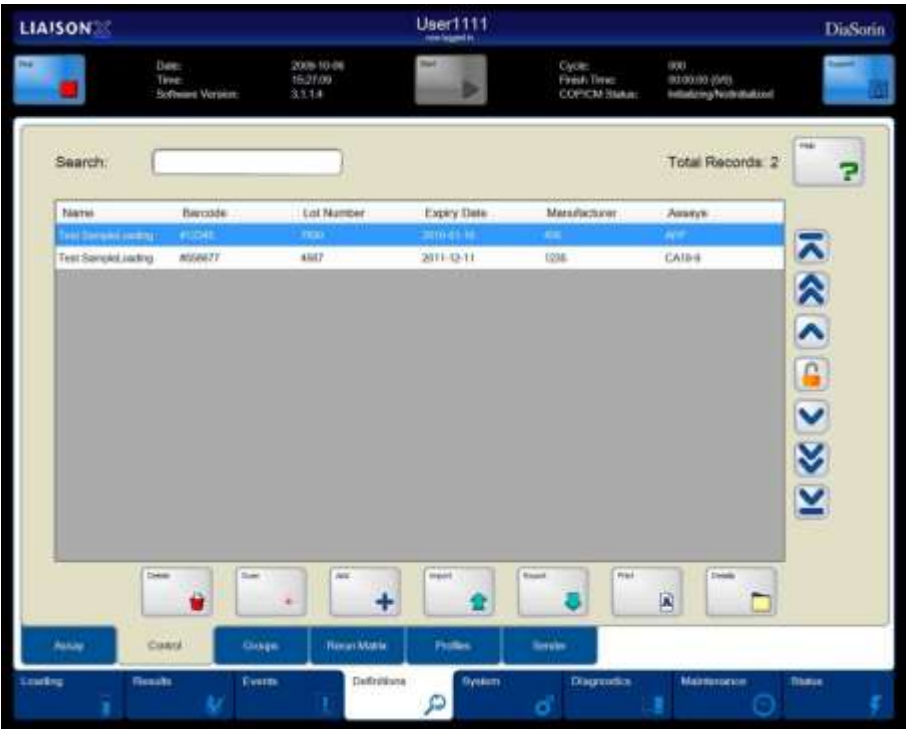


Figure 6-37: Sub category **Control**

Function	Description
Add	Adds a new control definition (see chapter 6.6.2.2).
Delete	Deletes one or more selected control definitions (see chapter 6.4.1.4).
Details	Shows details about a selected control definition (see chapter 6.6.2.1).
Export	Exports a control definition to a file.
Import	Imports a control definition from a file.
Scan	Enables to scan a bar-code of a control with a hand bar-code scanner, see chapter 5.6.3. The control will be added to the list.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print), see chapter 6.1.

Table 6-95: Functions of the **Control** sub category

Column	Description
Name	Shows the name of a control definition.
Barcode	Shows the bar-code of the control reagents.
Lot Number	Shows the Lot number of the control reagents.
Expiry Date	Shows the expiration day of the control reagents. Note: controls expire at midnight of the displayed date.
Manufacturer	Shows the manufacturer of the control reagents.
Assays	Shows all aligned assays.

Table 6-96: Columns of the controls table

6.6.2.1 Control Details

The **Control Details** display shows detailed information about a control definition. Several fields can be edited.

CAUTION

Controls must not be defined for logical combi assays: they could not result in a numerical result, therefore controls for logical combi assays are not supported by the system.

Figure 6-38: **Control Details** display

Function	Description
Add	Opens the Control Data Dialog to add a new assay control.
Assay Selection group	Shows all aligned assays.
Barcode-ID	Bar-code of the control.
Delete	Deletes the currently selected assay data control definition from the database.
Expiry Date	Expiration day of the control. Note: controls expire at midnight of the displayed date.
Lot Number	Lot number of the control.
Manufacturer	Manufacturer of the control.
Name	Name of a control definition. The control Name in combination with the Lot Number must be unique. Any sequence of alphanumeric characters (spaces and "-" are allowed) can be entered as a control Name.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-97: Functions

The data above can be read with an external reader from data control chart via 2-dimensional barcode.

6.6.2.2 Add Controls

Enables user to add a new control to the LIAISON® XL system.

Function	Description
Add	Opens the <i>Control Data Dialog</i> to add a new assay control.
Assay Selection group	Shows all aligned assays.
Barcode-ID	Bar-code of the control.
Delete	Deletes the currently selected assay data control definition from the database.
Expiry Date	Expiration day of the control. Note: controls expire at midnight of the displayed date.
Lot Number	Lot number of the control.
Manufacturer	Manufacturer of the control.
Name	Name of a control definition. The control Name in combination with the Lot Number must be unique. Any sequence of alphanumeric characters (spaces and "-" are allowed) can be entered as a control Name.

Table 6-98: Functions

Control Data
Group

Column	Description
Frequency	Defines, when the control definition must be performed. • After Calibrations • Every X Hours • Every Y Tests • Integral Begin • Ancillary Begin • With STAT
Manufacturer Range	The low and high limit of this control definition in user defined units (result is expected to be in this range).
Replicates	Defines a number of replicates to be used for control samples. If empty, the Control Replicates for the related assay is used.
Target CV	Contains the target value for the variation coefficient.
Type	To define whether this is an Accuracy or a Precision control.
User Range	The low and high limit of the reference range for this control, in user unit.

Table 6-99: Columns of the controls table

The **Manufacturer Range** can be read with an external reader from data control chart via 2-dimensional barcode.

NOTE

For assays that have an assay range lower limit defined, a control range lower limit set to 0 would cause the flags QL/UL to be reported whenever the result exceeds the assay range lower limit. Otherwise, a control range lower limit left empty does not cause a flag.

6.6.3 Sub Category Groups

In the subcategory **Groups**, there is the possibility to include assays in groups. It is necessary to include an assay in a group to be able to assign manually a patient sample to such assay.

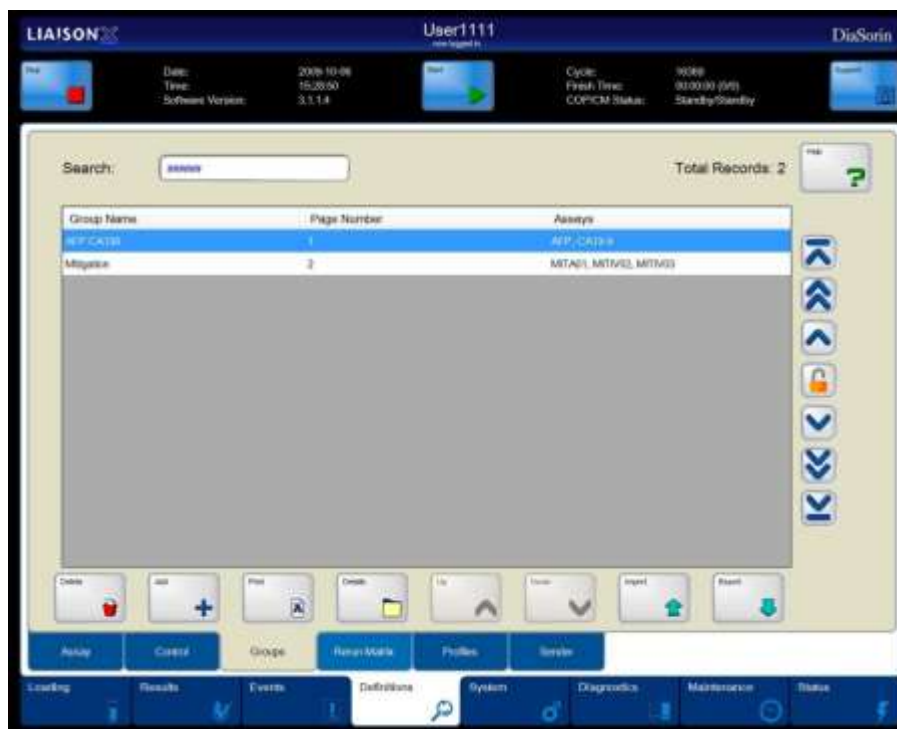


Figure 6-39: Sub category **Groups**

Function	Description
Add	Shows the Group Details display to add a new assay group (see chapter 6.6.3.1).
Delete	Deletes one or more selected assay groups (see chapter 6.4.1.4).
Details	Shows the Group Details display to show or edit the selected assay group (see chapter 6.6.3.1).
Export	Exports a group definition to a file. Note: such operation may be time consuming.
Import	Imports a group definition from a file. Note: such operation may be time consuming.
Up / Down	Moves the currently selected group one line up or down.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-100: Functions of the **Groups** sub category

Column	Description
Group Name	Shows the assay group name.
Assays	Shows all assigned assays.

Table 6-101: Columns of the groups table

6.6.3.1 Group Details: Details or Add

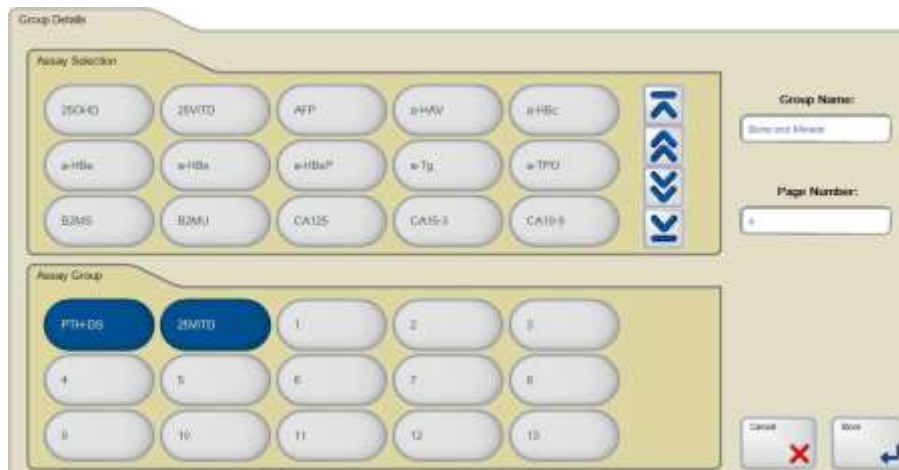


Figure 6-40: **Group Details** display

Function	Description
Assay Group	The Assay Group shows the name of all assigned assays (up to 15).
Assay Selection	Shows all available assays (unless they are prevented by usage). Click on the assay button to assign it to the group.
Group Name	Name of the assay group. The assay group name must be unique. Any sequence of alphanumeric characters (spaces and "-" are allowed) can be entered as an assay group name
Page Number	Used to display the groups in a specific order in the Assay Selection in Group in the subcategory Samples . This field is mandatory and must be unique.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-102: Functions

6.6.4 Sub Category Rerun Matrix

In the subcategory **Rerun Matrix**, there is the possibility to indicate, modify or generate the rerun rules.

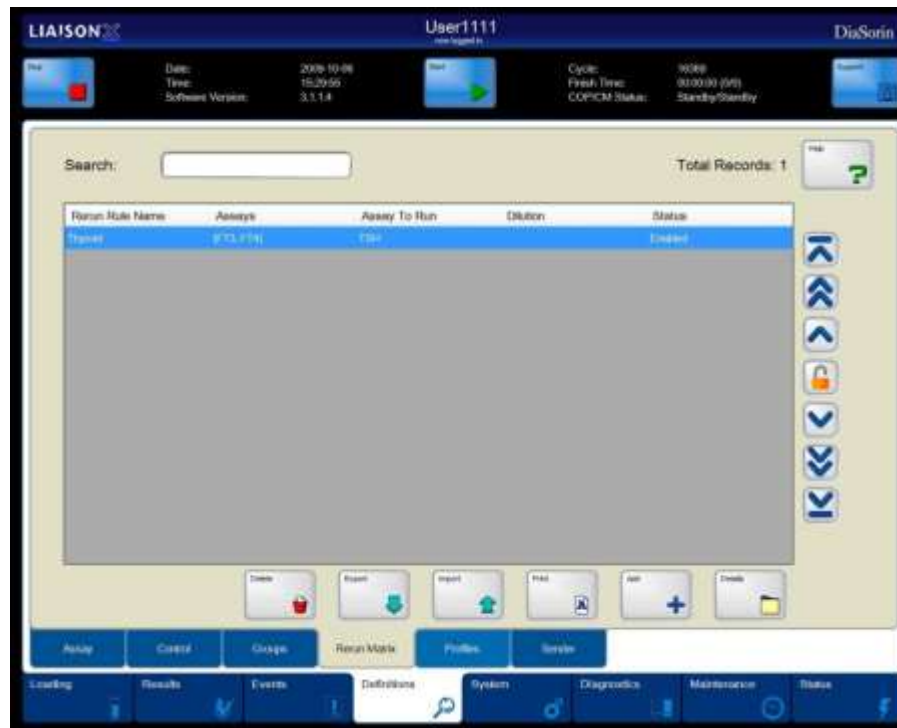


Figure 6-41: Sub category **Rerun Matrix**

Function	Description
Add	Shows the Rerun Rule Details display to add a new rerun rule (see chapter 6.6.4.1).
Delete	Deletes one or more selected rerun rules (see chapter 6.4.1.4).
Details	Shows the Rerun Rule Details display to show or edit the selected rerun rule (see chapter 6.6.4.1).
Export	Exports one or more selected rerun rules to a file.
Import	Imports one or more selected rerun rules from a file.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-103: Functions of the **Rerun Matrix** sub category

Column	Description
Rerun Rule Name	Shows the name of the rerun rules. The rerun rule name must be unique.
Assays	Shows the assay.
Assay To Run	Shows the assay that is launched if the conditions are satisfied.
Dilution	Dilution factor assigned to the assay.
Status	Shows the status (Enabled or Disabled) of the rerun rule.

Table 6-104: Columns of the rerun matrix table

6.6.4.1 Rerun Rule Details: Details or Add

Figure 6-42: Rerun Rule Details display

Function	Description
Enabled / Disabled	Allows disabling a rerun rule without deleting it.
Name	Name of the rerun rule. The rerun rule name must be unique and not longer than 20 characters. Any sequence of alphanumeric characters (spaces are allowed) can be entered as a rerun rule name.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-105: Functions

Conditions Group	Function	Description
	1 st Assay	Mandatory assay for the rerun rule. Assay 1 Click on the button to open a selection dialog. Pick up an assay in this dialog. Range 1 Specifies the low and high limit of the condition range. If empty the LIAISON® XL software will treat this as “do not care” and consider this condition as always true.
	2 nd Assay	Optional assay for the rerun rule. Assay 2 Click on the button to open a selection dialog. Pick up an assay in this dialog. Range 2 Specifies the low and high limit of the condition range. If empty the LIAISON® XL software will treat this as “do not care” and consider this condition as always true.
	And/Or	Evaluation condition: • And: Range 1 and range 2 must be fulfilled (both). • Or: Range 1 or range 2 must be fulfilled (only one).

Table 6-106: Functions of the **Conditions** group

Actions Group	Function	Description
	Dilution Factor	Dilution factor assigned to the assay.
	Priority	Whether the rerun rule is to be scheduled with Normal or STAT priority.
	Repetitions	Defines the number of times that assay shall be run for that sample.
	Assay	Click on the button to open a selection dialog. Pick up an assay (never run assays are excluded) in this dialog.

Table 6-107: Functions of the **Actions** group

NOTE

Tests that have been started via a Rerun Rule will not be evaluated against any Rerun Rule.

Samples, that have been erroneously removed while they were displayed as active, may not trigger a Rerun Rule evaluation even after reloading.

NOTE

The rerun rule evaluation will not be performed if the result of one of the two conditions is archived (manually or automatically) before the result of the other condition is done.

6.6.5 Sub Category Profiles

In the subcategory **Profile**, there is the possibility to arrange several assays as a profile. If the user assigns assays to samples, they can select a profile instead of all affected assays. In this way, it is possible to simplify recurrently test arrangements.

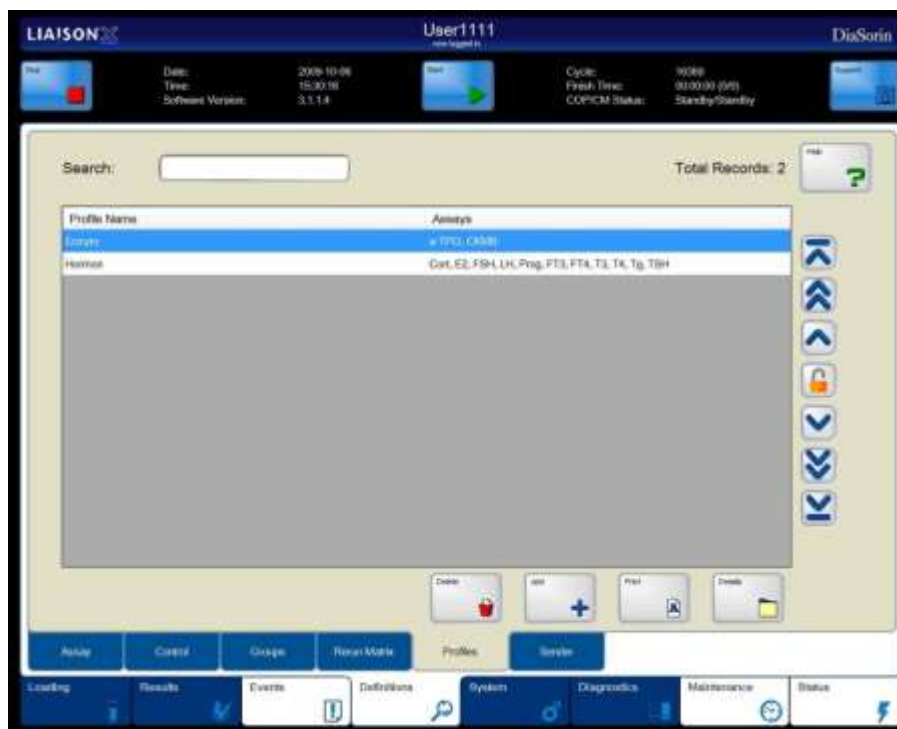


Figure 6-43: Sub category **Profiles**

Function	Description
Add	Shows the Profile Details display to add a new profile (see chapter 6.6.5.1).
Delete	Deletes one or more selected profiles (see chapter 6.4.1.4).
Details	Shows the Profile Details display to show or edit the selected profile (see chapter 6.6.5.1).
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-108: Functions of the **Profiles** sub category

Column	Description
Profile Name	Shows the name of the profile.
Assays	Shows all assigned assays.

Table 6-109: Columns of the profiles table

Figure 6-44: **Profile Details** display

Function	Description
Assay Selection	Shows all available assays. Click on the assay button to assign it to the profile.
Assay Profile	The Assay Profile group shows details about the profile. Profile List The list shows the name of all assigned assays.
Profile Name	Name of the profile. The assay profile name must be unique. Any sequence of alphanumeric characters (spaces and "-" are allowed) can be entered as a profile name.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-110: Functions

6.6.6 Sub Category Sender

In the subcategory **Sender**, it is possible to store information about the sample source.

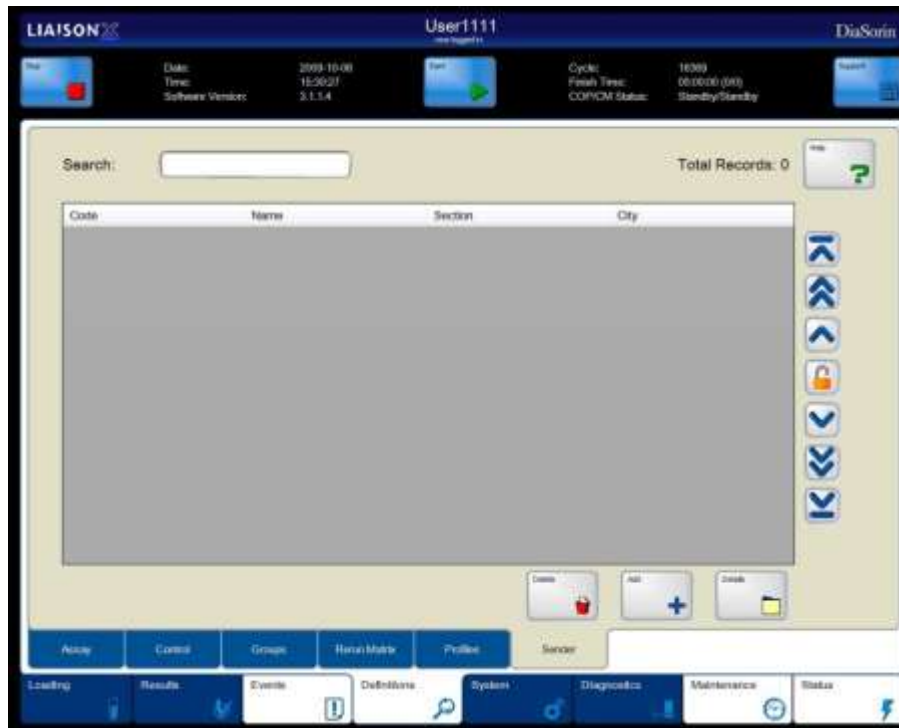


Figure 6-45: Sub category **Sender**

Function	Description
Add	Shows the Sender Details display to add a new sender.
Delete	Deletes one or more selected sender (see chapter 6.4.1.4).
Details	Shows the Sender Details display to show or edit the selected sender.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-111: Functions of the **Sender** sub category

Column	Description
Code	Code of the doctor.
Name	Name of the doctor.
Section	Department
City	Address of the doctor - city.

Table 6-112: Columns of the sender table

6.6.6.1 Sender Details: Details or Add



Sender Details

Code:

Name:

Section:

Comment:

Street:

City:

Phone:

Cancel  Ok 

Figure 6-46: **Sender Details** display

Function	Description
City	Address of the doctor - city.
Code	Code of the doctor.
Comment	Comment to the entry.
Name	Name of the doctor.
Phone	Telephone number of the doctor.
Section	Department
Street	Address of the doctor - street.

Table 6-113: Functions

6.7 Main Category System

The main category **System** allows the user to adapt the **LIAISON® XL** system to their specific circumstances and needs.

6.7.1 Sub Category Account

The subcategory **Account** can be used to change the user's own password or to log off the **LIAISON® XL** software.

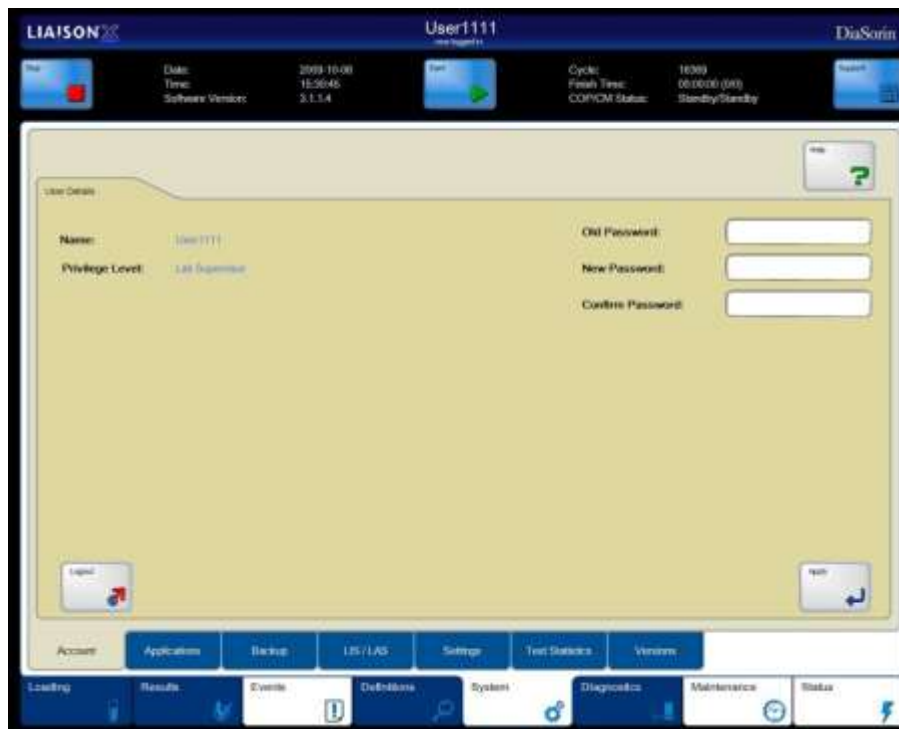


Figure 6-47: Sub category **Account**

Current User
Details Group

Function	Description
Privilege Level	Shows the users allocated access rights (see chapter 6.7.5.1).
Apply	Applies the change of the password.
Confirm Password	Field to re-enter the new password.
Logout	Allows current user to log off. If the user logs out while the instrument is running, the run will continue. User intervention on the hardware side (covers, containers...) will be traced, but not associated with a specific user.
Name	Shows the user name.
New Password	Field for the new password. Any alphanumeric chain of 8 to 20 characters can be used as password. The password is case sensitive.
Old Password	Field for the current password.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-114: Functions of the **Current User Details** group

6.7.2 Sub Category Applications

The subcategory **Applications** can be used to start additional applications.

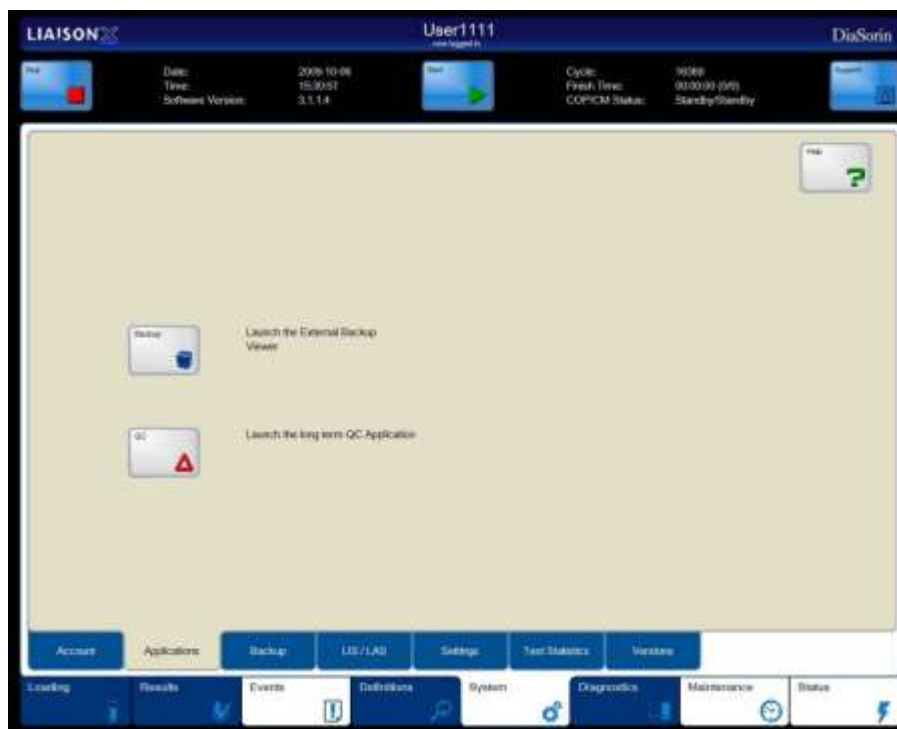


Figure 6-48: Sub category **Applications**

Function	Description
Viewer	Starts the external backup viewer application (see chapter 6.11).
QC	Starts the long term quality control (QC) application (see chapter 7). <i>Note: if both versions of quality control (QC) applications are installed (V2 and V3), a pop-up is prompted to select which QC software shall be opened</i>
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-115: Functions of the **Applications** sub category

6.7.3 Sub Category Backup

The sub category **Backup** provides the option to make a backup of the **LIAISON® XL** system files (e.g. database and settings files).

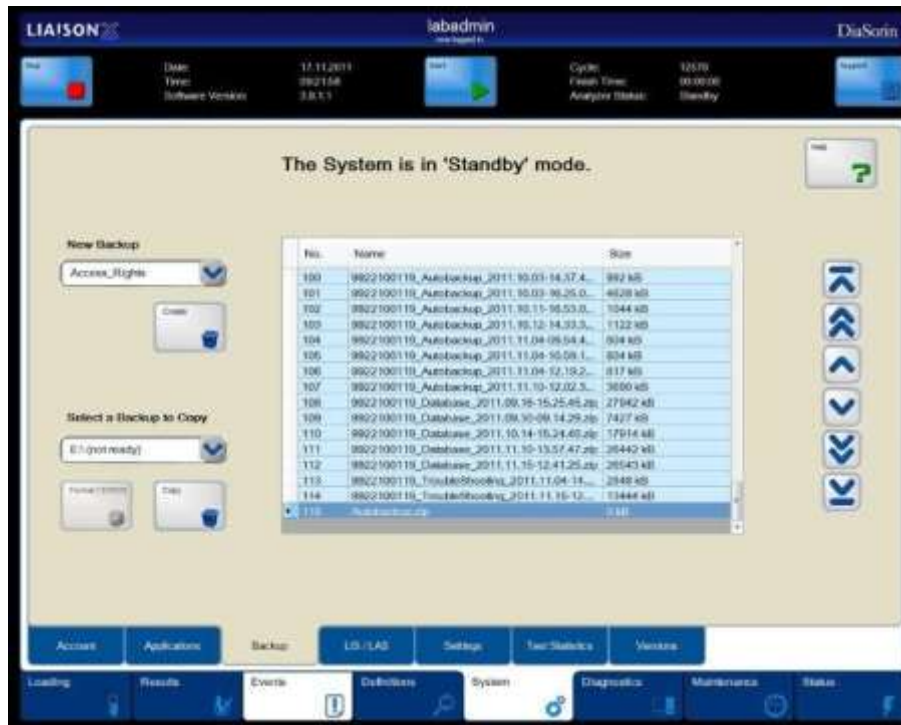


Figure 6-49: Sub category **Backup**

NOTE

The backup function is only available while the **LIAISON® XL** system is in **Standby**, **Ready**, **Halted** or **Not initialized** status, otherwise all controls and buttons are disabled.

Function	Description
Information line	Shows the status of the LIAISON® XL system. Additionally the software shows a second line with information about the creation or copying progress (e.g. Backup finished with success).
New Backup Create	Allows user to create a new backup. - Select the backup type: Autobackup_Database: Saves all databases for results, events, and system characteristics; if enabled, this backup is automatically created by the system (see chapter 6.7.5) Autobackup_System: Saves a selection of files useful for a general troubleshooting; if enabled, this backup is automatically created by the system (see chapter 6.7.5) Access_Rights: Saves only files to determine the defined accounts LIS_LAS: Saves all files generated by host communication and related settings LIS_HL7: Saves all files generated by host communication and related settings of HL7 protocol Database: Saves all databases for results, events, and system characteristics Maintenance: Saves all files related to maintenance definition QC: Saves files to exchange data between main software and QC Software All: Saves all files relevant for the software Results: Saves a file called FinishedJobs.txt that contains the cumulative history of successfully completed tests Troubleshooting: Saves a selection of files useful for a general troubleshooting Autobackup: not to be used (system driven backup) AllStoreLogs: Saves all the files useful for certain specific errors of the system AllLogArchives: Saves all older log files IoT: Saves a selection of files useful for IoT troubleshooting - Press on the Create button.

Function	Description
Select a Backup to Copy Copy	Allows user to copy a backup file on an external storage device, or CD or DVD. 1. Select the external storage device, or CD or DVD in the Select a Backup to Copy list. 2. Select an existing backup file in the backup file table. 3. Press on the Copy button. In case of CD or DVD, it must have been formatted via the Format CD/DVD button before pressing the Copy button.
Select a Backup to Copy Format CD/DVD	Allows user to prepare a CD or a DVD to be ready for file copy. A CD or a DVD can be formatted using such button on any LIAISON® XL system.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-116: Functions of the **Backup** sub category

NOTE

It is recommended to periodically (e.g. weekly) create and copy a Database backup on an external storage device using the functions from Table 6-116, in order to recover the database if needed.

Column	Description
No.	Number of the backup.
Name	Name of the backup file.
Size	Needed storage space on external device.

Table 6-117: Columns of the backup table

6.7.4 Sub Category LIS/LAS

The sub category **LIS/LAS** is used to configure the connection between the **LIAISON® XL** system and a Laboratory Information System (LIS). The connection between the **LIAISON® XL** system and a LIS enables the interchange of test requests and test results, while the connection between the **LIAISON® XL** system and a LAS (Laboratory Automation Systems) enables the instrument to pipette samples automatically routed from an external system.

NOTE

LAS configuration not available for this version of **LIAISON® XL** system.

Laboratory Information System (LIS) is often called a Host.

Note: For details about the interface protocol ask local service support.



Figure 6-50: Sub category **LIS/LAS** - LIS tab

LIS Tab

The **LIS** tab is to specify the interface for exchanging information between the **LIAISON® XL** instrument and a LIS with ASTM protocol.

Function	Description
Apply	Stores all changes.
Bad Frame Send <NAK> Timer	Overwrites the ASTM1381 'Bad Frame Send <NAK> Timer' Default: 30; Range: 30 - 120
Baudrate	Specifies the speed (baud rate) used for transmissions between the LIAISON® XL and the host. Overwrites the ASTM1381 requirements. Default is 9600; Values: 19200, 9600, 4800, 2400, or 1200
Busy Timer	Overwrites the ASTM1381 'Busy Timer' Default: 10; Range: 10 - 120
COM Port	This field specifies the serial port used for host transmissions. Default: 2; Range: 2, 3, 4.
Data Bits	Defines the number of bits per character. Overwrites the ASTM1381 requirements. Default: 8; Values: 7 or 8
Date Template	Must not be changed.
Delimiter	Delimiters are used for outgoing messages. Incoming messages may have different delimiters. is the default Field delimiter \\ is the default Repeat delimiter ^ is the default Component delimiter & is the default Escape delimiter
Enable Manufacturer record	Sends additional information (reagent kit no., reagent expiration date, reagent lot no., calibration ID, sample rack lane, sample position in the rack) to the host.
Host ID	Allows user to assign a name to the host. Default is blank

Instrument ID	Allows user to assign a unique instrument ID to the LIAISON® XL system. It is used to verify that a transmission is intended for this instrument. Default will be the instrument ID entered at installation.
LIS module	Allows the LIS transmission (Yes, No).
Parity	A parity bit is a bit that is added to ensure that the number of bits with value of one in a given set of bits is always even or odd. Parity bits are used as the simplest error detecting code. Default: None; Values: Even, Odd or None
Reload	Becomes enabled only when changes are made to that dialog. Reloads the current settings from file to revoke all changes made (since last changes were applied). This makes the button disabled again.
Respond to LIS Query for Results	The LIAISON® XL will respond to queries for results or not. Default: N; Values: Y or N
Result Flag Style	Sends the result flag as Short or Long text (e.g. "C" or "Calibration expired").
Send Automatically Queries Host for Worklist	The LIAISON® XL will generate query messages during sample loading to query test orders for bar coded patient samples. Default: N; Values: Y or N
Send Automatically Sends All Results	The LIAISON® XL will upload patient results whenever results have become available. Default: Y; Values: Y or N
Send Compressed Comments	The result comment record is generated using repeat delimiters or not. Default: N; Values: Y or N
Send Compressed Query	The query for test orders is generated using repeat delimiters or not. Default: N; Values: Y or N
Send Control Information	If enabled, the system will send information of the control material used to process a control result. Comprises: control lot, control name, control manufacturer, ranges used to process the result. Ignored if the Enable Manufacturer Record field is disabled.
Send Frame Timer (No Response)	Overwrites the ASTM1381 'Send Frame Timer' Default: 15; Range: 15 - 120

Stop Bits	Sends a stop bit (1) or not (0). Default: 1; Values: 0, or 1
Time Template	Must not be changed.
Timeout (Query)	Within <Timeout> seconds the LIAISON® XL expects a response to a query messages sent to the host. If within <Timeout> seconds transmission of a response has not started yet the LIAISON® XL will log in the event log that no response within timeout + SampleID without testorder. Default: 60; Range: 1 – 99999. Note: A value below 30 is outside the limit recommended by ASTM.

Table 6-118: Functions of the LIS tab

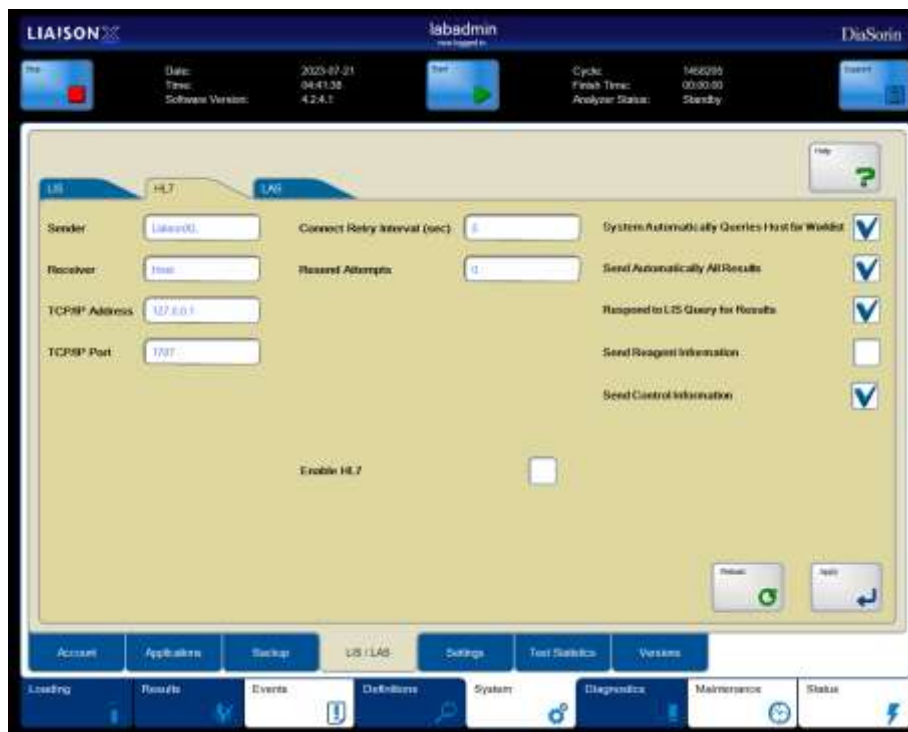


Figure 6-51: Sub category **LIS/LAS** – **HL7** tab

HL7 Tab

The **HL7** tab is to specify the interface for exchanging information between the **LIAISON® XL** instrument and a LIS with HL7 protocol.

Function	Description
Apply	Stores all changes.
Sender	Allows user to assign a unique instrument ID to the LIAISON® XL system. It is used to verify that a transmission is intended for this instrument. Default: LiaisonXL

Receiver	Allows user to assign a name to the host. Default: Host
TCP/IP Address	IP address of the host PC
TCP/IP Port	Port used in the communication between instrument and host
Connect Retry Interval (sec)	The LIAISON® XL will periodically try to connect to the host using the specified time interval. Default: 30; Range: 0 - 30
Resend Attempts	If a result could not be transmitted, LIAISON® XL tries to resend it the specified number of times. Default: 0; Range: 0 - 15
Enable HL7	Allows the LIS transmission (Yes, No).
System Automatically Queries Host for Worklist	The LIAISON® XL will generate query messages during sample loading to query test orders for barcoded patient samples. Default: Y; Values: Y or N
Send Automatically All Results	The LIAISON® XL will upload patient results whenever results have become available. Default: Y; Values: Y or N
Respond to LIS Query for Results	The LIAISON® XL will respond to queries for results or not. Default: Y; Values: Y or N
Send Reagent Information	Sends additional information (reagent kit no., reagent expiration date, reagent lot no., calibration ID, sample rack lane, sample position in the rack) to the host.
Send Control Information	If enabled, the system will send information of the control material used to process a control result. Comprises: control lot, control name, control manufacturer, ranges used to process the result.

Table 6-119: Functions of the **HL7** tab

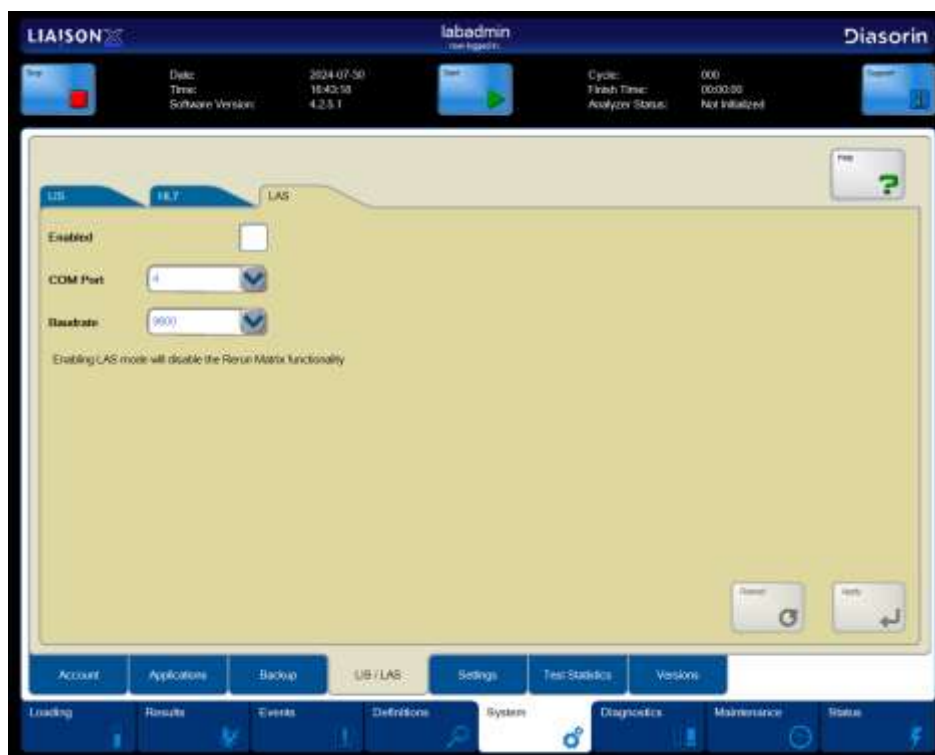


Figure 6-52: Sub category **LIS/LAS - LAS** tab

LAS Tab

The **LAS** tab is to specify the interface for exchanging information between the **LIAISON® XL** instrument and a LAS.

CAUTION

Users/Field service engineers shall not modify any parameter of this tab since the LAS configuration is not available for this version of **LIAISON® XL** system.

Function	Description
Apply	Stores all changes.
COM Port	This field specifies the serial port used for LAS transmission. Default: 2; Range: 2, 4.
Baudrate	Specifies the speed (baud rate) used for LAS transmission. Default is 9600; Values: 9600, 19200, or 38400.
Enabled	Stores all changes.
Reload	Becomes enabled only when changes are made to that dialog. Reloads the current settings from file to revoke all changes made (since last changes were applied). This makes the button disabled again.

Table 6-120: Functions of the **LAS** tab

6.7.5 Sub Category Settings

The sub category **Settings** is used for user accounts management, run mode definitions and general settings.

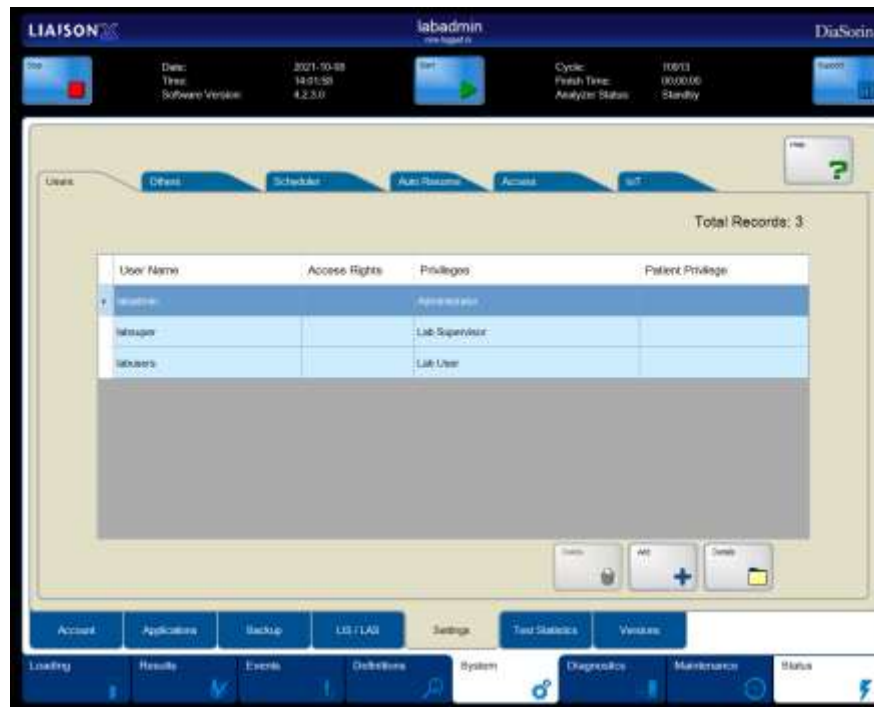


Figure 6-53: Sub category **Settings** - **Users** tab

Users Tab

There are several security levels of user access rights on the **LIAISON® XL** system. Some system functions are only available for users with an appropriate access level (e.g. changing system options, or deleting results).

The purpose of the **Users** tab is to define the rights of each user.

Function	Description
Add	Opens the User Setup display to add a new user to the systems (see chapter 6.7.5.1).
Details	Opens the User Setup display to view or edit a selected user entry (see chapter 6.7.5.1).

Table 6-121: Functions of the **Users** tab

Column	Description
User Name	Shows the user name.
Access Level	Shows the users allocated access rights as number (see chapter 6.7.5.1).
Privileges	Shows the users allocated access rights (see chapter 6.7.5.1).
Patient Privilege	Shows a * if the user has the privilege to view patient demographical data, otherwise empty.

Table 6-122: Columns of the users table

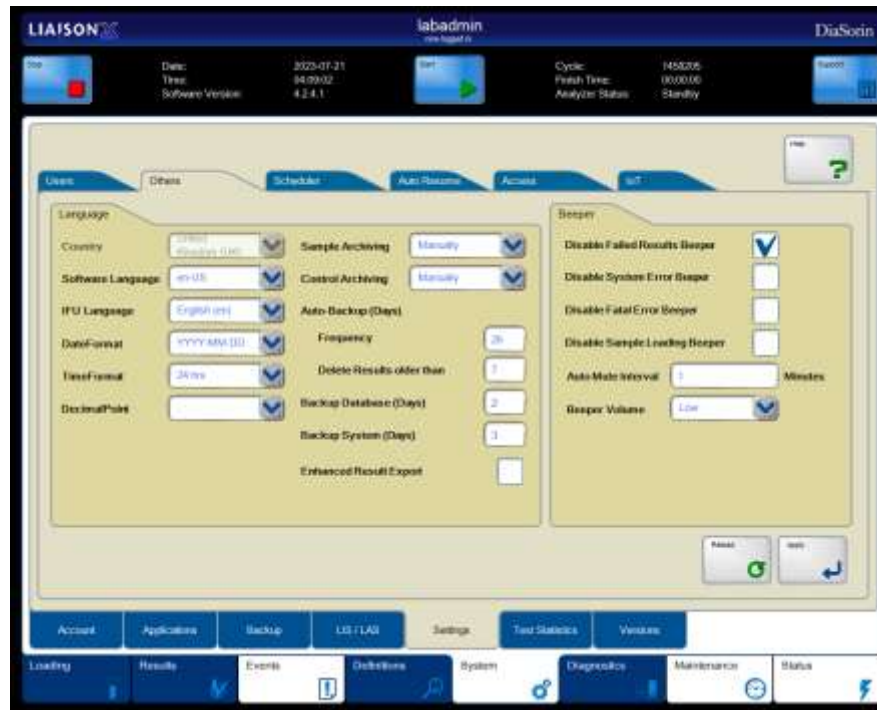


Figure 6-54: Sub category **Settings - Others** tab

Others Tab

The purpose of the **Others** tab is to define settings related to the behaviour of the system in general.

Function	Description
Country	Specifies the country in which the instrument is installed. It is used by the system to download/import appropriate IFU for the specific country.
Software Language	The language of the software. A change becomes effective after restart of the application.
IFU Language	The language preference that is used by the system to download the IFU. Note: IFU are provided in the preferred language only if such language is available for the defined country, otherwise they will be provided in one of the available languages for the defined country.
Date Format	Date format used in the software, among the following options: - MM/DD/YYYY - DD.MM.YYYY - YYYY-MM-DD
Time Format	Date format used in the software, among the following options: - 24 hrs - 12 hrs AM-PM
Decimal Point	Set the type of the decimal point, either “.” or “,”.
Sample Archiving	Allows selecting if patient sample/calibrator results are manually or automatically moved to the Archived page.
Control Archiving	Allows selecting if control results are manually or automatically moved to the Archived page.
Auto-Backup (Days) Frequency	The frequency in days when Auto Backup will be performed, i.e. when old Archived results will be moved to an area where they are accessible via External Backup Viewer (see 6.11). The value “0” disables the feature.
Auto-Backup (Days) Delete Results older than	After an Auto Backup the system deletes all results from the current Archived page that are older than specified days (see Auto-Backup (Days) Frequency). The value “0” means that no results are deleted. Ignored if “Auto-Backup Frequency” = 0.
Backup Database (Days)	The system automatically performs a Database backup with frequency specified in days in the box. The value “0” disables the feature.

Backup System (Days)	The system automatically performs a System backup with frequency specified in days in the box. The value "0" disables the feature.
Enhanced Result Export	If checked, additional fields are appended to exported results. Note: results generated with previous Software versions may be exported without specific data
Disable Failed Results Beeper	Disable the beeper for single occurrence events (e.g. aborted tests).
Disable System Error Beeper	Disable the beeper for system error (e.g. resource availability events).
Disable Fatal Error Beeper	Disable the beeper for fatal error.
Disable Sample Loading Beeper	Disable the beeper when loading a sample rack.
Auto mute Interval....minutes	Defines a time span, after which the audible (and visible if provided) alarm will be switched off automatically. If set to "0" then the alarms will not be switched off.
Beeper Volume	Defines the volume of the audible alarm. Default: High; Values: High, Medium, Low.
Apply	Saves the current settings.
Reload	Revokes the settings made since last changes were saved.

Table 6-123: Columns of the **Others** tab

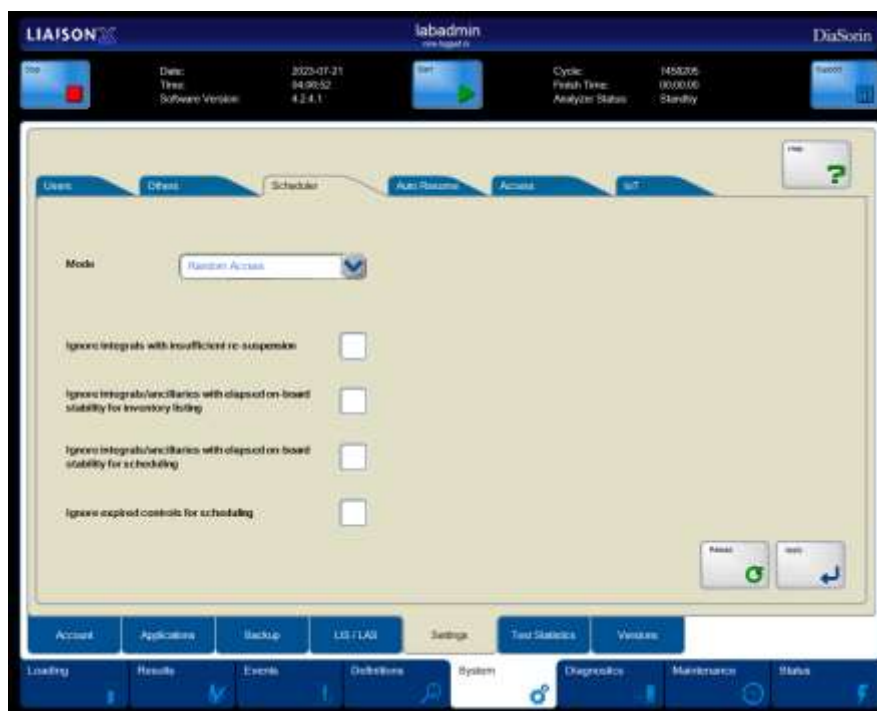


Figure 6-55: Sub category **Settings** - **Scheduler** tab

Scheduler Tab

The purpose of the **Scheduler** tab is to define settings related to the behaviour of the system in general.

Function	Description
Mode	Shows "Random Access" or "Batch", with the following meaning: - in Random Access, the system will pipette all samples from one rack and release it as soon as possible, then move to the next rack - in Batch, the system will pipette from all available racks loaded in Sample Area
Ignore integrals with insufficient re-suspension	If checked, the system ignores, for scheduling new tests, integrals that are not completely re-suspended (agitate for longer than 15 minutes) at the time of schedule. The Inventory list in software interface does not report not completely re-suspended integrals.
Ignore integrals/ ancillaries with elapsed On Board Stability for Inventory listing	If checked, the Inventory list in software interface does not report integrals that have an expired On Board Stability.
Ignore integrals/ ancillaries with elapsed On Board Stability for Scheduling	If checked, the system ignores, for scheduling new tests, integrals that have an expired On Board Stability at the time of schedule.
Ignore expired controls for scheduling	If checked, the system ignores, for scheduling, controls that are expired at the time of schedule.
Apply	Saves the current settings.
Reload	Revokes the settings made since last changes were saved.

Table 6-124: Columns of the **Scheduler** tab



Figure 6-56: Sub category **Settings** – **Auto Resume** tab

Autoresume Tab The purpose of the **Autoresume** tab is to define settings related to the behaviour of the system in general.

Function	Description
Monday ... Sunday for Resume option	If checked, the time field opens, allowing setting the starting time for the Resume execution on that day. Note: if the system is not in Standby status at the define time, the Resume execution is skipped.
Calibration	The checkbox can be selected only if the automatic resume option is enabled for that day. When selected, it triggers the automatic start of calibration after autoresume for those kits that have not a valid calibration and have all the required resources already loaded onboard.
Apply	Saves the current settings.
Reload	Revokes the settings made since last changes were saved.

Table 6-125: Columns of the **Autoresume** tab

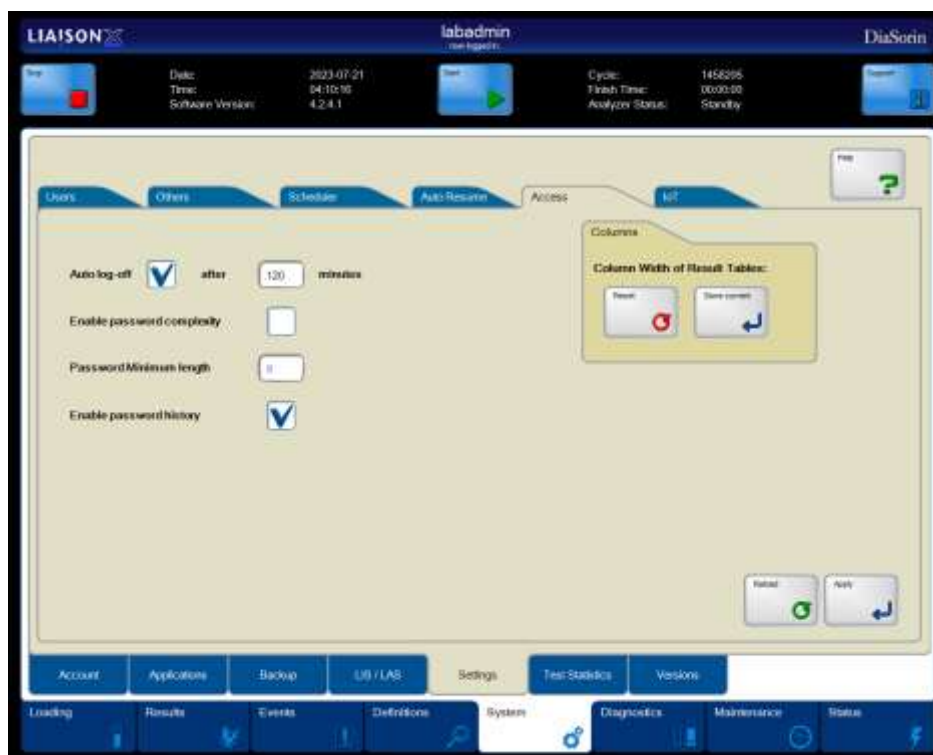


Figure 6-57: Sub category **Settings** - **Access** tab

Access Tab

The purpose of the **Access** tab is to define settings related to the behaviour of the system in general.

Function	Description
Auto log-off	If checked, the auto log-off time opens, allowing setting a time interval for auto log-off.
after ... minutes	Editable only if "Auto log-off" is checked. Allows defining a time interval for auto log-off. After this time is passed without user interaction, the log-in page will be prompted.
Enable password complexity	If checked, the password complexity is enabled: the newly created passwords shall bear at least one upper case, one lower case, one number, one special character
Password Minimum length	Defines the password minimum length. Default: 8. Range: 8-20. If specified, the newly created passwords shall comply with the minimum length
Enable Password History	If checked, password history is enabled: It is not possible to re-use one of the last five passwords.
Result column width – Store current	Saves the current Result column configuration.
Result column width - Reload	Restores the Result column settings to the factory default.
Apply	Saves the current settings.
Reload	Revokes the settings made since last changes were saved.

Table 6-126: Columns of the **Access** tab

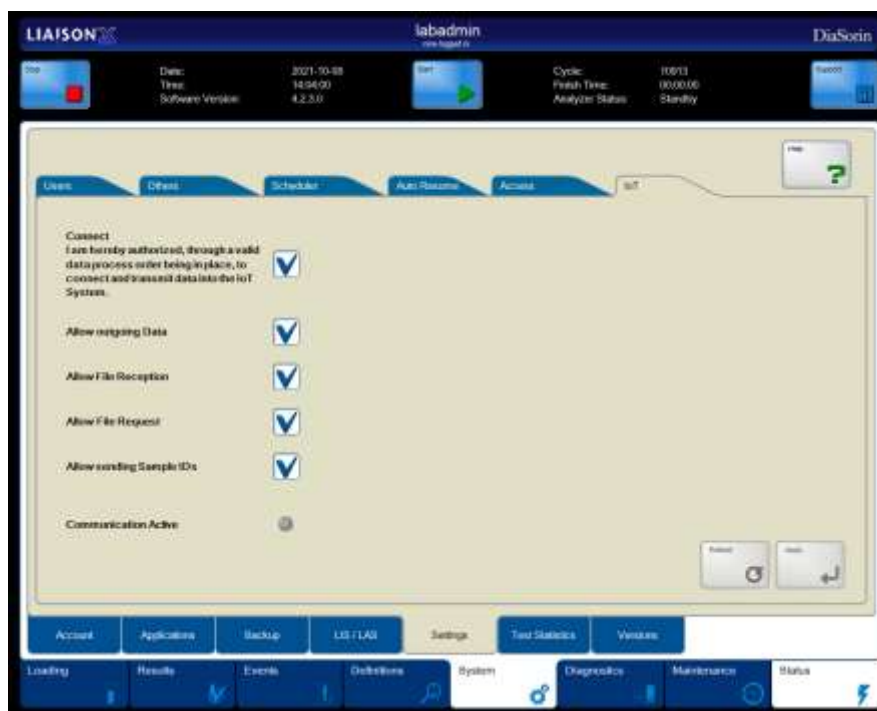


Figure 6-58: Sub category **Settings** - IoT tab

IoT Tab

The purpose of the **IoT** tab is to define settings related to the behaviour of the Internet of Things (IoT), an enhanced system to collect and transfer data to servers used by DiaSorin.

Note: no data of the Patient Group will be exchanged through IoT.

Function	Description
Connect <i>I am hereby authorized, through a valid data process order being in place, to connect and transmit data into the IoT System.</i>	If checked, the system will try to connect to the IoT server.
Allow outgoing Data	If checked and the system is connected, telemetry data are sent automatically to the IoT server.
Allow File Reception	If checked and the system is connected, files can be received from the IoT server.
Allow File Request	If checked and the system is connected, enables upload of files requested by the IoT server in case requested by DiaSorin personnel from remote. File Transfer may contain Sample IDs.
Allow sending Sample IDs	If checked telemetry messages (including events) can contain Sample IDs. If unchecked Sample IDs are not transmitted.
Communication Active	If on (yellow), indicates that the system is currently trying to send data to the IoT server, otherwise off (gray).
Apply	Saves the current settings.
Reload	Revokes the settings made since last changes were saved.

Table 6-127: Functions of the **IoT** tab

6.7.5.1 User Setup: Details or Add

The **User Setup** display enables to add a new user or to change the rights of a user.

The screenshot shows a 'User Setup' window with the following fields and values:

- Name:** User1111
- Password:** *****
- Expiry Period:** (empty) days
- Password never expires:** ☒
- Privilege Level:** Lab Supervisor, 1000
- Patient Privilege:** ☒

At the bottom right, there are two buttons: 'Cancel' (with a red X icon) and 'Save' (with a blue arrow icon).

Figure 6-59: **User Setup** display

Function	Description
Expiry Period	The user must change his/her password by specified day.
Name	Name of a user. The user name must be unique. Any sequence of alphanumeric characters (spaces are allowed) can be entered as a user name.
Password	Field for the (first) user password. Any alphanumeric chain of characters can be used as password. The password is case sensitive. Note: any newly added account will have the default password "diasorin". It shall be changed as soon as possible.
Password never expires	If checked, the user does not have to change his/her password as scheduled.
Patient Privilege	Defines, if the user has the privilege (Yes or No) to view patient demographical data.

Privilege Level	Defines the access rights for the user, default are: • LabUser (1000) • LabSuper (2000) • LabAdmin (3000)
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-128: Functions of the **User Setup** display

6.7.6 Sub Category Test Statistics

The sub category **Test Statistics** can be used to get information about the started tests. Among others the **LIAISON® XL** system shows the amount of test results with the result done or failed for each assay.

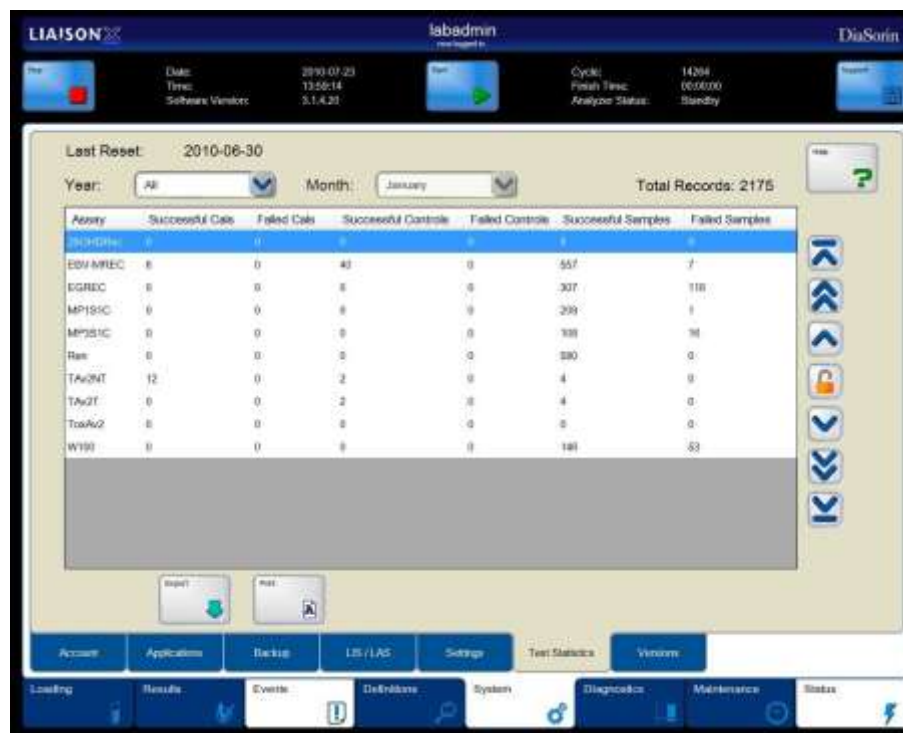


Figure 6-60: Sub category **Test Statistics**

Function	Description
Export	Exports the test statistics to a file
Month	Filter: Shows only the statistic entries of the selected month.
Year	Filter: Shows only the statistic entries of the selected year
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-129: Functions of the **Test Statistics** tab

Column	Description
Assay	Name of the assay.
Successful Cals + Failed Cals	Number of successfully or unsuccessfully performed calibrator determinations.
Successful Controls + Failed Controls	Number of successfully or unsuccessfully performed control determinations.
Successful Samples + Failed Samples	Number of successfully or unsuccessfully performed patient sample determinations.

Table 6-130: Columns of the test statistics table

6.7.7 Sub Category Versions

The sub category **Versions** is used to inform the user about the **LIAISON® XL** software and the **LIAISON® XL** instrument firmware versions.

LIAISON XL labadmin now logged in **Diasorin**

Stop Date: 2025-07-10 Time: 09:50:09 Software Version: 4.2.6.1 Start Cycle: 17162 Finish Time: 00:00:00 Analyzer Status: Standby Support

Serial Number: 1014300011 Liaison XL Version: 4.2.6.1 Help ?

PC Software Module	Version
L2Main.exe	4.2.6.1
AncBay.dll	4.2.6.1
AxiInterop.AcroPDFLib.dll	1.0.0.0
DataBrowser.dll	4.2.6.1
DeviceControl.dll	4.2.6.1
DiTiBay.dll	4.2.6.1
DriverInterface.dll	4.2.6.1
EvtHdl.dll	4.2.6.1
FastObjects.40.dll	12.0.1.98
FastObjects.Config.40.dll	1.0.0.0
FastObjects.Runtime.40.dll	12.0.1.98
Google.Protobuf.dll	3.27.3.0
Grpc.Core.Api.dll	2.0.0.0
Grpc.Core.dll	2.0.0.0
grpc_csharp_ext.x64.dll	
grpc_csharp_ext.x86.dll	
IntegralBay.dll	4.2.6.1
Interop.AcroPDFLib.dll	1.0.0.0
Interop.SHDocVw.dll	1.1.0.0
IOMA.dll	4.2.6.1
JobControl.dll	4.2.6.1
L2AMLib.dll	4.2.6.1
L2Base.dll	4.2.5.0
L2BaseLogic.dll	4.2.6.1
L2Help.dll	4.2.6.1

Firmware Module	Version
Cop	00.0002 D110143 COP LIA5
CuvetteSupply	00.1015 2211 Cuvette Supply
Incubator	01.0115 2212 IncubatorDriver
Washer	02.1001 2213 Washer Drive
MeasurementUnit	01.0005 2214 MEASURING UNI...
SampleBay	01.0029 2216 Sample Module
ReagentArea	00.0004 D110143 108 Reag-Bay
WashAspPump	00.1013 2038 PeristalticPump
WashProbRinsingPump	00.1013 2038 PeristalticPump
Cabinett	01.0000 D110143 Cabinet
FrontCover	00.0004 D110143 148 Frontcov
StarterReag1aPump	03.0510 D110167 000 LCMP500
StarterReag2aPump	03.0510 D110167 000 LCMP500
WashInjectionPump1	03.5010 D110167 000 LCMP5000
RFIDReader1	00.0004 D110143 109 ReagRFID
StarterReagentRackA	01.0015 2218 Starter Reagent
AirPip	01.0118 6319 APE Airpip-EC
AirPipSubDev1	01.0112 9902 SCTL 2011
AirPipSubDev2	10.0002 6319 APH Pump Head 2
PipPumpR	01.1212 9101 VP9101 Pumpe
OLV	01.1100 2219-10 OLV
Pipettor	01.3400 2219 L2Pipettor
PipettorSubDev1	2.02.09
PipettorSubDev2	2.02.09
BarcodeScanner	BCL 148 V 82.16 03.07.19

Account Applications Backup LIS / LAS Settings Test Statistics Versions

Loading Results Events Definitions System Diagnostics Maintenance Status

Figure 6-61: Sub category **Versions**

Function	Description
<i>Liaison XL Version</i>	Shows the version of the current LIAISON® XL software version. In case a Service Pack has been installed, it is indicated as well.
<i>Serial Number</i>	Shows the serial number of the LIAISON® XL instrument.
<i>Copyright button</i>	Shows third party copyright.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-131: Functions of the **Versions** sub category

Column	Description
<i>PC Software Module</i>	Shows the name of several modules of the current LIAISON® XL software.
<i>Version</i>	Shows the version.
<i>Firmware Module</i>	Shows the name of the modules of the LIAISON® XL instrument.

Table 6-132: Columns of the version tables

6.8 Main Category Diagnostics

In the main category **Diagnostics** and its subcategories, information about the **LIAISON® XL** system can be found.

CAUTION

Perform tasks from **Diagnostics** only guided by local support.

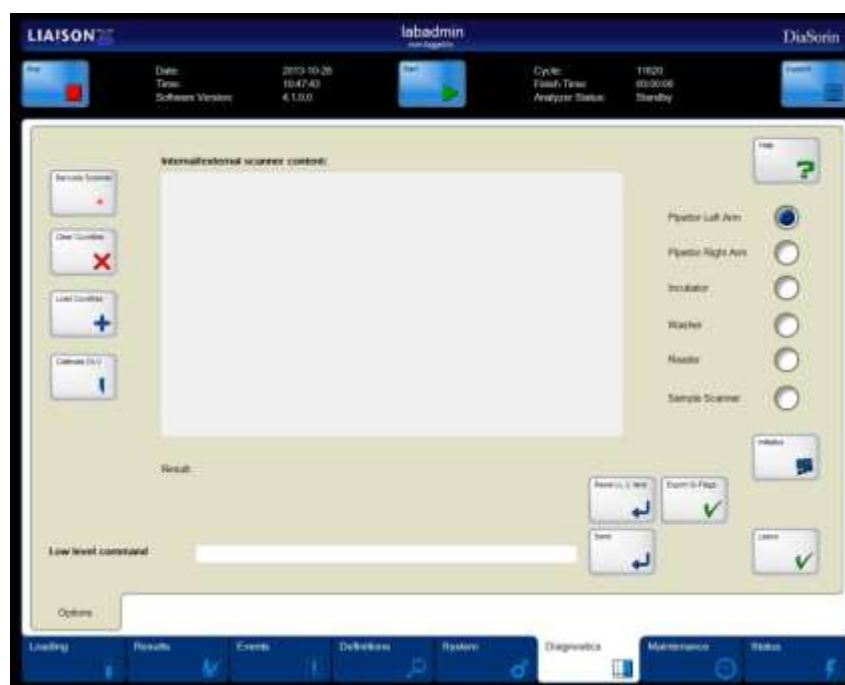


Figure 6-62: Main category **Diagnostics**

Function	Description
Calibrate OLV	Starts an OLV calibration. The result of the calibration (OK or Failed) will be placed in the Result field.
Clear Cuvettes	Starts a command to empty the incubator, washer and reader. No more cuvettes will be requested by the cuvette related assemblies before the incubator will not move.
Incubator	Initialises the incubator after the Initialize button has pressed.
Initialize	Starts the initialisation.
Internal/external scanner content	Shows the read bar-code of the sample barcode scanner or the handheld scanner. This field is emptied by pressing the Sample Scanner button.
Leave	Leaves the diagnostics dialog, causing the system to initialise and go back to Standby mode.
Load Cuvettes	Fills the empty positions in the incubator with cuvettes.
Low level command	Low level command as byte sequence in hexadecimal notation. It is sent to the instrument, if the Send button is pressed.
Q-Flags	Creates a CSV-file containing a reference to all Control Definitions which can cause control related flags. The file can be retrieved using the Copy function of the sub category Backup .
Reader	Initialises the Reader after the Initialize button has pressed.
Pipettor Left Arm	Initialises the left pipettor arm after the Initialize button has pressed.
Pipettor Right Arm	Initialises the right pipettor arm after the Initialize button has pressed.
Reset LL2. Lane	Resets the liquid levels of improperly offline vials for the integral loaded in the lane 2. The reset can be performed in Standby , Ready , Running . Note: After the reset, it is necessary to remove the integral from lane 2 and reload it in any available lanes. Note: Use this button only when recommended by DiaSorin representative.
Result	Shows the result of the OLV calibration (OK or Failed).
Sample Scanner	Button Sample Scanner : - Clears the field internal/external scanner content. Checkbox Sample Scanner : - Initialise the sample scanner after the Initialize button has pressed.

Function	Description
Send	Sends the entered low level command to the instrument.
Washer	Initialises the washer after the Initialize button has pressed.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-133: Functions of the **Options** sub category

NOTE

While the system is in **Diagnostics** mode, it is recommended not to initialize the system via the **STOP** menu.

6.9 Main Category Maintenance

The main category **Maintenance** and its subcategories allow performing necessary maintenance tasks to obtain the system performance.

6.9.1 Sub Category Schedule

In the subcategory **Schedule**, maintenance tasks can be managed or started. The individual maintenance tasks can be generated in such a way that they are startable either if required or on schedule. As soon as a scheduled maintenance task is due, this is indicated by a flashing **Maintenance** main category tab or **Schedule** subcategory tab.

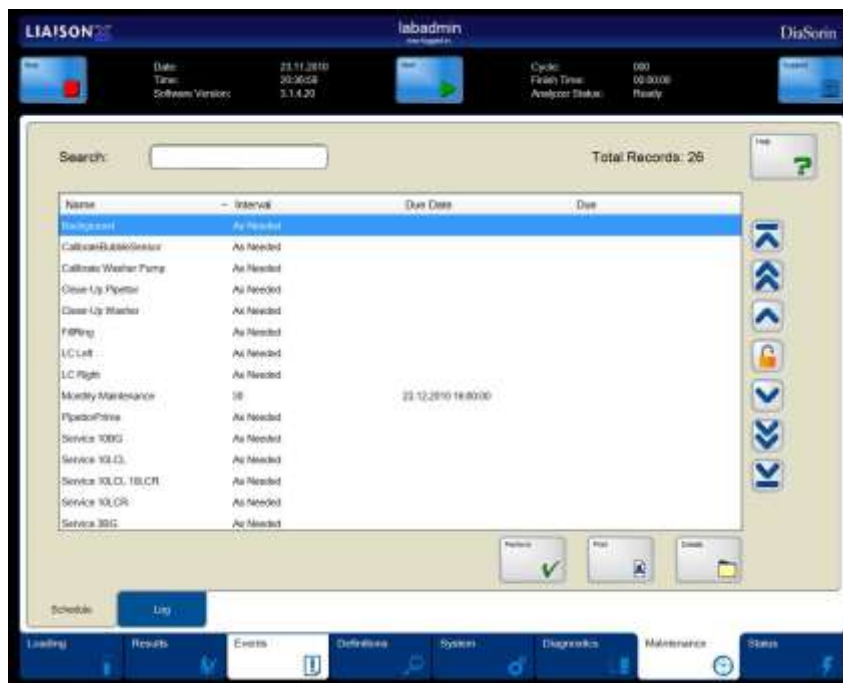


Figure 6-63: Sub category **Schedule**

Function	Description
Details	Shows details about a selected maintenance task (see chapter 6.9.1.1).
Import	Opens the Select File dialog to import a saved maintenance task from a file. Note: All existing maintenance tasks will be deleted before the system imports saved maintenance tasks.
Perform	Opens the Perform Task dialog (see chapter 6.9.1.2) and starts the selected maintenance task. Follow the instructions on the dialogue. The Perform button is disabled when the selected maintenance task cannot start.

Table 6-134: Functions of the **Schedule** sub category

Column	Description
Name	Name of the maintenance task.
Interval	Displays the interval for the maintenance task in days or nothing ('As needed') if there is no interval defined.
Due Date	Shows the date and time when the next run for the maintenance task is due. The cell is empty, if interval is 'As Needed'.
Due	Shows with a color indicator upcoming maintenance tasks.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-135: Columns of the **Schedule** table

6.9.1.1

Maintenance Task Details: Details



Figure 6-64: Maintenance Task Details display

Function	Description
Description	Description of the maintenance task.
Due Time	Date and time when the next run for the maintenance task is needed. Empty if interval is 'As Needed'.
Interval	Interval for the maintenance task in (1 - 365) days or nothing ('As needed') if there is no interval defined.
Name	Name of the maintenance task.
Procedure	Shows a list with all predefined maintenance task procedures.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-136: Functions of the Maintenance Task Details display

6.9.1.2 Perform a Maintenance Task



Figure 6-65: **Perform Task** display

Function	Description
Abort	Aborts the maintenance task procedure and closes the Perform Task display. A new maintenance log entry will not be generated. After a maintenance task is aborted, the system will stay in Maintenance mode. Start a rinse procedure to flush the tubings.
Date	Shows the current date.
Done	This button is prompted after the last step is finished and the maintenance task failed. Allows closing the Perform Task display.
Perform Task Wizard	Shows detailed information about the current performed step, including the time required to complete the ongoing step and the overall procedure.
Procedure	Shows the maintenance task steps.
Task	Shows the maintenance task name.
User Name	Shows the log-in name.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-137: Functions of the **Perform Task** display

NOTE

After a maintenance task has been successfully completed, the **Perform Task** display gets closed automatically.

NOTE

Before starting a maintenance task ensure that the **Start** button is enabled.

6.9.2 Sub Category Log

The sub category **Log** shows a list with all maintenance task entries, either successfully or unsuccessfully performed.

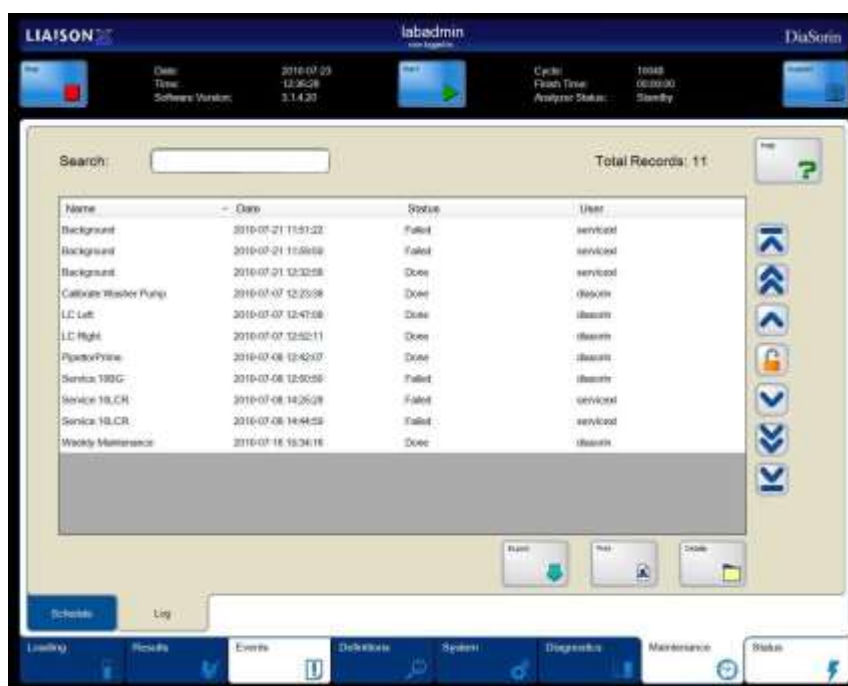


Figure 6-66: Sub category **Log**

Function	Description
Details	Shows details about a selected maintenance log entry.
Export	Opens the Save As dialog to export one or more selected maintenance log entries to a file.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-138: Functions of the **Log** sub category

Column	Description
Name	Name of the maintenance task.
Date	Shows the date and time when the maintenance task was performed.
Status	Shows the result Done or Failed of the maintenance task.
User	Shows the name of the user who performed the maintenance task.

Table 6-139: Columns of the **Log** table

6.10 Main Category Status

In the main category **Status**, the filling level of the different containers, bottles and waste containers can be accessed. Additionally, there is the possibility to check the temperatures of the individual modules. The loading of the system with cuvettes and disposable tips is also performed in this main category.

6.10.1 Sub Category Summary

Besides the indication of the temperatures in the individual modules and the filling level of the different containers, bottles and the waste container, the system can be filled with cuvettes in this sub category **Summary**.

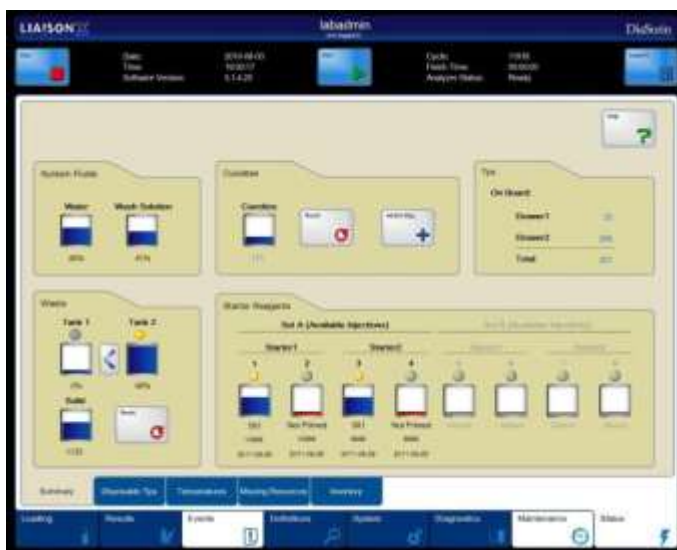


Figure 6-67: Sub category **Summary**

	 (blue)	 (yellow)	 (red)	Other possible status	Additional information
Water	at least 30%	in range 13%-30%	running out (less than 13%)	Disconnected	"Active" tests are not counted.
Wash Buffer	at least 30%	in range 12%-30%	running out (less than 12%)	Disconnected	"Active" tests are not counted.
Starter	at least 80 injections	less than 80 injections	running out (0,1,2 injections)	Absent (bottle not loaded) Present (bottle not primed) Not Available (bottle empty or offline)	Thresholds are compared with the difference between number of available shots and "active" tests. Red is reached when this difference is 0.
Cuvettes	cuvettes are detected by sensors	cuvette buffer is empty	running out (less than 3 cuvettes detected)		Based on sensors detection
Solid Waste (cuvettes/tips)	no more than 1700	in range 1700-2000	nearly full (more than 2000)	Pulled Out	"Active" tests are not counted for yellow status. Red threshold is compared with the sum of number of cuvettes (tips) in waste bin and "active" tests. When pulled out, there is space for no more than 50.
Liquid Waste	no more than 70%	in range 70-84%	nearly full (more than 84% liquid)	Absent (tank not loaded)	Thresholds are referred to the total amount of the two tanks. "Active" tests are not counted.

Table 6-140: Used colour code

Symbol	Meaning
	Container connected and active
	Container connected and inactive
	Container not connected

Table 6-141: Used symbols

System Fluids Group

Shows the usable volume of the **Water** and the **Wash Solution** containers [in percent].

Cuvettes Group

Function	Description
Added Bag	Press this button after refilling cuvettes. The Cuvettes counter increments of 200. (1 cuvette bag = 200 cuvettes)
Cuvettes	Shows the number of cuvettes in the instrument.
Reset	Press on this button to set the Cuvettes counter to 0.

Table 6-142: Functions of the **Cuvettes** group**Tips Group**

Shows the number of unused disposable tips in the instrument.

Waste Group Shows the filling level of the liquid waste containers (**Tank 1** and **Tank 2**) in per cent, and **Solid** waste (cuvettes and disposable tips).

Function	Description
Reset	Press on this button to clear the counters. Note: The Reset button is enabled for 5 minutes after the solid waste drawer is re-inserted into the LIAISON® XL system.
 or 	Changes the used waste tank: Tank 1 > Tank2: Used tank: Tank 1 Tank 1 < Tank2: Used tank: Tank 2

Table 6-143: Functions of the **Waste** group

Starter Reagents Group Shows remaining injection counters of all loaded starter reagents. The counter decreases after every injection.
The information is reported only when the starters after correctly primed by the system.

6.10.2 Sub Category Disposable Tips

In the subcategory **Disposable Tips**, the system can be filled with disposable tips.

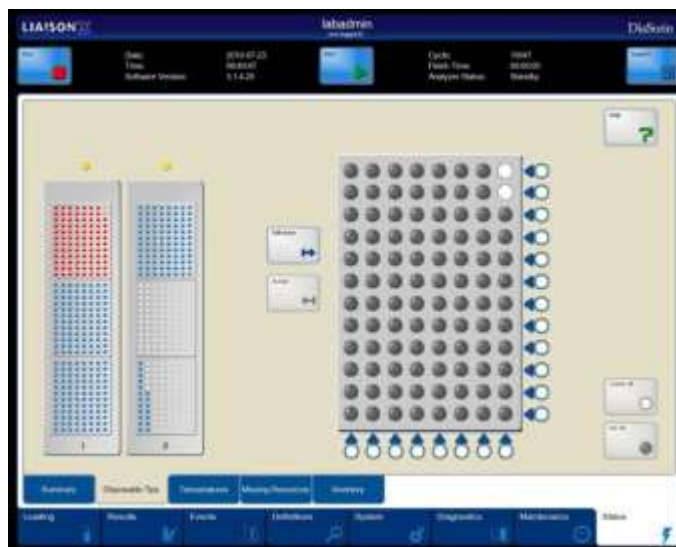


Figure 6-68: Sub category **Disposable Tips**

The window of the **Disposable Tips** sub category shows on the left side both drawers for disposable tip trays and on the right side the selected disposable tip tray of the drawer (red marked).

See chapter 5.5.2 for detailed procedure.

Function	Description
Assign	Gives access of the drawer to the pipettor. The LED below the physical drawer and the indicator above the drawer on the display change to yellow. The Assign button is only available when the drawer is closed.
Delete All	Deletes all disposable tips on the single disposable tip tray.
Set All	Fills the single disposable tip tray with disposable tips.
Withdraw	Gives the access of the drawer to the user. The LED below the drawer and the indicator above the drawer on the display changes to red. Note: If the instrument is pipetting the pipettor will use the other drawer. If there are no disposable tips or the drawer is also opened, the pipettor stops.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-144: Functions of the **Disposable Tips** sub category

6.10.3 Sub Category Temperatures

The sub category **Temperatures** shows the current temperature of several modules next the module name. Additionally the **Min** (minimum) and **Max** (maximum) temperatures are shown. In case any temperature falls out of tolerances then the value is displayed in red (see chapter 10.9 for temperature ranges) and the system will react accordingly (tests may be failed or not be started).



Figure 6-69: Sub category **Temperatures**

Function	Description
<i>Unit</i>	Use this list to change the temperature unit (°C or °F).
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-145: Functions of the **Temperatures** sub category

6.10.4 Sub Category Missing Resources

The sub category **Missing Resources** gives an approximated overview of any missing reagent or consumable, based on system estimations. It is updated after the routine has been started.

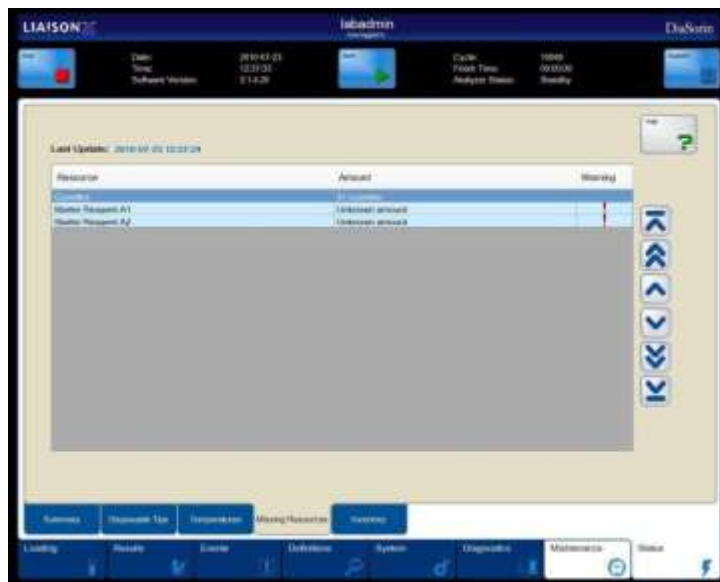


Figure 6-70: Sub category **Missing Resources**

Function	Description
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-146: Functions of the **Missing Resources** sub category

Column	Description
Resource	Name of the missing resource.
Amount	Missing liquid volume or number of objects.
Warning	Warning indicator. A missing warning indicates that that resource will be potentially missing. A present warning indicates that that resource will be certainly missing.

Table 6-147: Columns of the **Missing Resources** table

Resource	Amount
Ancillary	Required ancillary volume for the open tests. May be followed by Lot No. and Kit No.
Cuvettes	Number of missing cuvettes.
Disposable tips	Number of missing disposable tips.
Integral	Number of missing determinations for the open tests. May be followed by Lot No. and Kit No.
Liquid waste container	Waste volume corresponding to the missing tests.
Solid Waste	Number corresponding to the missing tests due to solid waste.
Starter reagent	Required starter volume for the open tests.
Wash buffer	Required wash buffer volume for the open tests.
Water container	Required water volume for the open tests.

Table 6-148: Meaning of **Amount**

6.10.5 Sub Category Inventory

The sub category **Inventory** shows a list of all loaded assays/integrals in the reagent bay including the combi assays. The dialog is updated in regular intervals.

NOTE

If the option “Ignore integrals with On Board Stability expired for inventory” or “Ignore integral with insufficient resuspension” are enabled such integrals are not listed in the inventory page.

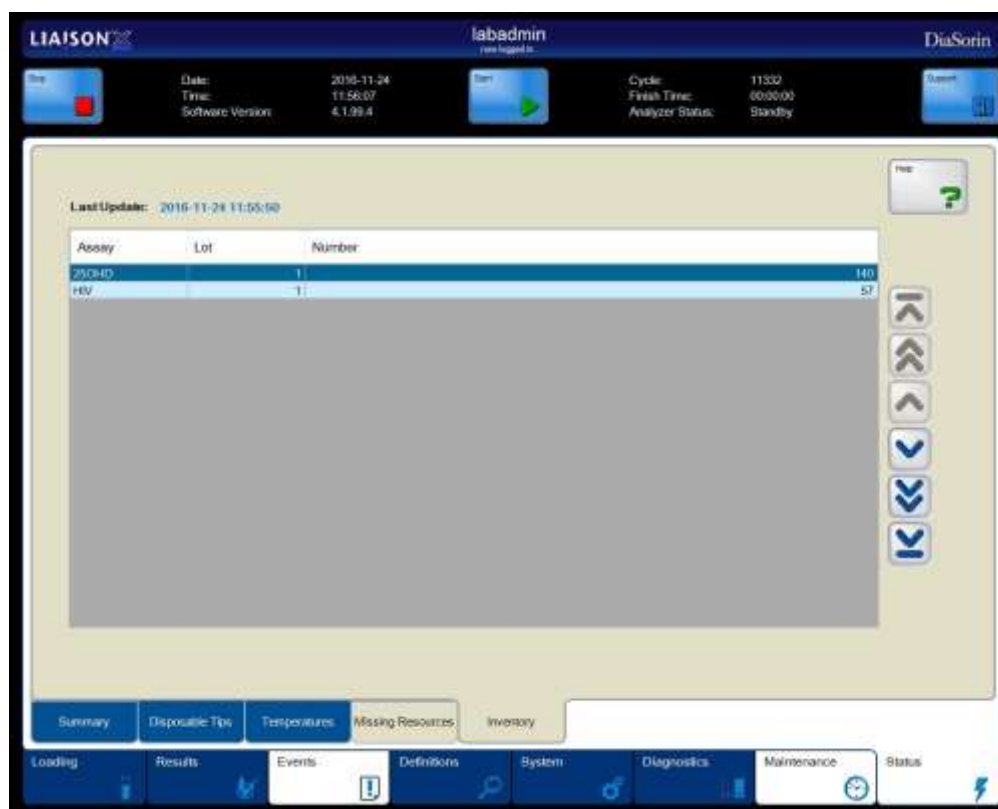


Figure 6-71: Sub category **Inventory**

Function	Description
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-149: Functions of the [Inventory](#) sub category

Column	Description
Assay	Assay abbreviation.
Lot	Lot number of the integral.
Number	Number of remaining calibrated determinations.

Table 6-150: Columns of the [Inventory](#) table

6.11 External Backup Viewer

The external backup viewer can be used to view archived patient tests from autobackup files.

NOTE

While the External Backup Viewer is running, the **LIAISON® XL** system software can not be accessed, but the **LIAISON® XL** system software is still running and working in the background.

Main Category Selection

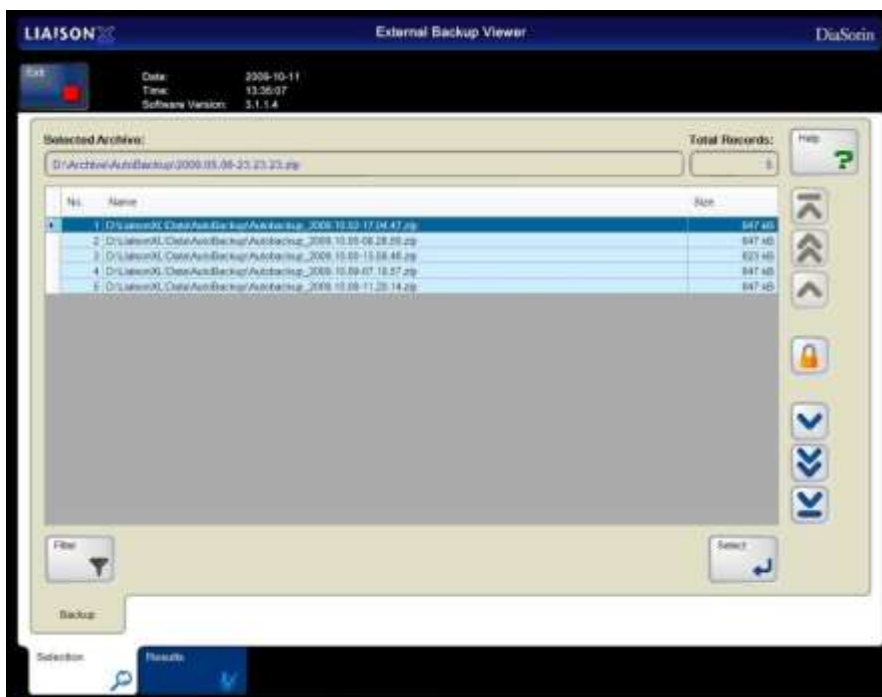


Figure 6-72: Main category **Selection**

Function	Description
Exit	Closes the External Backup Viewer and returns to the LIAISON® XL software.
Filter	Opens the Select Filter display (see chapter 6.4.1.5).
Select	Enables the user to open and view a selected backup file.
Selected Archive	Shows the name of the last opened backup file.
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-151: Functions of the **Selection** main category

Column	Description
No	Number of the backup.
Name	Name of the backup file.
Size	Needed storage space on the storage device.

Table 6-152: Columns of the **Selection** table

Main Category Results

The screenshot shows the 'External Backup Viewer' window of the LIAISON XL software. The interface includes a search bar, a table of results, and navigation controls. The table has columns for Sample ID, Assay, Measured Date and Time, Dilution Factor, RLU, Result, Unit, Qualitative Label, and Flags. The data is as follows:

Sample ID	Assay	Measured Date and Time	Dilution Factor	RLU	Result	Unit	Qualitative Label	Flags
SCA19-85A	CA19-9	2009-09-23 1...	1	6402	39	U/mL		
SCA19-85B	CA19-9	2009-09-23 1...	1	55000	735	U/mL		
CA11	CA19-9	2009-09-23 1...	1	5094	26.532026200...	U/mL		
CA22	CA19-9	2009-09-23 1...	1	5696	33.960137389...	U/mL		
CA33	CA19-9	2009-09-23 1...	1	4967	26.069922241...	U/mL		
CA44	CA19-9	2009-09-23 1...	1	4547	23.048825208...	U/mL		
CA55	CA19-9	2009-09-23 1...	1	5528	33.073852639...	U/mL		
CA33T	CA19-9	2009-09-23 1...	1	5632	31.959804634...	U/mL		

At the bottom of the window, there are tabs for 'Selection' and 'Results', and buttons for 'Filter', 'Print', and 'Details'.

Figure 6-73: Main category **Results**

Function	Description
Details	Opens the Result Details display for the selected entry (see chapter 6.4.1.3).
Filter	Opens the Select Filter display (see chapter 6.4.1.5).
Standard buttons	For standard buttons (e.g. arrow buttons, lock, Print) see chapter 6.1.

Table 6-153: Functions of the **Results** main category

Column	Description
Sample ID	Shows the sample ID.
Assay	Shows the assigned assay.
Measured Date and Time	Expected result date and time.
Dilution Factor	Multiplication factor for the result (only for diluted tests).
RLU	Shows the raw results (in Relative Light Units).
Result	Shows the dose result in user units.
Unit	User defined units.
Qualitative Label	Shows the result as qualitative evaluation (e.g. positive, negative etc.)
Flags	List of flags. For details about the flags see chapter 5.9.5.

Table 6-154: Columns of the **Results** table

Procedure

1. Start the external backup viewer from the sub category **Applications** (see chapter 6.7.2) in the main category **System**.
2. Enter the user name into the **User** box.
3. Enter the password into the **Password** box.
The password is case sensitive!
4. Click on the **Login** button.
The external backup viewer shows the main category **Selection**.
5. Select the desired backup file.
6. Click on the **Select** button.
The external backup viewer shows the **Extracting Zip File** dialog.
7. Click on the **OK** button to extract the desired backup file.
8. Click on the main category **Results**.
The external backup viewer shows all archived patient results from the backup file.
9. Select a result entry.
10. Click on the **Details** button.
The external backup viewer shows the details.
11. After the usage of the external backup viewer, click on the **Exit** to return to the **LIAISON® XL** software.

7 Quality Control (QC)

The current chapter applies up to QC SW V2. For subsequent versions, please refer to the manual available on DiaSorin online repository.

7.1 Overview

The **LIAISON® XL QC Software** is installed on the Control Unit, attached to the Diasorin **LIAISON® XL** Instrument. It is a selectable option within the DiaSorin LXL Software to support the Quality Control of all parameters performed on the **LIAISON® XL** system. The main purpose of this module is to provide the user access to the performance of their Quality Control samples in order to control the integrity of the analytical results.

All Quality Control samples being used contain a fixed concentration (target value) for a specific analyte. By testing this sample with the analytical method it should produce an expected result. If one or more results of control samples have a difference from the expected results, an issue in the analytical system or method may be detected.

To find out if a control result indicates an analytical problem, the control results are evaluated based on either the target value range (defined by the actual manufacturer of the control material) or on “intra-laboratory” limits.

Intra-laboratory limits have to be calculated for each combination of: Analyser instrument, method (assay), control material and control material lot.

Due to the different types of QC applications that are currently recognized, there arises the need of considering 4 different use cases:

1. Westgard rules
2. RiLiBÄK checks
3. Accuracy
4. Precision

7.2 Starting the Software

Within **LIAISON® XL** software the QC STATS program is loaded automatically from the user menu. Depending on the availability of user information in the configuration file, the user will be logged in automatically and known user rights are granted.

If no user information is available, or the application is started in a standalone mode, then the next screen will appear and you have to provide a User Name and Password.

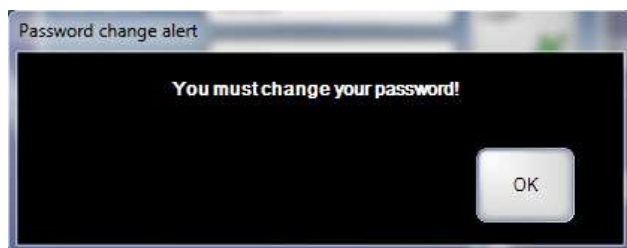


If the login is successful, the main menu of QC STATS is provided and six main tabs are displayed at the bottom of the screen:



Loading	Select and import specific .xml files
Results	Select and view results
Settings	Select to edit/change the definitions of the different available QC method/rules
Maintenance	Select to edit/change/delete information related to the analyser, Assays, control material and expected results
Audit	Select to access/retrieve/report all stored audit information
Administration	Select to access User and Role settings or to archive QC results, still available for review, but data will not be editable anymore

The 1st time you're logging in, or the existing password is expired when you access the application through the Desk shield, the software forces to enter a new password, different from the current used password. The following message box needs to be confirmed.



After selecting **OK**, you have to enter a new password and confirm this through the second entry



The screenshot shows a Windows-style dialog box titled "QC - User Login". The dialog has a blue header with a pie chart icon and the text "QC STATS". Below the header, there are two input fields: "User Name:" with the text "labsuper" and "Password:" with masked characters "*****". To the right of these fields is a "Login" button with a mouse cursor icon. Below the password field, there are two more input fields: "New Password:" and "Confirm Password:". At the bottom of the dialog, there are two buttons: "OK" and "Exit", both with green arrow icons.

The software will not allow you to enter the same password again. In this case the following message will appear:



If the changed password is successfully entered two times, the software will start normally.

The module can be closed by selecting the **Exit** button from the main menu header.

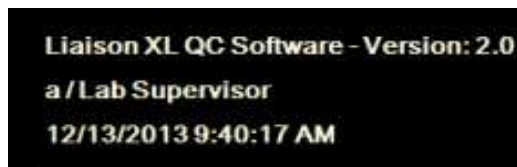


Or return to the Diasorin XL Software by selecting

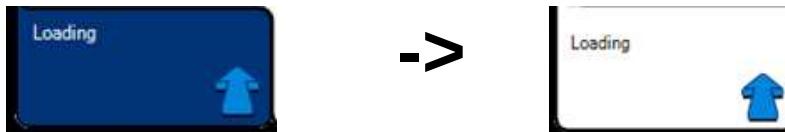


Beside the described button(s) the header also provides the following information:

- Name of the actual applicaton and the Software version
- Current user Logged in
- Actual Date and Time



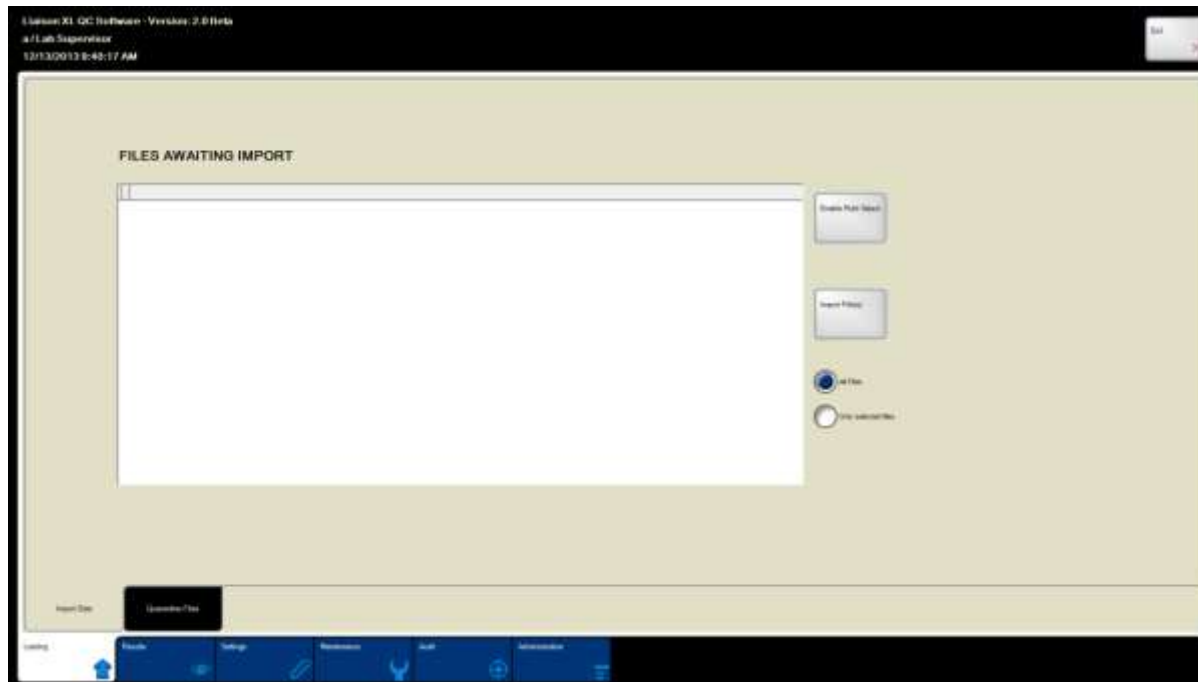
7.3 Loading



The exchange of Control result information between the **LIAISON® XL** software and QC STATS is performed automatically, based on file exchange in a predefined XML format and target directory. This automatic “File Watch” option can be disabled. In this case the **Loading** tab enables you to manual select and import external result files.

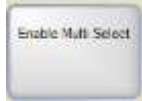
7.3.1 Import Data

The tab **Import Data** can be selected to access an overview of all valid files ready to be imported in QC STATS. Those files will be displayed in the **Files Awaiting Import** list box.



7.3.2 Importing Files

To upload all files, select the radio button and select **Import Files(s)**.

Import File(s)	Import of File(s) will be activated according next selection						
Enable Multi Select	Enable/Disable multi selection of files from the list.						
	This button is shown if multi selection is enabled and files can be selected by holding down the Ctrl key while selecting the file.						
	This button is shown if multi selection is disabled. Only one file at the time can be selected to import.						
All Files	Upload all files						
Only selected files	Upload selected files only						
FILES AWAITING IMPORT <table border="1"> <thead> <tr> <th>File Name</th><th>Created Date</th></tr> </thead> <tbody> <tr> <td>QCData0001.xml</td><td>2/26/2014 9:01:03 PM</td></tr> <tr> <td>QCData0002.xml</td><td>2/26/2014 9:01:03 PM</td></tr> </tbody> </table>		File Name	Created Date	QCData0001.xml	2/26/2014 9:01:03 PM	QCData0002.xml	2/26/2014 9:01:03 PM
File Name	Created Date						
QCData0001.xml	2/26/2014 9:01:03 PM						
QCData0002.xml	2/26/2014 9:01:03 PM						
File Name	Provides the actual name of the file that is waiting to be imported						
Created Date	The actual date and time the file is created by the LIAISON® XL software.						

During import the content of the file is checked, if the file is imported successfully an **Import Complete** message is registered in the audit log. In some cases a message box is generated to provide the user more information if essential information is missing. Please refer to appendix with errors for more detailed information on the actual messages.

7.3.3 Quarantine Files

The tab **Quarantine Files** can be selected to access an overview of all invalid files that could not be imported in QC STATS. Those files will be displayed in the **Quarantined File** list box.

If a file is selected from this list box, depending on the content, it will show the Assay Details, Lab Details, Analyser Details and Result Details in the related items on the screen. Any option that is missing or incorrect is highlighted in red. The same counts for the reason the file was quarantined. All fields can be edited to fill in the correct details.

The screenshot shows the LIAISON XL QC Software interface. At the top, it says "LIAISON XL QC Software - Version: 2.0 Beta" and "Administrator / Lab Supervisor" with the date "2022/0014 2:58:38 PM". The main window is titled "Quarantined File". It contains a table with columns "File Name" and "Created Date". Below this, there are four sections: "Assay Details", "Lab Details", "Analyzer Details", and "Result Details". Each section contains various input fields and buttons. The "Result Details" section includes a table with columns: "Result Date", "QC", "Concentration", "Unit", "Status", "Reference", "Range", "Concentration", "Unit", "Result", "Result Date", "Result Date", "Result Date". The interface has a dark blue header and footer with navigation icons.

Two options are selectable for the user

Import	Import the selected (and corrected) file. If fields are still empty, a message box will appear and empty fields that require input will be highlighted with red borders.						
Cancel	Any edited field will be cancelled and all field will become empty.						
Quarantined Files	Quarantined File <table> <tr> <th>File Name</th><th>Created Date</th></tr> <tr> <td>quarantined_20140226_30357591_-45.xml</td><td>2/26/2014 9:19:54 PM</td></tr> <tr> <td>quarantined_20140226_30366265_-45.xml</td><td>2/26/2014 9:20:02 PM</td></tr> </table>	File Name	Created Date	quarantined_20140226_30357591_-45.xml	2/26/2014 9:19:54 PM	quarantined_20140226_30366265_-45.xml	2/26/2014 9:20:02 PM
File Name	Created Date						
quarantined_20140226_30357591_-45.xml	2/26/2014 9:19:54 PM						
quarantined_20140226_30366265_-45.xml	2/26/2014 9:20:02 PM						
File Name	The name of the quarantined file including the actual date when the file was quarantined.						
Created Date	The date the file was original created.						

If a file is selected all available details will be listed in the different sections. Unknown fields will be left empty or will contain the word Unknown.

7.3.3.1 Lab Details

In this details section the information about the laboratory are provided

<i>Name</i>	Name of the laboratory provided by the LIAISON® XL Software
<i>Address</i>	Related address of the Laboratory

7.3.3.2 Analyzer Details

In this details section the information about the analyzer are provided

<i>Name</i>	Name of the analyser used to produce the control results available in the file
<i>Serial Number</i>	Actual serial number of the Analyzer being used
<i>Manufacturer</i>	Manufacturer of the Analyzer

7.3.3.3 Assay Details

In this details section the information about the assay for which the control is produced are provided

<i>Name</i>	Name of the laboratory provided by the LIAISON® XL Software
<i>Measuring Method</i>	Information about the measuring method being used
<i>Kit No</i>	Kit number for the assay reagents being used to generate the control results
<i>Ancillary Lot</i>	Information about the ancillary lot for the assay reagents being used
<i>Calibration Expiry Date</i>	Information about the expiry date for the Calibration of the assay
<i>Lot No</i>	Lot number for the assay being used
<i>Calibration Date</i>	Information about the date the calibration for the assay was performed

Matrix	What kind of substituent. Beside the fact it can be empty 3 other items will be used: - B for Blood - U for Urine - L for Liquor
Ancillary Serial No	Serial number being used for the ancillary Lot
Calibration ID	Identification being used for the calibration

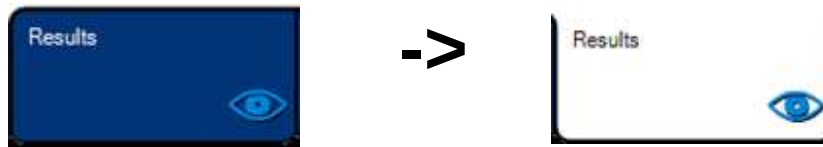
7.3.3.4 Result Details

In this table all relevant information of the control is provided

Result Date	Date and time the control result is generated by the analyser
ID	Identification
Concentration Value	Measured value of the control on the analyser
Unit	Used unit
Status	Provides a status of the result
F	Final result
C	Corrected result
Rejection Reason	Comment field providing the reason if the control is rejected by the LIAISON® XL software
Plate ID	Not applicable
Control Name	Name of the Control
Lot No	Actual Lot number being used for the control
Barcode	Barcode identification of the control

Control Manufacturer	Manufacturer details of the control being measured
Control Matrix	What kind of substituent. Beside the fact it can be empty 3 other items will be used: - B for Blood - U for Urine - L for Liquor
Expiry Date	Expiry date for the control
ManuRangeMax	Maximum Value of the control result provided by the manufacturer
ManuRangeMin	Minimum value of the control result provided by the manufacturer
UserRangeMax	Maximum Value defined by the user
UserRangeMin	Minimum Value defined by the user
PreAcc	Is the control either a precision or accuracy control
P	Precision
A	Accuracy

7.4 Results



The **Results** tab enables you to select and view results for the different Control samples. Multiple selection buttons are available to specify which results need to be reviewed. Each time a result is imported it is either generating a new period if there doesn't exist an open period for the same Analyzer, Assay and Control material.

Four types of controls can be shown:

- Accuracy
- Precision
- Westgard rules
- RiLiBÄK

Which tab in the result display can be selected is depending on the settings for the specific assay and the associated control. Please refer to the chapter where the **settings** are explained.

Depending on the type of Control to be visualised, the software will create a pre-period for the precision and Westgard controls, until the number of pre-set control results or the pre-set time range for pre-period length is reached. These values can be defined by a user with sufficient privileges in the settings options for the individual control. When the set value is reached, the pre-period is closed and the next control result will create a new period. If a period already exists, a new imported control result will be added to the existing period until the pre-set duration is reached.

7.4.1 Searching Results

Two drop down list boxes at the top left of the screen are used to define which results are displayed in the tree view list box and how they are organised. The default setting is to display all **Open Periods** organised by **Analyzer**.



The screenshot shows a search interface with two dropdown menus. The first dropdown is labeled 'Analyzer' and the second is labeled 'All Valid Periods'. Below these are two date input fields, both showing '10/30/2013', and a 'Clear Dates' button.

The first drop down contains a choice of 5 options that will organise the results in the tree view list box:

Lab
Analyzer
Assay
Control
Control Lot No

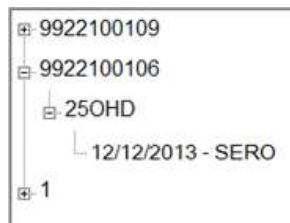
The second drop down contains a choice of 4 options that will display different period types in the tree view list box:

All Valid Periods
Open Periods
Periods With Errors
Rejected Periods

Below the two dropdown boxes you have the possibility to select a certain date range. If a day need to be selected, then you need to enter this date for both the begin-date and end-date.

The option **Clear Dates** will remove the entered dates.

For example, selecting **Assay** in the first dropdown and **All Valid Periods** in the second will display all periods in the tree view list box, organised by assay:



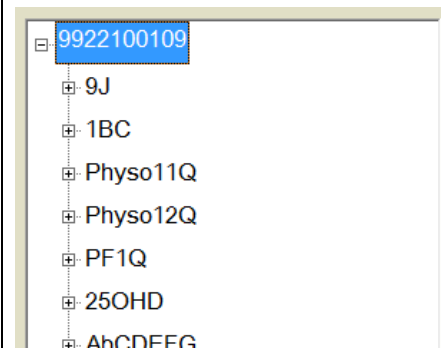
Selecting the  next to an item will open the sub-item(s), while selecting the  next to an item will close the sub-item(s).

The Tree list box is using 2 colours to differentiate between Periods with or without data that break a rule:

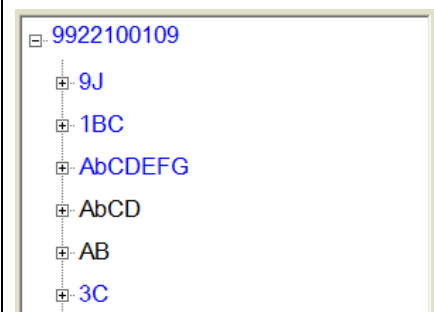
Black: No rule is broken for this control

Blue: The period for this control contains at least one broken rule

No broken rule

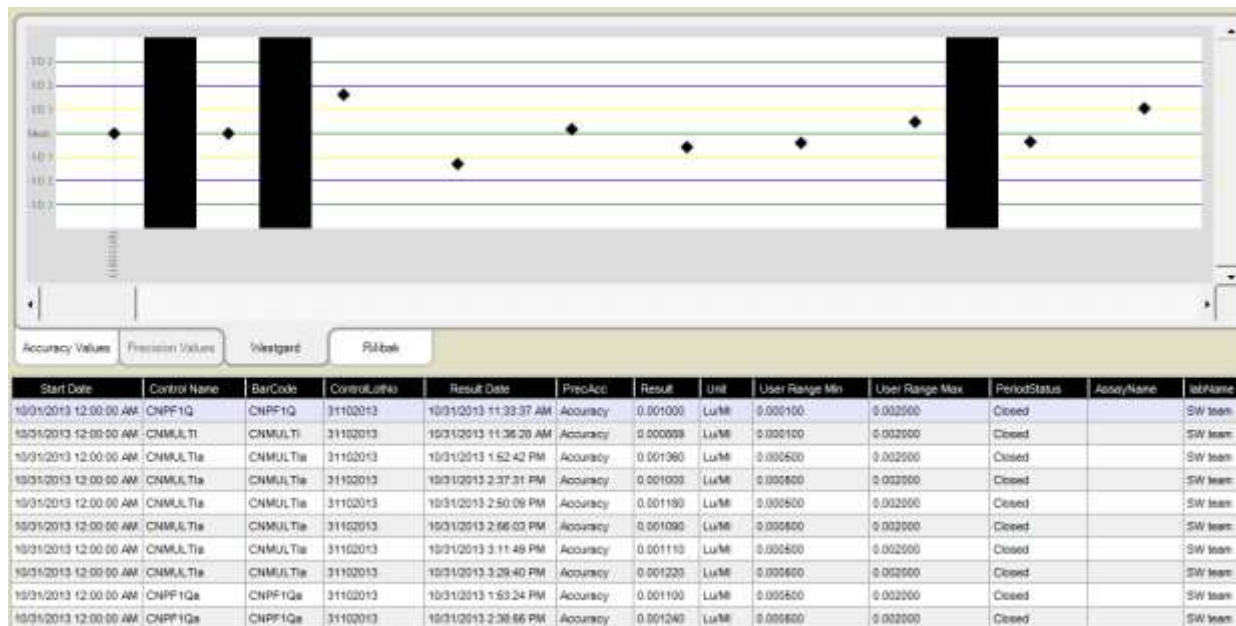


Broken rule



7.4.2 Viewing Results

In the tree view list box, use the  to open the period you would like to view. When a period is selected, the results will be displayed in the graph and table areas of the screen.



Depending on the configuration of the Control sample, the following tabs under the graphical review screen are enabled or disabled:

Accuracy Values
Precision Values
Westgard
RiLibÄK

What is actual displayed is depending on the type of control, accuracy or precision and if Rilbäk is enabled or not.

In the main screen the SD and CV are shown. For Westgard the number of points taken to calculate the CV can be configured per assay (default 20 points are required). For the RiliBÄK display of CV 15 consecutive points from 15 different days are taken.

The CV calculation is calculated as soon as a result is a result is available for a period.

CV = 157.88%
(157.88%)
No of Results 10

The next table shows what different aspects are applicable

	Westgard	RiliBÄK	Accuracy	Precision
Is date search applicable?	✓	✓	✓	✓
Can Multi Select be activated?	✓	✓	✓	✓
Can cumulative values be used?	✓			
Are pre-periods required/used?				✓
Is the SD calculated from the received controls?	✓			✓
Is the Coefficient of Variation (CV) calculation based on the actual period?	✓	✓	✓	✓
Is the shown CV based on the previous period(s)	✓	✓	✓	✓
Is the Mean calculated from the received controls?	✓			✓
Is the Mean provided by given ranges			✓	✓
Manufacturer?		✓*	✓	
User?		✓*	✓	
Can a period be closed/rejected?	✓	✓	✓	✓
Can results be excluded?	✓	✓	✓	✓
Should control results be within predefined limits (Manufacturer ranges)?			✓	
Will the calculated mean of the current period be shown in the graph?			✓	
Will the calculated mean of the previous period be shown on the graph?	✓			✓
Is the control checked for trend rules?	✓			
Is the control checked for Range rules?	✓	✓**		
Is the control checked for position rules?	✓			

*If applicable

**These limits are Manufacturer and/or Laboratory. This is only applicable if the actual Analyte is not predefined in the RiliBÄK table. In case the Analyte is defined, the Analyte limits are used.

The graph for Westgard rules is displayed in the Levy-Jennings format with the mean and standard deviation calculated on the Y-axis. Results are plotted along the x-axis in order of Result Date/Time. If hovering over a result in the graph, a brief summary of result details will be displayed: Value, Result Date and Calibration.

Also assay related data like: Calibration expiry date, Lot. No, Kit No, Ancillary Lot and Calibration ID. If applicable the rule violations are shown.

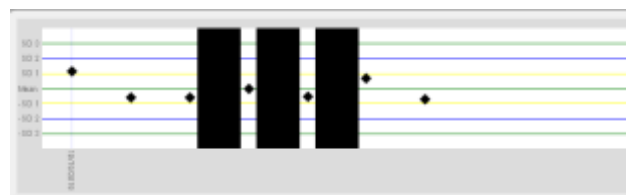
Plot details
Value: 6.514600 A
Result Date: 2/18/2014
Calibration: 1/31/2014 3:41:53 PM
Assay Calibration Expiry Date: 2014-10-02
Assay Lot No: 100
Assay Kit No: 300
Assay Ancillary Lot:
Assay Calibration ID: 00051
No violations

Under the list of displayed results, the following button is available

Enable Multi Select

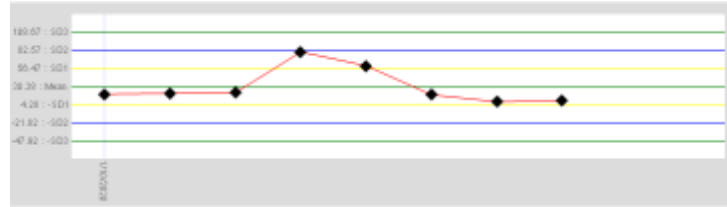
Multiple periods associated with an assay can be displayed on the graph and table by selecting the **Enable Multi Select** button and selecting the periods that you want to view.

The periods will be plotted on the graph in date/time order separated by a black bar.



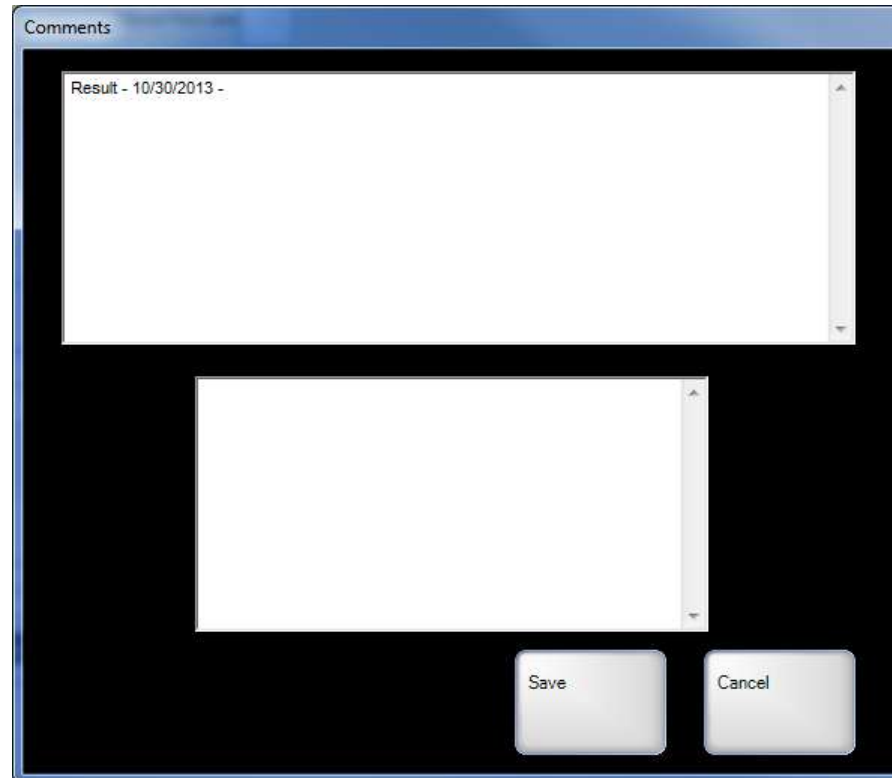
It is not necessary to select the **Enable Multi Select** button in order to view **all** periods associated with an assay. These will be displayed in the graph and table if the **assay** is selected in the tree view.

Other possible selection items in the results tab are

Day	Default option. Displays the Result Date: <yyyy-mm-dd>
Week	Displays the Result Date in weeks (x) since the start of the year: Week <x>
Month	Displays the Result Date month: <Month>
Use Cumulative Values	Checkbox is un-ticked as the default setting. If ticked, the mean and standard deviation will be calculated using data from all periods based on the same Analyzer, Assay and control material.
Show Excluded Results	Checkbox is ticked as the default setting t. If un-ticked, any excluded results in the period being viewed will not be displayed in the graph and table.
Show periods separately	Checkbox is un-ticked as the default setting. If ticked, and multiple periods have been selected (using the Enable Multi Select button), a Periods Separated window will be displayed showing graphs for each selected period. The maximum number of graphs that can be showed is 3. If the Enable Multi Select button is not ticked, the shown graph can still be viewed separate by selecting the tick box Show periods separately
Show Plot Line	Checkbox is un-ticked as the default setting. If ticked, a plot line will be added to the results on the graphs. 

**Add/View Result
Comments**

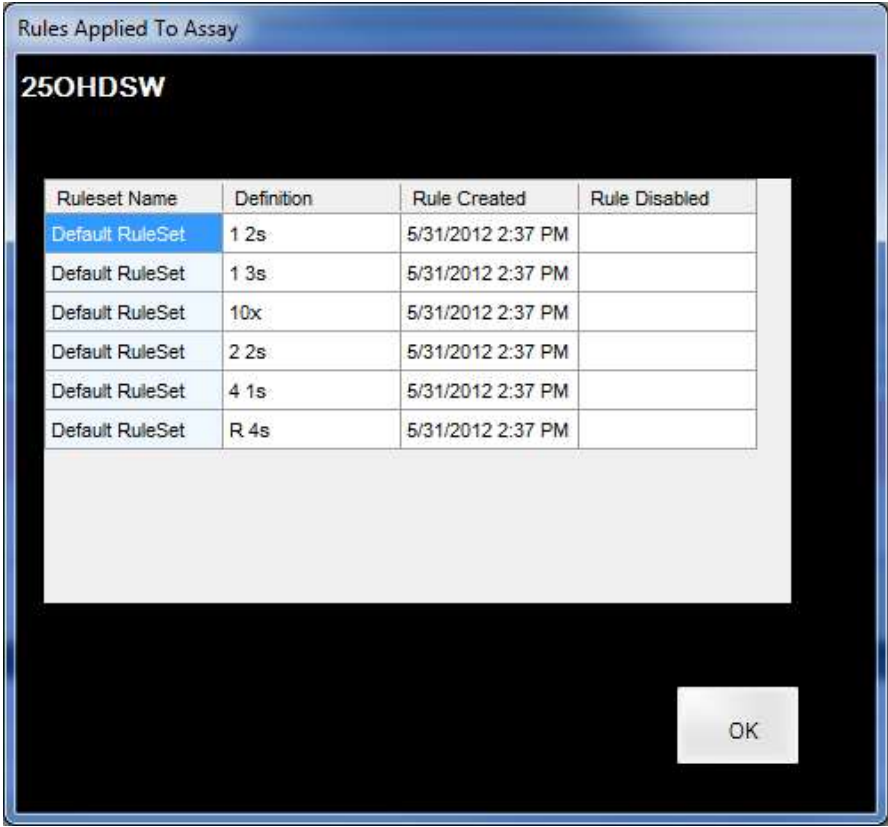
Allow to view or add comments to a selected result. If selected a new screen will appear.

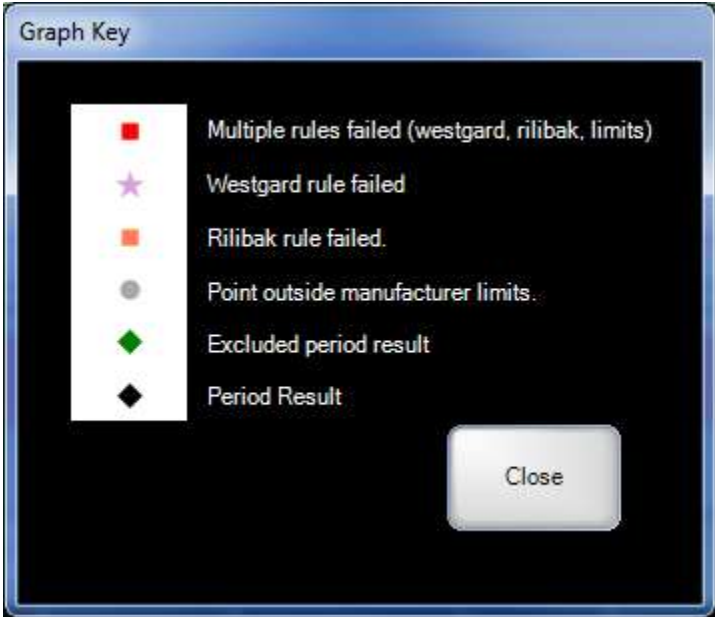


The first box shows Current comments and the user can add new comment in the second box. With **Save** the added comment is saved in the DB. **Cancel** will close the screen.

<i>Add/View Period Comments</i>	Allow to view or add comments to a selected period Comments Period - belUR: 2/18/2014 - Save Cancel Comment can be added and with the Yes button it will be saved. Selection of the No button will close the screen.
--	--

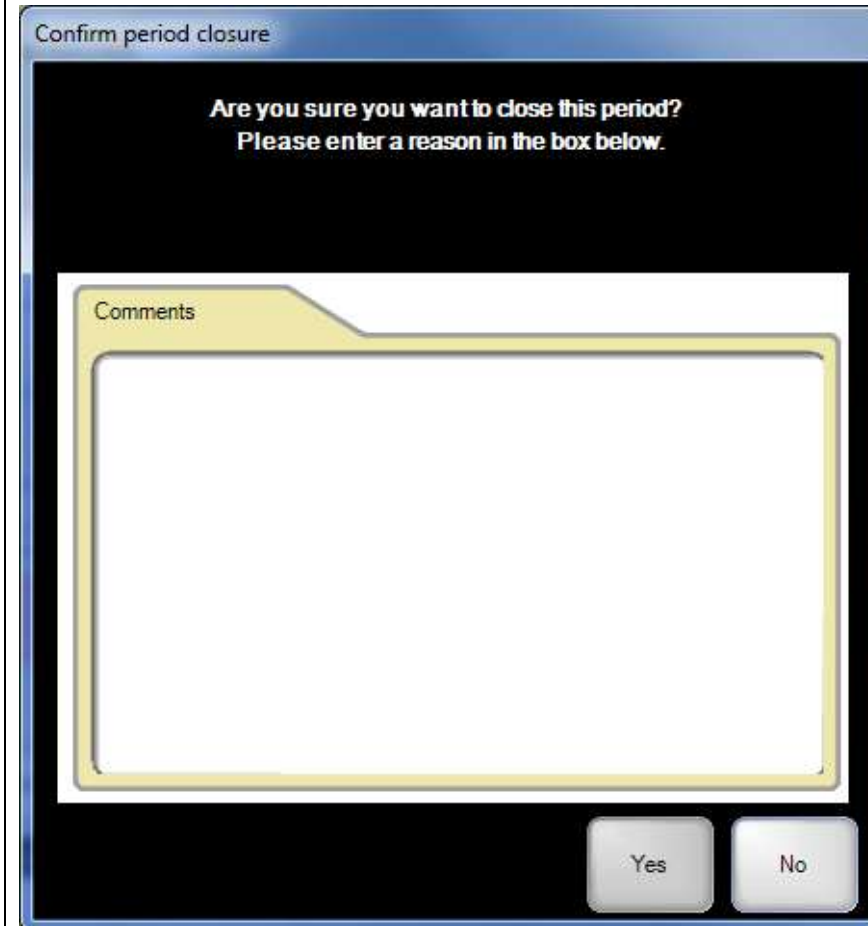
Print/Export	Period results can be printed or exported to a CSV file 
Print	With a period selected in the tree view list box, select the Print / Export button. At the prompt, select the Print button.
Export	With a period selected in the tree view list box, select the Print / Export button. At the prompt, select the Export button. A message confirming the location and filename of the exported data will be displayed. Files will be exported to the predefined location.
CSV Delimiter	Select what character to be used to separate the individual fields. The following characters can be selected from the drop down menu: , ; ^ or ~
Y+	Zoom out in Y scale direction
Y-	Zoom in in Y scale direction
X+	Zoom out in X scale direction
X-	Zoom in in X scale direction

Rules Applied	Displays the Westgard rules applied for the selected period 
Ruleset Name	As part of the settings different set of rules can be defined. In this column the actual Ruleset being used is provided.
Definition	Information about the actual rule within the used ruleset that has been applied.
Rule Created	The date and time the rule was created.
Rule disabled	The date and time the defined rule was disabled by the user.

OK	Leave the display screen.
Show Key	Shows the shape and colour symbols used to signify a period results status on the graph.  The image shows a 'Graph Key' dialog box with a black background and a blue border. It contains a list of symbols and their corresponding meanings: - Red square: Multiple rules failed (westgard, rilibak, limits) - Purple star: Westgard rule failed - Orange square: Rilibak rule failed - Grey circle: Point outside manufacturer limits - Green diamond: Excluded period result - Black diamond: Period Result A 'Close' button is located at the bottom right of the dialog box.

Close Period

To manually close a period, select the period you want to close in the tree view list box. If this option is selected, you must enter comments in the message box, else the closure of the period will not be performed.

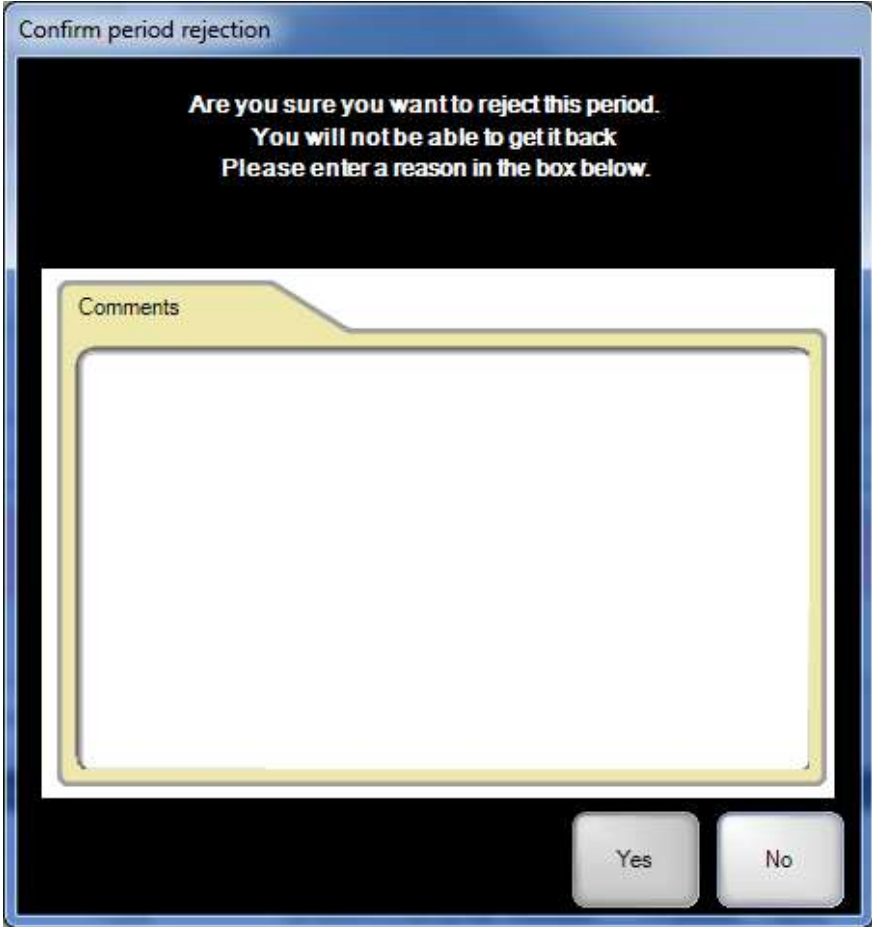


Confirm period closure

Are you sure you want to close this period?
Please enter a reason in the box below.

Comments

Yes No

Reject Period	Select the period you want to reject in the tree view list box, Only by entering comment, the period can be rejected. 
	An excluded result will not be taken into account any more for the actual calculation and is also excluded from any historical data used for the next period.

<i>Exclude Results</i>	Exclude results in a period, select the result(s) you want to exclude (in the graph or in the table). As soon as you select a result for exclusion you need to add a comment. Comments Result - 8/13/2013 - Save Cancel
-------------------------------	---

Edit Results

As default this option is disabled and will be enabled for manual entered results

StartDate	ResultDate	ConcentrationValue	EvaluationResult
10/30/2013 12:00:00 AM	12/13/2013 10:19:00 AM	1.000000	P

Result Date: 12/13/2013

Concentration Value: 1.000000

Evaluation Result: Pass

Plate ID:

☒ Include Result

Rejection Reason:

Comments: 1

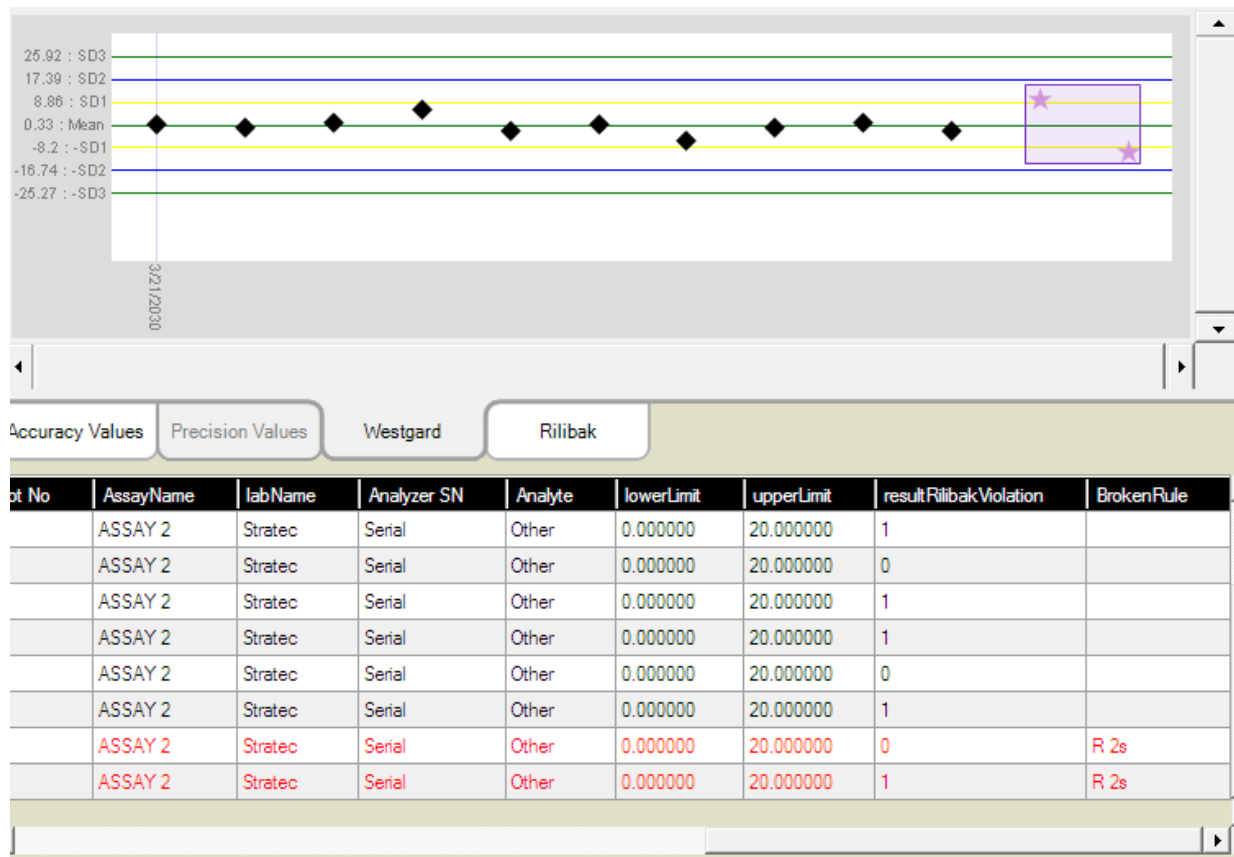
Exit Save Cancel

Content of any field can be edited/added or removed. The option Evaluation Result can be Pass or Failed. If the Save button is selected, the software checks if the entered concentration value is numeric. If not an error message will be displayed.

Show	The actual view of the graph and/or table of results can be altered by you by selecting the Show button. This button has 3 different functions:
Show Results	This option is the default choice. Currently the display provides a graphical screen and a table with results for each individual point. By selecting Show Results . The display is altered and only shows the table with results.
Show Graph	This option is available if only a table with results is shown. By selecting this option you alter the display by showing the graph only.
Show Graph and Results	This option is available if the display shows the graph only. By selecting this option you will alter the display to show both the graph and table of results.

7.4.2.1 Westgard rule failures

Results failing Westgard rules will be displayed as ★ on the graph and in red text on the table. Groupings will be applied on the graph to indicate results which have the same rule failures and/or multiple rule failures.



Hovering over a group in the graph will display a brief summary of details: Value, Result Date and Calibration. Beside this also assay related data will be provided like: Calibration expiry date, Lot. No, Kit No, Ancillary Lot and Calibration ID. If applicable the rule violations are shown.

A **Comments** window will be displayed, allowing you to enter a comment before saving.

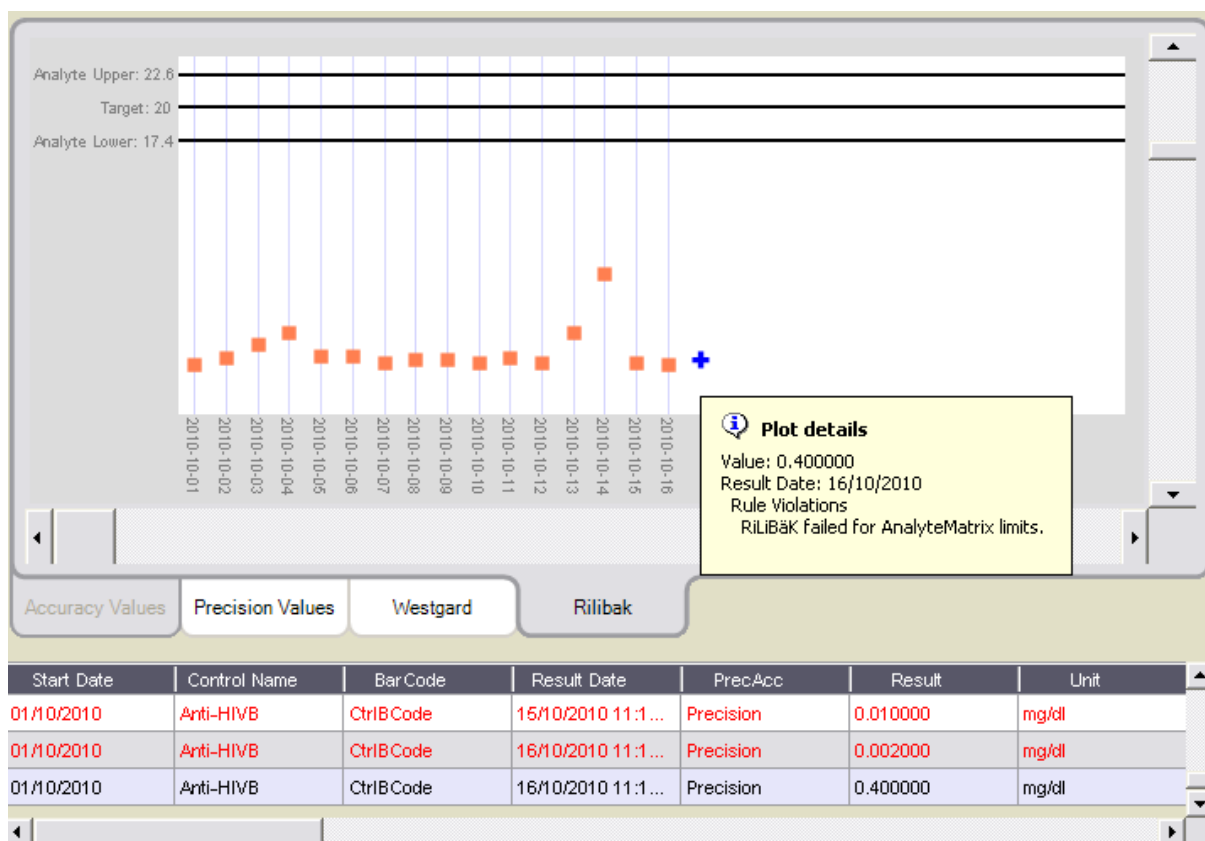
Select the **Save** button to exclude the result(s).

Select the **Cancel** button if you do not want to proceed with excluding the result(s).

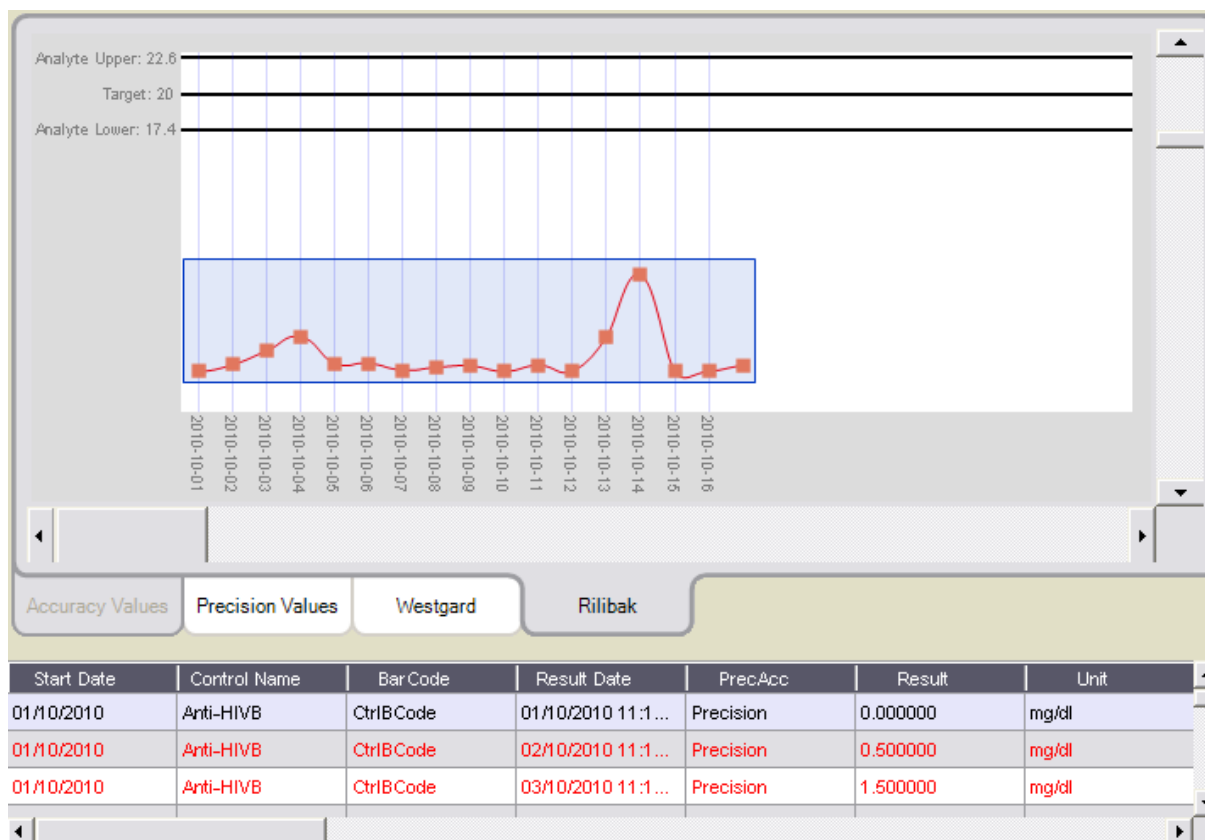
Excluded results will be displayed in green text in the table and as a  on the graph and will be omitted when calculating the mean and standard deviation.

7.4.2.2 Rilibak failures

Results failing outside the limits being used for RiLiBÄK will be displayed with an orange square in the graph  on the graph and in red text in the table. When a period fails the RiLiBÄK rules it is signified on graph, using a blue framing around the results in that failed period.



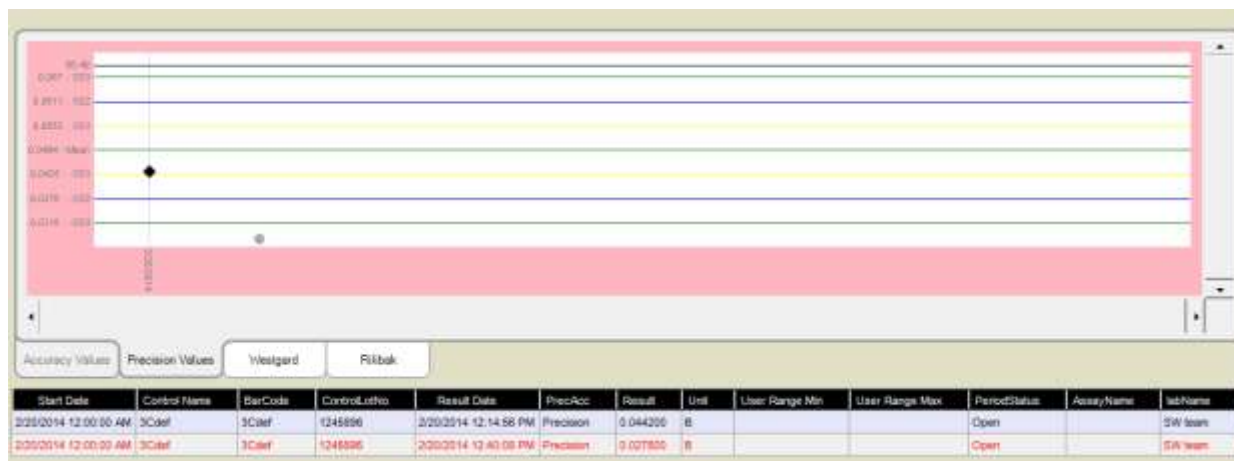
The next figure shows an example if a RiLiBÄK period fails



Hovering over a group in the graph will display a brief summary of details: Value, Result Date and Calibration. Beside this also assay related data will be provided like: Calibration expiry date, Lot. No, Kit No, Ancillary Lot and Calibration ID. If applicable the rule violation is shown.

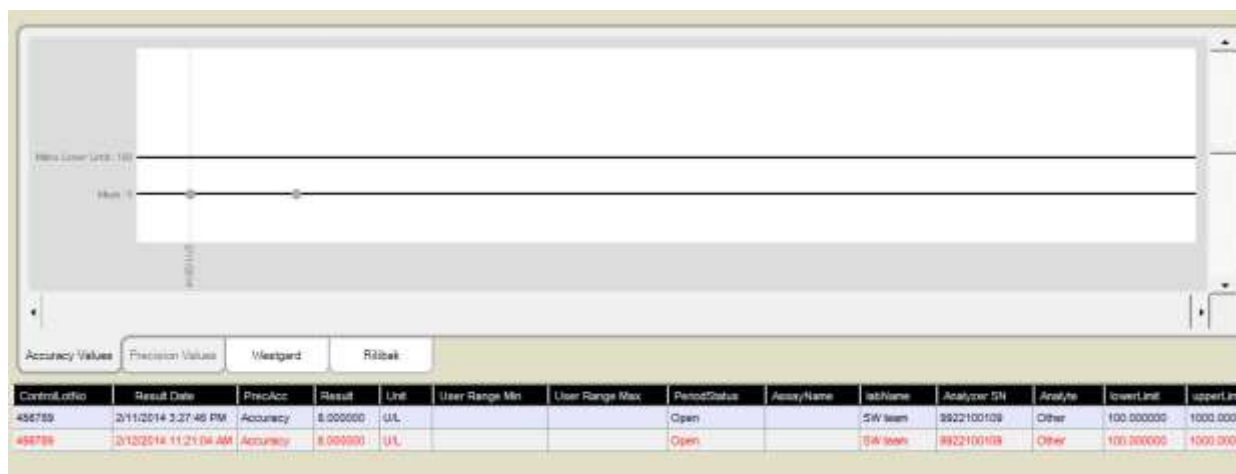
7.4.2.3 Precision/Accuracy failures

The way how failures are displayed for Precision and Accuracy Controls is exactly the same. Results failing will be displayed as ● on the graph and in red text in the table.



The pink colour around a graph represents a pre-period. If the graph represents a normal period, the surrounding colour of the graph is grey.

Example of a screen where the accuracy controls fails the defined ranges:



Hovering over a group in the graph will display a brief summary of details: Value, Result Date and Calibration. Beside this also assay related data will be provided like: Calibration expiry date, Lot. No, Kit No, Ancillary Lot and Calibration ID. If applicable the rule violation is shown.

7.4.2.4 Print Violations

Upon selecting Print Violations a new screen will be opened where all violations for a single day can be viewed.

Print violations

Select Date: 4/7/2014

Close Window

	Control Name	Control Barcode	Control Lot No	Assay Name	Assay	Result + Unit	Operator	Rules Broken
1	Control Anti-HIV1	ControlCode	Anti-HIV1 Lot#10	ASSAY 302	Accuracy	-1.010000	Diazom	Result is Out of limits

Print

Export

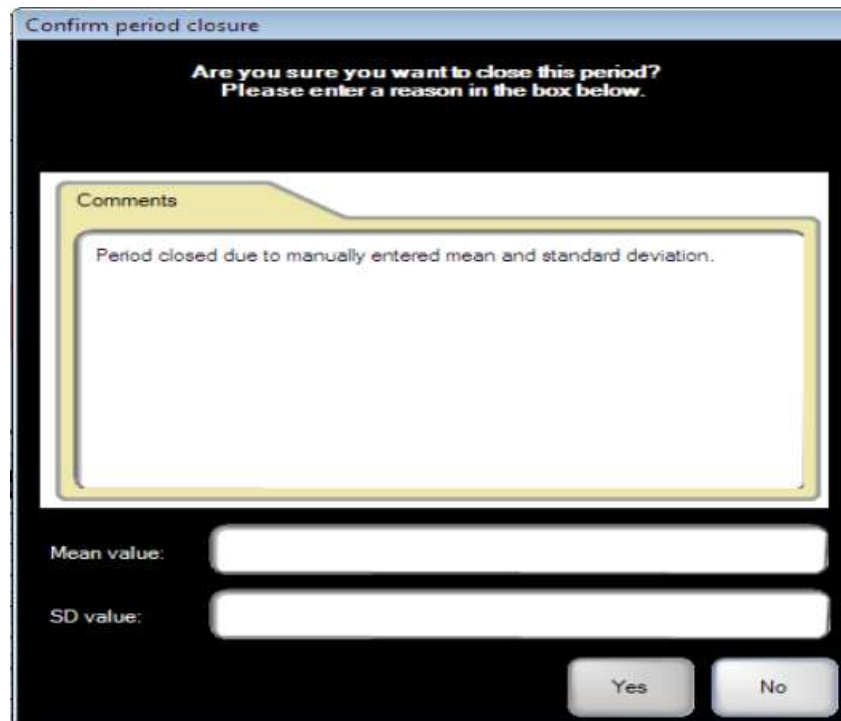
CSV Delimiter
 ;

Within this screen the following options are available:

Select Date	For which date violations are to be shown for.																
Close Window	Close Window and return to Result screen.																
Grid	The following information is shown in the grid: <table><tr><td>Control Name</td><td>Name of Control</td></tr><tr><td>Control Barcode</td><td>Barcode of Control</td></tr><tr><td>Control Lot No</td><td>Lot number for Control</td></tr><tr><td>Assay Name</td><td>Name of Assay</td></tr><tr><td>Area</td><td>For which rule the violation has occurred.</td></tr><tr><td>Result + Unit</td><td>Result and Unit information</td></tr><tr><td>Operator</td><td>Operator</td></tr><tr><td>Rules Broken</td><td>Description of violated rule.</td></tr></table>	Control Name	Name of Control	Control Barcode	Barcode of Control	Control Lot No	Lot number for Control	Assay Name	Name of Assay	Area	For which rule the violation has occurred.	Result + Unit	Result and Unit information	Operator	Operator	Rules Broken	Description of violated rule.
Control Name	Name of Control																
Control Barcode	Barcode of Control																
Control Lot No	Lot number for Control																
Assay Name	Name of Assay																
Area	For which rule the violation has occurred.																
Result + Unit	Result and Unit information																
Operator	Operator																
Rules Broken	Description of violated rule.																
Print	Option to print grid.																
Export	Export to CSV.																
CSV Delimiter	Option to choose delimiter for export file. Options are: , ; ^ ~																

7.4.2.5 Configuring mean and standard deviation for Precision controls

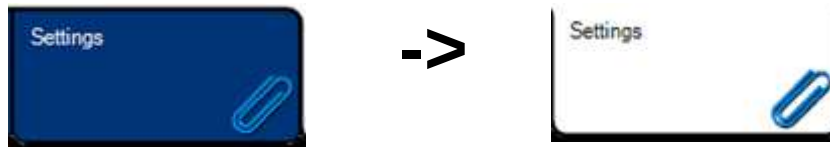
Within the Results screen for Precision controls, it is possible to manually configure the mean and standard deviation. When manually configuring these values, the current period will be closed and a new period will be opened with the configured values.



A screenshot of a software dialog box titled "Confirm period closure". The dialog has a black background with white text. At the top, it asks "Are you sure you want to close this period?" and "Please enter a reason in the box below." Below this is a yellow-bordered box labeled "Comments" containing the text "Period closed due to manually entered mean and standard deviation." At the bottom of the dialog, there are two input fields: "Mean value:" and "SD value:". At the very bottom right, there are two buttons labeled "Yes" and "No".

Comments	A comment must be added in order for the period to be closed.
Mean value	A value must be entered for the Mean.
SD value	A value must be entered for the SD.
Yes	This button confirms that closure of the current period and opens a new period with the configured Mean and SD. This button is only enabled when a Comment, Mean and SD are entered.
No	This button closes the window without taking any action.

7.5 Settings

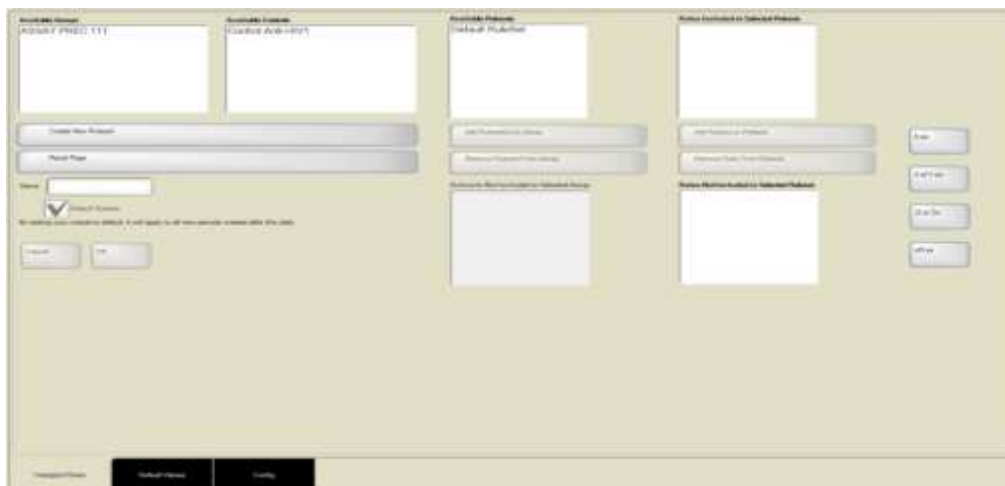


The **Settings** tab enables you to define Westgard rules, period defaults and specific configuration settings. There are three tabs located on the bottom left of the screen which can be selected to switch between the **Westgard Rules** area, the **Default Values** area and The **Config** area.



7.5.1 Westgard Rules

When the **Westgard Rules** tab is selected the screen will display all available assays in the **Available Assays** list box and all configured Rulesets in the **Available Rulesets** list box.



By selecting an individual **assay/control** you can view which **Rulesets** apply to for that assay/control.



By selecting individual **Rulesets** you can view which **Rules** are included in the **Ruleset**:

The screenshot shows the LIAISON XL software interface for configuring rulesets. The window is titled 'Ruleset Configuration' and contains several sections:

- Available Assays:** A list box containing 'ASSAY PREC 111'.
- Available Controls:** A list box containing 'Control Anti-HIV1'.
- Rulesets included in assay:** A list box containing 'Default RuleSet', 'RULESET1', and 'RULESET2'.
- Rules included in Selected Ruleset:** A list box containing '1 2s', '1 3s', '2 2s', '4 1s', '10x', and 'R 4s'.
- Buttons:** 'Create New Ruleset', 'Reset Page', 'Add Rule(s) to Assay', 'Remove Rule(s) From Assay', 'Add Rule(s) to Ruleset', and 'Remove Rule(s) From Ruleset'.
- Form Fields:** A 'Name' field containing 'RULESET2' and a 'Default Ruleset' checkbox which is checked.
- Footer:** 'Cancel' and 'OK' buttons.

7.5.1.1 **Default Ruleset**

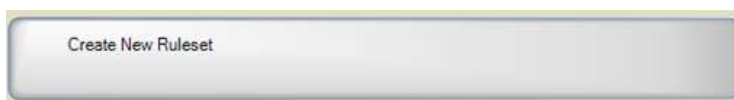
A **Default RuleSet** is created during installation. The **Default Ruleset** is applied to all assays. Rules included in the **Default RuleSet** can be viewed by selecting **Default RuleSet** in the **Available Rulesets** list box:

Rulesets included in assay	Rules Included in Selected Ruleset.
Default RuleSet	1 2s
RULESET1	1 3s
Default Ruleset1	2 2s
	4 1s
	10x
	R 4s

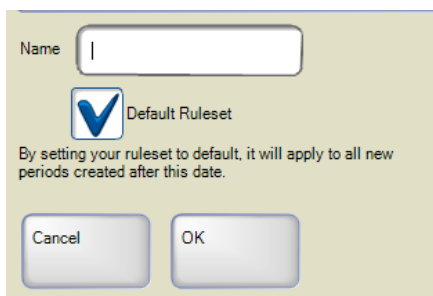
The **Default Ruleset** can be customised or removed using the configuration options available in the **Westgard Rules** area.

7.5.1.2 Create New Ruleset

To create a new Ruleset for an individual assay, select the assay in the **Available Assays** list box and select the **Create New Ruleset** button.



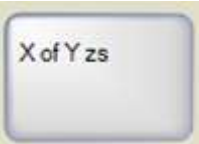
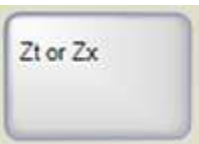
Select **Yes** to the prompt **Apply to Assay/Control?** Enter a **Name**, tick the **Default Ruleset** checkbox (to apply the Ruleset to all new periods), and select **OK**. If you do not want to save any changes, select the **Cancel** button.

A dialog box with a light beige background. It contains a text input field labeled "Name" with a cursor. Below it is a checked checkbox labeled "Default Ruleset". Under the checkbox, there is a line of text: "By setting your ruleset to default, it will apply to all new periods created after this date." At the bottom are two buttons: "Cancel" and "OK".

If you want to create a Ruleset without it being applied to an assay select **No** to the prompt **Apply to Assay?** You can also create a new Ruleset without selecting an assay first.

7.5.1.3 Create Rules

The buttons on the far right of the [Westgard Rules](#) area are used to create new rules:

Button	Rule Type	Description
	Position Rule	- Looks for X results outside of the specified SD (z) - Written: X zs
	Trend Rule (Limit)	- Looks for X out of Y results that are above or below a specified SD (z) - Written X of Y zs
	Add Trend Rule x or t	- Written Zt, looks for Z number of results which are continually increasing or Z number of results which are decreasing - Written Zx, looks for Z number of consecutive results that are above the mean or Z number of consecutive results that are below the mean
	Range Rule	- Looks for two results out of how ever many specified (x) that have a difference of a specific SD value (z) - Written xR zs

To create a new rule, select the Ruleset you want to use and select the appropriate rule button. Configure the rule as required and select **Save**. If you do not want to save any changes, select the **Cancel** button.

Position Rule

Trend Rule

Two different Trend rules can be defined

Range Rule

Add Range Rule

Range Rule

- looks for two results out of how ever many specified that have a difference of a specific SD value.
- written: xR zs

Out of how many results are we looking for the difference?

What SD difference are you looking for?

Rule Name:

7.5.1.4 Remove Rule(s) From Ruleset

To remove a Rule from a Ruleset, select the Ruleset and the Rule you want to remove (in the **Rules included in Selected Assay** list box) and select the **Remove Rule from Ruleset** button.



The Rule will be moved from the **Rules Included in selected Ruleset** list box to the **Rules Not Included in Selected Ruleset** list box.

7.5.1.5 Add Rule(s) to Ruleset

To add a Rule to a Ruleset, select the Ruleset and Rule you want to add (in the *Rules Not Included in Selected Assay*), and select the *Add Rule(s) to Ruleset* button.



The Rule will be moved from the *Rules Not Included in Selected Ruleset* list box to the *Rules Included in selected Ruleset* list box.

7.5.1.6 Remove Ruleset From Assay

To remove a Ruleset from an assay, select the assay and the Ruleset you want to remove (in the *Rulesets included in assay* list box), and select the *Remove Ruleset From Assay* button.



The Ruleset will be moved from the *Rulesets included in assay* list box to the *Rulesets Not Included in Selected Assay* list box.

7.5.1.7 Add Ruleset(s) to Assay

To add a Ruleset to an assay, select the assay and select the Ruleset you want to add (in the *Rulesets Not Included in Selected Assay* list box), and select the *Add Ruleset(s) to Assay* button.



The Ruleset will be moved from the *Rulesets Not Included in Selected Assay* list box to *Rulesets included in assay* list box.

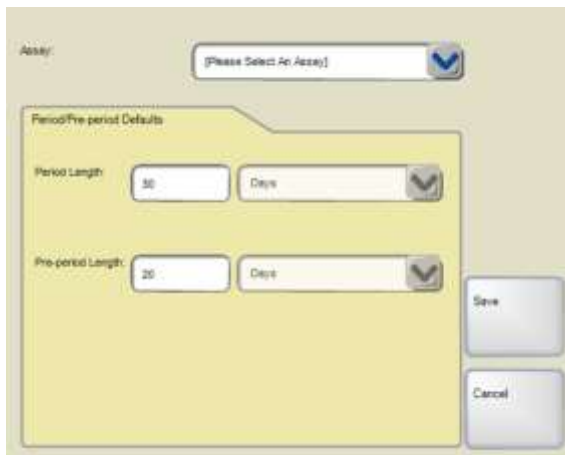
7.5.1.8 Reset Page

Select the [Reset Page](#) button to return the [Westgard Rules](#) area to the default view for the current selected assay.



7.5.2 Default Values

In the [Default Values](#) area you can define both the pre-period and period lengths for a selected assay. The default period length for all assays is 30 days, the default Pre-period Length is 20 days. Use the [Assay](#): drop down to select the assay you want to configure and use the [Length](#): text box and drop down to define the period.



A period can be defined in number of days, number of results/determination or infinitely. If defined as infinitely the period will not close automatically.

Assay	Please select from the drop down menu which assay you want to use to define the Period and pre-period Length
Period Length	The first box is to enter a number, which then refers to the selection being made in the dropdown menu where you can select between Days, Months or Results/Determination
Pre-period Length	If the pre-period is applicable to the selected assay you can define the length by a number in the left box and the actual period from the dropdown menu.
Save	Save any changes. The new settings will be activated when the application is restarted/reselected for the LIAISON® XL software.
Cancel	Select if you do not want to proceed with the changes and abandon them

7.5.3 Config

In the **Config** area you can configure settings for four different items of the software, Import, Export, RiLiBÄK and Westgard.

7.5.3.1 Import Settings

Select the **Import Settings** tab to configure the settings for importing files and where the files for Quarantine should be located.

Import Settings | Export Settings | RiLiBÄK Settings | Westgard Settings

Default File Location: D:\LiaisonXL\Data\QC

Quarantined File Location: D:\LiaisonXL\Data\QC\Quarantined

Import Method: File Upload

☒ Onscreen Keyboard ☒ Enable Messages in LRL ☒ Enable Use Of 'v' and 'V'

In order for these settings to take effect, you will need to restart the application.

Save Cancel

Default File Location	The default file location is: D:\LiaisonXL\Data\QC and can't be configured by the user
Quarantined File Location	The default file location is: D:\LiaisonXL\Data\QC\Quarantined and can't be configured by the user
Import Method	Selection between Manual and Automatic import of result files. If Automatic a file watch will be activated to check for new files available in the configured file location.
Onscreen Keyboard	Option to enable/disable on screen keyboard.
Enable Messages in LXL	Option to enable/disable messages in LXL.
Enable Use Of '<' and '>'	Option to include/exclude results with symbol '<' or '>' when performing statistical evaluation.
Save	Save any changes. The new settings will be activated when the application is restarted/reselected for the LIAISON® XL software.
Cancel	Use this option if no changes should be made to the import settings.

7.5.3.2 Export Settings

Select the **Export Settings** tab to configure the settings for exporting results, audit information and Archived results.

Results Export Location	The pre-set file location for results that are exported is: F: and can't be configured by the user
Audit Export Location	The pre-set file location for audit information is: F: and can't be configured by the user
Archive File Location	The pre-set file location for archiving is: F: and can't be configured by the user
Save	Save any changes. The new settings will be activated when the application is restarted/reselected for the LIAISON® XL software.
Cancel	Use this option if no changes should be made to the Export settings

7.5.3.3 RiLiBÄK Settings

Select the **RiLiBÄK Settings** tab to enable/disable to use of RiLiBÄK.



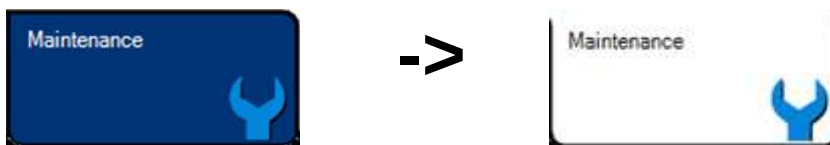
Enable RiLiBÄK	Select this option if RiLiBÄK need to be made available for control results. This option can only be selected if all periods are closed. If you try to select you will be informed about this restriction.
Save	Save any changes. The new settings will be activated when the application is restarted/reselected for the LIAISON® XL software.
Cancel	Use this option if no changes should be made to the import settings

7.5.3.4 Westgard Settings

Select the **Westgard Settings** tab to configure specific settings to be applied to the QC Controls using Westgard.

Enable Cumulative Calculation	Enable/Disable cumulative calculation
Save	Save any changes. The new settings will be activated when the application is restarted/reselected for the LIAISON® XL software.
Cancel	Use this option if no changes should be made to the import settings

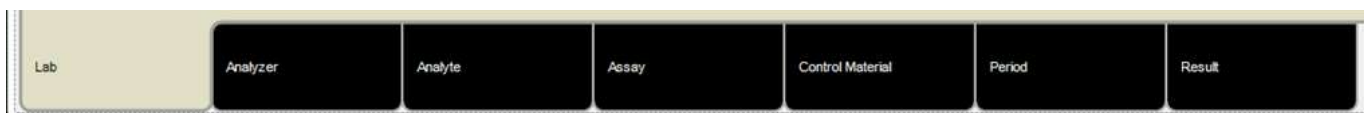
7.6 Maintenance



The **Maintenance** tab enables you to define the general settings for the QC STATS software. Those are:

Lab
Analyzer
Analyte
Assay
Control Material
Period
Result

Each option can be selected by you through a tab selection:



Each tab contains the possibility to save the changes or abort:

Save	Save any changes. The new settings will be activated when the application is restarted/reselected for the LIAISON® XL software.
Cancel	Use this option if no changes should be made to the settings

7.6.1 Lab

When the **Lab** tab is selected the Name and Address can be defined. This information is used when results are reported. When a new name is entered, the software will check if the name is unique. At least one laboratory need to be defined.



Each tab contains the possibility to save the changes or abort:

Lab	Name of the laboratory can be selected from a dropdown menu. You need to select [NewLab] If a new laboratory Name must be entered
Name	This shows the Name of the laboratory. If [New Lab] is selected, you can enter the name, else you can make changes if required
Address	This field shows the address which can be altered if required or entered if empty

7.6.2 Analyzer

With the **Analyzer** tab you can define the name of the Analyzer, in which laboratory it is located, what the serial number is and who the Manufacturer is.

At least one analyzer with a serial number and location need to be defined.



The screenshot shows a form for configuring an analyzer. It includes two dropdown menus for 'Analyzer' and 'Lab', and three text input fields for 'Serial Number', 'Name', and 'Manufacturer'. The 'Analyzer' dropdown is currently set to '[New Analyzer]' and the 'Lab' dropdown is set to '[Please Select A Lab]'. All input fields are empty.

Analyzer:	[New Analyzer]
Lab:	[Please Select A Lab]
Serial Number:	
Name:	
Manufacturer:	

<i>Analyzer</i>	Name of the Analyzer can be selected from a dropdown menu. You need to select <i>[New Analyzer]</i> if a new Analyzer must be entered
<i>Lab</i>	A dropdown menu showing the different laboratories being defined. You can select from the list a laboratory
<i>Serial Number</i>	Here actual Serial Number of the Analyzer can be entered
<i>Name</i>	Name of the Analyzer can be entered here
<i>Manufacturer</i>	The Manufacturer of the Analyzer can be entered here

7.6.3 Analyte

The **Analyte** tab is only available when RiLiBÄK is enabled and will allow you to associate the analyte being tested on **LIAISON[®] XL** against the RiLiBÄK rules with an assay. If a certain analyte is selected, the software will provide a list of all available Analyte Matrices. This list is not editable.

Analyte: 

Name:

Assay Name:

Analyte Matrix:

Matrix	Relative Deviation	From	To	Unit
Blood	9.000000	60.000000	400.000000	mg/dl
Blood	9.000000	0.680000	4.600000	mmol/l



Analyte	From this dropdown menu a analyte can be selected
Name	Here the name of the selected Analyte is shown and can be edited
Assay Name	The Assay Name can be entered here
Analyte Matrix	In this table the following parameters can be defined:
Matrix	Matrix being used for the Analyte
Relative Deviation	What is the relative allowed deviation
From	Value for the Lower range
To	Value for the Upper range
Unit	Used unit
From ValueSign	Sign to be used if not an exact value can be given for the lower range. Examples are >, >=
To ValueSign	Sign to be used if no exact value can be given for the upper range. Examples are <, <=

7.6.4 Assay

All Assay details are controlled by you through this option. Here you define the actual name, the measuring method, the matrix, kit No., Lot No. and Calibration date. It is also possible to clear the available calibration date.

You can edit an existing assay by selecting it from the drop down menu or define a new assay if you select [\[New Assay\]](#).



The screenshot shows a web-based form for configuring an assay. The form is set against a light beige background. At the top, the label 'Assay:' is followed by a dropdown menu currently displaying '[New Assay]' with a blue downward arrow icon to its right. Below this, the form contains several input fields, each preceded by a label: 'Name:', 'Measuring Method:', 'Matrix:', 'Kit No:', and 'Lot No:'. Each of these labels is followed by a white rectangular text input box. At the bottom, the label 'Calibration:' is followed by a greyed-out text input box. To the right of this box is a button labeled 'Clear Calibration Date'.

Assay	Here you can select the assay you want to check/edit. If you select [New Assay] you can define a new assay.																																																	
Name	If [New Assay] is selected you can enter the name for the assay here.																																																	
Measuring Method	Here the actual measuring method can be entered.																																																	
Matrix	Define the matrix for the assay																																																	
Kit No	Kit lot number for the assay																																																	
Lot No	Lot number for the assay																																																	
Calibration	◀ March 2014 ▶ <table><tr><th>Mon</th><th>Tue</th><th>Wed</th><th>Thu</th><th>Fri</th><th>Sat</th><th>Sun</th></tr><tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>1</td><td>2</td></tr><tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr><tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr><tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr><tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr><tr><td>31</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr></table> Today: 03/03/2014 In this window you can select the actual calibration date.	Mon	Tue	Wed	Thu	Fri	Sat	Sun	24	25	26	27	28	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6
Mon	Tue	Wed	Thu	Fri	Sat	Sun																																												
24	25	26	27	28	1	2																																												
3	4	5	6	7	8	9																																												
10	11	12	13	14	15	16																																												
17	18	19	20	21	22	23																																												
24	25	26	27	28	29	30																																												
31	1	2	3	4	5	6																																												

Assay Calibration Expiry Date:

Assay Calibration ID:

Assay Ancillary Lot:

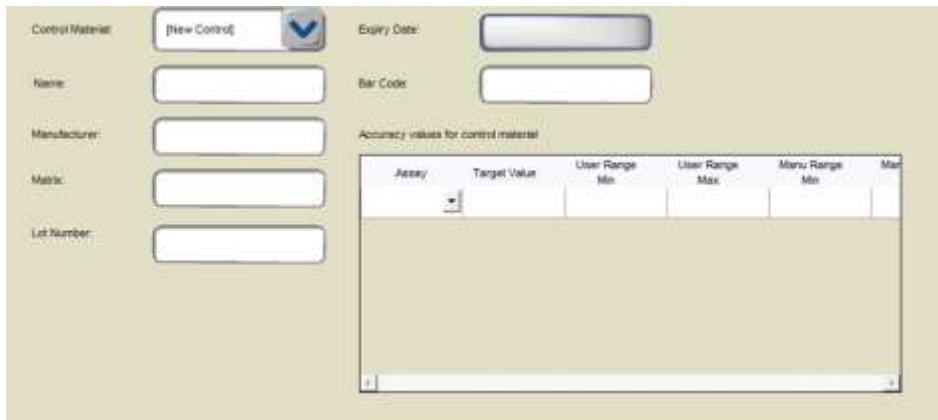
Assay Ancillary SerialNo:

Assay Calibration Expiry Date	Define the Calibration Expiry Date for the Assay. With the Clear Calibration Expiry button, the selected date can be reset.
Assay Calibration ID	Define the identification for the Assay Calibration
Assay Ancillary Lot	Here the Ancillary Lot is defined
Assay Ancillary SerialNo	Define the used Ancillary Serial Number for the Assay.

7.6.5 Control Material

When the **Control Material** tab is selected, you can manage the details for each Control material to be used/checked through QC STATS. You either select a predefined control and edit the default settings, or select **[New Control]** for the drop down to add new control material.

If control material is already defined it can hold accuracy values and you can enter new Target values, User and Manufacturer Ranges. All those values need to be numeric which will be checked when the entered information is saved.



The screenshot shows a web-based form for managing control materials. On the left, there are input fields for 'Name', 'Manufacturer', 'Matrix', and 'Lot Number'. Above these is a 'Control Material' dropdown menu currently set to '[New Control]' with a blue arrow icon. To the right of the dropdown is an 'Expiry Date' field. Below the 'Name' field is a 'Bar Code' field. To the right of the 'Manufacturer' field is a section titled 'Accuracy values for control material' which contains a table. The table has columns for 'Assay', 'Target Value', 'User Range Min', 'User Range Max', 'Manufacturer Range Min', and 'Manufacturer Range Max'. The 'Assay' column has a dropdown arrow. Below the table is a large empty text area for additional notes or comments.

If you select a Control already being used the screen can look like:

Control Material: CNMULTib

Name: CNMULTib

Manufacturer: LB

Matrix:

Lot Number: 31132013

Expiry Date: 3/9/2019

Bar Code: CNMULTib

Accuracy values for control material

Target Value	User Range Min	User Range Max	Menu Range Min	Menu Range Max
7.500005	-1.000000	-1.000000	0.000010	15.000000
0.001250	0.000500	0.002000	0.000500	0.002000
0.001250	0.000500	0.002000	0.000500	0.002000
0.001250	0.000500	0.002000	0.000500	0.002000
0.002500	0.000500	0.002000	0.001000	0.004000

Control Material	Here you can select the control you want to review/edit. If you select [New Control] a new control can be added.
Name	If you select a control from the dropdown list, the name is displayed here. For a new control, the name is entered here.
Manufacturer	Manufacturer for the control is entered here
Matrix	Matrix being used for the control
Lot Number	Actual Lot number
Expiry Date	Expiry date for the Control
Bar Code	What is the Barcode being used to identify the Control on the system
Accuracy values for control material	In this table the following values need to be entered
Assay	For which assay the control is used
Target Value	What is the actual target value
User Range Min	Enter the minimum value here

User Range Max	Enter the maximum value here
Manu Range Min	What is the lower value range provided by the manufacturer
Manu Range MAX	What is the upper value range provided by the manufacturer

7.6.6 Period

The **Period** tab allows you to view and add periods for specific control material related to assay and analyser being used. If you want to add a new period you need to select **[New Period]** for the drop down list in the **Select Period**

Select Period	Here you can enter a period you want to review, or select [New Period] if you want to define a new period
Analyzer	Select the analyser from the dropdown list
Assay	Select the assay from the dropdown list
Control Material	Select the actual control you want to use
Start Date	Enter the start date of the period
Comments	Here you can provide additional information

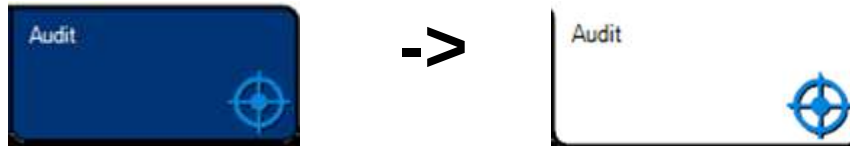
7.6.7 Result

With the **Result** tab you can enter Control results manual to the QC STATS database. Beside the result details you can enter the period details.

Lab:	Unknown	Result ID:	
Analyzer:	9922100109	Result Date:	12/19/2013
Assay:	1BC	Concentration Value & Unit:	
Control Material:	CNMULTI	Evaluation Result:	
		Plate ID:	
		PrecAcc:	Precision
		Comments:	

<i>Lab, Analyzer, Assay, Control Material</i>	Selectable items through the dropdown menu options.
<i>Result ID</i>	Identifier at the Control result to be entered manual. This ID needs to be unique.
<i>Result Date</i>	Select the actual date.
<i>Concentration Value</i>	Numeric result has to be entered.
<i>Concentration Unit</i>	Concentration unit to be entered.
<i>Evaluation Result</i>	Select between Pass and Fail.
<i>Plate ID</i>	No entry required.
<i>PrecAcc</i>	Select if result is an accuracy control or precision.
<i>Comments</i>	Free text.

7.7 Audit



The **Audit** tab can be used to view and report the user activity for QC STATS. After the user is specified the date range can be selected. The selected range can be activated by selecting the **Run Audit** option. The number of records is shown and the result can be exported into a CSV file or printed.

Audit by user:

Audit By Date Between: and

☐ Filter by Date

Total Records: 321

User Name	Created On	Action	Property	From	To
crash	Oct 18 2013 9:57 AM	Updated a Preperiod	meanValue	MSL	0.126434
			sdValue	MSL	0.014611
			cvValue	MSL	11.832389
			userComment		PeriodCalculated
crash	Oct 18 2013 9:57 AM	Updated a Preperiod	meanValue	MSL	0.439844
			sdValue	MSL	0.000000
			cvValue	MSL	0.714898
			userComment		PeriodCalculated
crash	Oct 18 2013 9:57 AM	Updated a Preperiod	meanValue	MSL	148.300000
			sdValue	MSL	1.414214
			cvValue	MSL	0.949137
			userComment		PeriodCalculated
crash	Oct 18 2013 9:57 AM	Updated a Preperiod	meanValue	MSL	0.000000
			userComment		PeriodCalculated
crash	Oct 18 2013 9:57 AM	Updated a Preperiod	meanValue	MSL	45.348341

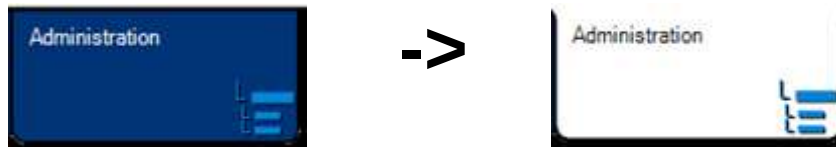
Each tab contains the possibility to save the changes or abort:

<i>Audit by User</i>	Select the user from the dropdown menu
<i>Audit by dates between</i>	Select the date from where the log audit need to be shown
<i>And</i>	Select the date to where the log audit need to be shown
<i>Filter by date</i>	List is ordered based on the date
<i>Run Audit</i>	Based on the pre-settings above the actual audit details are listed
<i>Export Audit</i>	Listed Audit data can be exported to an external file
<i>Print Audit</i>	Print the listed Audit details

Actual Table content

<i>User Name</i>	Actual User being selected to review the audit log
<i>Created On</i>	Date, time the logged activity was performed
<i>Action</i>	Short description of the actual activity being performed
<i>Property</i>	Related property of the action
<i>From</i>	Original Value. Left blank if this is not applicable.
<i>To</i>	Value/Remark being entered or edited by the user

7.8 Administration



The **Administration** tab enables you to define Users, apply rules and archive data stored in the operational Database. There are three tabs located on the bottom left of the screen which can be selected to switch between the **User** area, the **Rules** area and the **Archive Data** area.



7.8.1 User

When the **User** tab is selected, a screen displays all relevant options to add/edit/delete users, allowed to use the QC STATS software with certain predefined privileged roles. Default three different roles are available:

Administrator
Lab Supervisor
User

Select User	Dropdown menu to select an existing user to edit/delete. To add a new user select Add New User and enter a unique name as user name
User Name	This field may not be empty
Password	Free text to enter a Password
Confirm Password	The same entrance as the initial entered password.
Navigation buttons	Select from the existing roles field, the role for the new user by the navigation buttons between the two screens
Delete	The selected user can be deleted from the list
Save	The entered/changed user can be saved in the database
Cancel	If selected no changes will be stored in the database

7.8.2 Roles

When the **Roles** tab is selected, a screen displays most relevant options related to menu access that are applicable to define the privileges for a user. Default eight features are available:

Admin
Audit
Config
Defaults
Maintenance
Period
View
Westgard

The roles can be defined by generated a new unique name after selecting [Add New Role] or edited when selecting an existing role. Changes can be saved by selecting the **Save** button or abandoned by selecting the **Cancel** button.

7.8.3 Archive Data

The **Archive Data** tab enables you to archive closed result periods and retrieve archived results.

7.8.4 Archive Periods

To archive results from the closed periods, select the dates you wish the archiving to begin and end using the two date buttons. Select the **Run Archive** button. All closed periods starting on and between these dates will be archived.



Archive periods started between: 11/15/2013 and 11/15/2013

Run Archive

If the results are archived successfully they will be moved to the Archive folder (created during installation):



Archive File Location: D:\LiaisonXL\Data\QC\Archive\

7.8.5 Retrieve Archived Periods

Retrieve Archived Periods	All archived periods will be displayed in list box.
All Files	To retrieve all files, select the radio button and select the Retrieve Archive button
Only selected files	To retrieve selected files from the archive, select the file(s) you wish to retrieve within the list box
Retrieve Archive	Select the button, to activate the selected choice

7.9 Help

Within the QC application the help file can be accessed via the User Manual button on the top-right hand corner of every screen.



Upon clicking the User Manual button a new screen will appear showing the user manual at the page that applies to the current screen.



The pages can be navigated by clicking on the navigation buttons in top left.

Navigation buttons	Allows navigation through help documentation.
Home	Navigates back to the first page.
Print	Allows the user to print the help documentation.
Back	Closes the help documentation and navigates back to the application.

7.10 Error Messages

7.10.1 INFORMATION Messages

Type	Message	Reason
Analyte	Please enter an existing Assay Name.	Adding new analyte
Analyte	You currently have open periods for this Assay/Analyte match; you cannot change this until the periods have been closed.	Saving Analyte
Analyte	This Assay is currently matched to an Analyte, you cannot match one Assay to two different Analytes.	Saving Analyte
Analyte	You cannot link this Assay to Analyte, because Analyte have no matrix.	Saving Analyte
Analyte exists	An analyte of that name already exists; please select it from the list to edit details.	Analyte save screen
Analyzer exists	An analyzer of that SN already exists; please select it from the list to edit details.	Saving new analyzer
Archive	Files archived successfully to strReplace0.	Archive with success
Archive	Unable to archived periods.	Archive with problems

Type	Message	Reason
Archive	No available period data to archive, archive was not successful.	Archive periods – no periods find
Archive Import	strReplace0	Archive Import with success
Assay exists	An assay of that name already exists.	Assay save screen
Changes saved	Your changes have been saved.	Editing results with success
Control Material	Accuracy values are not valid.	Saving new control material
Control material exists	A control material matching those details already exists.	Control save screen
Data required	Please select an assay for which you wish to view the rules for.	Rules screen
Data required	Please enter why you wish to reject this result.	Rejecting result message
Data required	Please select an analyte for which you wish to view the rules for.	Rules screen
DataRequired	Please select a file you wish to import.	User try to import manually one/more files and no file is selected or user try to retrieve archive
Duplicate role	This role exists. Please enter a different role name	Role creation
Duplicate rule name	This rule name exists. Please enter a different rule name	Adding rule
Duplicate user	This user exists. Please enter a different user name.	User creation
Error	There was an error loading the period. The application will restart.	Results screen - loading data
Error displaying sd values	No Standard deviation values available for the strReplace0 graph. & vbCrLf & SD Values will not be displayed	Multi Graph screen - error
Error saving	Sorry, we were unable to save your changes.	Editing results with error
Error saving result	There as an error saving the result, please try again later.	Error adding result to db.
Existing ruleset	A ruleset with that name already exists, please enter another name.	westgard duplicate ruleset
Export Audit	Audit was successfully exported to the file strReplace0	Audit exporting with success

Type	Message	Reason
Information	There are too many periods selected. Please narrow your choice down to three periods before trying again.	Multi Graph screen
Information	Please select the assay from the list box.	WestGard rules screen
Installation message.	There was an error creating the database, you may need to re-install before continuing.	Setup message
Installation message.	The database has been successfully created.	Setup message
Lab exists	A lab of that name already exists, please select it from the list to edit details.	Saving new lab
No analytes	There are no analytes to view. You are only able to edit or create default rulesets.	Settings screen
No assays	There are no assays to view. You are only able to edit or create default rulesets.	Settings screen
No open periods	Currently, there are no open periods	Results screen - when displaying results
No periods with errors.	Currently, there are no periods with errors.	Results screen - when displaying results
No rejected periods.	There are no rejected periods, periods that have not been rejected will now be shown.	Results screen - when displaying results
No results	One or more of the periods selected do not have results to show, those that do will now be shown.	Multi Graph screen
No results.	Please select another period.	Results screen - when displaying results
No user name	Please enter a valid user name.	User creation
Password change alert	You must change your password!	Login screen - password expired
Password error	Incorrect password. Please try again.	User tries to add/edit a user.

Type	Message	Reason
Period closed	Period closed successful	Period close with success
Period rejected	Period rejected successful	Period rejected with success
Periods settings	These settings will only apply when a new period will be open.	Default values for a Period saving
Result	Selected PrecAcc is not valid for current period	Result screen saving
Result saved	The result has been saved to the database.	Result saving with success
Results	Data exported to the file strReplace0	Results screen - Exporting data
RiLiBäK	You cannot disable or enable RiLiBäK while open periods are present, please close all open periods if you wish to change this setting.	Rilibak option saving
Rule saved	The rule has been removed successfully.	WestGard rules screen
Rule saved	That rule has been added to the strReplace0.	WestGard rules screen
Ruleset saved	Your ruleset has been added.	WestGard rules screen
Saved	Item saved	Generic saving message for: Assay, Result, Period (Maintenance screen)
Select items	Please select the strReplace0 you wish to add your comments to.	Item for which user wants to add a comment - generic

7.10.2 WARNING Messages

Type	Message	Reason
Config file not valid	QCConfig.xml file is corrupted. QC will try to restore the previous version of this file. QC will be closed.	this happen when QCConfig.x ml file not a valid one (corrupted)
Deleting user	Please select an user you would like to delete	User deletion
Error	File strReplace0 does not exist!	Importing file - something is not ok with the result file
Error	strReplace0	Archive - some error occurred; Graph errors; Loading errors; Settings errors
Error	There was an error closing this period, please try again later.	Period close with error
Error	Please select a ruleset you would like to remove from	WestGard rules screen
Error	No periods match your selection, please add new period.	Period save screen
Error loading results to edit	The result(s) you have selected have not been manually entered and therefore cannot be edited!	Results screen - cannot edit non-manually result
Error printing	Error Printing, please make sure you have a period selected before continuing.	Results screen - error printing report
Error saving	There was and error saving the rule.	Adding rule error
Error saving	Please make sure the value(s) entered are numeric value.	Adding rule error
Error saving	There was an error adding the rule to the strReplace0, please try again later.	WestGard rules screen
Error saving	Error saving item. Please try again later.	Generic saving error message for: Assay, Result, Period (Maintenance screen)
Error saving	There was an error saving your ruleset.	WestGard rules screen
Import error	There was an error accessing the database, please try again later. If the error persist, please call the support service.	General DB access error

Type	Message	Reason
Import error	There was an error adding the kitlot to the database. File will be quarantined and added to the audit page.	Saving kit lot in DB error
Import error	There was an error adding the analyzer to the database. File will be quarantined and added to the audit page.	Adding analyzer in DB error
Import error	There was an error adding the lab to the database. File will be quarantined and added to the audit page.	Adding Lab error
Import error	There was an error importing the file due to missing analyzer data. File will be quarantined.	Analyzer requirements not met
Import error	There was an error importing the file due to missing data. File will be quarantined.	Error checking assay minimum requirements met
Import error	There was an error adding the control to the database. File will be quarantined and added to the audit page.	Error adding control material to DB
Import error	There was an error adding accuracy values. File will be quarantined.	Error adding accuracy Values
Import error	There was an error importing the file due to missing control data. File will be quarantined.	Control material requirements not met
Import error	There was an error importing the file due to missing data. File will be quarantined.	missing data
Import error	RiLiBÄK requires Max & Min imprecision values. These are not available, so file will be quarantined.	Error finding analyte details and RiLiBÄK is on
Import error	There was an error loading the requested file, please try again later. The file is moved to quarantined files.	Error loading file
Import error	There was an error adding the Result to the database. File will be quarantined and added to the audit page.	Error adding result to db.
Import error	There was an error importing the file due to missing result data. File will be quarantined.	result requirements not met
Import error	Duplicate file. The file is moved to quarantined files.	Importing routine error

Type	Message	Reason
Import error	The result date was previous to the date of the period closure, this result has been quarantined.	Automatic import error
Import error	The result date is previous to the period start date, this result has been quarantined.	Import error
Information required	Please enter a name for your ruleset or click cancel.	WestGard rules screen
Invalid date	Invalid strReplace0 date, please enter valid date.	Archive - invalid filtered dates
Missing result details	Please check all result details are complete before saving.	Saving a result
No comments	Please enter a reason for wanting to reject/close this period.	Results screen
No config file	QCConfig.xml file was not found. & vbCrLf & The application will be closed.	Loading application error
No login details	No user rights applied, application will be close. Please login as Administrator account and check the role/rights user.	Loading application error
No Open Period	No Open Period for selected assay and control. Please create a Period before continuing	Result saving
No password	Please enter a valid password	Adding/editing a user
No password confirmation	Please confirm your password	Adding/editing a user
No permissions	You do not have the permissions to access this screen	Screens denying access message
No Result	Please select a result.	Results screen
No result date	Please enter a result date	Saving a result
No selection made.	Please select a user.	Audit - when user try to retrieve the audit log
No standard deviation	No SD value, so unable to apply Westgard rules. & vbCrLf & & vbCrLf & Please go Maintenance/Control material and select the control, then enter relevant values for that each assay.	Results screen - when displaying results

Type	Message	Reason
No standard deviation	No SD value, so unable to apply Westgard rules. & vbCrLf & & vbCrLf & Please go Maintenance/Control material and select the control, then enter relevant values for that each analyte.	Results screen - when displaying results
No standard deviation.	Some or all of the periods selected have an SD value of 0. & vbCrLf & & vbCrLf & Westgard rules will not be applied to these periods.	Applying westagr algorithm
No standard deviation.	The period selected has an sd value of 0. & vbCrLf & & vbCrLf & Westgard rules will not be applied.	Applying westagr algorithm
Numeric values	Please make sure the concentration value is numeric	Saving concentration for a result
Onscreen keyboard	The Onscreen keyboard setting was changed. The change will not take effect until the application is re-started.	Onscreen keyboard changes - warning message
Open periods	Cannot remove rulesets from Assays with open periods	WestGard rules screen
Range rule error	The number of results you are looking for must be with the out of how many range	Adding rule - error
Reject failed	There was an error rejecting this period, please try again later.	Period rejected with error
Result ID value	Please make sure the Result ID is numeric	Result ID must be numeric
Result ID value	Please make sure the Result ID is unique	Result ID must be unique
Rule settings exists	A rule with the same settings already exists, the rule has not be added	Adding Rule - exists
Sorry, no login details	Error, no login details	Loading application error
User error	Incorrect Username or passwords, please try again.	Invalid Login credentials
User error	You have entered an incorrect username or password three time, application will now close.	Invalid Login credentials – 3 times - FDA rules
Warning	Rule cannot be deleted. & vbCrLf & Please remove rule from any associated rulesets.	WestGard rules screen
Warning	There was an error disabling the rule, please try again later	WestGard rules screen
Warning	You have not selected an assay, please select an assay then save again.	Default values for a Period saving
Warning	You have not selected an analyte, please select an analyte then save again.	Default values for a Period saving

7.10.3 CONFIRMATION Messages

Type	Message	Reason
Apply to analyte?	Do you wish to apply the new ruleset to the selected analyte?	WestGard rules screen
Apply to assay?	Do you wish to apply the new ruleset to the selected assay?	WestGard rules screen
Close QC	You are about to shut down the QC application. Be aware that some files may be quarantined when this application is restarted. Do you wish to continue?	Closing QC app
Confirm period closure	Are you sure you want to close this period?	Closing period question
Confirm period rejection	Are you sure you want to reject this period? & vbCrLf & You will not be able to get it back	Rejecting period question
Confirm user	You do not have permission to exclude a result.	Excluding result
Deleting user	Are you sure you want to delete the selected user?	User deletion
Edit RuleSet	Do you wish to edit the name?	Rule set name editing
Multiple selection	You have selected strReplace0 to add this comment to. Are you sure you wish to add this comment to all of these.	Adding comments screen
Rule re-applied.	The selected rule has previously been removed from the ruleset, re-adding will mean it will apply to all periods from the initial start date. & vbCrLf & Do you wish to continue?	WestGard rules screen
Rule re-applied.	The selected rule has previously been removed from the assay, re-adding will mean it will apply to all periods from the initial start date. & vbCrLf & Do you wish to continue?	WestGard rules screen

8 Maintenance

In order to operate correctly, it is essential that the **LIAISON® XL** system is maintained in accordance with the maintenance plan and procedures described in the instrument software.

According to given scheduling the system prompts the user for due maintenance tasks, and it guides the user through the required procedure.

Carefully observe all required steps in order to ensure proper system functionality.

8.1 Safety and Hints

DANGER

See Biological safety in chapter 1.8.6.

DANGER

See Electrical safety in chapter 1.8.3.

WARNING**Improper Maintenance Actions**

Improper maintenance Actions can result in serious personal injuries and material damage

- Follow all safety instructions in chapter 1.8 and this chapter.
- Follow the work instructions stated by the software.
- Take off watches and jewellery before performing any maintenance works.

WARNING**Unapproved Maintenance Actions**

Unapproved or inaccurately performed maintenance actions can result in serious personal injury and material damage.

- Only perform maintenance actions stated by the software.
- Follow closely the steps contained in the individual instructions.
- For the maintenance actions, only use parts or reagents mentioned in this instruction.
- Tests and maintenance actions specified by the manufacturer must be performed to ensure the safe operation of the system and the proper functioning of the system.
- All service and maintenance actions which are not described in this instruction must be performed by qualified and authorized service technicians.
- Any changes made to the instrument that are not authorized by the manufacturer will lead to the loss of guarantee.

WARNING**Handling of Decontamination Products**

- Pay attention in managing the decontamination products, because they may be harmful. Read the instructions of the decontamination products before use.
- Do not mix sodium hypochlorite solution (e.g. bleach) with alcohol or any other flammable.
- Observe the proper dilution of chemicals, as stated by the SW.

WARNING



Danger of Electrocutation or Mechanical Injury during Required Maintenance Works on the Voltage-Carrying System

If the system cannot be separated from the mains supply during required maintenance works, additional precautions must be taken to avoid serious injury with lethal consequences due to electrocution or injury by the system (e.g. contusion, cuts etc.).

- Only switch on the system if this is explicitly required.
- Only explicitly described protective covers may be opened.
- Perform the maintenance works with highest caution.
- Never touch electrical connecting contacts.
- Please note that mechanical components (e.g. pipettor) can move unexpectedly.

WARNING



Disposal

The instrument, the packaging material, and all parts that have been replaced must be disposed according to the applicable local and national provisions, legislation and laboratory procedures.

CAUTION

Cleaning, Disinfection or Decontamination

Observe the following aspects during cleaning, disinfection or decontamination because breakdowns or damages can be the result.

- Liquid cleaning, disinfection or decontamination solutions may only be used with a moistened cleaning tissue. They may not be poured into or sprayed into the system.
- Only cleaning, disinfection or decontamination solutions and procedures stated by the software are approved.
- Cleaning, disinfection or decontamination solutions must not come into contact with bearings and guides, as otherwise the greasy film may dissolve!
- Cleaning, disinfection or decontamination solutions must not be used in the vicinity of circuit boards, light barriers and perspex surfaces!

CAUTION**Unsuitable Sterilisation Method**

Containers and components for liquids or waste are seriously damaged by autoclaving.

- Disinfect or decontaminate the containers and components with a suitable disinfection or decontamination method.
- Comply with procedures stated by the software.
- Disposable materials must be incinerated.
- Liquid waste must be decontaminated with a chemical use sodium hypochlorite solution with 0.1% active chlorine (e.g. dilution 1:50 of a solution at 5% active chlorine) for at least half an hour.

CAUTION**Handling/Cleaning of Optic Surfaces**

Optic surfaces (e.g. scanners, lenses, sensors) must be free of dust and grease.

- Do not touch any optic surfaces.
- Only clean the optic surfaces with a softy and lint-free cloth.
- Do not use any aggressive detergents (e.g. acetone).

CAUTION**Touch Screen Cleaning**

Improper cleaning could damage the touch screen surface.

- Use soft clothes with neutral detergent or with ethanol to clean the touch screen.
- Do not use any chemical solvent, acidic or alkaline solution.
- Do not allow liquid from soaking into the joint of film and glass which may result in peeling or malfunctioning.

CAUTION**Organic Solvents**

Reagent containers and hoses (water and waste) can be seriously damaged by or become unusable because of organic solvents.

- Never use organic solvents.

8.2 Scheduled Maintenance Tasks

LIAISON® XL system takes care of informing about the need of a maintenance task (see chapter 6.9). Please perform the scheduled maintenance tasks as requested. Please consult the following sections for procedures.

Local service support may perform or be required to perform maintenance tasks that may be necessary for specific purposes (e.g. troubleshooting).

Local service support is allowed to perform preventive maintenance according to DiaSorin procedures.

8.3 Light Check

The Light Check (part number 319101 or 319150) is a **DiaSorin** product, intended to be used on the **LIAISON® XL** system in a dedicated maintenance task only with the purpose of troubleshooting.

Light Check reagent contains a lyophilized material that, when mixed with the proper amount and type of water, issues a predetermined RLU value when run on the **LIAISON® XL** system. It is required when running a system test on the system.

NOTE

Please comply with the storage and manufacturer's directions included in the package information for the Light Check.

8.4 Preparation of Liqui-Nox® solution

NOTE

Before Liqui-Nox® solution is handled or loaded into the **LIAISON® XL** system, the package information of Liqui-Nox® is to be read thoroughly and followed by the user.

The execution of some maintenance procedures foresees the use of a Liqui-Nox® solution (code X0022) that shall be prepared according to the procedures reported below.

Instruction to prepare 1 L of 1% Liqui-Nox® solution:

1. Fill the cleaning solution bottle with 10 mL of Liqui-Nox® detergent;
2. Add 0.99 L of water ;
3. Place the proper cap and gently shake the container, in order to limit the formation of foam.

8.5 Load and Unload the Cleaning Solution Bottle

NOTE

Before starting each weekly or monthly maintenance task, 1 L of fresh Liqui-Nox® solution shall be prepared according to chapter 8.4.

8.5.1.1 Procedure

Unload Procedure

1. Open the cabinet doors.
2. Pull left cabinet drawer out.
3. Disconnect the tube of the cleaning solution bottle from the cap (Figure 8-1).



Figure 8-1: Disconnect cleaning solution bottle

4. Pull the cleaning solution bottle out of the dedicated slot of the waste basin (Figure 8-2).
5. Remove the cap of the cleaning solution bottle.
Use a vessel and paper towels to avoid liquid spills.



Figure 8-2: Remove cleaning solution bottle

- Load Procedure**
1. Place the cap on the full cleaning solution bottle.
 2. Put the cleaning solution bottle into the dedicated slot of the waste basin (Figure 8-3).



Figure 8-3: Cleaning solution bottle slot

3. Reconnect the tube to the cap of the cleaning solution bottle (Figure 8-4).



Figure 8-4: Cleaning solution bottle reconnection

4. Push the left drawer back into the cabinet.
5. Close the cabinet doors.

8.6 Clean the pipettor probes

Right and Left probes shall be cleaned during the execution of both weekly and monthly maintenance procedures, as indicated by a dedicated pop-up that appears during the execution of the tasks.

The following procedure shall be executed to complete the cleaning:

1. Quit the Main UI;
2. Switch off the instrument and disconnect it from the main supply;
3. Open the top cover and move the right arm to a position easy to access;
4. Wipe the right arm probe with a tissue soaked with a Liqui-Nox[®] solution prepared according to chapter 8.4;
5. Wipe the right arm probe with a tissue soaked with DI water;
6. Wipe the right arm probe with a dry tissue;
7. Move the left arm to a position easy to access;
8. Wipe downward the left arm adapter with a tissue soaked with a Liqui-Nox[®] solution prepared according to chapter 8.4;
9. Wipe downward the left arm adapter with a tissue soaked with DI water;
10. Wipe downward the left arm adapter with a dry tissue;
11. If all the required cleaning procedures have been completed, reconnect the instrument to the main supply and switch it on, otherwise continue with the execution of the other cleaning procedures.

8.7 Clean the analyzer interior

Some of the inner parts of the analyzer shall be cleaned during the execution of the monthly maintenance procedure, as indicated by a dedicated pop-up that appears during the execution of the task.

The following procedure shall be executed to complete the cleaning:

1. Quit the Main UI;
2. Switch off the instrument and disconnect it from the main supply;
3. Open the sample area flap and extract the available sample racks;
4. Once removed the sample tubes, wipe each rack with a tissue saturated with an alcoholic/disinfectant solution;
5. Wipe the accessible surfaces of the sample module with a tissue saturated with an alcoholic/disinfectant solution;
6. Push the sample racks back into the sample area and close the flap;
7. Open the reagent area flap and extract the ancillary plate;
8. Wipe the surfaces of the ancillary plate with a tissue soaked with an alcoholic/disinfectant solution;
9. Wipe the accessible surfaces of the reagent area (i.e. the surface where lane numbers are indicated) with a tissue saturated with an alcoholic/disinfectant solution;
10. Push the ancillary plate back into the reagent area and close the flap;
11. Open the starter reagent area flap;
12. Remove the starter bottles;
13. Wipe the surfaces of the starter reagent area with a tissue saturated with an alcoholic/disinfectant solution;
14. Insert starter bottles back into the starter reagent area;
15. If all the required cleaning procedures have been completed, reconnect the instrument to the main supply and switch it on, otherwise continue with the execution of the other cleaning procedures.

8.8 Clean the primary and the intermediate tanks

Tanks and intermediate tanks containing water and wash solution shall be cleaned during the execution of the monthly maintenance procedure, as indicated by a dedicated pop-up that appears during the execution of the task.

8.8.1.1 Preparation of sodium hypochlorite solution

The cleaning of the tank shall be performed with a sodium hypochlorite solution at 0.5% - 0.9% active chlorine. In case commercial sodium hypo

chlorite solutions are used (e.g. bleach), avoid formulations featuring any fragrance, surfactant, other oxidizer or additive.

This paragraph reports the instructions to prepare 1 L or 2 L of solution.

As described in the procedure below, 1 L of solution is necessary for cleaning 1 tank, therefore a total of 4 L of hypochlorite solution is necessary for the whole maintenance.

Instruction to prepare 2 L of solution at 0.5 - 0.9% active chlorine:

1. Fill a graduate cylinder with 1.8 L of water;
2. Add 200 mL of a sodium hypochlorite solution (e.g. bleach) with a 5 - 9% content of active chlorine. In case the available sodium hypochlorite should have a different titer, please adjust the dilution accordingly;
3. Briskly mix.

Instruction to prepare 1 L of solution at 0.5 - 0.9% active chlorine:

1. Fill a graduate cylinder with 0.9 L of water;
2. Add 100 mL of a sodium hypochlorite solution (e.g. bleach) with a 5 - 9% content of active chlorine. In case the available sodium hypochlorite should have a different titer, please adjust the dilution accordingly;
3. Briskly mix.

8.8.1.2 Procedure**Preliminary steps**

The following procedure shall be executed to complete the cleaning:

1. Quit the Main UI.
2. Switch off the instrument and disconnect it from the main supply.

Wash buffer tanks removal

3. Open the cabinet right and middle doors.
4. Pull the right drawer out of the cabinet.
5. Remove the wash buffer main tank (white cap) and dispose the liquid.

NOTE

If **LIAISON® diluteX** is connected to the analyzer, please refer to **LIAISON® diluteX** User Manual for the removal of the cap.

6. Remove the sponge placed in front of the intermediate tank (Figure 8-5).



Figure 8-5: Sponge removal

7. Disconnect sensor (b) and liquid (a) connectors from the intermediate tank (Figure 8-6).

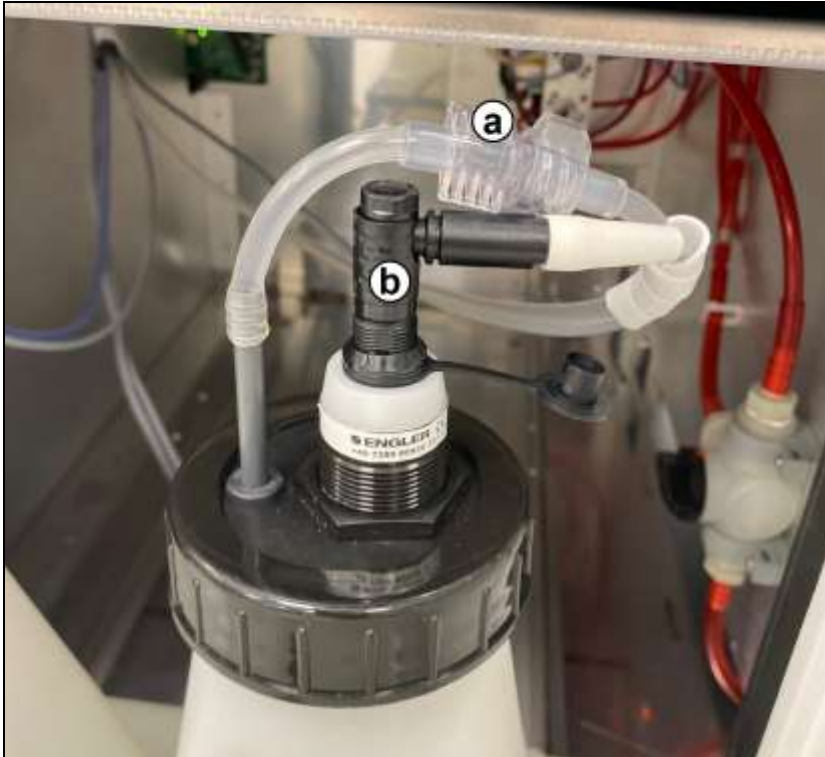


Figure 8-6: Wash buffer intermediate tank connectors

8. Using the handle, move the intermediate tank to the front (Figure 8-7).



Figure 8-7: Wash buffer intermediate tank moved to the front

9. Raise the intermediate tank up (Figure 8-8) and remove it from the dedicated slot of the drawer.

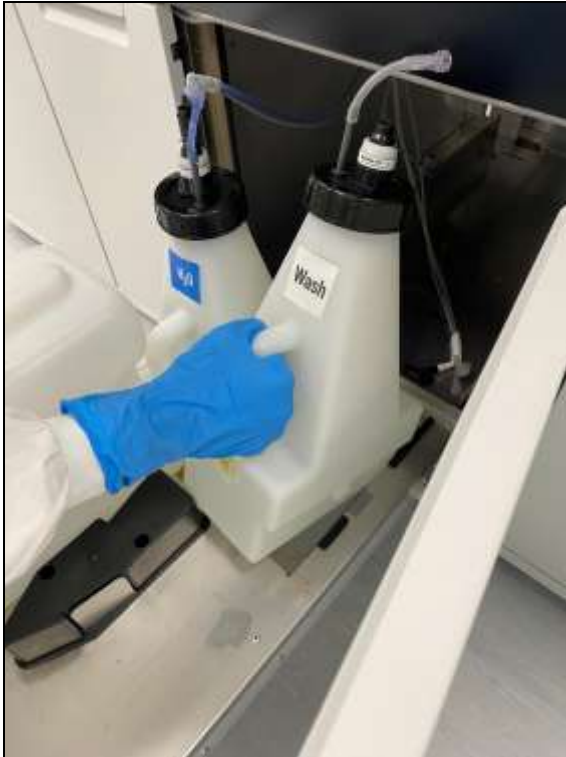


Figure 8-8: Wash buffer intermediate tank raised up and removed

10. Remove the black cap of the wash buffer intermediate tank and dispose the liquid.

Water tanks removal

11. Remove the water main tank (blue cap) and dispose the liquid.

NOTE

If **LIAISON® diluteX** is connected to the analyzer, please refer to **LIAISON® diluteX** User Manual for the removal of the cap.

12. Remove the sponge placed in front of the intermediate tank (Figure 8-9).



Figure 8-9: Sponge removal

13. Disconnect sensor (b) and liquid (a) connectors from the intermediate tank (Figure 8-10).



Figure 8-10: Water intermediate tank connectors

14. Using the handle, move the intermediate tank to the front (Figure 8-11).



Figure 8-11: Intermediate tank moved to the front

15. Raise water intermediate tank up (Figure 8-12) and remove it from the dedicated slot of the drawer.



Figure 8-12: Intermediate tank raised up and removed

16. Remove the black cap of the water intermediate tank and dispose the liquid.

Tanks cleaning

17. Fill each primary and intermediate tank with 1 L of sodium hypochlorite solution prepared according to chapter 8.8.1.1.
18. Close all the tanks with the dedicated caps.
19. Gently shake each tank, avoiding spilling and limiting the formation of foam.
20. Empty carefully each tank and rinse it thoroughly with distilled water (to ensure an adequate rinsing, it is recommended to fill each tank at least at half volume). Water to be used has to be defined according to CLSI guidelines for laboratory water ("Instrument Feed Water" type).
21. Repeat operation at previous point at least two more times for each tank.
22. Screw the caps of intermediate tanks.

Water Tanks insertion

23. Place the water intermediate tank into the dedicated slot of the drawer.
24. Holding the handle of the drawer by hand, push the intermediate tank back to the end of the slot (Figure 8-13).



Figure 8-13: Water intermediate tank insertion

25. Connect liquid and sensor connectors to the intermediate tank (Figure 8-10).

26. Put the sponge in front of the intermediate tank (Figure 8-14).



Figure 8-14: Sponge placement

27. Fill the water tank with DI Water, screw the cap and load it into the system.

NOTE

If **LIAISON® diluteX** is connected to the analyzer, it is not needed to fill the water tank; for further details, please refer to **LIAISON® diluteX** User Manual.

Wash Buffer Tanks insertion

28. Place the wash buffer intermediate tank into the dedicated slot of the drawer.
29. Holding the handle of the drawer by hand, push the intermediate tank back to the end of the slot (Figure 8-15).



Figure 8-15: Wash buffer intermediate tank insertion

30. Connect liquid and sensor connectors to the intermediate tank (Figure 8-6).

31. Put the sponge in front of the intermediate tank (Figure 8-16).



Figure 8-16: Sponge placement

32. Fill the wash buffer tank with the dedicated solution, screw the cap and load it into the system.

NOTE

If **LIAISON® diluteX** is connected to the analyzer, it is not needed to fill the wash buffer tank; for further details, please refer to **LIAISON® diluteX** User Manual.

NOTE

For the preparation of the wash solution, refer to the Instruction for Use available in Wash Buffer packages. Use the red line available on the tank as a guide during the preparation of the wash solution (refer to chapter 1.10.14).

33. Push the right drawer back into the cabinet.
34. Close the cabinet doors.
35. Wait approximately 5-10 minutes in order to allow the filling of the intermediate tanks.
36. If all the required cleaning procedures have been completed, reconnect the instrument to the main supply and switch it on, otherwise continue with the execution of the other cleaning procedures.

8.9 Clean the covers

Covers and flaps of the analyzer, together with the monitor, shall be cleaned during the execution of the monthly maintenance procedure, as indicated by a dedicated pop-up that appears during the execution of the task.

The following procedure shall be executed to complete the cleaning:

1. Quit the Main UI;
2. Switch off the instrument and disconnect it from the mains supply;
3. Wipe the external side of the covers (top cover, side covers, front cover) with a tissue saturated with an alcoholic/disinfectant solution;
4. Open reagent, sample, starter and cabinet flaps and wipe them (internally and externally) with a tissue saturated with an alcoholic/disinfectant solution;
5. Wipe the monitor with a tissue saturated with an alcoholic/disinfectant solution;
6. If all the required cleaning procedures have been completed, reconnect the instrument to the main supply and switch it on, otherwise continue with the execution of the other cleaning procedures.

8.10 Cuvette removal

In case one or more cuvettes should result as blocked in the accessible cuvette transportation system, it is possible to manually remove completely the blocked cuvettes (the software would prompt a corresponding event).

The following procedure shall be executed to complete the removal:

1. Pause the pipettors from the **STOP Menu**
2. Wait for 30"
3. Open the top cover
4. Remove the blocked cuvettes and throw them away
5. Close the top cover
6. Restart the pipettors from the **STOP Menu**

CAUTION

Never open the top cover without having paused the pipettors.

8.11 Automated actions performed by the system

The system automatically performs the following actions overnight, in order to improve the system performance:

- initialization
- automated back-up and clean-up of archived results from the [Archived](#) menu

provided that it was active and in status “Stand-by” when due.

CAUTION

Systems working overnight

In case the system works overnight without significant interruptions, the automatic initialization could not be performed. It is possible to check in the [Event Log](#) when the last initialization occurred.

In case the system could not automatically perform the scheduled initialization, it is necessary to initialize the system manually before starting a new routine.

9 Troubleshooting and Error Messages

9.1 Error Messages and Information Messages

This chapter describes error messages or information messages and gives instruction on error recovery.

NOTE

If the error reoccurs, please call service.

NOTE

The system may automatically reschedule replicates failed for a reason that could be recovered without user intervention.

Legend

	Meaning
Parameters [...]	Some error messages show details about the error. With this information, the cause or the affected sample may be found. In the error list (see below) these details will be shown as parameters (e.g. [SID]). Example: - List entry: Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Agitation speed out of range. - Message: Aborted Job SAMPLE_12 APF (2). Reason: Agitation speed out of range.
Effect	Depending on the fault category, the error will be noted differently. In the error list (see below) the notification will be shown in the column effect. - L: Adds an entry to the event log. - M: Shows a Message - S: Sounds a acoustic signal

Software Messages

Message	Description	Action	Effect	Event ID
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Agitation speed out of range.	Agitation speed of Magnetic Particles was out of range while pipetting.	- Start the job again. - If error reoccurs or occurs for several samples, call service to check the LIAISON® XL system (Check the stirrer agitation while the integral is loaded onboard).	L M S	262.003.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Ancillary not present.	Ancillary is not present or the loaded ancillary can not be used. Possible causes: - Unexpectedly removed. - Set offline during a run.	- Ensure that the required ancillary reagent is onboard and not offline (see the status in Ancillary page). - Start the job again.	L M S	262.009.00001

Message	Description	Action	Effect	Event ID
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Clot in Sample Probe.	There is a clot in the sample probe/tube. Possible causes: - Deficient sample preparation. - Incorrect tracking due to wrong sample rack type. - Incorrect tracking due to wrong tube diameter. - Tip touches the (wet) wall of a tube.	- Check the sample. - Check, if correct tube/rack were used. - Start the job again. - If error reoccurs, call service to check the teaching.	L M S	262.136.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Cycle Type (Normal, Diluent) Conflict.	An internal error has occurred.	Call service to involve the Corporate functions.	L M S	262.016.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Disposable tip not present.	No more disposable tips are available or the involved tip could not be found.	- Check if the disposable tips are present and if are correctly set on the software. - Start the job again. - If the problem occurs again call service to check the teaching.	L M S	262.007.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: First Starter Shot.	The needed prime cuvette was not successfully performed	Start the job again.	L M S	262.001.00002
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: High Background.	Dirty Reader or hardware defect.	Call service to check the reader.	L M S	262.000.00004

Message	Description	Action	Effect	Event ID
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Incubator temperature out of range.	A violation in the temperature range of the incubator is reported.	- Note the Conditioning time of 1 hour after power-up. - Start the job again. - If error reoccurs, call service to check the incubator.	L M S	262.013.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Internal Error.	An internal error has occurred.	Call service to involve the Corporate functions.	L M S	262.255.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Job Scheduling Failure.	A job scheduling error has occurred.	- Start the job again. - Call service to involve the Corporate functions.	L M S	262.017.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Liquid Container empty.	Possible causes: - Wash buffer container or water container empty. - Problems with the container/ instrument connectors.	- Fill wash buffer container or water container (only in case LIAISON® diluteX is not connected to the analyzer). - Check connectors. - Start the job again. - If error reoccurs, call service to check the LIAISON® XL system. - If LIAISON® diluteX is connected to the analyzer, please refer to LIAISON® diluteX User Manual.	L M S	262.005.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Reader detected spikes.	Error in Reader.	- Start the job again. - If the error occurs again, call service to check the reader.	L M S	262.003.00002

Message	Description	Action	Effect	Event ID
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Mechanical Error.	A problem with the movements of mechanical subassemblies has occurred. Note: calibrators could be failed with reason Mechanical Error even in absence of any mechanical defect (e.g. during rescheduling actions).	- Check LIAISON® XL system about jammed cuvettes or disposable tips. - If possible, start job again. - Call service to check the mechanical subassemblies of LIAISON® XL system.	L M S	262.001.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: No cuvette available.	There are no more cuvettes available or a cuvette is stuck.	- Open the “cuvette flap” and check if the cuvettes are present, if it is empty, load cuvettes. - Start the job again. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	262.004.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: No Sample	Possible reasons: - The tube is empty. - The tube has not enough liquid.	- Check if there is enough liquid, if not refill the tube. - Start the job again.	L M S	262.134.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: No Reagent.	Possible reasons: - The reagent is empty. - The reagent has not enough liquid. - The reagent contains liquid but the information on the RF-Tag is wrong.	- Check if there is enough liquid, if not load a new reagent. - In case the reagent is set offline reset the LLD (from Diagnostic page). - Start the job again.	L M S	262.135.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: No Mitigation Wash.	The due mitigation wash was not performed or failed.	If error reoccurs, call service.	L M S	262.002.00002

Message	Description	Action	Effect	Event ID
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Pipettor offline.	The pipettor is offline Possible causes: - Cover opened. - Pause button pressed. - Optical liquid verification (OLV) aborted.	- Close cover. - Click on the Continue button. - Call service in case of issues with the cover or the OLV sensors.	L M S	262.002.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Reagent Integral not present.	Possible causes: - The integral is not recognized - The integral was unexpectedly removed during the run (e.g. manually removed or flickering). - The integral went off-line.	- Check if the integral is present on board and if not load it. - Check into the reagent page if the integral is off-line. - Start the job again. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	262.010.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Reagent not pipetted.	Reagent not pipetted (eg. System paused, e.g. due to cover opened).	- Check if the cover is open or the system is in pause. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	262.131.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Reagent Integrity Error.	A reagent integrity error occurred. Possible causes: - Foam on the reagent liquid. - Not enough reagent liquid. - Bad teaching. - Hardware defect.	- Check the reagent vials. - Start the job again. - If the problem persists, call service to check LIAISON® XL system.	L M S	262.133.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Sample not present.	The sample was unexpectedly removed either manually or by the system (e.g. in case the tube has been set offline).	- Check if the sample is correctly loaded on board, if not load it. - Check the liquid level into the sample. - Start the job again.	L M S	262.008.00001

Message	Description	Action	Effect	Event ID
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Sample not pipetted.	The system was not able to aspirate the sample (e.g. System paused, e.g. due to cover opened).	- Check if the cover is open or the system is in pause. - Start the job again. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	262.130.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Sample Integrity Error.	A sample integrity error occurred Possible causes: - Anomalies (e.g. foam) on the sample liquid. - Bad teaching. - Hardware defect.	- Check the sample for anomalies. - Start the job again. - If the problem persists, call service to check teaching and hardware.	L M S	262.132.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Starter Reagent temperature out of range.	A violation in the temperature range of the injection point of the starter reagents is reported.	- Wait for the starter reagent temperatures to recover. - Start the job again. - If error reoccurs, call service to check the area for starter reagents.	L M S	262.015.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Tip pickup failed.	The tip sensor detects a tip, but the pick-up force was not as high as expected.	- Start the job again. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	262.128.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: User Requested Abort.	The system aborts a job due to user request.	If the requested abortion is wrong please start again the job.	L M S	262.018.00001

Message	Description	Action	Effect	Event ID
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Waste container full.	Possible causes: • Solid or liquid waste containers are full. • One liquid waste container is full and the other one is not connected. • Hardware defect.	• Check that the liquid waste connectors are correctly inserted. • Check if the solid waste tray is correctly inserted. • Empty the waste container(s). • If the problem persists call the service to check the waste connectors and sensors.	L M S	262.006.00001
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Washer Aspiration Failure.	The washer bubble sensors detected anomalies during the aspiration	• Repeat the job. • Perform the maintenances: "Calibrate washer pump" and "Calibrate bubble sensor". • If error reoccurs, call service to check the washer assembly.	L M S	262.012.00001
AM denied Assay [assay abbreviation] for Lane [lane number], Reason: Method Sequence garbled	An internal error has occurred.	• Call service to involve the Corporate functions.	L M S	265.001.00010
AM accepted Mitigation Wash [Mitigation name] at cycle [start Cycle], phase [Start Phase] from Position [Ancillary position]	The system accepts the mitigation in the next cycles.	-	L	262.000.00032
AM denied PipSequence [pipettor sequence number], Reason: [reason number] ([reason enumeration])	An internal error has occurred.	• Call service to involve the Corporate functions.	L M S	265.001.00011
AM rejected Job [SID] [assay abbreviation] ([replicate]) (Cycle occupied)	A scheduling error has occurred.	• Start the job again. • Call service to involve the Corporate functions.	L M S	262.004.00011

Message	Description	Action	Effect	Event ID
AM rejected Job [SID] [assay abbreviation] ([replicate]) (Ancillary not present)	The ancillary is removed during the run. The ancillary became unexpectedly empty during the run.	- Load ancillary. - Create and start job again.	L M S	262.015.00011
AM rejected Job [SID] [assay abbreviation] ([replicate]) (Reagent Integral not present)	The integral is removed during the run.	- Load integral. - Create and start job again.	L M S	262.013.00011
AM rejected Job [SID] [assay abbreviation] ([replicate]) (Sample Rack not present)	The sample is removed during the run.	- Load sample. - Create and start job again.	L M S	262.014.00011
AM rejected Job [SID] [assay abbreviation] ([replicate]) (Too late)	A communication problem occurs between the pc and the analyzer.	Call service to look for possible reasons for pc slowness, including unexpected LIS communication attempts.	L M S	262.003.00011
AM rejected Job [SID] [assay abbreviation] ([replicate]) (too many reagents)	An internal error has occurred.	Call service to involve the Corporate functions.	L M S	262.007.00011
AM rejected Job [SID] [assay abbreviation] ([replicate]) (Wrong Analyzer State)	An internal error has occurred	Call service to involve the Corporate functions.	L M S	262.016.00011
Ancillary [ancillary name] in position [lane] expired	The shelf life of the ancillary reagent is expired.	Replace the ancillary reagent.	L M S	256.001.00015
Ancillary [ancillary name] in position [lane]:OnBoard Stability expired	The OnBoard Stability of the ancillary reagent is expired.	Replace the ancillary reagent.	L M S	256.001.00016
Aspirated [reagent]	Only information.	-	L	262.000.00014
Aspirated [reagent] for Job [SID] [assay abbreviation] ([replicate]) (JobID [job ID], Cycle [pipetting cycle])	Only information.	-	L	262.000.00016

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Message	Description	Action	Effect	Event ID
Calibration usable for that lane has already been created.	While the first calibration is running, a second calibration has been started.	Wait for the end of the ongoing calibration.	L	264.001.00003
Cleaning reagent (article no: [article number]) not found in ancillary bay or set offline.	The Cleaning reagent is not loaded or it is offline.	Load cleaning reagent or set it online.	L M S	270.006.00002
Control Definition [Control definition name] not associated to Assay [assay abbreviation] (not present in Database).	User scanned the barcode of a control with handheld barcode scanner for an unknown assay definition.	- If the missing assay shall be used. - Import the assay definition. - Scan again the control barcode with the handheld barcode scanner.	L M S	259.001.00001
Control Definition denied, wrong structure.	The system could not succeed in scanning the control definition.	- Check the barcode quality. - Retry to scan the barcode. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	259.001.00004
Control Definition for [control name] overwritten.	Only information.	-	L	259.001.00002
Barcode for Control [control name] scanned.	Only information.	-	L	259.000.00003
Control Material [control sample ID] is missing for Control [control name], Assay [assay abbreviation].	Control sample not loaded.	Load control sample.	L M S	262.000.00029
Control Material [control sample ID] is expired for Control [control name], Assay [assay abbreviation].	Control sample is expired	Load a control sample not expired	L M S	262.001.00029
Cover opened by user [user name]	User has opened the cover.	Close the cover.	L M S	258.000.00027

Message	Description	Action	Effect	Event ID
Cuvette clearing was requested by user	Only information.	-	L	272.001.00001
Cuvette loading was requested by user	Only information.	-	L	272.002.00001
Cuvettes bag added	Only information.	-	L	258.001.00015
Cuvettes counter reset	Only information.	-	L	258.000.00015
Cuvettes entering green phase	Only information.		L	258.002.00014
Cuvettes entering red phase	Possible causes: • Cuvettes are missing. • Cuvettes are blocked into the system.	• Check if cuvettes are loaded onboard, if not load cuvettes. • If the cuvettes are blocked, please verify if it is possible to remove the block (See §8.10). • If the problem persists call service to check the LIAISON® XL system.	L S	258.000.00014
Cuvettes entering yellow phase	Possible causes: • Cuvettes are almost missing. • Cuvettes are blocked into the system.	• Check if cuvettes are loaded onboard, if not load cuvettes. • If the cuvettes are blocked, please verify if it is possible to remove the block (See §8.10). • If the problem persists call service to check the LIAISON® XL system.	L S	258.001.00014
Older [number of deleted results] archived Results were deleted	Only information.	-	L	262.000.00034
Deleted Assay Abr.: [abbreviation], ArtN.: [article number], Country Code [country code], Assay Revision [Assay Revision]	Only information.	-	L	256.000.00009

Message	Description	Action	Effect	Event ID
Deleted Control [control name]	Only information.	-	L	256.001.00009
Deleted Rerun Rule[rerun name]	Only information.	-	L	256.004.00009
Dispensed into Measuring Cuvette	Only information.	-	L	262.000.00015
Dispensed into Measuring Cuvette for Job [SID] [assay abbreviation] ([replicate]) (JobID [job ID], Cycle [pipetting cycle])	Only information.	-	L	262.000.00017
Empty Incubator due to inconsistent state of AM and Software	The status of the incubator is different from expected. Only information.	If the message reoccurs call service to check the LIAISON® XL system.	L M S	262.000.00018
Event Log cleaned up automatically ([number of remaining events] Events remaining, [number of deleted events] Events deleted)	Only information.	-	L	256.000.00005
Export Control [control name]	Only information.	-	L	256.001.00008
Export Rerun [rerun name]	Only information.	-	L	256.004.00008
External Scanner has read: [read value]	Only information.	-	L	272.005.00001

Message	Description	Action	Effect	Event ID
Failed to Aspirate [liquid] for Job [SID] [assay abbreviation] ([replicate]), Disposable Tip lost (JobID [job ID], Cycle [pipetting cycle])	The disposable tip has fallen off the adaptor unexpectedly or tip presence sensor failure. Possible causes: - Defective tip. - Insufficient tip pick-up force due to excessive friction inside the z drive. - Insufficient tip pick-up force due to excessive flexibility in the tip tray. - Hardware defect.	Call service to check the LIAISON® XL system.	L	262.001.00016
Failed to Aspirate [liquid] for Job [SID] [assay abbreviation] ([replicate]), Not Executed (JobID [job ID], Cycle [pipetting cycle])	The instrument was not able to perform the pipetting phase (e.g. system paused).	- Make sure that the system is not paused and start the job again. - If the error reoccurs call service to check the LIAISON® XL system.	L	262.002.00016
Failed to Aspirate [liquid] for Job [SID] [assay abbreviation] ([replicate]), No Liquid (JobID [job ID], Cycle [pipetting cycle])	Possible causes: - The reagent is empty. - The reagent has not enough liquid. The reagent contains liquid but the information on the RF-Tag are wrong	- Check if there is enough liquid, if not load a new reagent. - In case the reagent is set offline reset the LLD (from Diagnostic page). - Start the job again.	L	262.003.00016
Failed to Aspirate [liquid] for Job [SID] [assay abbreviation] ([replicate]), Clot detected (JobID [job ID], Cycle [pipetting cycle])	Clots were detected during aspirating sample. Possible causes: Clotted sample.	- Check liquid. - If error reoccurs, call service to check the teaching.	L	262.008.00016

Message	Description	Action	Effect	Event ID
Failed to Aspirate [liquid] for Job [SID] [assay abbreviation] ([replicate]), Integrity Error (JobID [job ID], Cycle [pipetting cycle])	A reagent integrity error occurred. Possible causes: • Foam on the reagent liquid. • Not enough reagent liquid. • Bad teaching. • Hardware defect.	• Check the reagent vials. • Start the job again. • If the problem persists, call service to check LIAISON® XL system.	L	262.009.00016
Failed to Dispense into Measuring Cuvette for Job [SID] [assay abbreviation] ([replicate]) (JobID [job ID], Cycle [pipetting cycle]), LLD-Result	Problems with the liquid dispensation.	• Start the job again. • If the problem reoccurs call service to check the LIAISON® XL system.	L	262.001.00017
Failed to Dispense into Measuring Cuvette for Job [SID] [assay abbreviation] ([replicate]) (JobID [job ID], Cycle [pipetting cycle]), Integrity Error	Problems with the optical liquid verification (OLV) or the pressure check.	• Start the job again. • If the problem reoccurs call service to check the LIAISON® XL system.	L	262.002.00017
Failed to load Rack File '[file path]' for lane [lane number].	The sample rack ID file is not present in the system.	• Call service.	L M S	265.000.00014
Failed to store File [file failed to store].	An error has occurred during the storing file process.	• Check hard disk or USB stick capacity. • Call service.	L M S	267.001.00100
Failed to store File [file failed to store].	An error has occurred during the storing file process.	• Check hard disk or USB stick capacity. • Call service.	L M S	259.001.00100
Failed to store File [file failed to store].	An error has occurred during the storing file process.	• Check hard disk or USB stick capacity. • Call service.	L M S	262.001.00100
Failed to upload Disposable Tip Coordinates !	An internal error has occurred.	• Call service.	L M S	267.000.00002

Message	Description	Action	Effect	Event ID
Failed to upload Integral Bay Coordinates !	An internal error has occurred.	Call service.	L M S	265.000.00002
Failed to upload Sample Coordinates !	An internal error has occurred.	Call service.	L M S	264.000.00002
Font/Color for Result Label reset while importing Assay Abr.: [abbreviation], ArtN.: [article number], Country Code [country code], Assay Revision [Assay Revision].	Only information.	-	L M S	256.000.00012
Forbidden removal of left DiTiTray	Only information.	-	L M S	267.000.00003
Forbidden removal of right DiTiTray	Only information.	-	L M S	267.001.00003
Left DiTiTray was disabled due to Tip Pickup Failures.	The left drawer for disposable tips was withdrawn automatically as there were subsequent tips pickup failures.	Check the tip population on the left drawer and ensure that it is consistently reported on the software.	L M S	267.000.00006
Right DiTiTray was disabled due to Tip Pickup Failures.	The right drawer for disposable tips was withdrawn automatically as there were subsequent tips pickup failures.	Check the tip population on the right drawer and ensure that it is consistently reported on the software.	L M S	267.001.00006
Import Generic Sequences	Only information.	-	L	256.003.00006
Import Assay Abr.: [abbreviation], ArtN.: [article number], Country Code [country code], Assay Revision: [assay revision]	Only information.	-	L	256.000.00006
Import Control [control name]	Only information.	-	L	256.001.00006

Message	Description	Action	Effect	Event ID
Import Dilution Sequence for [sample/diluent], [volume] µl, sample specific: []	Only information.	-	L	256.002.00006
Incubator initialization was requested by user	Only information.	-	L	272.000.00003
Incubator temperature in range	Only information.	-	L	258.001.00004
Incubator temperature out of range	The incubator temperature is out of range.	- Wait for the temperature to be back in range. - If the problem persists, call service.	L S	258.000.00004
Initialization completed.	Only information.	-	L	258.000.00036
Integral [assay abbreviation] in lane [lane] expired	The shelf life of the integral is expired.	Replace it with a new integral.	L M S	256.000.00015
Integral [abbreviation] in lane [lane]: OnBoard Stability expired	The OnBoard Stability of the integral is expired.	Check the product Instruction for Use.	L M S	256.000.00016
Integral [assay abbreviation] removed from Lane [lane number].	Only information.	-	L	265.000.00012
Integral found at lane [lane number] with ArticleNo [Art. No], LotNo[LotNo], KitNo [KitNo], rem. Det. [rem. Determinations], rem. Calibr [rem. Calibrations] and LL [LL values]	Only information.	-	L	265.000.00017
Integral removed from Lane [assay abbreviation].	Only information.	-	L	265.001.00012

Message	Description	Action	Effect	Event ID
Job to schedule does not exist in DB ([SID] [assay abbreviation] ([replicate]))	The job has been deleted from the DB after that the routine is started.	Start the job again.	L M S	262.000.00013
Job to transmit does not exist in DB ([SID] [assay abbreviation] ([replicate]))	The job has been deleted from the DB after that the routine is started.	Start the job again.	L M S	262.000.00012
Left Arm initialization was requested by user	Only information.	-	L	272.000.00001
Light Check for left arm was run with result: Failed. Measured RLU: [RLU value]; Mean:[Mean value]. CV: [CV value] %.	The Light Check task for left arm is failed.	If error reoccurs, call service to check the LIAISON® XL system.	L	270.002.00002
Light Check for left arm was run with result: Passed. Measured RLU: [RLU value]; Mean:[Mean value]. CV: [CV value] %.	Only information.	-	L	270.002.00001
Light Check for right arm was run with result: Failed. Measured RLU: [RLU value]; Mean: [Mean value]. CV: [CV value] %.	The Light Check task for right arm is failed.	If error recurs, call service to check the LIAISON® XL system.	L	270.003.00002
Light Check for right arm was run with result: Passed. Measured RLU: [RLU value]; Mean: [Mean value]. CV: [CV value] %.	Only information.	-	L	270.003.00001

Message	Description	Action	Effect	Event ID
Light Check was run with result: Failed. Measured RLU: left arm: [left arm RLU value]; right arm: [right arm RLU value]. Mean: left arm [left arm Mean value], right arm [right arm Mean value]. CV: left arm [left arm CV value] %, right arm [right arm CV value] %.	The Light Check task is failed.	If error reoccurs, call service to check the LIAISON® XL system.	L	270.004.00002
Light Check was run with result: Passed. Measured RLU: left arm: [left arm RLU value]; right arm: [right arm RLU value]. Mean: left arm [left arm mean value], right arm [right arm Mean value]. CV: left arm [left arm CV value] %, right arm [right arm CV value] %.	Only information.	-	L	270.004.00001
Lightcheck reagent (article no: [article number]) not found in ancillary bay or set offline.	Possible causes: - The Light Check could be not present. - The Light Check could be offline.	- Ensure that the Light Check is physically present on board. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	270.006.00001
Liquid Waste entering green phase.	Only information.	-	L	258.002.00012
Liquid Waste entering red phase.	Possible causes: - Liquid waste containers are almost full. No new job can be started. - Hardware defect.	- Empty liquid waste container. - If the problem persists call service to check the LIAISON® XL liquid waste sensor.	L S	258.000.00012

Message	Description	Action	Effect	Event ID
Liquid Waste entering yellow phase.	Possible causes: - Liquid waste containers are almost full. - Hardware defect.	- Empty liquid waste container. - If the problem persists call service to check the LIAISON® XL liquid waste sensor.	L S	258.001.00012
Left Liquid Waste Tank inserted.	Only information.	-	L	258.001.00013
Left Liquid Waste Tank removed.	Only information.	-	L M S	258.000.00013
Right Liquid Waste Tank inserted.	Only information.	-	L	258.003.00013
Right Liquid Waste Tank removed.	Only information.	-	L M S	258.002.00013
Loaded Rack File '[rack name]' for lane [lane number].	Only information.	-	L	265.001.00014
Loaded the Assay [assay abbreviation] for Lane [lane number].	Only information.	-	L	265.000.00010
Maintenance Task [Maintenance task name] failed.	The maintenance task is failed.	- Check if all needed resources are present. - Start again the Maintenance task. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	270.000.00002
Maintenance Task [Maintenance Task name] not performed.	The maintenance task has not been performed.	- Check if all needed resources are present. - Start again the Maintenance task. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	270.007.00001
Maintenance Task [Maintenance task name] succeeded.	Only information.	-	L	270.000.00001

Message	Description	Action	Effect	Event ID
Maintenance Task [Maintenance Task name] was cancelled.	Only information.	-	L M S	270.008.00001
Reader initialization was requested by user.	Only information.	-	L	272.000.00005
Mitigation Wash in cycle [cycle], phase [phase] failed.	Only information.	If error reoccurs, call service.	L M S	262.001.00037
Mitigation Wash in cycle [cycle], phase [phase] performed.	Only information.	-	L	262.000.00037
Mitigation Wash in cycle [cycle], phase [phase], Reagent [reagent] performed.	Only information.	-	L	262.000.00038
Mitigation Wash in cycle [cycle], phase [phase], Reagent [reagent] failed.	Only information.	If error reoccurs, call service.	L M S	262.001.00038
Moved Job [SID] [assay abbreviation] ([replicate]) from [old cuvette position] to [new cuvette position].	Only information.	-	L	262.000.00019
No Assay found for Integral with Article Number [article number] in lane [lane number].	The assay protocol is not present in the system database.	Load the assay protocol.	L M S	265.000.00015

Message	Description	Action	Effect	Event ID
No Integral found to schedule Job [SID] [assay abbreviation] ([replicate]). [reason].	A needed integral is not recognized.	- Check if the integral is onboard, online, not expired and with the remaining determinations field different from zero, and available diluents if necessary. - Load the needed integral. - Start the job again. - If the problem persists call service to check the LIAISON® XL system.	L M S	262.000.00005
No matching Diluent Sequence found for Job [SID] [assay abbreviation] ([replicate]).	The dilution sequence is missing.	Call service.	L M S	262.000.00024
Not all needed resources for Maintenance are available, or temperatures are out of range or waste containers are full.	Missing resources for Maintenance or a temperature is out of range or the liquid waste container is full.	- Refill or load missing resources. - Ensure that the temperatures are within range. - Empty liquid waste containers. - Start the maintenance task again. - If the problem persists call service to check the LIAISON® XL system.	L M S	270.005.00001
OLV Calibration failed.	Problems with the optical liquid verification (OLV).	- Prime the pipettor. - Check for leaks in reagent liquid line. - If the problem persists call service to check the LIAISON® XL system.	L M S	272.003.00003
OLV Calibration succeeded.	Only information.	-	L	272.003.00002
OLV Calibration was requested by user.	Only information.	-	L	272.003.00001

Message	Description	Action	Effect	Event ID
Overwrite Assay Abr.: [Assay abbr.], ArtN.: [Art.No], Country Code [Country code], Assay Revision [Assay Revision].	Only information.	-	L	256.000.00007
Overwrite Control [control name].	Only information.	-	L	256.001.00007
Overwrite Rerun [rerun name].	Only information.	-	L	256.004.00007
Printing Failed.	Possible causes: problem with the printer.	- Check the printer for any error condition and clear if any. - If the problem persists, reboot the PC. - If the problem still persists, call service.	L M S	271.000.00001
Quality Control [Passed/Failed] for analyzer [analyzer ID], assay [Assay abbr.], control name [control name] at [Date and Time]. The rule type was [rule type] with the comment: [comment].	The QC Software has detected a rule violation as described.	-	L M	269.000.00001
Quality Control [Passed/Failed] for analyzer [analyzer ID], assay [Assay abbr.], control name [control name] at [Date and Time]. The rule type was [rule type] with the comment: [comment].	The QC Software has detected a rule violation as described.	-	L M S	269.001.00001
Reagent Integral temperature in range.	Only information.	-	L	258.001.00002

Message	Description	Action	Effect	Event ID
Reagent Integral temperature out of range.	A violation in the temperature range of the Reagent area is reported. Possible causes: • The system has been shutdown for a long time. • Hardware defect.	• Check the temperature page and wait for the temperature to come back in range. • If the problem persists call service to check the LIAISON® XL reagent area cooling module and temperature sensor.	L S	258.000.00002
Check PressureProfiles.txt Received 0x "01 23 [error code]".	The pressure profile file is damaged.	• Call service.	L M S	256.000.00013
Import Rerun Rule [rerun name].	Only information.	-	L	256.004.00006
Result of OLV Calibration: [Result value].	Only information.	-	L	272.003.00004
Right Arm initialization was requested by user.	Only information.	-	L	272.000.00002
RLU received: [RLU] ([dark count corrected]/ [dark count]) for Job [SID] [assay abbreviation] ([replicate]).	Only information.	-	L	262.000.00010
Sample Tube for Job to schedule was removed ([SID] [assay abbreviation] ([replicate])).	Possible causes: • The sample tube is removed during a run. • Defective Sample Rack • Defective Sample area anchorage system	• Load the sample again and press "START" button. • If the problem persists, call service to check the racks and the Sample area.	L M S	262.000.00021
Sample Scanner has read: [read value].	Only information.	-	L	272.004.00001

Message	Description	Action	Effect	Event ID
Samples temperature in range.	Only information.	-	L	258.001.00003
Scheduled Job [SID] [assay abbreviation] ([replicate]) for Cycle [cycle], Lane [integral lane] (finishes in [finishing cycle], coordinate [sample coordinate]).	Only information.	-	L	262.000.00006
Scheduled Priming cuvette for Starterset A, Startcycle: [start cycle], Primecycle: [prime cycle].	Only information.	-	L	262.000.00027
Scheduled Priming cuvette for Starterset B, Startcycle: [start cycle], Primecycle: [prime cycle].	Only information.	-	L	262.000.00028
Software: Communication error. [error string].	A problem of communication has occurred between the computer and the instrument.	• Shutdown the computer and the instrument. • Restart the computer and the instrument. • If the problem persists call service to check the LIAISON® XL system.	L M S	258.000.00028
Software: Internal communication error. [error code].	A problem of communication has occurred between the computer and the instrument	• Shutdown the computer and the instrument. • Restart the computer and the instrument. • If the problem persists call service to check the LIAISON® XL system.	L M S	258.000.00030

Message	Description	Action	Effect	Event ID
Software: No serial communication to device. [error string].	A problem of communication has occurred between the computer and the instrument has occurred.	• Check that instrument is switched on. • Check USB cable between PC and instrument. • Shutdown the computer and the instrument. • Restart the computer and the instrument. • If error reoccurs, call service to check the LIAISON® XL system.	L M S	258.000.00029
Solid Waste counter reset.	Only information.	-	L	258.000.00018
Solid Waste drawer pulled out.	Only information.	-	L S	258.000.00017
Solid Waste drawer pushed in.	Only information.	-	L	258.001.00017
Solid Waste entering green phase.	Only information.	-	L	258.002.00016
Solid Waste entering red phase.	The solid waste container is almost full. No new job can be started.	• Empty the solid waste container.	L S	258.000.00016
Solid Waste entering yellow phase.	The solid waste container is almost full.	• Empty the solid waste container.	L S	258.001.00016
Starter [A1, A2, B1 or B2] entering green phase.	Only information.	-	L	258.002.00019

Message	Description	Action	Effect	Event ID
Starter [A1, A2, B1 or B2] entering red phase.	The system can not use the involved Starter bottle. Possible causes: - Starter bottle is empty. - Starter bottle has been removed. - Starter has not been primed yet. - RF tag not readable. - Hardware defect.	- Load a new starter bottle and wait for the starter prime. - If the problem persists call service to check the Starter Reagent Rack.	L S	258.000.00019
Starter [A1, A2, B1 or B2] entering yellow phase.	The Starter bottle is almost empty.	- The system can start only few tests. - Load a new starter bottle and wait for the starter prime.	L S	258.001.00019
Starter [A1, A2, B1 or B2] temperature in range.	Only information.	-	L	258.001.00005
Starter [A1, A2, B1 or B2] temperature out of range.	A violation in the temperature range of the Starter area is reported. Possible causes: - The system is still initializing or resuming. - The system was shut down for a long time. - Hardware defect.	- Wait for the temperature to come back in range. - If the problem persists, call service to check the LIAISON® XL Starter reagent heating foil and temperature sensor.	L S	258.000.00005
Starter Bottle [article number.] in position [lane] expired.	The shelf life of the Starter Bottle is expired.Expired Starters are not used and there for no flag is needed.	Exchange the starter bottle.	L M S	256.002.00015

Message	Description	Action	Effect	Event ID
Starter Lot Change performed, switched Starter Set [starter set (A/B)], Starter Reagent [starter reagent (1/2)] from Lot [old LOT number] to Lot [new LOT number].	Only information. A new lot starter has been loaded on board and primed. Old valid calibrations are invalidated.	-	L	262.000.00030
Starter Priming failed.	- Problems with the starter priming. (Sticky) Bubbles in the starter liquid line. - Starter bottle empty.	- Check if the Starter bottle is correctly inserted and enough liquid is present. - Repeat priming. - If error persists, gently agitate the bottle and its connected tube to remove sticky bubbles. - If the problem persists call service to check the LIAISON® XL system.	L M S	262.000.00035
Stopped Analyzer due to serious event before.	An internal error has occurred.	- Shut down the computer and the instrument. - Restart the computer and the instrument. - Initialize the system. - If the problem persists call service to check the LIAISON® XL system.	L M S	256.000.00010
Switched active liquid waste tank from left to right.	Only information.	-	L	258.000.00037
Switched active liquid waste tank from right to left.	Only information.	-	L	258.001.00037
System initialized.	Only information.	-	L	256.000.00002
System Liquid entering green phase.	Only information.	-	L	258.002.00008

Message	Description	Action	Effect	Event ID
System Liquid entering red phase.	The liquid level is below the 13% threshold. Possible causes: • The System Liquid container is almost empty. No new job can be started. • Hardware defect.	• Refill the System Liquid (DI Water) container. • If the problem persists call service to check the LIAISON® XL System liquid sensor.	L S	258.000.00008
System Liquid entering yellow phase.	Possible causes: • The System Liquid container is almost empty. • The event informs the user that the system will run out of System Liquid soon. The liquid level drops below the 30% threshold. • Hardware defect.	• Refill the System Liquid (DI Water) container. • If the problem persists call service to check the LIAISON® XL System liquid sensor.	L S	258.001.00008
System Liquid level sensor connected.	Only information.	-	L	258.003.00009
System Liquid level sensor disconnected.	Possible causes: • The System Liquid (DI Water) container sensor (on the intermediate tank) is disconnected. • Hardware defect.	• Reconnect the System Liquid (DI Water) container if possible. • If the problem persists call service to check the LIAISON® XL System Liquid sensor.	L M S	258.002.00009
System Liquid main container inserted.	Only information.	-	L	258.001.00009
System Liquid main container removed.	Only information.	-	L S	258.000.00009

Message	Description	Action	Effect	Event ID
System resumed from Stand By.	Only information.	-	L	256.000.00014
The CRC of the integral inserted into lane [lane number] has changed since last use.	Only information. The data stored into the RF-Tag have been changed since last loading.	-	L M S	265.000.00004
The FlashCurve Display Tool [tool name] was not found at [path]	An internal error has occurred.	Call service to involve the Corporate functions.	L M S	268.000.00001
The integral inserted into lane [lane number] has an incorrect CRC in Cluster [cluster index]. Expected [expected CRC], found [found CRC].	Problems with the integral RF-Tag check sum.	- Use a different integral. - If the problem reoccurs call service.	L M S	265.000.00003
The reagent integral removed from lane [lane number of the removed integral] was in use.	Only information.	-	L M S	265.000.00001
Unscheduled Job [SID] [assay abbreviation] ([replicate]) Cycle [cycle].	Only information.	-	L	262.000.00007
User [user name] logged in at level [login level].	Only information.	-	L	256.000.00001
User requested Priming.	Only information.	-	L	256.000.00003
User sent low level command: [low level command].	Only information.	-	L	272.006.00001
Wash Liquid entering green phase.	Only information.	-	L	258.002.00010

Message	Description	Action	Effect	Event ID
Wash Liquid entering red phase.	Possible causes: - The Wash Liquid container is almost empty. No new job can be started. - Hardware defect.	- Refill the Wash Liquid resource. - If the problem persists call service to check the LIAISON® XL Wash liquid sensor.	L S	258.000.00010
Wash Liquid entering yellow phase.	Possible causes: - The Wash Liquid container is almost empty. - Hardware defect	- Refill the Wash Liquid resource. - If the problem persists call service to check the LIAISON® XL Wash liquid sensor.	L S	258.001.00010
Wash Liquid level sensor connected.	Only information.	-	L	258.003.00011
Wash Liquid level sensor disconnected.	Possible causes: - The Wash Liquid container sensor is disconnected. - Hardware defect	- Reconnect the Wash Liquid container. - Check the connector of the Wash Liquid container. - If the problem persists call service to check the LIAISON® XL Wash Liquid sensor.	L M S	258.002.00011
Wash Liquid main container inserted.	Only information.	-	L	258.001.00011
Wash Liquid main container removed.	Only information.	-	L S	258.000.00011
Washer initialization was requested by user.	Only information.	-	L	272.000.00004
Event [event description] from [sender module].	Only information.	-	L	256.001.00004
Import Mitigation sequence [Mitigation sequence name].	Only information.	-	L	256.005.00006

Message	Description	Action	Effect	Event ID
Import Assay Group [Assay group name].	Only information.	-	L	256.006.00006
Import Maintenance from file [maintenance file name].	Only information.	-	L	256.007.00006
Failed to import Assay (Article number [Art. number], Abbreviation [abbreviation], Lis Alias [LisAlias]). Reason: An Assay with same Article Number but different Abbreviation or LIS Alias exists already.	Problem with the assay protocol.	Call service to involve the Corporate functions.	L M S	256.020.00006
Failed to import Assay (Article number [Art. number], Abbreviation [abbreviation], Lis Alias [LisAlias]). Reason: An Assay with different Article Number but same Abbreviation exists already.	Problem with the assay protocol.	Call service to involve the Corporate functions.	L M S	256.021.00006
Failed to import Assay (Article number [Art. number], Abbreviation [abbreviation], Lis Alias [LisAlias]). Reason: An Assay with different Article Number but same LIS Alias exists already.	LIS alias for the imported assay already used.	- Check existing LIS aliases. - If possible, change existing LIS alias.	L M S	256.022.00006
Failed to import Assay (Article Number: [Art. number], Abbreviation: [abbreviation], Lis Alias: [LisAlias]). Reason: User [user] has insufficient rights.	Not sufficient rights to import this assay protocol.	Call Service.	L M S	256.023.00006

Message	Description	Action	Effect	Event ID
Start to import Assays from file [absolute path to the assay file].	Only information.	-	L	256.030.00006
Completed import of Assays from file [absolute path to the assay file].	Only information.	-	L	256.031.00006
Failed to import of Assays from file [absolute path to the assay file], no Assay was changed.	Problem with the assays file.	- Import again the Assay protocol. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	256.032.00006
Failed to import from file [absolute path to the assay file].	Problem with the file.	- Import again the Assay protocol. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	256.033.00006
Overwrite Dilution.	Only information.	-	L	256.002.00007
Overwrite Generics.	Only information.	-	L	256.003.00007
Overwrite Mitigation Sequence [Mitigation sequence name].	Only information.	-	L	256.005.00007
Overwrite AssayGroup [Assay Group name].	Only information.	-	L	256.006.00007
User requested Pause.	Only information.	-	L	256.000.00017
User requested Continue.	Only information.	-	L	256.001.00017
Failed to load File [file name].	Problem during the attempt of importing a file.	- Ensure both the file and the path in which it is stored are available. - If the problem persists call service.	L M S	256.000.00100

Message	Description	Action	Effect	Event ID
Starter loaded (Lot Number [LotNo], Vial Number [Vial No.], Lane [lane No], remaining Shots: [remaining starter shots]).	Only information.	-	L	258.000.00038
Starter loaded in lane [starter position] is expired.	The shelf-life of the starter bottle loaded in that position is expired.	Change the starter bottle.	L M S	258.001.00038
Starter loaded in lane [starter lane] has incorrect CRC (read: [read CRC], calculated [calculated CRC]).	Problems with the starter RF-Tag check sum.	- Use a different starter bottle. - If the problem reoccurs call service.	L M S	258.002.00038
Starter loaded in lane [starter lane] has wrong type.	The starter type is incorrect.	Loaded the correct starter type.	L M S	258.003.00038
Starter removed from lane [starter lane].	Only information.	-	L	258.004.00038
Ancillary [Ancillary name], Lot Number [LotNo], Vial Number [Vial No.] loaded at position [position] (Rem. Vol: [Rem. Volume], LL [liquid level]).	Only information.	-	L	258.000.00039
OBS Expired Ancillary [Ancillary name], Lot Number [Lot.No.], Vial Number [Vial No.] loaded at position [position] (Rem. Vol: [Rem. Volume], LL [liquid level]).	The OnBoard Stability of the ancillary package is expired.	Check the product Instruction For Use.	L M S	258.001.00039

Message	Description	Action	Effect	Event ID
Expired Ancillary [Ancillary name], Lot Numebr [LotNo], Vial Number [Vial No] loaded at position [position] (Rem. Vol: [Rem. Volume], LL [liquid level]).	The shelf-life of the Ancillary loaded in that position is expired.	Replace the ancillary package.	L M S	258.002.00039
CRC invalid (read [read CRC], calculated [calculated CRC]) for Ancillary [Ancillary name], Lot Number [LotNo], Vial Number [Vial No.] loaded at position [position] (Rem. Vol: [Rem. Volume], LL [liquid level]).	Problems with the ancillary RF-Tag check sum.	- Use a different ancillary vial. - If the problem reoccurs call service.	L M S	258.003.00039
Perform daily initialization	Only information.	-	L	258.000.00040
System status changed from [old status] to [new status].	Only information.	-	L	258.000.00041
Backup [backup name] started.	Only information.	-	L	259.000.00005
AutoBackup started.	Only information.	-	L	259.001.00005
Backup completed.	Only information.	-	L	259.002.00005
Backup failed.	The backup is not successfully completed. Possible causes: - The disk is full or not available. - A file may be locked by a running process.	- Re-start the backup. - If the problem persists call service.	L M S	259.003.00005
Auto backup Database Started	Only information.	-	L	259.004.00005
Auto backup System Started	Only information.	-	L	259.005.00005

Message	Description	Action	Effect	Event ID
No Starters found, or starters are not primed yet, to schedule Job [SID] [assay abbreviation] ([replicate]).	Possible causes: • The primed Starters shots are not enough to schedule Job • Hardware defect	• Load the needed starters. • Wait for the system to prime them. • If the problem persists call service.	L M S	262.001.00005
No Ancillary found to schedule Job [SID] [assay abbreviation] ([replicate]).	Possible causes: • The ancillary is not loaded onboard. • The ancillary is empty. • The ancillary is offline. • Hardware defect.	• Load the needed ancillary. • Check in the Ancillary page the status of the ancillary, if necessary change it. • If the problem persists call service.	L M S	262.002.00005
No Mitigation Ancillary found to schedule Job [SID] [assay abbreviation] ([replicate]).	Possible causes: • The ancillary is not loaded onboard. • The ancillary is empty. • The ancillary is offline. • Hardware defect.	• Load the needed ancillary. • Check in the Ancillary page the status of the ancillary, if necessary change it. • If the problem persists call service.	L M S	262.003.00005
No Integral found (short Agitation Time) to schedule Job [SID] [assay abbreviation] ([replicate]).	The option to "Ignore integrals with insufficient re-suspension" is enabled and no integral with elapsed Agitation Time is available to schedule the requested job.	Wait until the Agitation Time of the needed integral is elapsed and then re-start.	L M S	262.004.00005
Short Integral Agitation Time in lane [integral lane] for Job [SID] [assay abbreviation] ([replicate]).	Only information. The agitation time countdown for the integral involved in that job was not achieved.	Check the product Instruction For Use about resuspension of magnetic particles.	L M S	262.001.00006

Message	Description	Action	Effect	Event ID
Failed to Aspirate [reagent] for Job [SID] [assay abbreviation] ([replicate]), Not enough Liquid (JobID [JobID] Cycle [Pipetting Cycle]).	Possible causes: The reagent vial is almost empty.	- Check if there is enough liquid, otherwise load a new reagent. - Start the job again.	L	262.004.00016
Failed to Aspirate [reagent] for Job [SID] [assay abbreviation] ([replicate]), No LLD Signal (JobID [JobID] Cycle [Pipetting Cycle]).	A technical problem occurs.	Call service to check the LIAISON® XL right arm.	L	262.005.00016
Failed to Aspirate [reagent] for Job [SID] [assay abbreviation] ([replicate]), Bad LLD Signal (JobID [JobID] Cycle [Pipetting Cycle]).	LLD signal was found invalid.	Call service to check the LIAISON® XL right arm.	L	262.006.00016
Failed to Aspirate [reagent] for Job [SID] [assay abbreviation] ([replicate]), LLD Position Verification Negative (JobID [JobID] Cycle [Pipetting Cycle]).	A technical problem occurs.	Call service to check the LIAISON® XL right arm.	L	262.007.00016
AM denied Mitigation Wash [Mitigation name] at cycle [start Cycle], phase [Start Phase] from Position [Ancillary position], Reason: Too late.	An internal error has occurred.	Call Service to involve Corporate functions.	L M S	262.003.00032
AM denied Mitigation Wash [Mitigation name] at cycle [start Cycle], phase [Start Phase] from Position [Ancillary position], Reason: Cycle used.	An internal error has occurred.	Call Service.	L M S	262.004.00032

Message	Description	Action	Effect	Event ID
AM denied Mitigation Wash [Mitigation name] at cycle [start Cycle], phase [Start Phase] from Position [Ancillary position], Reason: Wrong Analyzer State.	An internal error has occurred.	If error reoccurs, call Service.	L M S	262.009.00032
AM not able to start new jobs.	Possible reasons: - missing resources (e.g. no cuvettes available, no starters available, no tips available, no available space in solid or liquid waste, no system/wash liquid available for additional jobs). - temporary unavailability of an assembly (e.g. temperatures out of range, stirrer agitation speed out of range, an offline arm) hardware defects.	- Check ALL the resources in the Status page, refill resources if missing. - Start again the run. - If the problem persists call service to check the LIAISON® XL system.	L M S	262.000.00039
No response to query for workorder for SID [SID] within [seconds] seconds.	No response is provided from the host for that SID until the timeout.	- If the worklist for that SID was correctly received, ignore it. - If no worklist was provided for that SID, reload the involved sample. - If the problem persists call service to check the LIAISON® XL Host connection.	L	263.000.00001
Structure error in LIS message.	An error with the LIS protocol is occurred.	Call service to check the Host implementation.	L M S	263.000.00002
Data format error in message received from LIS.	An error with the LIS communication is occurred	Call service to check the Host implementation.	L M S	263.000.00003

Message	Description	Action	Effect	Event ID
Sample Tube [SID] taken offline (Lane[lane number], Tube [Position in rack]).	The sample tube is offline. Possible causes: - Not enough sample liquid. - Clot detected.	- Check the sample tube and ensure that it is properly prepared, then reload it. - Start the job again.	L M S	264.000.00045
Duplicate Sample ID [SID] (Lane [lane first occurrence], Position [Row first occurrence]/Lane [Lane second occurrence], Position [Row second occurrence]).	In the loaded racks, two or more samples carry the same ID. The system kept the first recognized tube only.	In case also the other tubes shall be tested, reload such tubes and ensure that a unique barcode is attached to each of them.	L S	264.000.00050
Illegal Sample ID found in Rack.	An illegal Sample ID (SID) is read and it is not saved	Use another SID.	L M S	264.000.00051
Empty positions detected in Lane [lane].	Only information	-	L S	264.000.00052
Rack identifier Barcode could not be detected in Lane [lane].	Possible reasons: - The rack identifier barcode can not be read by the barcode reader. - Hardware defect.	- Remove and the reload the sample rack. - If the problem persists, use another sample rack and call service to check the LIAISON® XL barcode scanner and the rack.	L S	264.000.00053
Rack identifier [rack identifier] not found in Lane [lane].	The rack identifier barcode can not be found.	- Remove and the reload the sample rack. - If the problem persists, use another sample rack and call service to check the LIAISON® XL barcode scanner and the rack.	L S	264.000.00054
Misdetetection of Rack Positions in lane [lane].	The system recognizes a mismatch between the expected and detected rack positions.	- Remove and the reload the sample rack. - If the problem persists, use another sample rack and call service to check the LIAISON® XL barcode scanner and the rack.	L S	264.000.00055

Message	Description	Action	Effect	Event ID
Rack inserted into wrong lane [lane].	Possible causes: - The rack was not inserted into the lane where the barcode reader was focused on. - Hardware defect.	- Re-loaded the sample rack in the correct lane (according to the LEDs indication). - If the problem persists, call service to check the LIAISON® XL sample area barcode scanner.	L S	264.000.00056
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Method Sequence storage full.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.002.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Lane storage full (too many alternative methods).	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.003.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Too many pipetting sequences (com_gen limit exceeded).	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.004.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Too many Method Sequence steps.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.005.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Method Sequence too long.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.006.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Method garbled.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.007.00010

Message	Description	Action	Effect	Event ID
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Too many virtual methods.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.008.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Reference to unknown Pipetting Sequence.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.009.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Lane number invalid.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.010.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Double Aspiration in R2-Phase.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.011.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Extended Phase mismatch.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.012.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Method already stored.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.013.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Invalid Measurement Parameter.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.014.00010
AM denied Assay [assay abbreviation] for Lane [lane] Reason: Invalid Wash Parameter.	An internal error has occurred.	Call service to involve Corporate functions.	L M S	265.015.00010

Message	Description	Action	Effect	Event ID
Integral (OBS expired) found at lane [lane number] with ArticleNo [article number], LotNo [LotNo], KitNo [KitNo], rem. Det. [rem. Determinations], rem. Calibr [rem. Calibrations] and LL [LL values].	The OnBoard Stability of the integral is expired.	See the product Instruction For Use.	L M S	265.001.00017
Integral (expired) found at lane [lane number] with ArticleNo [article number], LotNo [LotNo], KitNo [KitNo], rem. Det. [rem. Determinations], rem. Calibr [rem. Calibrations] and LL [LL values].	The shelf-life of the integral is expired.	Use another integral.	L M S	265.002.00017
Integral with LL = 0 found (try Diagnostics -> Reset LLD) at lane [lane number] with ArticleNo [article number], LotNo [LotNo], KitNo [KitNo], rem. Det. [rem. Determinations], rem. Calibr. [rem. Calibrations] and LL [LL values].	The integral is set offline due to an inconsistency found in the Liquid Level stored in the Tag.	- If no used vial is exhausted, check the proper integral conditions then use the "Reset LLD" function under the Diagnostic page. - If the problem persist call Service.	L M S	265.003.00017
Left Arm taken online.	Only information.	-	L	265.000.00018
Left Arm taken offline.	The Sample Arm is taken offline.	- Check if the system is paused, in this case press "Stop" - "Continue" from the Header, otherwise initialize the system. - If error reoccurs, call service to check the LIAISON® XL system.	L	265.001.00018

Message	Description	Action	Effect	Event ID
Right Arm taken online.	Only information.	- Check if the system is paused, in this case press "Stop" - "Continue" from the Header, otherwise initialize the system. - If error reoccurs, call service to check the LIAISON® XL system.	L	265.000.00019
Right Arm taken offline.	The Reagent Arm is taken offline.	- Load another integral. - If error reoccurs, call service to check the LIAISON® XL system.	L	265.001.00019
Integral without RF-Tag Information inserted into lane [lane].	The system can not recognize the RF-Tag for that integral.	- Loaded another integral. - If error reoccurs call service.	L M S	265.000.00020
Integral Reagent Flap open, please close the Flap.	The integral flap has been open for too long.	Close the Reagent Flap.	L M S	265.000.00021
Integral taken offline (ArtNo.: [Art.No.], Lane [lane] Positions [position in integral]).	Possible reasons: - The integral shelf-life is expired. - The integral is not compatible with the assay protocol version. - Problems with the integral RF-Tag check sum. - The Liquid Level Detection system failed to find the liquid in a vial.	- Ensure that the shelf life is not expired. - Ensure that assay protocol version is compatible with the loaded integral. - If no used vial is exhausted, check the proper integral conditions then use the "Reset LLD" function under the Diagnostic page. - Start again the not started jobs. - If the problem persists, load a new integral. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	265.000.00045

Message	Description	Action	Effect	Event ID
Not plausible data read from Integral Lane [lane] and Integral Lane [lane], please remove them from the system, do not use them and reboot the system. Contact your DiaSorin representative for further support.	Possible reasons: - Defective integral RF-Tag - Hardware defect	Call service to check the LIAISON® XL system	L M S	265.000.00046
Ancillary Rack loaded.	Only information.	-	L	266.000.00002
Ancillary Rack unloaded.	Only information.	-	L	266.001.00002
Ancillary [ancillary name] from position [Ancillary position] removed.	Only information.	-	L	266.000.00003
Needed Ancillary [Ancillary name] from position [Ancillary position] removed.	A needed ancillary was removed before that its aspiration phase was finished.	- Reload the ancillary. - Start again the not started jobs.	L M S	266.001.00003
Ancillary taken offline (Name: [Ancillary name], Position [Ancillary position]).	Possible causes: - No liquid found - The ancillary shelf-life is expired. - The ancillary reagent has a data recognition issue.	- If the ancillary is not is exhausted, reload it, otherwise load a new ancillary. - Start again the not started jobs. - If error persists, call service to check the LIAISON® XL system.	L M S	266.000.00045

Message	Description	Action	Effect	Event ID
Not plausible data read from Ancillary Position [Ancillary position] and Ancillary Position [Ancillary position], please remove them from the system, do not use them and reboot the system. Contact your DiaSorin representative for further support.	Possible reasons: - Defective integral RF-Tag - Hardware defect	Call service to check the LIAISON® XL system	L M S	266.000.00046
Maintenance Task [Maintenance task name] (Step: [Maintenance task step] succeeded.	Only information.	-	L	270.000.00003
Maintenance Task [Maintenance task name] (Step: [Maintenance task step] failed.	A maintenance task failed.	- Check if all the resources are present into the system from Status page. - Start again the Maintenance task. - If the problem persists, call service to check the LIAISON® XL system.	L	270.000.00004
Washer Aspiration Error occurred during Background or Lightcheck, Replicate [Replicate number].	An internal error occurred during the Background or Light Check.	- Perform the maintenance task "WasherPrime". - Start again the failed maintenance task. - If the problem persists, call service to check the LIAISON® XL system.	L M S	270.009.00001
Aspiration Error occurred for Light Check, Replicate [Replicate number].	An internal error occurred during the Light Check.	- Check the liquid volume into the Light Check bottle. - Start again the Light Check task. - If the problem persists, call service to check the LIAISON® XL system.	L M S	270.009.00002

Message	Description	Action	Effect	Event ID
DarkCount Error occurred during Maintenance, Replicate [Replicate number].	An internal error occurred into the measurement chamber during a Maintenance task.	- Start again the involved maintenance task. - If the problem persists, call service to check the LIAISON® XL system.	L M S	270.009.00003
Spikes detected during Maintenance, Replicate [Replicate Number].	An internal error occurred into the measurement chamber during a Maintenance task.	- Start again the involved maintenance task. - If the problem persists, call service to check the LIAISON® XL system.	L M S	270.009.00004
Sample Scanner initialization was requested by user.	Only information.	-	L	272.000.00006
Cover closed by user [user name].	Only information.	-	L	258.001.00027
Aborted Job [SID] [Assay Abbreviation] ([replicate]). Reason: Starter Dispense check.	A problem with the sensor in the aspiration line from the measured cuvette into the liquid waste.	- Start again the aborted job. - If the problem persists, call service to check the LIAISON® XL system.	L M S	262.019.00001
Only [tips available] disposable tips available ([needed tips] needed).	There are not enough disposable tips.	Load disposable tips.	L M S	270.005.00002
Manual Input of RackID [rack ID] in lane [lane].	Only information.	-	L	264.000.00057
Illegal Sample ID [SID] (Lane [lane], Position [sample position]).	An illegal SID is loaded.	- Reload the SID. - If the problem persists, replace the SID with a legal SID.	L M S	264.000.00060
Switched LED On for Sample Lane.	Only information.	-	L	264.000.00061
Switched LED Off for Sample Lane.	Only information.	-	L	264.001.00061
Position barcode missing.	The System fail to read one or more position identifiers.	- Remove and then reload the sample rack. - If the problem persists, call service.	L	264.000.00062

Message	Description	Action	Effect	Event ID
Event [event ID] from [module], Parameters: "[parameters]".	Only information.	-	L	256.000.00004
User [user name] logged off.	Only information.	-	L	256.001.00001
Fatal error occurred during database access. Processing stopped.	An internal error occurred during the access to the database.	Call service to involve Corporate functions.	L M S	256.000.00018
Software started.	Only information	-	L	256.000.00019
Software closed.	Only information	-	L	256.001.00019
Disposable Tips entering red phase.	Possible causes: - Tip supply is almost empty. - The Tip drawer is not inserted correctly. - The Disposable Tips on board are set differently from the Disposable Tips declared on software page	- Check if the drawers are correctly pushed in and assigned. - Check if the Disposable Tips are loaded on board and set correctly into the software page. - If the problem persists call service to check the LIAISON® XL system.	L S	258.000.00025
Disposable Tips entering yellow phase.	Possible causes: - Tip supply is almost empty. - The Tip drawer is not inserted correctly. - The Disposable Tips on board are set differently from the Disposable Tips declared on software page.	- Check if the drawers are correctly pushed in and assigned. - Check if the Disposable Tips are loaded on board and set correctly into the software page. - If the problem persists call service to check the LIAISON® XL system.	L S	258.001.00025
Disposable Tips entering green phase.	Only information.	-	L	258.002.00025

Message	Description	Action	Effect	Event ID
Communication to analyzer lost.	The communication between the pc and the instrument was interrupted as the analyzer did not timely respond to the PC (e.g. the instrument was shut down while the pc was still on).	- Restart the pc and the LIAISON® XL system. - If the problem persists, call service to check the LIAISON® XL system.	L M S	258.001.00029
Analyzer stopped due to open cover during operation.	Possible causes: The cover was opened while the system was running. Hardware defect	- Close the cover and initialize the system. - If the problem persists, call service to check the LIAISON® XL system.	L M S	258.000.00044
Too many cuvettes loaded. This may lead to a cuvette jam.	Only information. Too many cuvettes were added.	-	L M S	258.000.00046
Enough cuvettes already loaded. Adding new cuvettes may lead to a cuvette jam.	There are enough cuvettes for the system	Don't add more cuvettes.	L M S	258.000.00047
Failed to import Control Definition '[Control definition name]', Lot Number '[Lot No]', Barcode '[barcode ID]'.	The import was not successfully completed. Possible causes: - The new control definition may contain a barcode already used for a different control definition. - The contents of the new control definition does not match the SW requirements.	- Retry to import the control. - If the problem persists, call service to check the LIAISON® XL system.	L M S	259.000.00004
Aborted Job [SID] [assay abbreviation] ([replicate]) Reason: Reader DarkCount out of Range.	The job was aborted due to an error in the measurement chamber.	- Restart the job. - If error reoccurs, call service to check the LIAISON® XL system.	L M S	262.004.00002

Message	Description	Action	Effect	Event ID
Aborted Job [SID] [assay abbreviation] ([replicate]): Reader DarkCount average is invalid.	The job was aborted due to an error in the measurement chamber.	- Switch off and on the instrument. - If error persists, call Service.	L M S	262.005.00002
Aborted Job [SID] [assay abbreviation] ([replicate]). Reason: Reader DarkCount exceeded envelope.	The job was aborted due to an error in the reader.	- Restart the job. - If the problem persists, call service to check the LIAISON® XL system.	L M S	262.006.00002
Error while transmitting data to LIS.	Possible causes: - the communication could be interrupted. - there is a problem in the structure during communication.	- Retry the transmission. - If the problem persists, call service to check the LIAISON® XL system.	L M S	263.000.00004
Error while receiving data from LIS.	Possible causes: - the communication could be interrupted - there is a problem in the structure during communication	- Retry the download. - If the problem persists, call service to check the LIAISON® XL system.	L M S	263.000.00005
Liaison XL LIS module running.	Only information.	-	L	263.000.00006
Liaison XL LIS module stopped.	Possible causes: - The LIS module was switched off. - The communication between Liaison XL and host was interrupted.	- Ensure that the LIS module is on. - If the problem persists, restart the pc. - If the problem persists, call service to check the LIAISON® XL system.	L	263.000.00007

Message	Description	Action	Effect	Event ID
Liaison XL LIS module could not be started.	Possible causes: • The LIS module cannot start for an error. • COM port may be used already by a different program. • COM port may be wrongly configured. • Cable to LIS system may be defect.	• Make sure the cable between the PC and the LIS system is plugged in correctly. • Restart the PC.	L M S	263.000.00008
Liaison XL LIS module could not be stopped.	For information only.	-	L M S	263.000.00009
User requested release of Ancillary Rack.	Only information.	-	L	266.002.00002
Control '[Control Name]' was below Manufacturer Range for Assay '[Assay Abbr.]'.	The control is below the Manufacturer Range.	• Follow the recommendation reported into the assay Instructions For Use, Quality Control section. • If the problem persists, call service to check the LIAISON® XL system.	L M S	268.000.00002
Control '[Control name]' was above Manufacturer Range for Assay '[Assay Abbr.]'.	The control is above the Manufacturer Range.	• Follow the recommendation reported into the assay Instructions For Use, Quality Control section. • If error reoccurs, call service to check the LIAISON® XL system.	L M S	268.000.00003
Control '[Control name]' was below User Range for Assay '[Assay Abbr.]'.	The control is below the User Range.	-	L M S	268.000.00004
Control '[Control name]' was above User Range for Assay '[Assay Abbr.]'.	The control is above the User Range.	-	L M S	268.000.00005

Message	Description	Action	Effect	Event ID
Dose [Dose result] calculated for '[SID]' [Assay Abbr.], CalibrationID: '[Cal. ID]'	Only information.	-	L	268.000.00006
Unable to recalculate Result as it is bound to a no longer valid Calibration.	The system cannot recalculate a result as it was previously calculated with a calibration that is not valid anymore. This applies to controls that are started automatically due to a control rule of type "After Calibrations".	-	L M S	268.000.00007
User requested to reset the Liquid Levels on the integral in lane 2.	Only information.	-	L	272.000.00007
System reset the Liquid Levels on the integral in lane 2.	Only information.	-	L	272.001.00007
System failed to reset the Liquid Levels on the integral in lane 2.	The system cannot reset the liquid levels. Possible causes: • No RFID tag found • Error in reading/writing the RFID tag	• Check to have correctly inserted the integral in lane 2 • If the problem persists, call service to check the LIAISON® XL system.	L	272.002.00007
Fast Resume from Standby enabled.	Only information for DiaSorin representatives.	-	L	272.000.00008
Fast Resume from Standby disabled.	Only information for DiaSorin representatives.	-	L	272.001.00008
Instrument not connected to FGS.	Only information.	-	L	273.040.00000

Message	Description	Action	Effect	Event ID
Instrument connected to FGS, but FGS not connected to the Cloud.	Only information.	-	L	273.041.00000
Instrument connected to FGS, but FGS temporarily not connected to the Cloud.	Only information.	-	L	273.042.00000
Instrument connected to FGS, and FGS connected to Cloud.	Only information.	-	L	273.043.00000
Vigilant Online Cloud Service FastTrack connected.	Only information.	-	L	273.044.00000
Vigilant Online Cloud Service FastTrack disconnected.	Only information.	-	L	273.045.00000
Upload requested File.	Only information.	-	L M	273.000.00001
Requested File [requested file] does not exist.	Only information.	-	L M	273.001.00001
Received Log File Request from [from] to [to].	Only information.	-	L	273.000.00002
Upload Log File Request.	Only information.	-	L	273.001.00002
Download File.	Only information.	-	L	273.000.00003
Calibration for Assay [Assay Abbr.] expired.	Possible causes: The calibration of that assay is expired. In case of Combi assay, the assay used to calibrate is reported.	It could be necessary to perform a new calibration, depending of the used kit lot and number.	L M S	256.003.00015
More than 1000 Assays are loaded, this is not supported.	There are too many assays stored in the database.	Call service to check the LIAISON® XL system.	L M S	256.000.00027

Message	Description	Action	Effect	Event ID
More than 100 Dilution Sequences are loaded, this is not supported.	There are too many dilutions sequences stored in the database.	Call service to check the LIAISON® XL system.	L M S	256.001.00027
More than 267 Mitigation Sequences are loaded, this is not supported.	There are too many mitigation sequences stored in the database.	Call service to check the LIAISON® XL system.	L M S	256.002.00027
Reagent Integral temperature out of range for too long, suspend new jobs.	No news jobs can start because the temperature of the reagent area is out of range from more than 30 minutes.	- Wait until that the temperature of the reagent area back in range and then re-start the jobs. - If re-occurs call the service.	L M S	258.002.00002
System Setting 'Software Language' changed from '[Old language]' to '[New language]'.	Only information.	-	L	259.001.00007
System Setting 'IFU Language' changed from '[Old language]' to '[New language]'.	Only information.	-	L	259.002.00007
System Setting 'Date Format' changed from '[Old date format]' to '[New date format]'.	Only information.	-	L	259.003.00007
System Setting 'Time Format' changed from '[Old time format]' to '[New time format]'.	Only information.	-	L	259.004.00007
System Setting 'Decimal Point' changed from '[Old decimal point]' to '[New decimal point]'.	Only information.	-	L	259.005.00007
System Setting 'Country Code' changed from '[Old country code]' to '[New country code]'.	Only information.	-	L	259.006.00007

Message	Description	Action	Effect	Event ID
System Setting 'Auto Backup Path' changed from '[Old path]' to '[New path]'.	Only information.	-	L	259.007.00007
System Setting 'Backup Path' changed from '[Old path]' to '[New path]'.	Only information.	-	L	259.008.00007
System Setting 'Automatic Archiving' for Samples enabled.	Only information.	-	L	259.009.00007
System Setting 'Automatic Archiving' for Samples disabled.	Only information.	-	L	259.010.00007
System Setting 'Eventlog Size' changed from '[Old size]' to '[New size]'.	Only information.	-	L	259.011.00007
System Setting 'Auto log-off' disabled.	Only information.	-	L	259.012.00007
System Setting 'Auto log-off' after '[Minutes]' minutes enabled	Only information.	-	L	259.013.00007
System Setting 'Auto log-off' changed from '[Old setting]' to '[New setting]'.	Only information.	-	L	259.014.00007
System Setting 'Auto Backup (Days) Frequency' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.015.00007

Message	Description	Action	Effect	Event ID
System Setting 'Auto-Backup (Days) Delete Results older than' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.016.00007
System Setting 'Disable Failed Results Beeper' enabled.	Only information.	-	L	259.017.00007
System Setting 'Disable Failed Results Beeper' disabled.	Only information.	-	L	259.018.00007
System Setting 'Disable System Error Beeper' enabled.	Only information.	-	L	259.019.00007
System Setting 'Disable System Error Beeper' disabled.	Only information.	-	L	259.020.00007
System Setting 'Disable Fatal Error Beeper' enabled.	Only information.	-	L	259.021.00007
System Setting 'Disable Fatal Error Beeper' disabled.	Only information.	-	L	259.022.00007
System Setting 'Disable Sample Loading Beeper' enabled.	Only information.	-	L	259.023.00007
System Setting 'Disable Sample Loading Beeper' disabled.	Only information.	-	L	259.024.00007
System Setting 'Auto Mute Interval' changed from '[old value]' to '[new value]'.	Only information.	-	L	259.025.00007
System Setting 'Random Access' enabled.	Only information.	-	L	259.026.00007
System Setting 'Random Access' disabled.	Only information.	-	L	259.027.00007

Message	Description	Action	Effect	Event ID
System Setting 'Beeper Volume' set to High.	Only information.	-	L	259.028.00007
System Setting 'Beeper Volume' set to Medium.	Only information.	-	L	259.029.00007
System Setting 'Beeper Volume' set to Low.	Only information.	-	L	259.030.00007
System Setting 'Automatic Archiving' for Controls enabled.	Only information.	-	L	259.031.00007
System Setting 'Automatic Archiving' for Controls disabled.	Only information.	-	L	259.032.00007
System Setting 'Ignore integrals with insufficient re-suspension' enabled.	Only information.	-	L	259.033.00007
System Setting 'Ignore integrals with insufficient re-suspension' disabled.	Only information.	-	L	259.034.00007
System Setting 'Ignore onboard expired integrals/ancillaries for inventory' enabled	Only information.	-	L	259.036.00007
System Setting 'Ignore onboard expired integrals/ancillaries for inventory' disabled	Only information.	-	L	259.037.00007
System Setting 'Ignore onboard expired integrals/ancillaries for scheduling' enabled.	Only information.	-	L	259.038.00007
System Setting 'Ignore onboard expired integrals/ancillaries for scheduling' disabled.	Only information.	-	L	259.039.00007

Message	Description	Action	Effect	Event ID
System Setting 'Ignore expired controls for scheduling' enabled.	Only information.	-	L	259.040.00007
System Setting 'Ignore expired controls for scheduling' disabled.	Only information.	-	L	259.041.00007
System Setting 'Password Minimum length' changed from [old password minimum length] to [new password minimum length].	Only information.	-	L	259.050.00007
System Setting 'Enable password complexity' enabled.	Only information.	-	L	259.060.00007
System Setting 'Enable password complexity' disabled.	Only information.	-	L	259.061.00007
System Setting 'Enable password history' enabled.	Only information.	-	L	259.062.00007
System Setting 'Enable password history' disabled.	Only information.	-	L	259.063.00007
System Setting 'Auto Resume Monday' changed from [old starting time] to [new starting time].	Only information.	-	L	259.080.00007
System Setting 'Auto Resume Tuesday' changed from [old starting time] to [new starting time].	Only information.	-	L	259.081.00007

Message	Description	Action	Effect	Event ID
System Setting 'Auto Resume Wednesday' changed from [old starting time] to [new starting time].	Only information.	-	L	259.082.00007
System Setting 'Auto Resume Thursday ' changed from [old starting time] to [new starting time].	Only information.	-	L	259.083.00007
System Setting 'Auto Resume Friday' changed from [old starting time] to [new starting time].	Only information.	-	L	259.084.00007
System Setting 'Auto Resume Saturday' changed from [old starting time] to [new starting time].	Only information.	-	L	259.085.00007
System Setting 'Auto Resume Sunday' changed from [old starting time] to [new starting time].	Only information.	-	L	259.086.00007
Check automatic start of calibrations.	Only information.	-	L	258.000.00051
Automatically created calibration for integral in lane [integral lane] (Assay name).	Only information.	-	L	258.000.00052
Could not create automatically calibration for integral in lane [integral lane] (Assay name). Reason: [description].	Only information.	-	L	258.000.00053

Message	Description	Action	Effect	Event ID
Could not create automatically calibration for integral in lane [integral lane] (Assay name), integral is exhausted.	Only information.	Replace the integral and start the calibration again	L	258.000.00054
Could not create automatically calibration for integral in lane [integral lane] (Assay name), analyzer can not start new jobs.	Only information.	-	L S	258.000.00055
System Setting 'Auto Calibration Monday' enabled.	Only information.	-	L	259.100.00007
System Setting 'Auto Calibration Monday' disabled.	Only information.	-	L	259.101.00007
System Setting 'Auto Calibration Tuesday' enabled.	Only information.	-	L	259.102.00007
System Setting 'Auto Calibration Tuesday' disabled.	Only information.	-	L	259.103.00007
System Setting 'Auto Calibration Wednesday' enabled.	Only information.	-	L	259.104.00007
System Setting 'Auto Calibration Wednesday' disabled.	Only information.	-	L	259.105.00007
System Setting 'Auto Calibration Thursday' enabled.	Only information.	-	L	259.106.00007
System Setting 'Auto Calibration Thursday' disabled.	Only information.	-	L	259.107.00007
System Setting 'Auto Calibration Friday' enabled.	Only information.	-	L	259.108.00007

Message	Description	Action	Effect	Event ID
System Setting 'Auto Calibration Friday' disabled.	Only information.	-	L	259.109.00007
System Setting 'Auto Calibration Saturday' enabled.	Only information.	-	L	259.110.00007
System Setting 'Auto Calibration Saturday' disabled.	Only information.	-	L	259.111.00007
System Setting 'Auto Calibration Sunday' enabled.	Only information.	-	L	259.112.00007
System Setting 'Auto Calibration Sunday' disabled.	Only information.	-	L	259.113.00007
System Setting 'Enhanced Result Export' enabled.	Only information.	-	L	259.090.00007
System Setting 'Enhanced Result Export' disabled.	Only information.	-	L	259.091.00007
System Setting 'Limit Assay Import' enabled.	Only information.	-	L	259.092.00007
System Setting 'Limit Assay Import' disabled.	Only information.	-	L	259.093.00007
System Setting 'Country' changed from [old country name] to [new country name].	Only information.	-	L	259.099.00007
LIS Setting 'Instrument ID' changed from '[Old instrument ID]' to '[New instrument ID]'.	Only information.	-	L	259.000.00008
LIS Setting 'Host ID' changed from '[Old host ID]' to '[New host ID]'.	Only information.	-	L	259.001.00008

Message	Description	Action	Effect	Event ID
LIS Setting 'COM Port' changed from '[Old COM Port]' to '[New COM Port]'.	Only information.	-	L	259.002.00008
LIS Setting 'Baudrate' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.003.00008
LIS Setting 'Data Bits' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.004.00008
LIS Setting 'Stop Bits' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.005.00008
LIS Setting 'Parity' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.006.00008
LIS Setting 'Enable Manufacturer record' enabled.	Only information.	-	L	259.009.00008
LIS Setting 'Enable Manufacturer record' disabled.	Only information.	-	L	259.010.00008
LIS Setting 'Timeout (Query)' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.011.00008
LIS Setting 'Send Frame Timer (No Response)' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.012.00008
LIS Setting 'Bad Frame Send <NAK> Timer (Interframe)' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.013.00008

9 Troubleshooting and Error Messages

Message	Description	Action	Effect	Event ID
LIS Setting 'Delimiter Field' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.014.00008
LIS Setting 'Delimiter Component' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.015.00008
LIS Setting 'Delimiter Repeat' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.016.00008
LIS Setting 'Delimiter Escape' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.017.00008
LIS Setting 'LIS module' enabled.	Only information.	-	L	259.018.00008
LIS Setting 'LIS module' disabled.	Only information.	-	L	259.019.00008
LIS Setting 'Send Automatically Queries Host for Worklist' enabled.	Only information.	-	L	259.020.00008
LIS Setting 'Send Automatically Queries Host for Worklist' disabled.	Only information.	-	L	259.021.00008
LIS Setting 'Send Compressed Query' enabled.	Only information.	-	L	259.022.00008
LIS Setting 'Send Compressed Query' disabled.	Only information.	-	L	259.023.00008
LIS Setting 'Send Compressed Comments' enabled.	Only information.	-	L	259.024.00008

Message	Description	Action	Effect	Event ID
LIS Setting 'Send Compressed Comments' disabled.	Only information.	-	L	259.025.00008
LIS Setting 'Send Automatically Sends All Results' enabled.	Only information.	-	L	259.026.00008
LIS Setting 'Send Automatically Sends All Results' disabled.	Only information.	-	L	259.027.00008
LIS Setting 'Respond to LIS Query for Results' enabled.	Only information.	-	L	259.028.00008
LIS Setting 'Respond to LIS Query for Results' disabled.	Only information.	-	L	259.029.00008
LIS Setting 'Record ASTM 1381' enabled.	Only information.	-	L	259.030.00008
LIS Setting 'Record ASTM 1381' disabled.	Only information.	-	L	259.031.00008
LIS Setting 'Record ASTM 1394' enabled.	Only information.	-	L	259.032.00008
LIS Setting 'Record ASTM 1394' disabled.	Only information.	-	L	259.033.00008
LIS Setting 'Busy Timer' changed from '[Old value]' to '[New value]'.	Only information.	-	L	259.034.00008
LIS Setting 'Result Flag Style' changed from '[Old style]' to '[New style]'.	Only information.	-	L	259.035.00008
LIS Setting 'Send Control Information' enabled.	Only information.	-	L	259.036.00008
LIS Setting 'Send Control Information' disabled.	Only information.	-	L	259.037.00008

Message	Description	Action	Effect	Event ID
Exported [number of results] Results to File [File name].	Only information.	-	L	259.000.00010
Failed to export [number of results] Results to File [File name].	It was not possible to export the results.	• Ensure that the the results to export are properly selected, that the exporting device is properly loaded and try again. • If the problem persists contact service.	L M	259.001.00010
Manually archived [number of results] Results.	Only information.	-	L	259.000.00011
Failed to manually achive [number of results] Results.	It was not possible to archive the results.	• Ensure that the results to archive are properly selected and try again. • If the problem persists contact service.	L M	259.001.00011
Printed [number of results] Results.	Only information.	-	L	259.000.00012
Manually sent [number of results] Results to Host.	Only information.	-	L M	259.000.00013
Manually deleted [number of results] Results from Work Database.	Only information.	-	L	259.000.00014
Failed to manually delete [number of results] Results from Work Database.	It was not possible to delete the results.	• Ensure that the results to delete are properly selected and try again. • If the problem persists contact service.	L M	259.001.00014
Manually deleted [number of results] Results from Archived Database.	Only information.	-	L	259.000.00015
Vigilant Online Setting 'Enabled' enabled.	Only information.	-	L	259.000.00020
Vigilant Online Setting 'Enabled' disabled.	Only information.	-	L	259.001.00020

Message	Description	Action	Effect	Event ID
Vigilant Online Setting 'Send Telemetry Data' enabled.	Only information.	-	L	259.000.00021
Vigilant Online Setting 'Send Telemetry Data' disabled.	Only information.	-	L	259.001.00021
Vigilant Online Setting 'Allow File Reception' enabled.	Only information.	-	L	259.000.00022
Vigilant Online Setting 'Allow File Reception' disabled.	Only information.	-	L	259.001.00022
Vigilant Online Setting 'Allow File Request' enabled.	Only information.	-	L	259.000.00023
Vigilant Online Setting 'Allow File Request' disabled.	Only information.	-	L	259.001.00023
Vigilant Online Setting 'Allow Sending SampleIDs' enabled.	Only information.	-	L	259.000.00024
Vigilant Online Setting 'Allow Sending SampleIDs' disabled.	Only information	-	L	259.001.00024
Aborted Job '[SID]' '[Assay Abbr.]' ([replicate]). Reason: Starter Reagent depleted.	Possible causes: • Empty starter bottle. • Problem in the aspiration of Starter Reagents. • Hardware defect.	• If the liquid is present in the Starter bottle, perform a Starter priming task from Maintenance page. • If the bottle is empty, insert a new starter bottle and restart the job. • If the problem persists, call service to check the LIAISON® XL system.	L M S	262.020.00001
Analyser is stopped because no signal from system liquid level sensor.	Possible causes: • Problem in the connection of the system liquid level sensor • Hardware defect	• Check the connection of system liquid level sensor. • If the problem persists, call service to check the LIAISON® XL system.	L M S	262.001.00008

Message	Description	Action	Effect	Event ID
Analyser is stopped because no signal from wash liquid level sensor.	Possible causes: • Problem in the connection of the wash liquid level sensor. • Hardware defect.	• Check the connection of wash liquid level sensor. • If the problem persists, call service to check the LIAISON® XL system.	L M S	262.002.00008
Calibration for Integral in lane '[Lane]' is expired '[Abbr.]'.	The calibration for integral that was inserted in that lane is expired.	• It is necessary to perform a new calibration for that integral.	L M S	265.000.00023
Analyzer could not start Priming due to wrong analyzer status.	The Priming could not be started because the analyzer status is different from either Maintenance, or Standby, or Ready.	• Wait until the system status becomes a valid one. • If the status is "Halted", initialize the system to enter in a valid status.	L M S	258.000.00048
Analyzer could not start Clear Cuvettes due to wrong analyzer status.	The "Clear Cuvettes" could not be started because the analyzer status is different from either or Standby, or Ready.	• Wait until the system status becomes a valid one.	L M S	258.001.00048
Analyzer could not start Background due to wrong analyzer status.	The Background could not be started because the analyzer status is different from either Maintenance, or Standby, or Ready.	• Wait until the system status becomes a valid one.	L M S	258.002.00048
Analyzer could not start Light Check due to wrong analyzer status.	The Light Check could not be started because the analyzer status is different from either Maintenance, or Standby, or Ready.	• Wait until the system status becomes a valid one.	L M S	258.003.00048
Liquid Waste did not increase during the last [number of jobs] started jobs. Check Liquid Waste Tanks.	A plausibility check on the liquid waste task filling shows that the liquid waste did not increase as expected.	• Check that the liquid waste tanks are properly connected. • If the problem persists, call service.	L M S	258.000.00049

Message	Description	Action	Effect	Event ID
Calibrator with SID [SID] for assay [Assay abbr.] failed with "Mechanical Error" as it could not be scheduled.	The calibrator could not be scheduled.	- Restart the calibration. - If the problem persists, call service to check the LIAISON® XL system.	L M S	262.000.00045
The system cannot run [Sample ID] as a Control for [Assay Abbreviation] as there is no Control defined for this assay.	Information only. The user tried to run a control for an assay, but the control has not been defined for that assay. This typically happens in case of rerun for a member of a Combi Family, not all the members of which are assigned to that control.	Run the control with an assay that has been assigned to it.	L M	262.000.00046
Unable to export QC File to folder [path].	The user tried to export a file to a not available path.	Ensure that the needed path is available and try again.	L M S	263.000.00012
User [User name] logged in last time [Time of last login].	For information only.		L	256.004.00001
User [User name] could not log in.	For information only.		L	256.005.00001
User [User name] is blocked to log in.	The number of login attempts exceeded the limit.	Wait for the timeout to elapse.	L	256.006.00001
User [User name] added new user [User name] (password expiration: [Password expiration] privilege: [Privilege], patient privilege: [Patient Privilege])	For information only.		L	256.020.00001

Message	Description	Action	Effect	Event ID
User [User name] modified user [User name] (password changed: [Password changed], password expiration: [Password expiration] privilege: [Privilege], patient privilege: [Patient Privilege])	For information only.		L	256.021.00001
User [User name] deleted user [User name]	For information only.		L	256.022.00001
No Generics found. Please import Generics.	No Generics file has been imported.	Import Generics file. If problem persist, call Service.	L M S	256.000.00090
No Dilutions found. Please import Dilutions.	No Dilution file has been imported.	Import Dilutions file. If problem persist, call Service.	L M S	256.000.00091
Use Dilution table imported from file [Dilution table file name]	Only information.	-	L	256.000.00097
HighVolumeSampleDilution is switched off	Only information.	-	L	256.000.00098
HighVolumeSampleDilution is switched on	Only information.	-	L	256.001.00098
Perform calendar based Auto Resume.	For information only.		L	258.000.00050
Stored Result Browser Configuration.	For information only.		L	259.000.00099
Restored Result Browser Configuration.	For information only.		L	259.001.00099

Message	Description	Action	Effect	Event ID
No Integral found (On-board stability elapsed) to schedule Job [SID] [assay abbreviation] ([replicate]).	For information only.	Load an Integral with a valid On Board Stability and schedule again the Job.	L M S	262.005.00005
No Ancillary found (On-board stability elapsed) to schedule Job [SID] [assay abbreviation] ([replicate]).	For information only.	Load an Ancillary with a valid On Board Stability and schedule again the Job.	L M S	262.006.00005
Expired Control [control name]: Lane [lane], Position [sample position], Barcode [barcode ID]	For information only.		L M	264.000.00063
Online help acquisition succeeded.	For information only.		L	274.000.00000
Online help acquisition failed.	For information only.	- Try the import again when the system is not running. - If the problem persists call Service.	L M	274.000.00001
Online help for assay [Assay Lot]', lot [Lot number] in language [IFU Language] downloaded.	For information only.		L M	274.001.00000
Download of online help for assay [Assay Lot]', lot [Lot number] in language [IFU Language] failed.	For information only.	- Try to download and acquire the instrument package again. - If the problem persists, call Service.	L M	274.001.00001
Online help for control [Control Name], lot [Control Lot] in language [Language] downloaded.	For information only.		L M	274.002.00000

Message	Description	Action	Effect	Event ID
Download of online help for control '[Control Name]', lot [Control Lot] in language [Language] failed.	For information only.	- Try to download and acquire the instrument package again. - If the problem persists, call Service.	L M	274.002.00001
Online help for consumable [Consumable name], lot [Consumable Lot] in language [Language] downloaded.	For information only.		L M	274.003.00000
Download of online help for consumable [Consumable name], lot [Consumable Lot] in language [Language] failed.	For information only.	- Try to download and acquire the instrument package again. - If the problem persists, call Service.	L M	274.003.00001
Online help manual in language [Language] downloaded.	For information only.		L M	274.004.00000
Download of online help manual in language [Language] failed.	For information only.	- Try to download and acquire the instrument package again. - If the problem persists, call Service.	L M	274.004.00001
Online help to be imported has a wrong structure.	For information only.	Call service.	L	274.005.00000
Online help acquired for [Language1] instead of [Language2].	For information only.		L	274.006.00000

Analyzer Messages

Message	Description	Action	Effect	Event ID
Unknown command	The analyzer received a wrong command.	Call service to check the LIAISON® XL system.	L M S	000.000.00002
Unknown command	The analyzer received a wrong command.	Call service to check the LIAISON® XL system.	L M S	000.002.00002
Parameter value out of range	The analyzer received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	000.000.00003
Read failure of permanent parameter	The analyzer had a read failure of permanent parameter and is using default values.	If the problem persists, call service to check the LIAISON® XL system.	L M S	000.000.00005
Error during self test	The analyzer found an error during self test.	Call service to check the LIAISON® XL system.	L M S	000.001.00012
Worklist command execution timeout (Dev: [Device address], SA: [subassembly ID])	Device out of order: The command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	000.006.00016
Illegal parameter type definition	Illegal parameter type definition in the COP.	Call service to check the LIAISON® XL system.	L M S	000.000.00017
Invalid parameter index	COP: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service to check the LIAISON® XL system.	L M S	000.000.00018
Access to parameter not allowed	The analyzer received an unauthorized access to parameter.	Call service to check the LIAISON® XL system.	L M S	000.000.00019

Message	Description	Action	Effect	Event ID
Wrong parameter unlock code	The analyzer: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service to check the LIAISON® XL system.	L M S	000.000.00020
Illegal parameter type in command	The current command tries to access a persistent parameter but using the wrong parameter type.	Call service to check the LIAISON® XL system.	L M S	000.000.00021
Illegal parameter length in command	The current command tries to access a persistent parameter but using the wrong parameter length.	Call service to check the LIAISON® XL system.	L M S	000.000.00022
The device [device address] (SA:[subassembly id]) cannot be addressed	Wrong device id used or unknown device addressed.	Call service to check the LIAISON® XL system.	L M S	000.006.00032
Internal CAN-bus error while command transmission to a device	Internal CAN-bus error while command transmission to a device.	Call service to check the LIAISON® XL system.	L M S	000.006.00033
Device [device type,device variant,device individual] failed registering to CAN-bus, event [event ID]	An invalid CAN service layer system command received.	Call service to check the LIAISON® XL system.	L M S	000.006.00034

Message	Description	Action	Effect	Event ID
Connection definition [[device type endpoint A], [port endpoint A], [device individuum number endpoint A]]: [device variant endpoint A] <-> [[device type endpoint B], [port endpoint B], [device individuum number endpoint B]]: [device variant endpoint B] has failed, event [CAN error code]	Invalid CAN device definition.	Call service to check the LIAISON® XL system.	L M S	000.006.00035
Routing definition for device [device address]:[CAN port] has failed, event [CAN error code]	Invalid CAN device definition.	Call service to check the LIAISON® XL system.	L M S	000.006.00036
Set headless communication for device at port [CAN port] has failed, event [CAN error code]	Invalid CAN device definition.	Call service to check the LIAISON® XL system.	L M S	000.006.00037
Set exclusive read mode at port [CAN port] has failed, event [CAN error code]	Invalid CAN device definition.	Call service to check the LIAISON® XL system.	L M S	000.006.00038
Communication to the device [device address] (SA [subassembly]) failed, event [event ID]	Device out of order, timeout occurred while command transmission to device.	Call service to check the LIAISON® XL system.	L M S	000.006.00039
Link definition [[CAN bus number A],[port A]] <-> [[CAN bus number B],[port B]] has failed, event [CAN error code]	Invalid CAN device definition.	Call service to check the LIAISON® XL system.	L M S	000.006.00040
CAN communication system failed, event [CAN event id]	Invalid CAN device definition.	Call service to check the LIAISON® XL system.	L M S	000.006.00041

Message	Description	Action	Effect	Event ID
The wash buffer fluidics may need to be checked. Contact the Local DiaSorin representative for assistance	Only information.	Call service to check the LIAISON® XL system.	L M	000.006.00047
Error message(s) lost due to buffer overflow	An internal CPU error has occurred.	Call service to check the LIAISON® XL system.	L M	000.002.00049
No communication from PC for too long time	The PC does no longer communicate to the analyser.	- Perform an initialization. - If it is not sufficient, shut down the pc and the system, then startup again. - If the problem persists, call service to check the LIAISON® XL system.	L M S	000.002.00050
Command cannot be scheduled to worklist (block [worklist block id], sequence [Worklist sequence id]), reason [status]	Worklist blocked or invalid sequence sent to worklist.	Call service to check the LIAISON® XL system.	L M S	000.003.00066
Pipetting command (id:[pipetting sequence id]) cannot be scheduled to worklist (block [Worklist block id], sequence [Worklist sequence id]), reason [status]	Worklist blocked or invalid pipetting command sent to worklist.	Call service to check the LIAISON® XL system.	L M S	000.003.00067
Notify handler storage overflow (block [Worklist block id], sequence [Worklist sequence id])	Notification for worklist sequence cannot be stored.	Call service to check the LIAISON® XL system.	L M S	000.013.00078
External non-maskable interrupt	An internal CPU error has occurred.	Call service to check the LIAISON® XL system.	L M S	000.020.00080
Watchdog timer underflow	An internal CPU error has occurred.	Call service to check the LIAISON® XL system.	L M S	000.020.00081

Message	Description	Action	Effect	Event ID
Main clock oscillation stopped	An internal CPU error has occurred.	Call service to check the LIAISON® XL system.	L M S	000.020.00082
Voltage out-of-range	An internal CPU error has occurred.	Call service to check the LIAISON® XL system.	L M S	000.020.00083
Undefined instruction occurred	An internal CPU error has occurred.	Call service to check the LIAISON® XL system.	L M S	000.020.00084
Arithmetic overflow occurred	An internal CPU error has occurred.	Call service to check the LIAISON® XL system.	L M S	000.020.00085
System cycle belated by [1/10 seconds] [1/10s]	Start of system cycle delayed due to excessive load.	If error reoccurs, call service to check the LIAISON® XL system.	L M S	000.012.00129
Coordinate target missing for index [target index]	Missing coordinates for target index.	Call service to check the LIAISON® XL system.	L M S	000.016.00130
Pipettor response timeout. Arm: [left(0)/right(1) arm], State: [pipettor driver state]	No response from sample arm.	Call service to check the LIAISON® XL system.	L M S	000.014.00145
Pipettor response timeout. Arm: [left(0)/right(1) arm], State: [pipettor driver state]	No response from reagent arm.	Call service to check the LIAISON® XL system.	L M S	000.015.00145
Pipettor write sync timeout. Arm: [left (0)/right (1) arm]	No response from sample arm.	Call service to check the LIAISON® XL system.	L M S	000.014.00146
Pipettor write sync timeout. Arm: [left (0)/right (1) arm]	No response from reagent arm.	Call service to check the LIAISON® XL system.	L M S	000.015.00146
Tip eject failed. Arm: [left (0)/right (1) arm]	Disposable tip eject failed.	- Perform an initialization. - If it is not sufficient, shut down the pc and the system, then startup again. - If the problem persists, call service to check the LIAISON® XL system.	L M S	000.014.00147

Message	Description	Action	Effect	Event ID
OLV sensor calibration failed	Calibration of OLV sensor failed.	• Retry to start the OLV calibration. • If the problem persists, call service to check the LIAISON® XL system.	L M S	000.015.00150
OLV transportation airgap calibration failed	Calibration of OLV transportation airgap failed.	• Retry to start the OLV calibration. • If the problem persists, call service to check the LIAISON® XL system.	L M S	000.015.00151
Reagent temperature out-of-range for too long time	The reagent temperature has been out-of-range for too long.	• Call service to check the LIAISON® XL system.	L M S	000.017.00160
Ring temperature out-of-range for too long time	The incubator temperature has been out-of-range for too long.	• Call service to check the LIAISON® XL system.	L M S	000.017.00161
Too many subsequent washer aspiration failures	Aspiration at wash probe failed too many times.	• Call service to check the LIAISON® XL system.	L M S	000.017.00162
Too many subsequent cavities while starter reagent temperature out-of-range	Aspiration at wash probe failed too many times.	• Call service to check the LIAISON® XL system.	L M S	000.017.00163
Too many subsequent RLU measurement failures	RLU measurement failed too many times.	• Call service to check the LIAISON® XL system.	L M S	000.017.00164
Too many cuvettes removed while solid waste drawer is opened	Capacity of intermediate store is exceeded.	• If the problem persists, call service to check the LIAISON® XL system.	L M S	000.018.00176
Internal error occurred	Internal analyzer error.	• Call service to check the LIAISON® XL system.	L M	000.006.00255
Internal error occurred	Internal analyzer error.	• Call service to check the LIAISON® XL system.	L M S	000.012.00255
Parameter value out of range	Virtual Device Driver Power Monitor received a parameter value out of the allowed range.	• Call service to check the LIAISON® XL system.	L M S	002.000.00003

Message	Description	Action	Effect	Event ID
Supply voltage out of range ([mVolt] mV)	Central power detected supply voltage out of range.	If the problem persists, call service to check the LIAISON® XL system.	L M S	002.000.00006
Supply voltage back in range ([mVolt] mV)	Only information.	-	L	002.000.00007
Circuit [circuit name] voltage out of range ([mVolt] mV)	Power supply of CAN connector is out of range.	If the problem persists, call service to check the LIAISON® XL system.	L M S	002.000.00032
Circuit [circuit name] voltage back in range ([mVolt] mV)	Only information.	-	L	002.000.00033
Unknown command	The Flashlight virtual device driver received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	004.000.00002
Parameter value out of range	Flashlight virtual device received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	004.000.00003
Unable to execute command	Flashlight virtual device can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	004.000.00014
Unknown command	Virtual Device Driver Service received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	005.000.00002
Unknown command	Virtual Device Driver Service Pipettor received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	005.001.00002
Unknown command	Virtual Device Driver Service Central parts received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	005.002.00002
Unknown command	Virtual Device Driver Service Incubation ring received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	005.003.00002

Message	Description	Action	Effect	Event ID
Unknown command	Virtual Device Driver Service Wash transport or Reader unit received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	005.004.00002
Unknown command	Virtual Device Driver Service Cuvette loading or Cuvette supply received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	005.005.00002
Unknown command	Virtual Device Driver Service Washing solution lines received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	005.006.00002
Unknown command	Virtual Device Driver Service Starter reagents received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	005.007.00002
Unknown command	Virtual Device Driver Service Reagent or Sample loading received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	005.008.00002
Unknown command	Virtual Device Driver Service Front module received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	005.009.00002
Parameter value out of range	Virtual Device Driver Service received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	005.000.00003
Parameter value out of range	Virtual Device Driver Service Pipettor received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	005.001.00003

Message	Description	Action	Effect	Event ID
Parameter value out of range	Virtual Device Driver Service Central parts received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	005.002.00003
Parameter value out of range	Virtual Device Driver Service Incubation ring received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	005.003.00003
Parameter value out of range	Virtual Device Driver Service Wash transport or Reader unit received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	005.004.00003
Parameter value out of range	Virtual Device Driver Service Cuvette loading or cuvette supply received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	005.005.00003
Parameter value out of range	Virtual Device Driver Service Washing solution lines received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	005.006.00003
Parameter value out of range	Virtual Device Driver Service Starter reagents received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	005.007.00003
Parameter value out of range	Virtual Device Driver Service Reagent or Sample loading received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	005.008.00003

Message	Description	Action	Effect	Event ID
Parameter value out of range	Virtual Device Driver Service Front module received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	005.009.00003
Command execution timeout	Virtual Device Driver Service Pipettor: The command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	005.001.00016
Not enough cuvettes available	Priming wash buffer not applicable due to missing cuvettes.	- Load cuvettes. - If the problem persists, call service to check the LIAISON® XL system.	L	005.006.00032
Not enough cuvettes available	Priming starter reagents not applicable due to missing cuvettes.	- Load cuvettes. - If the problem persists, call service to check the LIAISON® XL system.	L	005.007.00032
Replenishment of ring suspended due to missing cuvettes	Filling incubation ring not applicable due to missing cuvettes.	- Load cuvettes. - If the problem persists, call service to check the LIAISON® XL system.	L M S	005.003.00033
Insufficient starter reagent detected while priming	Possible causes: An insufficient starter reagent quantity is detected while priming. Air detected while aspiration of starter reagent.	- Check the liquid amount in the Starter bottle, if it is not enough, load a new starter bottle. - If there is not enough liquid, prime the starters from Maintenance page. - If the problem persists, call service to check the LIAISON® XL system.	L M S	005.007.00034
Integrity error(s) occurred during system test	Irregular events occurred during system test.	If the problem persists, call service to check the LIAISON® XL system.	L M S	005.000.00035
Cuvette Supply is not initialized	Cuvette Supply received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	017.000.00001

Message	Description	Action	Effect	Event ID
Cuvette Supply is not initialized	Cuvette Supply Motor auger received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	017.001.00001
Cuvette Supply is not initialized	Cuvette Supply received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	017.002.00001
Cuvette Supply is not initialized	Cuvette Supply received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	017.003.00001
Tube Heater is not initialized	Tube 1 Heater received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	017.004.00001
Tube Heater is not initialized	Tube 2 Heater received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	017.005.00001
Tube Heater is not initialized	Tube 3 Heater received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	017.006.00001
Tube Heater is not initialized	Tube 4 Heater received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	017.007.00001
Cuvette Supply received an unknown command	Cuvette Supply Main Module received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	017.000.00002
Cuvette Supply received an unknown command	Cuvette Supply Motor auger received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	017.001.00002

Message	Description	Action	Effect	Event ID
Cuvette Supply received an unknown command	Cuvette Supply received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	017.002.00002
Cuvette Supply received an unknown command	Cuvette Supply received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	017.003.00002
Tube Heater received an unknown command	Cuvette Supply Heater Tube A1 received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	017.004.00002
Tube Heater received an unknown command	Cuvette Supply Heater Tube A2 received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	017.005.00002
Tube Heater received an unknown command	Cuvette Supply Heater Tube B1 received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	017.006.00002
Tube Heater received an unknown command	Cuvette Supply Heater Tube B2 received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	017.007.00002
Cuvette Supply / Tube Heater received a parameter value out of range	Cuvette Supply / Tube Heater received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	017.000.00003
Cuvette Supply / Tube Heater had a read failure of permanent parameter	Cuvette Supply / Tube Heater Main Module had a read failure of permanent parameter and is using default values.	If the problem persists, call service to check the LIAISON® XL system.	L M S	017.000.00005
Cuvette Supply / Tube Heater supply voltage out of range ([Volt] V)	Cuvette Supply / Tube Heater Main Module detected supply voltage out of range.	If the problem persists, call service to check the LIAISON® XL system.	L M S	017.000.00006
Cuvette Supply / Tube Heater supply voltage back in range ([Volt] V)	Only information.	-	L	017.000.00007

Message	Description	Action	Effect	Event ID
Cuvette Supply found an error during self test	Cuvette Supply / Tube Heater Main Module found an error during self test.	Call service to check the LIAISON® XL system.	L M S	017.000.00012
Cuvette Supply found an error during self test	The Cuvette Supply found an error during self test.	Call service to check the LIAISON® XL system.	L M S	017.001.00012
Cuvette Supply found an error during self test	The Cuvette Supply found an error during self test.	Call service to check the LIAISON® XL system.	L M S	017.002.00012
Cuvette Supply found an error during self test	The Cuvette Supply found an error during self test.	Call service to check the LIAISON® XL system.	L M S	017.003.00012
Tube Heater found an error during self test	The Tube 1 Heater found an error during self test.	Call service to check the LIAISON® XL system.	L M S	017.004.00012
Tube Heater found an error during self test	The Tube 2 Heater found an error during self test.	Call service to check the LIAISON® XL system.	L M S	017.005.00012
Tube Heater found an error during self test	The Tube 3 Heater found an error during self test.	Call service to check the LIAISON® XL system.	L M S	017.006.00012
Tube Heater found an error during self test	The Tube 4 Heater found an error during self test.	Call service to check the LIAISON® XL system.	L M S	017.007.00012
Cuvette Supply received a command parameter value out of range	Cuvette Supply Main Module received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	017.000.00013
Cuvette Supply received a command parameter value out of range	Cuvette Supply module Motor auger received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	017.001.00013
Cuvette Supply received a command parameter value out of range	Cuvette Supply module received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	017.002.00013

Message	Description	Action	Effect	Event ID
Cuvette Supply received a command parameter value out of range	Cuvette Supply module received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	017.003.00013
Tube Heater received a command parameter value out of range	Cuvette Supply module Heater Tube A1 received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	017.004.00013
Tube Heater received a command parameter value out of range	Cuvette Supply module Heater Tube A2 received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	017.005.00013
Tube Heater received a command parameter value out of range	Cuvette Supply module Heater Tube B1 received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	017.006.00013
Tube Heater received a command parameter value out of range	Cuvette Supply module Heater Tube B2 received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	017.007.00013
Cuvette Supply / Tube Heater is unable to execute command	Cuvette Supply / Tube Heater Main Module can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	017.000.00014
Cuvette Supply is unable to execute command	Cuvette Supply can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	017.001.00014
Cuvette Supply is unable to execute command	Cuvette Supply can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	017.002.00014
Cuvette Supply is unable to execute command	Cuvette Supply can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	017.003.00014

Message	Description	Action	Effect	Event ID
Tube Heater is unable to execute command	Tube 1 Heater can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	017.004.00014
Tube Heater is unable to execute command	Tube 2 Heater can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	017.005.00014
Tube Heater is unable to execute command	Tube 3 Heater can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	017.006.00014
Tube Heater is unable to execute command	Tube 4 Heater can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	017.007.00014
Cuvette Supply / Tube Heater received a command which is not implemented	Cuvette Supply / Tube Heater Main Module received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	017.000.00015
Cuvette Supply / Tube Heater received a command which is not implemented	Cuvette Supply / Tube Heater Motor Auger received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	017.001.00015
Cuvette Supply / Tube Heater received a command which is not implemented	Cuvette Supply / Tube Heater received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	017.002.00015
Cuvette Supply / Tube Heater received a command which is not implemented	Cuvette Supply / Tube Heater received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	017.003.00015
Cuvette Supply / Tube Heater received a command which is not implemented	Cuvette Supply / Tube Heater, Heater Tube A1 received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	017.004.00015
Cuvette Supply / Tube Heater received a command which is not implemented	Cuvette Supply / Tube Heater, Heater Tube A2 received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	017.005.00015

Message	Description	Action	Effect	Event ID
Cuvette Supply / Tube Heater received a command which is not implemented	Cuvette Supply / Tube Heater, Heater Tube B1 received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	017.006.00015
Cuvette Supply / Tube Heater received a command which is not implemented	Cuvette Supply / Tube Heater, Heater Tube B2 received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	017.007.00015
Cuvette Supply / Tube Heater reached a timeout during command execution	Cuvette Supply / Tube Heater Main Module reached a timeout during command execution.	Call service to check the LIAISON® XL system.	L M S	017.000.00016
Cuvette Supply / Tube Heater reached a timeout during command execution	Cuvette Supply / Tube Heater Motor auger reached a timeout during command execution.	Call service to check the LIAISON® XL system.	L M S	017.001.00016
Cuvette Supply / Tube Heater reached a timeout during command execution	Cuvette Supply / Tube Heater reached a timeout during command execution.	Call service to check the LIAISON® XL system.	L M S	017.002.00016
Cuvette Supply / Tube Heater reached a timeout during command execution	Cuvette Supply / Tube Heater reached a timeout during command execution.	Call service to check the LIAISON® XL system.	L M S	017.003.00016
Cuvette Supply / Tube Heater reached a timeout during command execution	Cuvette Supply / Tube Heater, Heater Tube A1 reached a timeout during command execution.	Call service to check the LIAISON® XL system.	L M S	017.004.00016
Cuvette Supply / Tube Heater reached a timeout during command execution	Cuvette Supply / Tube Heater, Heater Tube A2 reached a timeout during command execution.	Call service to check the LIAISON® XL system.	L M S	017.005.00016

Message	Description	Action	Effect	Event ID
Cuvette Supply / Tube Heater reached a timeout during command execution	Cuvette Supply / Tube Heater, Heater Tube B1 reached a timeout during command execution.	Call service to check the LIAISON® XL system.	L M S	017.006.00016
Cuvette Supply / Tube Heater reached a timeout during command execution	Cuvette Supply / Tube Heater, Heater Tube B2 reached a timeout during command execution.	Call service to check the LIAISON® XL system.	L M S	017.007.00016
Cuvette Supply / Tube Heater received an illegal parameter type definition	Illegal parameter type definition in the Cuvette Supply / Tube Heater.	Call service to check the LIAISON® XL system.	L M S	017.000.00017
Cuvette Supply / Tube Heater received an invalid parameter index	Cuvette Supply / Tube Heater: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service to check the LIAISON® XL system.	L M S	017.000.00018
Cuvette Supply / Tube Heater received an unauthorized access to parameter	Cuvette Supply / Tube Heater received an unauthorized access to parameter.	Call service to check the LIAISON® XL system.	L M S	017.000.00019
Cuvette Supply / Tube Heater received a wrong parameter unlock code	Cuvette Supply / Tube Heater: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service to check the LIAISON® XL system.	L M S	017.000.00020
Cuvette Supply / Tube Heater received a command with illegal parameter type	Cuvette Supply / Tube Heater received a command with illegal parameter type.	Call service to check the LIAISON® XL system.	L M S	017.000.00021
Cuvette Supply / Tube Heater received a command with illegal parameter length	Cuvette Supply / Tube Heater received a command with illegal parameter length.	Call service to check the LIAISON® XL system.	L M S	017.000.00022

Message	Description	Action	Effect	Event ID
Tube Heater measured temperature fails plausibility check	The Tube 1 Heater measured temperature fails the plausibility check.	Call service to check the LIAISON® XL system.	L M S	017.004.00034
Tube Heater measured temperature fails plausibility check	The Tube 2 Heater measured temperature fails the plausibility check.	Call service to check the LIAISON® XL system.	L M S	017.005.00034
Tube Heater measured temperature fails plausibility check	The Tube 3 Heater measured temperature fails the plausibility check.	Call service to check the LIAISON® XL system.	L M S	017.006.00034
Tube Heater measured temperature fails plausibility check	The Tube Heater 4 measured temperature fails the plausibility check.	Call service to check the LIAISON® XL system.	L M S	017.007.00034
Tube Heater given ambient temperature fails plausibility check	Tube 1 Heater given ambient temperature fails plausibility check.	Call service to check the LIAISON® XL system.	L M S	017.004.00035
Tube Heater given ambient temperature fails plausibility check	Tube 2 Heater given ambient temperature fails plausibility check.	Call service to check the LIAISON® XL system.	L M S	017.005.00035
Tube Heater given ambient temperature fails plausibility check	Tube 3 Heater given ambient temperature fails plausibility check.	Call service to check the LIAISON® XL system.	L M S	017.006.00035
Tube Heater given ambient temperature fails plausibility check	Tube 4 Heater given ambient temperature fails plausibility check.	Call service to check the LIAISON® XL system.	L M S	017.007.00035
Cuvette Supply can not calibrate sensor	Cuvette Supply Main Module can not calibrate sensor.	Call service to check the LIAISON® XL system.	L M S	017.000.00037
Not initialized	Incubator Main Module received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.000.00001

Message	Description	Action	Effect	Event ID
Not initialized	Heater received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.001.00001
Not initialized	Pusher Incubator Washer received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.002.00001
Not initialized	Cuvette Transport received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.003.00001
Not initialized	Pusher Washer Incubator received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.004.00001
Not initialized	Pusher Supply received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.005.00001
Not initialized	Heater tube 1 is removed from Incubator.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.006.00001
Not initialized	Heater tube 2 is removed from Incubator.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.007.00001
Not initialized	Supply Upper Sensor received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.008.00001
Not initialized	Supply Lower Sensor received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.009.00001
unknown command	Incubator received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	018.000.00002

Message	Description	Action	Effect	Event ID
unknown command	Heater Incubator received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	018.001.00002
unknown command	Pusher Incubator-Washer received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	018.002.00002
unknown command	Transport received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	018.003.00002
unknown command	Pusher Washer-Incubator received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	018.004.00002
unknown command	Cuvette Loader received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	018.005.00002
unknown command	Heater Tube 1 received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	018.006.00002
unknown command	Heater Tube 2 received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	018.007.00002
unknown command	Cuvette Supply, Upper Sensor received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	018.008.00002
unknown command	Cuvette Supply, Lower Sensor received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	018.009.00002
Parameter value out of range	Incubator Main Module received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	018.000.00003
Read failure of permanent parameter	Incubator Main Module had a read failure of permanent parameter and is using default values.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.000.00005

Message	Description	Action	Effect	Event ID
Supply voltage out of range ([Volt] V)	Incubator Main Module detected supply voltage out of range.	If the problem persists, call service to check the LIAISON® XL system.	L M S	018.000.00006
Supply voltage back in range ([Volt] V)	Only information.	-	L	018.000.00007
Thermal or short circuit protection of driver	Cuvette Transport detected thermal or short circuit protection of driver.	Call service to check the LIAISON® XL system.	L M S	018.003.00008
Position reached several retries	Pusher Incubator Washer needed several retries to reach position.	If the problem persists, call service to check the LIAISON® XL system.	L M	018.002.00009
Position reached several retries	Cuvette Transport needed several retries to reach position.	If the problem persists, call service to check the LIAISON® XL system.	L M	018.003.00009
Position reached several retries	Pusher Washer Incubator needed several retries to reach position.	If the problem persists, call service to check the LIAISON® XL system.	L M	018.004.00009
Position reached several retries	Pusher Supply needed several retries to reach position.	If the problem persists, call service to check the LIAISON® XL system.	L M	018.005.00009
Target not reached	Pusher Incubator Washer could not reach target.	Call service to check the LIAISON® XL system.	L M S	018.002.00010
Target not reached	Cuvette Transport could not reach target.	Call service to check the LIAISON® XL system.	L M S	018.003.00010
Target not reached	Pusher Washer Incubator could not reach target.	Call service to check the LIAISON® XL system.	L M S	018.004.00010
Target not reached	Pusher Supply could not reach target.	Call service to check the LIAISON® XL system.	L M S	018.005.00010
Command terminated	Incubator Main Module terminated command before completion.	Call service to check the LIAISON® XL system.	L M S	018.000.00011
Command terminated	Heater terminated command before completion.	Call service to check the LIAISON® XL system.	L M S	018.001.00011

Message	Description	Action	Effect	Event ID
Command terminated	Pusher Incubator Washer terminated command before completion.	Call service to check the LIAISON® XL system.	L M S	018.002.00011
Command terminated	Cuvette Transport terminated command before completion.	Call service to check the LIAISON® XL system.	L M S	018.003.00011
Command terminated	Pusher Washer Incubator terminated command before completion.	Call service to check the LIAISON® XL system.	L M S	018.004.00011
Command terminated	Pusher Supply terminated command before completion.	Call service to check the LIAISON® XL system.	L M S	018.005.00011
Command terminated	Heater tube 1 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.006.00011
Command terminated	Heater tube 2 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.007.00011
Command terminated	Supply Upper Sensor terminated command before completion.	Call service to check the LIAISON® XL system.	L M S	018.008.00011
Command terminated	Supply Lower Sensor terminated command before completion.	Call service to check the LIAISON® XL system.	L M S	018.009.00011
Error during self test	Heater found an error during selftest.	Call service to check the LIAISON® XL system.	L M S	018.001.00012
Error during self test	Heater tube 1 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.006.00012
Error during self test	Heater tube 2 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.007.00012
Command parameter value out of range	Incubator Main Module received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	018.000.00013

Message	Description	Action	Effect	Event ID
Command parameter value out of range	Heater Incubator received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	018.001.00013
Command parameter value out of range	Pusher Incubator-received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	018.002.00013
Command parameter value out of range	Cuvette Transport received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	018.003.00013
Command parameter value out of range	Pusher Washer-Incubator received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	018.004.00013
Command parameter value out of range	Pusher Supply received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	018.005.00013
Command parameter value out of range	Incubator Heater Tube 1 received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	018.006.00013
Command parameter value out of range	Incubator Heater Tube 2 received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	018.007.00013
Command parameter value out of range	Supply Upper Sensor received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	018.008.00013
Command parameter value out of range	Supply Lower Sensor received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	018.009.00013

Message	Description	Action	Effect	Event ID
Unable to execute command	Incubator Main Module can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	018.000.00014
Unable to execute command	Heater can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	018.001.00014
Unable to execute command	Pusher Incubator Washer can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	018.002.00014
Unable to execute command	Cuvette Transport can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	018.003.00014
Unable to execute command	Pusher Washer Incubator can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	018.004.00014
Unable to execute command	Pusher Supply can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	018.005.00014
Unable to execute command	Heater tube 1 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.006.00014
Unable to execute command	Heater tube 2 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.007.00014
Unable to execute command	Supply Upper Sensor can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	018.008.00014
Unable to execute command	Supply Lower Sensor can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	018.009.00014
Command not implemented	Incubator Main Module received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	018.000.00015

Message	Description	Action	Effect	Event ID
Command not implemented	Heater received a command which is not implemented.	Call service to check the LIAISON® XL system	L M S	018.001.00015
Command not implemented	Pusher Incubator Washer received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	018.002.00015
Command not implemented	Cuvette Transport received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	018.003.00015
Command not implemented	Pusher Washer Incubator received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	018.004.00015
Command not implemented	Pusher Supply received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	018.005.00015
Command not implemented	Heater tube 1 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.006.00015
Command not implemented	Heater tube 2 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.007.00015
Command not implemented	Supply Upper Sensor received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	018.008.00015
Command not implemented	Supply Lower Sensor received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	018.009.00015
Command execution timeout	Incubator Main Module: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	018.000.00016

Message	Description	Action	Effect	Event ID
Command execution timeout	Heater: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	018.001.00016
Command execution timeout	Pusher Incubator Washer: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	018.002.00016
Command execution timeout	Cuvette Transport: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	018.003.00016
Command execution timeout	Pusher Washer Incubator: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	018.004.00016
Command execution timeout	Pusher Supply: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	018.005.00016
Command execution timeout	Heater tube 1 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.006.00016
Command execution timeout	Heater tube 2 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.007.00016
Command execution timeout	Supply Upper Sensor: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	018.008.00016
Command execution timeout	Supply Lower Sensor: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	018.009.00016
Illegal parameter type definition	Illegal parameter type definition in the Incubator Main Module.	Call service to check the LIAISON® XL system.	L M S	018.000.00017

Message	Description	Action	Effect	Event ID
Invalid parameter index	Incubator Main Module: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service to check the LIAISON® XL system.	L M S	018.000.00018
Access to parameter not allowed	Incubator Main Module received an unauthorized access to parameter.	Call service to check the LIAISON® XL system.	L M S	018.000.00019
Wrong parameter unlock code	Incubator Main Module: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service to check the LIAISON® XL system.	L M S	018.000.00020
Illegal parameter type in command	Incubator Main Module: the current command tries to access a persistent parameter but using the wrong parameter type.	Call service to check the LIAISON® XL system.	L M S	018.000.00021
Illegal parameter length in command	Incubator Main Module: the current command tries to access a persistent parameter but using the wrong parameter length.	Call service to check the LIAISON® XL system.	L M S	018.000.00022
Measured temperature fails plausibility check	Heater temperature sensor fails plausibility check.	Call service to check the LIAISON® XL system.	L M S	018.001.00034
Measured temperature fails plausibility check	Heater tube 1 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.006.00034
Measured temperature fails plausibility check	Heater tube 2 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.007.00034
Ambient temperature fails plausibility check	Heater given ambient temperature fails plausibility check.	Call service to check the LIAISON® XL system.	L M S	018.001.00035

Message	Description	Action	Effect	Event ID
Ambient temperature fails plausibility check	Heater tube 1 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.006.00035
Ambient temperature fails plausibility check	Heater tube 2 is removed from Incubator.	Call service to check the LIAISON® XL system.	L M S	018.007.00035
Transport blocked by cuvette pushers	Cuvette Transport can not move because it is blocked by one or more pusher.	Call service to check the LIAISON® XL system.	L M S	018.003.00036
Cuvette sensor can not be calibrated	Incubator Main Module can not calibrate sensor.	Call service to check the LIAISON® XL system.	L M S	018.000.00037
Cuvette position in transport already full	Pusher Supply can not insert cuvette because target is already full.	Call service to check the LIAISON® XL system.	L M S	018.005.00038
Movement failure cuvette loader	Pusher Supply could not move correctly.	Call service to check the LIAISON® XL system.	L M S	018.005.00040
Init position of Incubator changed since last calibration	Cuvette Transport detected misalignment of init sensor.	If the problem persists, call service to check the LIAISON® XL system.	L M	018.003.00043
Not initialized	Washer received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	019.000.00001
unknown command	Washer received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	019.000.00002
Parameter value out of range	Washer received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	019.000.00003
Read failure of permanent parameter	Washer had a read failure of permanent parameter and is using default values.	Call service to check the LIAISON® XL system.	L M S	019.000.00005
Supply voltage out of range ([mVolt] mV)	Washer detected supply voltage out of range.	If the problem persists, call service to check the LIAISON® XL system.	L M S	019.000.00006

Message	Description	Action	Effect	Event ID
Supply voltage back in range ([mVolt] mV)	Only information.	-	L	019.000.00007
Thermal or short circuit protection of driver	Washer detected thermal or short circuit protection of driver.	Call service to check the LIAISON® XL system.	L M S	019.000.00008
Position reached several retries	Washer needed several retries to reach position.	If the problem persists, call service to check the LIAISON® XL system.	L M	019.000.00009
Target not reached	Washer could not reach target.	Call service to check the LIAISON® XL system.	L M S	019.000.00010
Command terminated	Washer terminated command before completion.	Call service to check the LIAISON® XL system.	L M S	019.000.00011
Error during self test	Washer found an error during selftest.	Call service to check the LIAISON® XL system.	L M S	019.000.00012
Command parameter value out of range	Washer received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	019.000.00013
Unable to execute command	Washer can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	019.000.00014
Command not implemented	Washer received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	019.000.00015
Command execution timeout	Washer: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	019.000.00016
Illegal parameter type definition	Illegal parameter type definition in the Washer.	Call service to check the LIAISON® XL system.	L M S	019.000.00017

Message	Description	Action	Effect	Event ID
Invalid parameter index	Washer: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service to check the LIAISON® XL system.	L M S	019.000.00018
Access to parameter not allowed	Washer received an unauthorized access to parameter.	Call service to check the LIAISON® XL system.	L M S	019.000.00019
Wrong parameter unlock code	Washer: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service to check the LIAISON® XL system.	L M S	019.000.00020
Illegal parameter type in command	Washer: the current command tries to access a persistent parameter but using the wrong parameter type.	Call service to check the LIAISON® XL system.	L M S	019.000.00021
Illegal parameter length in command	Washer: The current command tries to access a persistent parameter but using the wrong parameter length.	Call service to check the LIAISON® XL system.	L M S	019.000.00022
Aspiration detection failure (failed [Failed], monitored [Monitored])	Washer detected wrong aspiration volume.	If the problem persists, call service to check the LIAISON® XL system.	L M	019.000.00032
Aspiration sensor calibration error	Washer could not calibrate aspiration sensor.	Call service to check the LIAISON® XL system.	L M S	019.000.00033
Aspiration sensor calibration error	Washer could not calibrate aspiration sensor.	If the problem persists, call service to check the LIAISON® XL system.	L M S	019.000.00034

Message	Description	Action	Effect	Event ID
Not initialized	Luminometer Main Subassembly received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	020.000.00001
Not initialized	Luminometer Shutter and Aspiration Probe Drive received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	020.001.00001
Not initialized	Luminometer Transport Drive received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	020.002.00001
Not initialized	Luminometer Data transmission Subunit received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	020.003.00001
LCMP Pump is not initialized	Starter Reagent pump 2/1 received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	020.004.00001
LCMP Pump is not initialized	Starter Reagent pump 2/2 received a command which can only be executed after initialization.	If the problem persists, call service to check the LIAISON® XL system.	L M S	020.005.00001
Unknown command	Luminometer Main Subassembly received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	020.000.00002
Unknown command	Luminometer Shutter and Aspiration Probe Drive received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	020.001.00002

Message	Description	Action	Effect	Event ID
Unknown command	Luminometer Transport Drive received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	020.002.00002
Unknown command	Luminometer Data transmission Subunit received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	020.003.00002
LCMP Pump received an unknown command	Starter Reagent pump 2/1 pump received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	020.004.00002
LCMP Pump received an unknown command	Starter Reagent pump 2/2 pump received a wrong command opcode.	Call service to check the LIAISON® XL system.	L M S	020.005.00002
Parameter value out of range	Luminometer received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	020.000.00003
LCMP Pump received a parameter value out of range	Starter Reagent pump A2 received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	020.004.00003
LCMP Pump received a parameter value out of range	Starter Reagent B2 pump a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	020.005.00003
Read failure of permanent parameter	Luminometer had a read failure of permanent parameter and is using default values.	Call service to check the LIAISON® XL system.	L M S	020.000.00005
LCMP Pump had a read failure of permanent parameter	Starter Reagent pump 2/1 had a read failure of permanent parameter and is using default values.	Call service to check the LIAISON® XL system.	L M S	020.004.00005

Message	Description	Action	Effect	Event ID
LCMP Pump had a read failure of permanent parameter	Starter Reagent pump 2/2 had a read failure of permanent parameter and is using default values.	Call service to check the LIAISON® XL system.	L M S	020.005.00005
Supply voltage CHN 1 out of range ([Volt] V)	Luminometer detected supply voltage out of range.	If the problem persists, call service to check the LIAISON® XL system.	L M S	020.000.00006
LCMP Pump supply voltage out of range ([mVolt] mV)	Starter Reagent pump 2/1 detected supply voltage out of range.	If the problem persists, call service to check the LIAISON® XL system.	L M S	020.004.00006
LCMP Pump supply voltage out of range ([mVolt] mV)	Starter Reagent pump 2/2 detected supply voltage out of range.	If the problem persists, call service to check the LIAISON® XL system.	L M S	020.005.00006
Supply voltage CHN 1 back in range ([Volt] V)	Only information. The supply voltage CHN 1 is back in range ([Volt] V).	-	L	020.000.00007
LCMP Pump supply voltage back in range ([mVolt] mV)	Only information. The LCMP pump supply voltage is back in range ([mVolt] mV).	-	L	020.004.00007
LCMP Pump supply voltage back in range ([mVolt] mV)	Only information. The LCMP pump supply voltage is back in range ([mVolt] mV).	-	L	020.005.00007
Thermal or short circuit protection of driver	Luminometer Main Subassembly detected thermal or short circuit protection of driver.	Call service to check the LIAISON® XL system.	L M S	020.000.00008
Thermal or short circuit protection of driver	Luminometer Shutter and Aspiration Probe Drive detected thermal or short circuit protection of driver.	Call service to check the LIAISON® XL system.	L M S	020.001.00008

Message	Description	Action	Effect	Event ID
Thermal or short circuit protection of driver	Luminometer Transport Drive detected thermal or short circuit protection of driver.	Call service to check the LIAISON® XL system.	L M S	020.002.00008
Thermal or short circuit protection of driver	Luminometer Data transmission Subunit detected thermal or short circuit protection of driver.	Call service to check the LIAISON® XL system.	L M S	020.003.00008
LCMP Pump has a thermal or short circuit protection of driver	Starter Reagent pump 2/1 detected thermal or short circuit protection of driver.	Call service to check the LIAISON® XL system.	L M S	020.004.00008
LCMP Pump has a thermal or short circuit protection of driver	Starter Reagent pump 2/2 detected thermal or short circuit protection of driver.	Call service to check the LIAISON® XL system.	L M S	020.005.00008
Position reached several retries	Luminometer Main Subassembly needed several retries to reach position.	If the problem persists, call service to check the LIAISON® XL system.	L M	020.000.00009
Position reached several retries	Luminometer shutter and aspiration probe drive needed several retries to reach position.	If the problem persists, call service to check the LIAISON® XL system.	L M	020.001.00009
Position reached several retries	Luminometer transport drive needed several retries to reach position.	If the problem persists, call service to check the LIAISON® XL system.	L M	020.002.00009
Position reached several retries	Luminometer subassembly 3 needed several retries to reach position.	If the problem persists, call service to check the LIAISON® XL system.	L M	020.003.00009
LCMP Pump had to retry positioning several times	Starter Reagent pump 2/1 drive needed several retries to reach position.	If the problem persists, call service to check the LIAISON® XL system.	L M	020.004.00009
LCMP Pump had to retry positioning several times	Starter Reagent pump 2/2 drive needed several retries to reach position.	If the problem persists, call service to check the LIAISON® XL system.	L M	020.005.00009

Message	Description	Action	Effect	Event ID
Target not reached	Luminometer main subassembly could not reach target position.	Call service to check the LIAISON® XL system.	L M S	020.000.00010
Target not reached	Luminometer shutter and aspiration probe drive could not reach target position.	Call service to check the LIAISON® XL system.	L M S	020.001.00010
Target not reached	Luminometer transport drive could not reach target position.	Call service to check the LIAISON® XL system.	L M S	020.002.00010
Target not reached	Luminometer Data transmission Subunit could not reach target position.	Call service to check the LIAISON® XL system.	L M S	020.003.00010
LCMP Pump did not reach target	Starter Reagent pump 2/1 could not reach target position.	Call service to check the LIAISON® XL system.	L M S	020.004.00010
LCMP Pump did not reach target	Starter Reagent pump 2/2 could not reach target position.	Call service to check the LIAISON® XL system.	L M S	020.005.00010
LCMP Pump terminated command	Starter Reagent pump 2/1 terminated command before completion.	Call service to check the LIAISON® XL system.	L M S	020.004.00011
LCMP Pump terminated command	Starter Reagent pump 2/2 terminated command before completion.	Call service to check the LIAISON® XL system.	L M S	020.005.00011
Error during self test	Luminometer detect an error during selftest.	Call service to check the LIAISON® XL system.	L M S	020.000.00012
LCMP Pump found an error during self test	Starter Reagent pump 2/1 found an error during selftest.	Call service to check the LIAISON® XL system.	L M S	020.004.00012
LCMP Pump found an error during self test	Starter Reagent pump 2/2 found an error during selftest.	Call service to check the LIAISON® XL system.	L M S	020.005.00012

Message	Description	Action	Effect	Event ID
Command parameter value out of range	Luminometer main subassembly received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	020.000.00013
Command parameter value out of range	Luminometer shutter and aspiration probe drive received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	020.001.00013
Command parameter value out of range	Luminometer transport drive received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	020.002.00013
Command parameter value out of range	Luminometer Raw Data Transmission received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	020.003.00013
LCMP Pump received a command parameter value out of range	Starter Reagent pump A2 received a command with a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	020.004.00013
LCMP Pump received a command parameter value out of range	Starter Reagent pump B2 received a command with a parameter value out of the allowed range of range.	Call service to check the LIAISON® XL system.	L M S	020.005.00013
Unable to execute command	Luminometer main subassembly can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	020.000.00014
Unable to execute command	Luminometer shutter and aspiration probe drive can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	020.001.00014

Message	Description	Action	Effect	Event ID
Unable to execute command	Luminometer transport drive can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	020.002.00014
Unable to execute command	Luminometer subassembly 3 can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	020.003.00014
LCMP Pump is unable to execute command	Starter Reagent pump 2/1 can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	020.004.00014
LCMP Pump is unable to execute command	Starter Reagent pump 2/2 can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	020.005.00014
Command not implemented	Luminometer main subassembly received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	020.000.00015
Command not implemented	Luminometer shutter and aspiration probe drive received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	020.001.00015
Command not implemented	Luminometer transport drive received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	020.002.00015
Command not implemented	Luminometer subassembly 3 received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	020.003.00015
LCMP Pump received a command which is not implemented	Starter Reagent pump 2/1 received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	020.004.00015

Message	Description	Action	Effect	Event ID
LCMP Pump received a command which is not implemented	Starter Reagent pump 2/2 received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	020.005.00015
Command execution timeout	Luminometer main subassembly: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	020.000.00016
Command execution timeout	Luminometer shutter and aspiration probe drive: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	020.001.00016
Command execution timeout	Luminometer transport drive: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	020.002.00016
Command execution timeout	Luminometer Data Transmission: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	020.003.00016
LCMP Pump reached a timeout during command execution	Starter Reagent pump 2/1 reached a timeout during command execution.	Call service to check the LIAISON® XL system.	L M S	020.004.00016
LCMP Pump reached a timeout during command execution	Starter Reagent pump 2/2 reached a timeout during command execution.	Call service to check the LIAISON® XL system.	L M S	020.005.00016
Illegal parameter type definition	Illegal parameter type definition in the Luminometer main subassembly.	Call service to check the LIAISON® XL system.	L M S	020.000.00017
Illegal parameter type definition	Illegal parameter type definition in the Luminometer shutter and aspiration probe drive.	Call service to check the LIAISON® XL system.	L M S	020.001.00017

Message	Description	Action	Effect	Event ID
Illegal parameter type definition	Illegal parameter type definition in the Luminometer transport.	Call service to check the LIAISON® XL system.	L M S	020.002.00017
Illegal parameter type definition	Illegal parameter type definition in the Luminometer Data Transmission Subunit.	Call service to check the LIAISON® XL system.	L M S	020.003.00017
LCMP Pump received an illegal parameter type definition	Illegal parameter type definition in the Starter Reagent pump 2/1.	Call service to check the LIAISON® XL system.	L M S	020.004.00017
LCMP Pump received an illegal parameter type definition	Illegal parameter type definition in the Starter Reagent pump 2/2.	Call service to check the LIAISON® XL system.	L M S	020.005.00017
Invalid parameter index	Luminometer: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service to check the LIAISON® XL system.	L M S	020.000.00018
LCMP Pump received an invalid parameter index	Starter Reagent pump 2/1 received an invalid parameter index.	Call service to check the LIAISON® XL system.	L M S	020.004.00018
LCMP Pump received an invalid parameter index	Starter Reagent pump 2/2 received an invalid parameter index.	Call service to check the LIAISON® XL system.	L M S	020.005.00018
Access to parameter not allowed	Luminometer received an unauthorized access to parameter.	Call service to check the LIAISON® XL system.	L M S	020.000.00019
LCMP Pump received an unauthorized access to parameter	Starter Reagent pump 2/1 received an unauthorized access to parameter.	Call service to check the LIAISON® XL system.	L M S	020.004.00019
LCMP Pump received an unauthorized access to parameter	Starter Reagent pump 2/2 received an unauthorized access to parameter.	Call service to check the LIAISON® XL system.	L M S	020.005.00019

Message	Description	Action	Effect	Event ID
Wrong parameter unlock code	Luminometer: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service to check the LIAISON® XL system.	L M S	020.000.00020
LCMP Pump received a wrong parameter unlock code	Starter Reagent pump 2/1: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service to check the LIAISON® XL system.	L M S	020.004.00020
LCMP Pump received a wrong parameter unlock code	Starter Reagent pump 2/2: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service to check the LIAISON® XL system.	L M S	020.005.00020
Illegal parameter type in command	Luminometer: the current command tries to access a persistent parameter but using the wrong parameter type.	Call service to check the LIAISON® XL system.	L M S	020.000.00021
LCMP Pump received a command with illegal parameter type	Starter Reagent pump 2/1 received a command with illegal parameter type.	Call service to check the LIAISON® XL system.	L M S	020.004.00021
LCMP Pump received a command with illegal parameter type	Starter Reagent pump 2/2 received a command with illegal parameter type.	Call service to check the LIAISON® XL system.	L M S	020.005.00021
Illegal parameter length in command	Luminometer: the Luminometer received a command with illegal parameter length.	Call service to check the LIAISON® XL system.	L M S	020.000.00022
LCMP Pump received a command with illegal parameter length	Starter Reagent pump 2/1 received a command with illegal parameter length.	Call service to check the LIAISON® XL system.	L M S	020.004.00022

Message	Description	Action	Effect	Event ID
LCMP Pump received a command with illegal parameter length	Starter Reagent pump 2/2 received a command with illegal parameter length.	Call service to check the LIAISON® XL system.	L M S	020.005.00022
High Voltage out of Range	High Voltage out of Range for Luminometer.	Call service to check the LIAISON® XL system.	L M S	020.000.00032
LCMP Pump failed in automatic calibration	Starter Reagent pump 2/1 failure on automatic calibration detected.	Call service to check the LIAISON® XL system.	L M S	020.004.00032
LCMP Pump failed in automatic calibration	Starter Reagent pump 2/2 failure on automatic calibration detected.	Call service to check the LIAISON® XL system.	L M S	020.005.00032
Count Rate Overrun	Luminometer detected a count rate overrun error while no measurement is running.	Call service to check the LIAISON® XL system.	L M S	020.000.00033
Counter Read Error	Luminometer detected a counter unit error.	Call service to check the LIAISON® XL system.	L M S	020.000.00034
Internal Error: Fifo Full	Luminometer main subassembly detected a internal command fifo overrun.	Call service to check the LIAISON® XL system.	L M S	020.000.00064
Internal Error: Fifo Full	Luminometer shutter and aspiration probe drive detected a internal command fifo overrun.	Call service to check the LIAISON® XL system.	L M S	020.001.00064
Internal Error: Fifo Full	Luminometer transport drive detected a internal command fifo overrun.	Call service to check the LIAISON® XL system.	L M S	020.002.00064
Internal Error: Fifo Full	Luminometer data transmission subassembly detected a internal command fifo overrun.	Call service to check the LIAISON® XL system.	L M S	020.003.00064
Hardware Error: AD5620 Failure	Luminometer detected a internal hardware error.	Call service to check the LIAISON® XL system.	L M S	020.000.00080

Message	Description	Action	Effect	Event ID
Hardware Error: Trigger Lightbarrier	Luminometer detected a internal hardware error.	Call service to check the LIAISON® XL system.	L M S	020.000.00096
Hardware Error: Trigger Lightbarrier	Luminometer detected a internal hardware error.	Call service to check the LIAISON® XL system.	L M S	020.001.00096
Hardware Error: Trigger Lightbarrier	Luminometer detected a internal hardware error.	Call service to check the LIAISON® XL system.	L M S	020.002.00096
Hardware Error: Trigger Lightbarrier	Luminometer detected a internal hardware error.	Call service to check the LIAISON® XL system.	L M S	020.003.00096
Internal Error: No Injection performed	Luminometer detected no starter reagent injected was performed.	If the problem persists, call service to check the LIAISON® XL system.	L M S	020.000.00112
No Cuvette detected	Luminometer could not detect a cuvette before measurement.	If the problem persists, call service to check the LIAISON® XL system.	L M S	020.000.00144
Not initialized	Sample /disposable tip unit received a command which can only be executed after initialization.	- Initialize the system. - If the problem persists, call service to check the LIAISON® XL system.	L M S	022.000.00001
Not initialized	Barcode scanner received a command which can only be executed after initialization.	- Initialize the system. - If the problem persists, call service to check the LIAISON® XL system.	L M S	022.001.00001
Not initialized	Sample Module received a command which can only be executed after initialization.	- Initialize the system. - If the problem persists, call service to check the LIAISON® XL system.	L M S	022.002.00001
Unknown command	Sample /disposable tip unit Subassembly received an unknown command.	Call service to check the LIAISON® XL system.	L M S	022.000.00002
Unknown command	Sample Module Barcode scanner received an unknown command.	Call service to check the LIAISON® XL system.	L M S	022.001.00002

Message	Description	Action	Effect	Event ID
Unknown command	Sample Module received an unknown command.	Call service to check the LIAISON® XL system.	L M S	022.002.00002
Parameter value out of range	Sample module received a parameter value out of the allowed range.	Call service to check the LIAISON® XL system.	L M S	022.000.00003
Read failure of permanent parameter	Sample module had a read failure of permanent parameter and is using default values.	Call service to check the LIAISON® XL system.	L M S	022.000.00005
Supply voltage CHN 1 out of range ([Volt] V)	Sample module detected supply voltage out of range.	If the problem persists, call service to check the LIAISON® XL system.	L M S	022.000.00006
Supply voltage CHN 1 back in range ([Volt] V)	Only information.	-	L	022.000.00007
Thermal or short circuit protection of driver	An internal system error has occurred.	Call service.	L M S	022.000.00008
Target not reached	An internal system error has occurred.	Call service.	L M S	022.000.00010
Error during self test	An error occurs during the self test.	Call service.	L M S	022.000.00012
Command parameter value out of range	An internal system error has occurred.	Call service.	L M S	022.000.00013
Unable to execute command	Sample/disposable tip unit can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	022.000.00014
Unable to execute command	Barcode scanner can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	022.001.00014
Unable to execute command	Sample module can not execute command during actual state.	Call service to check the LIAISON® XL system.	L M S	022.002.00014

Message	Description	Action	Effect	Event ID
Command not implemented	Sample module received a command which is not implemented.	Call service to check the LIAISON® XL system.	L M S	022.000.00015
Command execution timeout	Sample module: the command could not be executed within a reasonable time.	Call service to check the LIAISON® XL system.	L M S	022.000.00016
Illegal parameter type definition	Illegal parameter type definition in the Sample module.	Call service to check the LIAISON® XL system.	L M S	022.000.00017
Invalid parameter index	Sample module: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service to check the LIAISON® XL system.	L M S	022.000.00018
Access to parameter not allowed	Sample module received an unauthorized access to parameter.	Call service to check the LIAISON® XL system.	L M S	022.000.00019
Wrong parameter unlock code	Sample module: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service to check the LIAISON® XL system.	L M S	022.000.00020
Illegal parameter type in command	Sample module: the current command tries to access a persistent parameter but using the wrong parameter type.	Call service to check the LIAISON® XL system.	L M S	022.000.00021
Illegal parameter length in command	Sample module: Illegal parameter length.	Call service to check the LIAISON® XL system.	L M S	022.000.00022

Message	Description	Action	Effect	Event ID
Lane occupation changed on more than one lane or occupation not plausible	No information. The system recognized two racks loaded at the same time. Possible causes: • Unexpected user handling. • HW defect.	• Ensure that the needed racks are loaded and recognized. • Load racks subsequently whenever necessary.	L M S	022.001.00034
Wrong barcode communication format	An error with the barcode scanner occurred.	• Call service to check the LIAISON® XL system.	L M	022.000.00037
No scanner communication	Error in scanner communication.	• If the problem persists, call service to check the LIAISON® XL system.	L M	022.000.00039
No scanner communication	Error in scanner communication.	• If the problem persists, call service to check the LIAISON® XL system.	L M	022.001.00039
No scanner answer	Scanner does not reply.	• If the problem persists, call service to check the LIAISON® XL system.	L M	022.001.00041
Scanner temperature too high	The scanner temperature is too high.	• If error reoccurs call service.	L M	022.000.00042
Scanner temperature too high	The scanner temperature is too high.	• If error reoccurs call service.	L M	022.001.00042
Scanner takes too long to reach the correct polygon speed	The scanner takes too long to reach the correct polygon speed.	• If error reoccurs call service.	L M	022.001.00043
Scanner takes too long to focus	The scanner takes too long to focus.	• If error reoccurs call service.	L M	022.001.00044
Scanner takes too long to switch on laser diode	The scanner takes too long to switch on laser diode.	• If error reoccurs call service.	L M	022.001.00045
Scanner takes too long to switch off laser diode	The scanner takes too long to switch off laser diode.	• If error reoccurs call service.	L M	022.001.00046

Message	Description	Action	Effect	Event ID
Scanner polygon speed not ok	The scanner polygon speed is not ok.	If error reoccurs call service.	L M	022.001.00047
Scanner not focused	The scanner is not focused.	If error reoccurs call service.	L M	022.001.00048
Scanner takes too long to reset	The scanner takes too long to reset.	If error reoccurs call service.	L M	022.000.00049
Scanner takes too long to reset	The scanner takes too long to reset.	If error reoccurs call service.	L M	022.001.00049
Sample barcode scanner was switched off	Timeout waiting for a rack.	If error reoccurs call service.	L M S	022.001.00051
1st position barcode missing (/A)	1st position barcode missing (/A).	If error reoccurs call service.	L	022.001.00065
No rack ID barcode found	No rack ID barcode was found.	If error reoccurs call service.	L	022.001.00066
Position barcode missing	Position barcode missing.	If error reoccurs call service.	L	022.001.00067
Wrong empty tube barcode	Error during decoding empty tube barcode.	If error reoccurs call service.	L	022.001.00068
Sample barcode too long	Wrong barcode length.	If error reoccurs call service.	L	022.001.00069
Barcode '&' character doubling failed	Double '&' characters in patient barcodes can not added, caused by too less space or no position barcode.	If error reoccurs call service.	L M	022.001.00070
Rack position barcodes not continuously present or more sample barcodes read than position barcodes	Barcode information is not correct.	If error reoccurs call service.	L	022.001.00071
Environmental temperature is out of range	Environment temperature is below lower temperature limit or above upper temperature limit.	If error reoccurs call service.	L S	022.000.00080

Message	Description	Action	Effect	Event ID
Environmental temperature is back in range	Only information.	-	L	022.000.00081
ERROR_ERR_INTERNAL_DE FAULT_BARSCAN_ZYKL	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00208
ERROR_ERR_INTERNAL_DE FAULT_GETSCANNERSTATU SBACKGROUND	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00209
ERROR_ERR_INTERNAL_DE FAULT_READPARAMETERB ACKGROUND	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00210
ERROR_ERR_INTERNAL_WR ITEPARAMETERBACKGROU ND_ANZ	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00211
ERROR_ERR_INTERNAL_DE FAULT_WRITEPARAMETERB ACKGROUND	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00212
ERROR_ERR_INTERNAL_DE FAULT_GETBARCODEBACK GROUND	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00213
ERROR_ERR_INTERNAL_DE FAULT_STARTPOLYGONBAC KGROUND	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00214
ERROR_ERR_INTERNAL_DE FAULT_STOPPOLYGONBAC KGROUND	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00215
ERROR_ERR_INTERNAL_DE FAULT_SETFOCUSBACKGR OUND	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00216

Message	Description	Action	Effect	Event ID
ERROR_ERR_INTERNAL_DE FAULT_LASERONBACKGRO UND	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00217
ERROR_ERR_INTERNAL_DE FAULT_LASEROFFBACKGRO UND	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00218
ERROR_ERR_INTERNAL_DE FAULT_SCANNERRESETBAC KGROUND	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00219
ERROR_ERR_INTERNAL_DE FAULT_RESTOREFACTORYB ACKGROUND	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00220
ERROR_ERR_INTERNAL_RE AD_SCANNER_STATE	Internal state error in the barcode scanner driver.	• Call service.	L M	022.000.00221
ERROR_ERR_INTERNAL_DE FAULT_READ_SCANNER_ST ATE	Internal state error in the barcode scanner driver.	• Call service.	L M	022.000.00222
ERROR_ERR_INTERNAL_DE FAULT_WAIT_POWER_ON	Internal state error in the barcode scanner driver.	• Call service.	L M S	022.001.00224
ERROR_ERR_INTERNAL	Internal error in the BCL148 (barcode sample scanner) driver.	• Call service.	L M	022.000.00255
ERROR_ERR_INTERNAL	Internal error in the BCL148 (barcode sample scanner) driver.	• Call service.	L M S	022.001.00255
Stirrer not initialized	The stirrer received a command which can only be executed after initialization.	• Initialize the system. • If the problem persists, call service to check the LIAISON® XL system.	L M S	023.001.00001
Unknown command	Reagent unit received an unknown command.	• If the problem persists, call service to check the LIAISON® XL system.	L M S	023.000.00002

Message	Description	Action	Effect	Event ID
Unknown command	Stirrer received an unknown command.	• Call service.	L M S	023.001.00002
Unknown command	Temperature control received an unknown command.	• Call service.	L M S	023.002.00002
Parameter value out of range	Reagent unit received a parameter value out of the allowed range.	• Call service.	L M S	023.000.00003
Parameter value out of range	Stirrer received a parameter value out of the allowed range.	• Call service.	L M S	023.001.00003
Parameter value out of range	Temperature control received a parameter value out of the allowed range.	• Call service.	L M S	023.002.00003
Read failure of permanent parameter	Reagent unit had a read failure of permanent parameter and is using default values.	• Call service.	L M S	023.000.00005
Supply voltage CHN 1 out of range ([Volt] V)	Reagent unit detected supply voltage out of range.	• If error reoccurs call service.	L M S	023.000.00006
Supply voltage CHN 1 back in range ([Volt] V)	Only information.	-	L	023.000.00007
Stirrer active. Unable to execute command	Stirrer can not execute command during actual state.	• Call service.	L M S	023.001.00014
Command execution timeout	Reagent unit: the command could not be executed within a reasonable time.	• Call service.	L M S	023.000.00016
Stirrer command execution timeout	Stirrer: the command could not be executed within a reasonable time.	• Call service.	L M S	023.001.00016
Illegal parameter type definition	Illegal parameter type definition in the Reagent unit.	• Call service.	L M S	023.000.00017

Message	Description	Action	Effect	Event ID
Invalid parameter index	Reagent unit: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service.	L M S	023.000.00018
Access to parameter not allowed	Reagent unit received an unauthorized access to parameter.	Call service.	L M S	023.000.00019
Wrong parameter unlock code	Reagent unit: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service..	L M S	023.000.00020
Illegal parameter type in command	Reagent unit: the current command tries to access a persistent parameter but using the wrong parameter type.	Call service.	L M S	023.000.00021
Illegal parameter length in command	Reagent unit: Illegal parameter length.	Call service.	L M S	023.000.00022
Supply voltage CHN 2 out of range ([Volt] V)	The supply voltage CHN 2 is out of range.	If error reoccurs call service.	L M S	023.000.00033
Supply voltage CHN 2 back in range ([Volt] V)	Only information.	-	L	023.000.00034
Supply voltage CHN 3 out of range ([Volt] V)	Reagent unit detected supply voltage out of range.	If error reoccurs call service.	L M S	023.000.00035
Supply voltage CHN 3 back in range ([Volt] V)	Only information.	-	L	023.000.00036
Left reagent temperature out of range ([°C] °C)	The temperature of the left reagent bay area is out of range.	If error reoccurs call service.	L M S	023.000.00037

Message	Description	Action	Effect	Event ID
Middle reagent temperature out of range ([°C] °C)	The temperature of the middle reagent bay area is out of range.	If error reoccurs call service.	L M S	023.000.00038
Right reagent temperature out of range ([°C] °C)	The temperature of the right reagent bay area is out of range.	If error reoccurs call service.	L M S	023.000.00039
Left Seebeck voltage too low ([Volt] V)	Left peltier elements defect or not connected.	If error reoccurs call service.	L M	023.000.00041
Left Seebeck voltage too high ([Volt] V)	Left peltier elements defect or peltier fans defect.	If error reoccurs call service.	L M	023.000.00042
Middle Seebeck voltage too low ([Volt] V)	Middle peltier elements defect or not connected.	If error reoccurs call service.	L M	023.000.00043
Middle Seebeck voltage too high ([Volt] V)	Middle peltier elements defect or peltier fans defect.	If error reoccurs call service.	L M	023.000.00044
Right Seebeck voltage too low ([Volt] V)	Right peltier elements defect or not connected.	If error reoccurs call service.	L M	023.000.00045
Right Seebeck voltage too high ([Volt] V)	Right peltier elements defect or peltier fans defect.	If error reoccurs call service.	L M	023.000.00046
Seebeck voltage difference too high ([Volt] V)	Peltier elements defect or not connected.	If error reoccurs call service.	L M	023.000.00047
Stirrer rotation not ok	The stirrer rotation is not ok.	If error reoccurs call service.	L M S	023.001.00048
I2C bus to left integral sensor area defect	Hardware defect.	If error reoccurs call service.	L M S	023.000.00049
I2C bus to right integral sensor area defect	Hardware defect.	If error reoccurs call service.	L M S	023.000.00050
Supply voltage CHN 4 out of range ([Volt] V)	The supply voltage CHN 4 is out of range.	If error reoccurs call service.	L M	023.000.00060
Supply voltage CHN 4 back in range ([Volt] V)	Only information.	-	L	023.000.00061

Message	Description	Action	Effect	Event ID
Supply voltage CHN 5 out of range ([Volt] V)	The supply voltage CHN 5 is out of range.	If error reoccurs call service.	L M	023.000.00062
Supply voltage CHN 5 back in range ([Volt] V)	Only information.	-	L	023.000.00063
Middle Right reagent temperature out of range ([°C] °C)	The temperature of the middle right reagent bay area is out of range.	If error reoccurs call service.	L M	023.000.00064
Middle Right Seebeck voltage too low ([Volt] V)	Middle Right peltier elements voltage too low	If error reoccurs call service.	L M	023.000.00065
Middle Right Seebeck voltage too high ([Volt] V)	Middle Right peltier elements voltage too high	If error reoccurs call service.	L M	023.000.00066
Not initialized	Front module received a command which can only be executed after initialization.	If error reoccurs call service.	L M S	032.000.00001
Unknown command	Front module received a unknown command.	Call service.	L M S	032.000.00002
Parameter value out of range	Front module received a parameter value out of the allowed range.	Call service.	L M S	032.000.00003
Read failure of permanent parameter	Front module had a read failure of permanent parameter and is using default values.	Call service.	L M S	032.000.00005
Supply voltage [source] out of range, Voltage [Volt] V	Front module detected supply voltage out of range.	If error reoccurs call service.	L M S	032.000.00006
Supply voltage [source] back in range, Voltage [Volt] V	Only information.	-	L	032.000.00007
Command execution timeout	Front module: The command could not be executed within a reasonable time.	Call service.	L M S	032.000.00016

Message	Description	Action	Effect	Event ID
Illegal parameter type definition	Illegal parameter type definition in the Front module.	Call service.	L M S	032.000.00017
Invalid parameter index	Front module: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service.	L M S	032.000.00018
Access to parameter not allowed	Front module received an unauthorized access to parameter.	Call service.	L M S	032.000.00019
Wrong parameter unlock code	Front module: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service.	L M S	032.000.00020
Illegal parameter type in command	Front module: the current command tries to access a persistent parameter but using the wrong parameter type.	Call service.	L M S	032.000.00021
Illegal parameter length in command	Front module: Illegal parameter length.	Call service.	L M S	032.000.00022
Cleaning Solution Control is not initialized	Cabinet received a command which can only be executed after initialization or a fatal error of the cleaning solution control has occurred.	If error reoccurs call service.	L M S	034.005.00001
Unknown command	Cabinet received an unknown command.	Call service.	L M S	034.000.00002
Unknown command	Cabinet: System liquid control received an unknown command.	Call service.	L M S	034.001.00002

Message	Description	Action	Effect	Event ID
Unknown command	Cabinet: Wash buffer control received an unknown command.	Call service.	L M S	034.002.00002
Unknown command	Cabinet: Liquid waste control received an unknown command.	Call service.	L M S	034.003.00002
Unknown command	Cabinet: Solid waste control received an unknown command.	Call service.	L M S	034.004.00002
Unknown command	Cabinet: Cleaning solution control received an unknown command.	Call service.	L M S	034.005.00002
Parameter value is out of range	Cabinet received a parameter value out of the allowed range.	Call service.	L M S	034.000.00003
Liquid Waste Control: Actor is not defined	Liquid Waste Control: the command denotes an actor that does not exist.	Call service.	L M S	034.003.00003
Cleaning Solution Control: Actor is not defined	Cleaning Solution control: the command denotes an actor that does not exist.	Call service.	L M S	034.005.00003
Read failure of permanent parameter	Cabinet: reading a parameter from the flash memory failed.	Call service.	L M S	034.000.00005
Supply voltage out of range ([mVolt] mV)	Cabinet detected supply voltage out of range.	If error reoccurs call service.	L M S	034.000.00006
Supply voltage back in range ([mVolt] mV)	Only information.	-	L	034.000.00007
Cabinet unable to execute command	Cabinet cannot execute a command during actual state.	Call service.	L M S	034.000.00014
System Liquid Control unable to execute command	Cabinet: System liquid control cannot execute a command during actual state.	Call service.	L M S	034.001.00014

Message	Description	Action	Effect	Event ID
Wash Buffer Control unable to execute command	Cabinet: Wash buffer control cannot execute a command during actual state.	Call service.	L M S	034.002.00014
Liquid Waste Control unable to execute command	Cabinet: Liquid waste control cannot execute a command during actual state.	Call service.	L M S	034.003.00014
Solid Waste Control unable to execute command	Cabinet: Solid waste control cannot execute a command during actual state.	Call service.	L M S	034.004.00014
Cleaning Solution Control unable to execute command	Cabinet: Cleaning solution control cannot execute a command during actual state.	Call service.	L M S	034.005.00014
Command not implemented	Cabinet: the actual command is not implemented.	Call service.	L M S	034.000.00015
Command not implemented	Cabinet: the actual command is not implemented.	Call service.	L M S	034.001.00015
Command not implemented	Cabinet: the actual command is not implemented.	Call service.	L M S	034.002.00015
Command not implemented	Cabinet: the actual command is not implemented.	Call service.	L M S	034.003.00015
Command not implemented	Cabinet: the actual command is not implemented.	Call service.	L M S	034.004.00015
Command not implemented	Cabinet: the actual command is not implemented.	Call service.	L M S	034.005.00015
Command execution timeout	Cabinet: the command could not be executed within a reasonable time.	Call service.	L M S	034.000.00016

Message	Description	Action	Effect	Event ID
Command execution timeout	Cabinet: the command could not be executed within a reasonable time.	Call service.	L M S	034.001.00016
Command execution timeout	Cabinet: the command could not be executed within a reasonable time.	Call service.	L M S	034.002.00016
Command execution timeout	Cabinet: the command could not be executed within a reasonable time.	Call service.	L M S	034.003.00016
Command execution timeout	Cabinet: the command could not be executed within a reasonable time.	Call service.	L M S	034.004.00016
Command execution timeout	Cabinet: the command could not be executed within a reasonable time.	Call service.	L M S	034.005.00016
Illegal parameter type definition	Illegal parameter type definition in the Cabinet A.	Call service.	L M S	034.000.00017
Invalid parameter index	Cabinet: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service.	L M S	034.000.00018
Access to parameter not allowed	Cabinet received an unauthorized access to parameter.	Call service.	L M S	034.000.00019
Wrong parameter unlock code	Cabinet: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service.	L M S	034.000.00020

Message	Description	Action	Effect	Event ID
Illegal parameter type in command	Cabinet: the current command tries to access a persistent parameter but using the wrong parameter type.	Call service.	L M S	034.000.00021
Illegal parameter length in command	Cabinet: the current command tries to access a persistent parameter but using the wrong parameter length.	Call service.	L M S	034.000.00022
Liquid waste full	Cabinet: the liquid waste containers are either: - both full ($\geq 90\%$) - one full, one disconnected - both disconnected or the sensor is damaged.	Empty liquid waste containers.	L M S	034.003.00032
System liquid empty	Cabinet: the system liquid container level is $< 1\%$ or the sensor is damaged.	Refill the water container.	L M S	034.001.00033
Wash buffer empty	Cabinet: the wash buffer container level is $< 1\%$ or the sensor is damaged.	Refill the wash buffer container.	L M S	034.002.00034
System liquid entering yellow phase	Cabinet: the system liquid container level goes beyond the defined threshold.	Refill the water container.	L	034.001.00048
System liquid entering red phase	Cabinet: the system liquid container level goes beyond the defined threshold.	Refill the water container.	L S	034.001.00049
Wash buffer entering yellow phase	Cabinet: the wash buffer container level goes beyond the defined threshold.	Refill the wash buffer container.	L	034.002.00050

Message	Description	Action	Effect	Event ID
Wash buffer entering red phase	Cabinet: the wash buffer container level goes beyond the defined threshold.	Refill the wash buffer container.	L S	034.002.00051
Liquid waste entering yellow phase	Cabinet: the liquid waste containers exceeds the defined threshold.	Empty the liquid waste container.	L	034.003.00052
Liquid waste entering red phase	Cabinet: the liquid waste containers exceeds the defined threshold.	Empty the liquid waste container.	L S	034.003.00053
System liquid main container removed	Possible causes: - Somebody removed the system liquid main container (10 liters). - The sensor is damaged.	Re-insert the system liquid main container.	L	034.001.00054
Wash buffer main container removed	Possible causes: - Somebody removed the wash buffer main container (10 liters). - The sensor is damaged.	Re-insert the wash buffer main container.	L	034.002.00055
Liquid waste container removed	Possible causes: - Somebody removed a liquid waste container. - The sensor is damaged.	Re-insert the liquid waste container.	L	034.003.00056
Solid waste drawer pulled out	Possible causes: - Somebody pulled out the solid waste drawer. - The sensor is damaged.	Re-insert the solid waste container.	L	034.004.00057

Message	Description	Action	Effect	Event ID
System liquid level sensor disconnected	Possible causes: - The water container level sensor is disconnected. - The sensor is damaged.	Re-connected the system liquid level sensor.	L	034.001.00058
Wash buffer level sensor disconnected	Possible causes: - The wash buffer container level sensor is disconnected. - The sensor is damaged.	Re-connected the wash buffer level sensor.	L	034.002.00059
Failure of waste valve status check	Liquid waste valve defect detected	Call service	L M S	034.003.00075
LCMP Pump is not initialized	Starter reagent 1, pump set A received a command which can only be executed after initialization.	If error reoccurs call service.	L M S	048.000.00001
LCMP Pump received an unknown command	Starter reagent 1, pump set A received an unknown command.	Call service.	L M S	048.000.00002
LCMP Pump received a parameter value out of range	Starter reagent 1, pump set A received a parameter value out of range.	Call service.	L M S	048.000.00003
LCMP Pump had a read failure of permanent parameter	Starter reagent 1, pump set A had a read failure of permanent parameter and is using default values.	Call service.	L M S	048.000.00005
LCMP Pump supply voltage out of range ([mVolt] mV)	Starter reagent 1, pump set A detected supply voltage out of range.	If error reoccurs call service.	L M S	048.000.00006
LCMP Pump supply voltage back in range ([mVolt] mV)	Only information.	-	L	048.000.00007

Message	Description	Action	Effect	Event ID
LCMP Pump has a thermal or short circuit protection of driver	Starter reagent 1, pump set A detected thermal or short circuit protection of driver.	Call service.	L M S	048.000.00008
LCMP Pump had to retry positioning several times	Starter reagent 1, pump set A needed several retries to reach position.	If error reoccurs call service.	L M	048.000.00009
LCMP Pump did not reach target	Starter reagent 1, pump set A could not reach target position.	Call service.	L M S	048.000.00010
LCMP Pump terminated command	Starter reagent 1, pump set A terminated command before completion.	call service.	L M S	048.000.00011
LCMP Pump found an error during self test	LCMP Pump found an error during self test.	Call service.	L M S	048.000.00012
LCMP Pump received a command parameter value out of range	Starter reagent 1, pump set A received a command with a parameter value out of the allowed range.	Call service.	L M S	048.000.00013
LCMP Pump is unable to execute command	Starter reagent 1, pump set A can not execute command during actual state.	Call service.	L M S	048.000.00014
LCMP Pump received a command which is not implemented	Starter reagent 1, pump set A received a command which is not implemented.	Call service.	L M S	048.000.00015
LCMP Pump reached a timeout during command execution	Starter reagent 1, pump set A reached a timeout during command execution.	Call service.	L M S	048.000.00016
LCMP Pump received an illegal parameter type definition	Illegal parameter type definition in the Starter reagent 1, pump set A.	Call service.	L M S	048.000.00017

Message	Description	Action	Effect	Event ID
LCMP Pump received an invalid parameter index	Starter reagent 1, pump set A received an invalid parameter index.	Call service.	L M S	048.000.00018
LCMP Pump received an unauthorized access to parameter	Starter reagent 1, pump set A received an unauthorized access to parameter.	Call service.	L M S	048.000.00019
LCMP Pump received a wrong parameter unlock code	Starter reagent 1, pump set A: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service.	L M S	048.000.00020
LCMP Pump received a command with illegal parameter type	Starter reagent 1, pump set A received a command with illegal parameter type.	Call service.	L M S	048.000.00021
LCMP Pump received a command with illegal parameter length	Starter reagent 1, pump set A received a command with illegal parameter length.	Call service.	L M S	048.000.00022
LCMP Pump failed in automatic calibration	Starter reagent 1, pump set A failure on automatic calibration detected.	If error reoccurs call service.	L M S	048.000.00032
LCMP Pump is not initialized	Wash Injection Pump received a command which can only be executed after initialization.	If error reoccurs call service.	L M S	052.000.00001
LCMP Pump received an unknown command	Wash Injection Pump received an unknown command.	Call service.	L M S	052.000.00002
LCMP Pump received a parameter value out of range	Wash Injection Pump received a parameter value out of the allowed range.	Call service.	L M S	052.000.00003

Message	Description	Action	Effect	Event ID
LCMP Pump had a read failure of permanent parameter	Wash Injection Pump had a read failure of permanent parameter and is using default values.	• Call service.	L M S	052.000.00005
LCMP Pump supply voltage out of range ([mVolt] mV)	Wash Injection Pump detected supply voltage out of range.	• If error reoccurs call service.	L M S	052.000.00006
LCMP Pump supply voltage back in range ([mVolt] mV)	Only information.	-	L	052.000.00007
LCMP Pump has a thermal or short circuit protection of driver	Wash Injection Pump has a thermal or short circuit protection of driver.	• Call service.	L M S	052.000.00008
LCMP Pump had to retry positioning several times	Wash Injection Pump had to retry positioning several times.	• If error reoccurs call service.	L M	052.000.00009
LCMP Pump did not reach target	Wash Injection Pump did not reach target.	• Call service.	L M S	052.000.00010
LCMP Pump terminated command	Wash Injection Pump terminated command.	• Call service.	L M S	052.000.00011
LCMP Pump found an error during self test	Wash Injection Pump found an error during selftest.	• Call service.	L M S	052.000.00012
LCMP Pump received a command parameter value out of range	Wash Injection Pump received a command with a parameter value out of the allowed range.	• Call service.	L M S	052.000.00013
LCMP Pump is unable to execute command	Wash Injection Pump is unable to execute command during actual state.	• Call service.	L M S	052.000.00014
LCMP Pump received a command which is not implemented	Wash Injection Pump received a command which is not implemented.	• Call service.	L M S	052.000.00015

Message	Description	Action	Effect	Event ID
LCMP Pump reached a timeout during command execution	Wash Injection Pump reached a timeout during command execution.	Call service.	L M S	052.000.00016
LCMP Pump received an illegal parameter type definition	Illegal parameter type definition in the Wash Injection Pump.	Call service.	L M S	052.000.00017
LCMP Pump received an invalid parameter index	Wash Injection Pump received an invalid parameter index.	Call service.	L M S	052.000.00018
LCMP Pump received an unauthorized access to parameter	Wash Injection Pump received an unauthorized access to parameter.	Call service.	L M S	052.000.00019
LCMP Pump received a wrong parameter unlock code	Wash Injection Pump: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service.	L M S	052.000.00020
LCMP Pump received a command with illegal parameter type	Wash Injection Pump received a command with illegal parameter type.	Call service.	L M S	052.000.00021
LCMP Pump received a command with illegal parameter length	Wash Injection Pump received a command with illegal parameter length.	Call service.	L M S	052.000.00022
LCMP Pump failed in automatic calibration	Wash Injection Pump failed in automatic calibration.	If error reoccurs call service.	L M S	052.000.00032
Peristaltic Pump is not initialized	Wash Aspiration Pump received a command which can only be executed after initialization.	If error reoccurs call service.	L M S	053.000.00001
Peristaltic Pump received an unknown command	Wash Aspiration Pump received an unknown command.	If error reoccurs call service.	L M S	053.000.00002

Message	Description	Action	Effect	Event ID
Peristaltic Pump received a parameter value out of range	Wash Aspiration Pump received a parameter value out of the allowed range.	If error reoccurs call service.	L M S	053.000.00003
Peristaltic Pump had a read failure of permanent parameter	Wash Aspiration Pump had a read failure of permanent parameter and is using default values.	If error reoccurs call service.	L M S	053.000.00005
Peristaltic Pump supply voltage out of range ([mVolt] mV)	Wash Aspiration Pump detected supply voltage out of range.	If error reoccurs call service.	L M S	053.000.00006
Peristaltic Pump supply voltage back in range ([mVolt] mV)	Only information.	-	L	053.000.00007
Peristaltic Pump has a thermal or short circuit protection of driver	Wash Aspiration Pump has a thermal or short circuit protection of driver.	Call service.	L M S	053.000.00008
Peristaltic Pump had to retry positioning several times	Wash Aspiration Pump had to retry positioning several times.	If error reoccurs call service.	L M	053.000.00009
Peristaltic Pump did not reach target	Wash Aspiration Pump did not reach target.	Call service.	L M S	053.000.00010
Peristaltic Pump terminated command	Wash Aspiration Pump terminated command.	Call service.	L M S	053.000.00011
Peristaltic Pump found an error during self test	Wash Aspiration Pump found an error during selftest.	Call service.	L M S	053.000.00012
Peristaltic Pump received a command parameter value out of range	Wash Aspiration Pump received a command with a parameter value out of the allowed range.	Call service.	L M S	053.000.00013
Peristaltic Pump is unable to execute command	Wash Aspiration Pump is unable to execute command during actual state.	Call service.	L M S	053.000.00014

Message	Description	Action	Effect	Event ID
Peristaltic Pump received a command which is not implemented	Wash Aspiration Pump received a command which is not implemented.	Call service.	L M S	053.000.00015
Peristaltic Pump reached a timeout during command execution	Wash Aspiration Pump reached a timeout during command execution.	Call service.	L M S	053.000.00016
Peristaltic Pump received an illegal parameter type definition	Illegal parameter type definition in the Wash Aspiration Pump.	Call service.	L M S	053.000.00017
Peristaltic Pump received an invalid parameter index	Wash Aspiration Pump received an invalid parameter index.	Call service.	L M S	053.000.00018
Peristaltic Pump received an unauthorized access to parameter	Wash Aspiration Pump received an unauthorized access to parameter.	Call service.	L M S	053.000.00019
Peristaltic Pump received a wrong parameter unlock code	Wash Aspiration Pump: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service.	L M S	053.000.00020
Peristaltic Pump received a command with illegal parameter type	Wash Aspiration Pump received a command with illegal parameter type.	Call service.	L M S	053.000.00021
Peristaltic Pump received a command with illegal parameter length	Wash Aspiration Pump received a command with illegal parameter length.	Call service.	L M S	053.000.00022
Peristaltic Pump failed in calibration of init sensor	Wash Aspiration Pump failed in calibration of init sensor.	Call service.	L M S	053.000.00032
Peristaltic Pump is not initialized	Wash probe rinsing pump (WPRP) received a command which can only be executed after initialization.	If error reoccurs call service.	L M S	054.000.00001

Message	Description	Action	Effect	Event ID
Peristaltic Pump received an unknown command	Wash probe rinsing pump (WPRP) received an unknown command.	Call service.	L M S	054.000.00002
Peristaltic Pump received a parameter value out of range	Wash probe rinsing pump (WPRP) received a parameter value out of the allowed range.	Call service.	L M S	054.000.00003
Peristaltic Pump had a read failure of permanent parameter	Wash probe rinsing pump (WPRP) had a read failure of permanent parameter and is using default values.	Call service.	L M S	054.000.00005
Peristaltic Pump supply voltage out of range ([mVolt] mV)	Wash probe rinsing pump (WPRP) detected supply voltage out of range.	If error reoccurs call service.	L M S	054.000.00006
Peristaltic Pump supply voltage back in range ([mVolt] mV)	Only information.	-	L	054.000.00007
Peristaltic Pump has a thermal or short circuit protection of driver	Wash probe rinsing pump (WPRP) has a thermal or short circuit protection of driver.	Call service.	L M S	054.000.00008
Peristaltic Pump had to retry positioning several times	Wash probe rinsing pump (WPRP) had to retry positioning several times.	If error reoccurs call service.	L M	054.000.00009
Peristaltic Pump did not reach target	Wash probe rinsing pump (WPRP) did not reach target.	Call service.	L M S	054.000.00010
Peristaltic Pump terminated command	Wash probe rinsing pump (WPRP) terminated command.	Call service.	L M S	054.000.00011
Peristaltic Pump found an error during self test	Wash probe rinsing pump (WPRP) found an error during selftest.	Call service.	L M S	054.000.00012

Message	Description	Action	Effect	Event ID
Peristaltic Pump received a command parameter value out of range	Wash probe rinsing pump (WPRP) received a command with a parameter value out of the allowed range.	Call service.	L M S	054.000.00013
Peristaltic Pump is unable to execute command	Wash probe rinsing pump (WPRP) is unable to execute command during actual state.	Call service.	L M S	054.000.00014
Peristaltic Pump received a command which is not implemented	Wash probe rinsing pump (WPRP) received a command which is not implemented.	Call service.	L M S	054.000.00015
Peristaltic Pump reached a timeout during command execution	Wash probe rinsing pump (WPRP) reached a timeout during command execution.	Call service.	L M S	054.000.00016
Peristaltic Pump received an illegal parameter type definition	Illegal parameter type definition in the Wash probe rinsing pump (WPRP).	Call service.	L M S	054.000.00017
Peristaltic Pump received an invalid parameter index	Wash probe rinsing pump (WPRP): each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service.	L M S	054.000.00018
Peristaltic Pump received an unauthorized access to parameter	Wash probe rinsing pump (WPRP) received an unauthorized access to parameter.	Call service.	L M S	054.000.00019
Peristaltic Pump received a wrong parameter unlock code	Wash probe rinsing pump (WPRP): persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service.	L M S	054.000.00020

Message	Description	Action	Effect	Event ID
Peristaltic Pump received a command with illegal parameter type	Wash probe rinsing pump (WPRP) received a command with illegal parameter type.	Call service.	L M S	054.000.00021
Peristaltic Pump received a command with illegal parameter length	Wash probe rinsing pump (WPRP) received a command with illegal parameter length.	Call service.	L M S	054.000.00022
Peristaltic Pump failed in calibration of init sensor	Wash probe rinsing pump (WPRP) failed in calibration of init sensor.	Call service.	L M S	054.000.00032
Module cannot execute command as module is not initialized	Default for RFID reader cannot execute command as module is not initialized	If error reoccurs call service.	L M	064.000.00001
Module cannot execute command as module is not initialized	RFID reader cannot execute command as module is not initialized	If error reoccurs call service.	L M	064.001.00001
Module cannot execute command as module is not initialized	RFID Antenna cannot execute command as module is not initialized	If error reoccurs call service.	L M	064.002.00001
Unknown command	Default for RFID reader received an unknown command.	Call service.	L M S	064.000.00002
Unknown command	RFID reader received an unknown command.	Call service.	L M S	064.001.00002
Unknown command	RFID Antenna received an unknown command.	Call service.	L M S	064.002.00002
Parameter value out of range	Default for RFID reader received a parameter value out of the allowed range.	Call service.	L M S	064.000.00003

Message	Description	Action	Effect	Event ID
Parameter value out of range	RFID reader received a parameter value out of the allowed range.	Call service.	L M S	064.001.00003
Parameter value out of range	RFID Antenna received a parameter value out of the allowed range.	Call service.	L M S	064.002.00003
Read failure of permanent parameter	Default for RFID reader had a read failure of permanent parameter and is using default values.	Call service.	L M S	064.000.00005
Supply voltage out of range ([Volt] V)	Default for RFID reader detected supply voltage out of range.	If error reoccurs call service.	L M S	064.000.00006
Supply voltage back in range ([Volt] V)	Only information.	-	L	064.000.00007
Command terminated abnormally	Default for RFID reader command terminated abnormally	If error reoccurs call service.	L M	064.000.00011
Command terminated abnormally	RFID reader command terminated abnormally	If error reoccurs call service.	L M	064.001.00011
Command terminated abnormally	RFID Antenna command terminated abnormally	If error reoccurs call service.	L M	064.002.00011
Module cannot execute command as received command parameter is out of range	Default for RFID reader module cannot execute command as received command parameter is out of range	If error reoccurs call service.	L M	064.000.00013
Reader unable to execute command	RFID reader is unable to execute command during actual state.	Call service.	L M S	064.001.00014
Antenna unable to execute command	RFID Antenna reader is unable to execute command during actual state.	Call service.	L M S	064.002.00014

Message	Description	Action	Effect	Event ID
General command execution timeout	Default for RFID reader: the command could not be executed within a reasonable time.	Call service.	L M S	064.000.00016
Reader command execution timeout	RFID reader: the command could not be executed within a reasonable time.	Call service.	L M S	064.001.00016
Antenna command execution timeout	RFID Antenna: the command could not be executed within a reasonable time.	Call service.	L M S	064.002.00016
Illegal parameter type definition	Illegal parameter type definition in the default for RFID reader.	Call service.	L M S	064.000.00017
Invalid parameter index	Default for RFID reader: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service.	L M S	064.000.00018
Access to parameter not allowed	Default for RFID reader received an unauthorized access to parameter.	Call service.	L M S	064.000.00019
Wrong parameter unlock code	Default for RFID reader: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service.	L M S	064.000.00020
Illegal parameter type in command	Default for RFID reader: the current command tries to access a persistent parameter but using the wrong parameter type.	Call service.	L M S	064.000.00021
Illegal parameter length in command	Illegal parameter length.	Call service.	L M S	064.000.00022

Message	Description	Action	Effect	Event ID
RFID decoder interface. Unable to communicate with reader IC	RFID decoder interface can not communicate with reader IC.	- Restart the system. - If the problem persists, call service to check the LIAISON® XL system.	L M S	064.000.00064
RFID decoder interface. Unable to communicate with reader IC	RFID decoder interface. Unable to communicate with reader IC.	- Restart the system. - If the problem persists, call service to check the LIAISON® XL system.	L M S	064.001.00064
Antenna interface. Unable to communicate with antenna	Antenna interface. Unable to communicate with antenna.	- Restart the system. - If the problem persists, call service to check the LIAISON® XL system.	L M S	064.000.00065
Antenna interface. Unable to communicate with antenna	Antenna interface. Unable to communicate with antenna.	- Restart the system. - If the problem persists, call service to check the LIAISON® XL system.	L M S	064.002.00065
The command is not recognized, i.e. a format error occurred	The command is not recognized, i.e. a format error occurred	If error reoccurs call service.	L M	064.000.00034
The command option is not supported	The command option is not supported	If error reoccurs call service.	L M	064.000.00035
The specified block was not successfully programmed	EPROM or RFID block was not successfully programmed	If error reoccurs call service.	L M	064.000.00051
The specified block was not successfully locked	EPROM or RFID block was not successfully locked	If error reoccurs call service.	L M	064.000.00052
Self diagnostic gets counter values which can be limited by parameter Sd_Counter_descriptor	Self diagnostic gets counter values which can be limited by parameter Sd_Counter_descriptor	If error reoccurs call service.	L M	064.000.00160
Self diagnostic gets values of init and all move counters of drives	Only information.	-	L M	064.000.00161

Message	Description	Action	Effect	Event ID
Self diagnostic Power control of supply voltage	Only information.	-	L M	064.000.00162
Self Diagnostic Device information: serial, article number and Version	Only information.	-	L M	064.000.00190
Self diagnostic unexpected error message	Self diagnostic unexpected error message	If error reoccurs call service.	L M	064.000.00191
Error during read or write to ServiceMemory	Error during read or write to ServiceMemory	If error reoccurs call service.	L M	064.000.00192
ServiceMemory read data in long message format	Only information.	-	L M	064.000.00193
Initialize ServiceMemory values done	Only information.	-	L M	064.000.00194
Mismatch at Self Diagnostic memory configuration	Only information.	-	L M	064.000.00195
Modification access denied because of wrong Access-Key to modify data	Only information.	-	L M	064.000.00196
RFID write/compare check failure ([block number] block number)	Possible causes: - Integral or ancillary could not be inserted correctly. - An internal error has occurred.	- Check if the integral or the ancillary are correctly inserted. - Call service to involve the corporate functions.	L M S	064.001.00066
Wrong RFID tag receive length	Possible causes: - Integral or ancillary could not be inserted correctly. - An internal error has occurred.	- Check if the integral or the ancillary are correctly inserted. - Call service to involve the corporate functions.	L M	064.001.00067
Multiple RFID tags in field	There are more than one RFID tags in field.	If error reoccurs call service.	L M	064.001.00068

Message	Description	Action	Effect	Event ID
Tag timeout. No answer received from RFID tag	Tag timeout. No answer received from RFID tag.	If error reoccurs call service.	L M	064.001.00069
RFID reader IC error: No RFID tag found	RFID reader IC error: No RFID tag found.	If error reoccurs call service.	L	064.001.00070
RFID reader IC error: Checksum error	RFID reader IC error: Checksum error.	If error reoccurs call service.	L M	064.001.00071
RFID reader IC error: Bit collision error	RFID reader IC error: Bit collision error.	If error reoccurs call service.	L M	064.001.00072
RFID reader IC error: Bit framing error	Possible reasons: - Integral RFID TAG defective. - Wrong alignment antenna PCB on reagent compartment. - Integral removed while reading or writing to/from it.	If error reoccurs call service.	L M	064.001.00073
Unknown command	An unknown command appear in the Starter Reagent Rack A.	Call service.	L M S	069.000.00002
Unknown command	An unknown command appear in the Starter Reagent Rack A.	Call service.	L M S	069.001.00002
Unknown command	An unknown command appear in the Starter Reagent Rack A RFID Antenna.	Call service.	L M S	069.002.00002
Unknown command	An unknown command appear in the Starter Reagent Rack A Aspiration control.	Call service.	L M S	069.003.00002
Parameter value out of range	Starter Reagent Rack A. Subassembly received a parameter value out of the allowed range.	Call service.	L M S	069.000.00003

Message	Description	Action	Effect	Event ID
Parameter value out of range	Starter Reagent Rack A. Subassembly received a parameter value out of the allowed range.	Call service.	L M S	069.001.00003
Parameter value out of range	Starter Reagent Rack A. Subassembly received a parameter value out of the allowed range.	Call service.	L M S	069.002.00003
Parameter value out of range	Starter Reagent Rack A. Subassembly received a parameter value out of the allowed range.	Call service.	L M S	069.003.00003
Read failure of permanent parameter	Starter Reagent Rack A. Default for RFID reader had a read failure of permanent parameter and is using default values.	Call service.	L M S	069.000.00005
Supply voltage out of range ([Volt] V)	Starter Reagent Rack A. Default for RFID reader detected supply voltage out of range.	If error reoccurs call service.	L M S	069.000.00006
Supply voltage back in range ([Volt] V)	Only information.	-	L	069.000.00007
Reader unable to execute command	Starter Reagent Rack A. RFID reader unable to execute command during actual state.	Call service.	L M S	069.001.00014
Antenna unable to execute command	Starter Reagent Rack A. RFID Antenna unable to execute command during actual state.	Call service.	L M S	069.002.00014

Message	Description	Action	Effect	Event ID
Aspirate unable to execute command	Starter Reagent Rack A. Aspiration control unable to execute command during actual state.	Call service.	L M S	069.003.00014
General command execution timeout	Starter Reagent Rack A. Default for RFID: The command could not be executed within a reasonable time.	Call service.	L M S	069.000.00016
Reader command execution timeout	Starter Reagent Rack A. RFID reader: The command could not be executed within a reasonable time.	Call service.	L M S	069.001.00016
Antenna command execution timeout	Starter Reagent Rack A. RFID Antenna: The command could not be executed within a reasonable time.	Call service.	L M S	069.002.00016
Aspirate command execution timeout	Starter Reagent Rack A. Aspiration control: The command could not be executed within a reasonable time.	Call service.	L M S	069.003.00016
Illegal parameter type definition	Illegal parameter type definition in the Starter Reagent Rack A. Subassembly: Default for RFID reader.	Call service.	L M S	069.000.00017
Illegal parameter type definition	Illegal parameter type definition in the Starter Reagent Rack A. Subassembly: Aspiration control.	Call service.	L M S	069.003.00017

Message	Description	Action	Effect	Event ID
Invalid parameter index	Starter Reagent Rack A, Subassembly. Default for RFID reader: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service.	L M S	069.000.00018
Access to parameter not allowed	Starter Reagent Rack A, Subassembly Default for RFID reader received an unauthorized access to parameter.	Call service.	L M S	069.000.00019
Access to parameter not allowed	Starter Reagent Rack A, Subassembly RFID reader received an unauthorized access to parameter.	Call service.	L M S	069.001.00019
Wrong parameter unlock code	Starter Reagent Rack A, Subassembly. Default for RFID reader: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service.	L M S	069.000.00020
Illegal parameter type in command	Starter Reagent Rack A, Subassembly. Default for RFID reader: the current command tries to access a persistent parameter but using the wrong parameter type.	Call service.	L M S	069.000.00021

Message	Description	Action	Effect	Event ID
Illegal parameter length in command	Illegal parameter length.	Call service.	L M S	069.000.00022
RFID decoder interface. Unable to communicate with reader IC	RFID decoder interface in the Starter Reagent Rack A. Unable to communicate with reader IC.	If error reoccurs call service.	L M S	069.000.00064
RFID decoder interface. Unable to communicate with reader IC	RFID decoder interface in the Starter Reagent Rack A. Unable to communicate with reader IC.	If error reoccurs call service.	L M S	069.001.00064
Antenna interface. Unable to communicate with antenna	Antenna interface in the Starter Reagent Rack A. Unable to communicate with antenna.	If error reoccurs call service.	L M S	069.000.00065
Antenna interface. Unable to communicate with antenna	Antenna interface in the Starter Reagent Rack A. Unable to communicate with antenna.	If error reoccurs call service.	L M S	069.002.00065
RFID write/compare check failure ([block number] block number)	TAG on bottle in the Starter Reagent Rack A is not kept correctly.	- Check RFID tag position on the bottle and its orientation. - If the problem persists, call service to check the LIAISON® XL system.	L M S	069.001.00066
Wrong RFID tag receive length	TAG on bottle in the Starter Reagent Rack A is not kept correctly.	- Check RFID tag position on the bottle and its orientation. - Use another bottle. - If the problem persists, call service to check the LIAISON® XL system.	L M	069.001.00067
Multiple RFID tags in field	There are more than one bottle with the same tag in the Starter Reagent Rack A.	Call service to check the LIAISON® XL system.	L M	069.001.00068

Message	Description	Action	Effect	Event ID
Tag timeout. No answer received from RFID tag	Tag timeout. No answer received from RFID tag from the Starter Reagent Rack A Reader.	• Check RFID tag position on the bottle and its orientation. • Use another bottle. • If the problem persists, call service to check the LIAISON® XL system.	L M	069.001.00069
RFID reader IC error: No RFID tag found	RFID reader IC error: No RFID tag found from the Starter Reagent Rack A Reader.	• Check RFID tag position on the bottle and its orientation. • Use another bottle. • If the problem persists, call service to check the LIAISON® XL system.	L M	069.001.00070
RFID reader IC error: Checksum error	RFID reader IC error: Checksum error from the Starter Reagent Rack A Reader.	• Check RFID tag position on the bottle and its orientation. • Use another bottle. • If the problem persists, call service to check the LIAISON® XL system.	L M	069.001.00071
RFID reader IC error: Bit collision error	RFID reader IC error: Bit collision error from the Starter Reagent Rack A Reader.	• Check RFID tag position on the bottle and its orientation. • Use another bottle. • If the problem persists, call service to check the LIAISON® XL system.	L M	069.001.00072
RFID reader IC error: Bit framing error	RFID reader IC error: Bit framing error from the Starter Reagent Rack A Reader.	• Check RFID tag position on the bottle and its orientation. • Use another bottle. • If the problem persists, call service to check the LIAISON® XL system.	L M	069.001.00073

Message	Description	Action	Effect	Event ID
Bubble for a longer time	Air is present during aspiration.	- Check if the Starter bottle is empty. - Perform a starter prime maintenance task from Maintenance page. - Use another bottle. - If the problem persists, call service to check the LIAISON® XL system.	L M S	069.003.00096
Air detected in starter fluidics	There is air in the starter fluidics.	- Check the liquid in the bottle. - Perform a maintenance task from Maintenance page. - If the problem persists, call service to check the LIAISON® XL system.	L M S	069.003.00097
Starter bubble sensor needs to be calibrated	Possible causes: - Liquid could not be present in the aspiration channel. - The starter sensor needs to be calibrated. - Hardware defects.	- Perform a Starter prime task from Maintenance page. - If the problem persists, call service to check the LIAISON® XL system.	L	069.003.00099
Unknown command	An unknown command appears in the Starter Reagent Rack B.	Call service.	L M S	070.000.00002
Unknown command	An unknown command appears in the Starter Reagent Rack B.	Call service.	L M S	070.001.00002
Unknown command	An unknown command appears in the Starter Reagent Rack B.	Call service.	L M S	070.002.00002
Unknown command	An unknown command appears in the Starter Reagent Rack B.	Call service.	L M S	070.003.00002

Message	Description	Action	Effect	Event ID
Parameter value out of range	Starter Reagent Rack B. Subassembly received a parameter value out of the allowed range.	Call service.	L M S	070.000.00003
Parameter value out of range	Starter Reagent Rack B. Subassembly received a parameter value out of the allowed range.	Call service.	L M S	070.001.00003
Parameter value out of range	Starter Reagent Rack B. Subassembly received a parameter value out of the allowed range.	Call service.	L M S	070.002.00003
Parameter value out of range	Starter Reagent Rack B. Subassembly received a parameter value out of the allowed range.	Call service.	L M S	070.003.00003
Read failure of permanent parameter	Starter Reagent Rack B. Default for RFID reader had a read failure of permanent parameter and is using default values.	Call service.	L M S	070.000.00005
Supply voltage out of range ([Volt] V)	Starter Reagent Rack B, detected supply voltage out of range.	If error reoccurs call service.	L M S	070.000.00006
Supply voltage back in range ([Volt] V)	Only information.	-	L	070.000.00007
Reader unable to execute command	Starter Reagent Rack B. RFID reader unable to execute command during actual state.	Call service	L M S	070.001.00014

Message	Description	Action	Effect	Event ID
Antenna unable to execute command	Starter Reagent Rack B. RFID Antenna unable to execute command during actual state.	Call service.	L M S	070.002.00014
Aspirate unable to execute command	Starter Reagent Rack B. Aspiration control unable to execute command during actual state.	Call service.	L M S	070.003.00014
General command execution timeout	Starter Reagent Rack B. Default for RFID reader: the command could not be executed within a reasonable time.	Call service.	L M S	070.000.00016
Reader command execution timeout	Starter Reagent Rack B. RFID reader: the command could not be executed within a reasonable time.	Call service.	L M S	070.001.00016
Antenna command execution timeout	Starter Reagent Rack B. RFID Antenna: the command could not be executed within a reasonable time.	Call service.	L M S	070.002.00016
Aspirate command execution timeout	Starter Reagent Rack B. Aspiration control: the command could not be executed within a reasonable time.	Call service.	L M S	070.003.00016
Illegal parameter type definition	Illegal parameter type definition in the Starter Reagent Rack B. Default for RFID reader.	Call service.	L M S	070.000.00017

Message	Description	Action	Effect	Event ID
Illegal parameter type definition	Illegal parameter type definition in the Starter Reagent Rack B. Aspiration control.	Call service.	L M S	070.003.00017
Invalid parameter index	Starter Reagent Rack B. Default for RFID reader: each persistent parameter has an identifier (= index). The current command requires access to an undefined index.	Call service.	L M S	070.000.00018
Access to parameter not allowed	Starter Reagent Rack B. Default for RFID reader received an unauthorized access to parameter.	Call service.	L M S	070.000.00019
Access to parameter not allowed	Starter Reagent Rack B. RFID reader received an unauthorized access to parameter.	Call service.	L M S	070.001.00019
Wrong parameter unlock code	Starter Reagent Rack B. Default for RFID reader: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service.	L M S	070.000.00020
Illegal parameter type in command	Starter Reagent Rack B. Default for RFID reader: the current command tries to access a persistent parameter but using the wrong parameter type.	Call service.	L M S	070.000.00021

Message	Description	Action	Effect	Event ID
Illegal parameter length in command	Illegal parameter length.	Call service.	L M S	070.000.00022
RFID decoder interface. Unable to communicate with reader IC	RFID decoder interface in the Starter Reagent Rack B. Unable to communicate with reader IC.	If error reoccurs call service.	L M S	070.000.00064
RFID decoder interface. Unable to communicate with reader IC	RFID decoder interface in the Starter Reagent Rack B. Unable to communicate with reader IC.	If error reoccurs call service.	L M S	070.001.00064
Antenna interface. Unable to communicate with antenna	Antenna interface in the Starter Reagent Rack B. Unable to communicate with antenna.	If error reoccurs call service.	L M S	070.000.00065
Antenna interface. Unable to communicate with antenna	Antenna interface in the Starter Reagent Rack B. Unable to communicate with antenna.	If error reoccurs call service.	L M S	070.002.00065
RFID write/compare check failure ([block number] block number)	TAG on bottle in the Starter Reagent Rack B is not kept correctly.	- Check RFID tag position on the bottle and its orientation. - If the problem persists, call service to check the LIAISON® XL system.	L M S	070.001.00066
Wrong RFID tag receive length	TAG on bottle in the Starter Reagent Rack B is not kept correctly.	- Check RFID tag position on the bottle and its orientation towards Antenna. - Use another bottle. - If the error reoccurs call service.	L M	070.001.00067
Multiple RFID tags in field	There are more than one bottle with the same tag in the Starter Reagent Rack B.	If the problem persists, call service to check the LIAISON® XL system.	L M	070.001.00068

Message	Description	Action	Effect	Event ID
Tag timeout. No answer received from RFID tag	Tag timeout. No answer received from RFID tag from the Starter Reagent Rack B Reader.	• Check RFID tag position on the bottle and its orientation. • Use another bottle. • If the problem persists, call service to check the LIAISON® XL system.	L M	070.001.00069
RFID reader IC error: No RFID tag found	RFID reader IC error: No RFID tag found from the Starter Reagent Rack B Reader.	• Check RFID tag position on the bottle and its orientation. • Use another bottle. • If the problem persists, call service to check the LIAISON® XL system.	L M	070.001.00070
RFID reader IC error: Checksum error	RFID reader IC error: Checksum error from the Starter Reagent Rack B Reader.	• Check RFID tag position on the bottle and its orientation. • Use another bottle. • If the problem persists, call service to check the LIAISON® XL system.	L M	070.001.00071
RFID reader IC error: Bit collision error	RFID reader IC error: Bit collision error from the Starter Reagent Rack B Reader.	• Check RFID tag position on the bottle and its orientation. • Use another bottle. • If the problem persists, call service to check the LIAISON® XL system.	L M	070.001.00072
RFID reader IC error: Bit framing error	RFID reader IC error: Bit framing error from the Starter Reagent Rack B Reader.	• Check RFID tag position on the bottle and its orientation. • Use another bottle. • If the problem persists, call service to check the LIAISON® XL system.	L M	070.001.00073

Message	Description	Action	Effect	Event ID
Bubble for a longer time	Possible causes: - Air is present during aspiration. - The starter bottle has been removed / replaced or moved.	- Check if it is empty. - Use another bottle. - If the problem persists, call service to check the LIAISON® XL system.	L M S	070.003.00096
Air detected in starter fluidics	There is air in the starter fluidics. Too many bubbles are present during an aspiration.	- Check the liquid in the bottle. - Perform Starter Prime task from Maintenance page. - If the problem persists, call service to check the LIAISON® XL system.	L M S	070.003.00097
Starter bubble sensor needs to be calibrated	Possible causes: - Liquid could not be present in the aspiration channel or the sensor needs to be calibrated. - It is either damaged aspirate tube or sensor hardware failure.	- Perform Starter Prime task from Maintenance page. - If the problem persists, call service to check the LIAISON® XL system.	L	070.003.00099
Watchdog reset [internal error code]	Optical Liquid Verification (OLV) PCB defect.	Call service.	L M S	252.000.00001
Parameter value out of range	Optical Liquid Verification (OLV) received a parameter value out of the allowed range.	Call service.	L M S	252.000.00003
Read failure of permanent parameter	Optical Liquid Verification (OLV) had a read failure of permanent parameter and is using default values.	Call service.	L M S	252.000.00005
Illegal parameter type definition	Illegal parameter type definition in the Optical Liquid Verification (OLV).	Call service.	L M S	252.000.00017

Message	Description	Action	Effect	Event ID
Invalid parameter index	Optical Liquid Verification (OLV): each persistent parameter has an identifier. The current command requires access to an undefined index.	Call service.	L M S	252.000.00018
Access to parameter not allowed	Optical Liquid Verification (OLV) received an unauthorized access to parameter.	Call service.	L M S	252.000.00019
Wrong parameter unlock code	Optical Liquid Verification (OLV): persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	Call service.	L M S	252.000.00020
Illegal parameter type in command	Optical Liquid Verification (OLV): the current command tries to access a persistent parameter but using the wrong parameter type.	Call service.	L M S	252.000.00021
Illegal parameter length in command	Optical Liquid Verification (OLV): the current command tries to access a persistent parameter but using the wrong parameter length.	Call service.	L M S	252.000.00022
Watchdog reset	Pipettor main PCB defect.	Call service.	L M S	253.000.00001
Insufficient parameters for command [command ID], received [number of received bytes] bytes	An internal system error has occurred.	Call service.	L M S	253.000.00002
Command parameter out of range. Command: [command ID]	Pipettor received a command with a parameter value out of the allowed range.	Call service.	L M S	253.000.00003

Message	Description	Action	Effect	Event ID
Communication buffer overflow	An internal system error has occurred.	• Call service.	L M S	253.000.00004
No coordinates for position [target index]	An internal system error has occurred.	• Call service.	L M S	253.000.00005
Write failure of permanent parameter	Pipettor main PCB defect.	• Call service.	L M S	253.000.00007
Read failure of permanent parameter	Pipettor had a read failure of permanent parameter and is using default values.	• Call service.	L M S	253.000.00008
Illegal parameter type definition	Illegal parameter type definition in the Pipettor.	• Call service.	L M S	253.000.00009
Invalid parameter index	Pipettor: each persistent parameter has an identifier. The current command requires access to an undefined index.	• Call service.	L M S	253.000.00010
Access to parameter not allowed	Pipettor received an unauthorized access to parameter.	• Call service.	L M S	253.000.00011
Wrong parameter unlock code	Pipettor: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	• Call service.	L M S	253.000.00012
Illegal parameter type in command	Pipettor: the current command tries to access a persistent parameter but using the wrong parameter type.	• Call service.	L M S	253.000.00013
Illegal parameter length in command	Illegal parameter length.	• Call service.	L M S	253.000.00014

Message	Description	Action	Effect	Event ID
Left arm, collision avoided. Moving to coordinate: [target index right arm to move to], right arm at coordinate: [left arm actual target index]	Coordinate misalignment.	Call service.	L M S	253.000.00022
Right arm, collision avoided. Moving to coordinate: [target index left arm to move to], left arm at coordinate: [right arm actual target index]	Coordinate misalignment.	Call service.	L M S	253.000.00023
No connection to wash pump	There is no connection with the wash pump or pump defect.	Call service.	L M S	253.000.00031
Left arm, pump error (noStr) [pump error]	Left arm pump error.	Call service.	L M S	253.000.00040
Right arm, pump error (noStr) [pump error]	Right arm pump error.	Call service.	L M S	253.000.00041
Left arm, pump response timeout	Left arm pump response timeout.	Call service.	L M S	253.000.00042
Right arm, pump response timeout	Right arm pump response timeout.	Call service.	L M S	253.000.00043
Left arm, pump error [pump error]	Left arm pump error.	Call service.	L M S	253.000.00044
Right arm, pump error [pump error]	Right arm pump error.	Call service.	L M S	253.000.00045
OLV controller response timeout, command [command ID sent to OLV]	OLV controller response timeout, command.	Call service.	L M S	253.000.00046
Disposable tip dropped	The disposable tip is dropped.	If error reoccurs call service.	L M S	253.000.00048

Message	Description	Action	Effect	Event ID
Left arm, X-axis, home sensor always ON when initialising	Home sensor defect or motor unable to move out of sensor.	• Call service.	L M S	253.000.00100
Left arm, Y-axis, home sensor always ON when initialising	Home sensor defect or motor unable to move out of sensor.	• Call service.	L M S	253.000.00101
Left arm, Z-axis, home sensor always ON when initialising	Home sensor defect or motor unable to move out of sensor.	• Call service.	L M S	253.000.00102
Right arm, X-axis, home sensor always ON when initialising	Home sensor defect or motor unable to move out of sensor.	• Call service.	L M S	253.000.00103
Right arm, Y-axis, home sensor always ON when initialising	Home sensor defect or motor unable to move out of sensor.	• Call service.	L M S	253.000.00104
Right arm, Z-axis, home sensor always ON when initialising	Home sensor defect or motor unable to move out of sensor.	• Call service.	L M S	253.000.00105
Left arm, X-axis, timeout when moving to home sensor	Motor unable to move axis towards home sensor.	• Call service.	L M S	253.000.00110
Left arm, Y-axis, timeout when moving to home sensor	Motor unable to move axis towards home sensor.	• Call service.	L M S	253.000.00111
Left arm, Z-axis, timeout when moving to home sensor	Motor unable to move axis towards home sensor.	• Call service.	L M S	253.000.00112
Right arm, X-axis, timeout when moving to home sensor	Motor unable to move axis towards home sensor.	• Call service.	L M S	253.000.00113
Right arm, Y-axis, timeout when moving to home sensor	Motor unable to move axis towards home sensor.	• Call service.	L M S	253.000.00114
Right arm, Z-axis, timeout when moving to home sensor	Motor unable to move axis towards home sensor.	• Call service.	L M S	253.000.00115
Left arm, X-axis, motor overload detected	Left arm, X-axis, is subject of excessive friction or it is blocked by obstacle.	• If error reoccurs call service.	L M S	253.000.00120

Message	Description	Action	Effect	Event ID
Left arm, Y-axis, motor overload detected	Left arm, Y-axis, is subject of excessive friction or it is blocked by obstacle.	If error reoccurs call service.	L M S	253.000.00121
Left arm, Z-axis, motor overload detected	Left arm, Z-axis, is subject of excessive friction or it is blocked by obstacle.	If error reoccurs call service.	L M S	253.000.00122
Right arm, X-axis, motor overload detected	Right arm, X-axis, is subject of excessive friction or it is blocked by obstacle.	If error reoccurs call service.	L M S	253.000.00123
Right arm, Y-axis, motor overload detected	Right arm, Y-axis, is subject of excessive friction or it is blocked by obstacle.	If error reoccurs call service.	L M S	253.000.00124
Right arm, Z-axis, motor overload detected	Right arm, Z-axis, is subject of excessive friction or it is blocked by obstacle.	If error reoccurs call service.	L M S	253.000.00125
Left arm, X-axis, no encoder steps detected	Left arm's, X-axis, encoder or cable defect or full motor blockade.	Call service.	L M S	253.000.00130
Left arm, Y-axis, no encoder steps detected	Left arm's, Y-axis, encoder or cable defect or full motor blockade.	Call service.	L M S	253.000.00131
Left arm, Z-axis, no encoder steps detected	Left arm's, Z-axis, encoder or cable defect or full motor blockade.	Call service.	L M S	253.000.00132
Right arm, X-axis, no encoder steps detected	Right arm's, X-axis, encoder or cable defect or full motor blockade.	Call service.	L M S	253.000.00133
Right arm, Y-axis, no encoder steps detected	Right arm's, Y-axis, encoder or cable defect or full motor blockade.	Call service.	L M S	253.000.00134

Message	Description	Action	Effect	Event ID
Right arm, Z-axis, no encoder steps detected	Right arm's, Z-axis, encoder or cable defect or full motor blockade.	Call service.	L M S	253.000.00135
Left arm, X-axis, position is out of tolerance. Coordinate: [target index]	Left arm, X-axis, is subject to high friction at specified position.	If error reoccurs call service.	L M S	253.000.00140
Left arm, Y-axis, position is out of tolerance. Coordinate: [target index]	Left arm, Y-axis, is subject to high friction at specified position.	If error reoccurs call service.	L M S	253.000.00141
Left arm, Z-axis, position is out of tolerance. Coordinate: [target index]	Left arm, Z-axis, is subject to high friction at specified position.	If error reoccurs call service.	L M S	253.000.00142
Right arm, X-axis, position is out of tolerance. Coordinate: [target index]	Right arm, X-axis, is subject to high friction at specified position.	If error reoccurs call service.	L M S	253.000.00143
Right arm, Y-axis, position is out of tolerance. Coordinate: [target index]	Right arm, Y-axis, is subject to high friction at specified position.	If error reoccurs call service.	L M S	253.000.00144
Right arm, Z-axis, position is out of tolerance. Coordinate: [target index]	Right arm, Z-axis, is subject to high friction at specified position.	If error reoccurs call service.	L M S	253.000.00145
Left arm, X-axis, motor controller response timeout. Register: [SCTL register], State: [transmission state]	Pipettor main PCB defect.	Call service.	L M S	253.000.00150
Left arm, Z-axis, motor controller response timeout. Register: [SCTL register], State: [transmission state]	Pipettor main PCB defect.	Call service.	L M S	253.000.00152

Message	Description	Action	Effect	Event ID
Right arm, X-axis, motor controller response timeout. Register: [SCTL register], State: [transmission state]	Pipettor main PCB defect.	Call service.	L M S	253.000.00153
Right arm, Z-axis, motor controller response timeout. Register: [SCTL register], State: [transmission state]	Pipettor main PCB defect.	Call service.	L M S	253.000.00155
Motor controller watchdog reset.	Pipettor main PCB defect.	Call service.	L M S	253.000.00160
Left arm, pump warning [warning reported by pump]	A pump warning occurs for the left arm, firmware issue.	If error reoccurs call service.	L M	253.000.00194
Right arm, pump warning [warning reported by pump]	A pump warning occurs for the right arm, firmware issue.	If error reoccurs call service.	L M	253.000.00195
Left arm, pump warning (noStr) [warning reported by pump]	A pump warning occurs for the left arm, firmware issue.	If error reoccurs call service.	L M	253.000.00196
Right arm, pump warning (noStr) [warning reported by pump]	A pump warning occurs for the right arm, firmware issue.	If error reoccurs call service.	L M	253.000.00197
Right arm, OLV analyze. Pump steps mismatch. Expected [expected pump steps], Detected [detected pump steps]	Hardware defect, missing connection from pump step output to PCB.	Call service.	L M S	253.000.00199
Left arm, X-axis, motor overload detected, move retried successfully	Possible causes: - Left arm, X-axis, is subject of excessive friction. - It is blocked by obstacle.	If error reoccurs call service.	L M	253.000.00200

Message	Description	Action	Effect	Event ID
Left arm, Y-axis, motor overload detected, move retried successfully	Possible causes: - Left arm, Y-axis, is subject of excessive friction. - It is blocked by obstacle.	If error reoccurs call service.	L M	253.000.00201
Left arm, Z-axis, motor overload detected, move retried successfully	Possible causes: - Left arm, Z-axis, is subject of excessive friction. - It is blocked by obstacle.	If error reoccurs call service.	L M	253.000.00202
Right arm, X-axis, motor overload detected, move retried successfully	Possible causes: - Right arm, X-axis, is subject of excessive friction. - It is blocked by obstacle.	If error reoccurs call service.	L M	253.000.00203
Right arm, Y-axis, motor overload detected, move retried successfully	Possible causes: - Right arm, Y-axis, is subject of excessive friction. - It is blocked by obstacle.	If error reoccurs call service.	L M	253.000.00204
Right arm, Z-axis, motor overload detected, move retried successfully	Possible causes: - Right arm, Z-axis is subject of excessive friction. - It is blocked by obstacle.	If error reoccurs call service.	L M	253.000.00205
Left arm, X-axis encoder slippage detected, [number of steps] steps	There has been a problem with the left arm movement.	If the error reoccurs call service.	L M	253.000.00206
Left arm, Y-axis encoder slippage detected, [number of steps] steps	There has been a problem with the left arm movement.	If the error reoccurs call service.	L M	253.000.00207

Message	Description	Action	Effect	Event ID
Left arm, Z-axis encoder slippage detected, [number of steps] steps	There has been a problem with the left arm movement.	If the error reoccurs call service.	L M	253.000.00208
Right arm, X-axis encoder slippage detected, [number of steps] steps	There has been a problem with the left arm movement.	If the error reoccurs call service.	L M	253.000.00209
Right arm, Y-axis encoder slippage detected, [number of steps] steps	There has been a problem with the left arm movement.	If the error reoccurs call service.	L M	253.000.00210
Right arm, Z-axis encoder slippage detected, [number of steps] steps	There has been a problem with the left arm movement	If the error reoccurs call service.	L M	253.000.00211
Too many subsequent diti pickup failures	Possible causes: - No disposable tips was present. - Hardware defects.	- Check if the disposable tips are present onboard and correctly set. - Restart the routine. - If the problem persists, call service to check the LIAISON® XL system.	L M S	000.014.00152
Tip eject verification failed.	Possible causes: A plausibility check about disposable tips movement did not succeed.	Call service to check the LIAISON® XL system.	L M	000.014.00153
Maintenance process aborted due to general error	The maintenance was aborted due to a general error.	- Re start the maintenance process. - If error reoccurs call service.	L	000.012.00192
Maintenance process aborted due to timeout condition	The maintenance was aborted due to an internal error.	- Start again the maintenance process. - If the problem persists, call service to check the LIAISON® XL system.	L	000.012.00193

Message	Description	Action	Effect	Event ID
Maintenance process aborted due to missing cuvettes	Possible causes: - missing cuvettes. - cuvettes are stuck.	- Load cuvettes and re start the maintenance process. - If error reoccurs call service.	L	000.012.00194
Maintenance process aborted due to offline pipettor	Possible causes: - System is in pause mode. - Hardware defect.	- After having initialized the system, re start the maintenance process. - If error reoccurs call service.	L	000.012.00195
Maintenance process completed with integrity errors	Only information.	-	L	000.012.00196
Maintenance process aborted due to unavailable starter	Possible causes: - Starter is finished during maintenance. - Hardware defect.	- Change the starter and re-start the maintenance. - If error reoccurs call service.	L	000.012.00197
Air present at the start of the aspiration	Only information.	If error reoccurs call service.	L M	069.003.00100
Air is present at the start of the aspiration	Only information.	If error reoccurs call service.	L M	070.003.00100
Internal Error: Data Compression failed	An internal system error has occurred.	Call service.	L M S	020.003.00065
High side drive IC failure or contact failure of the valve [valve number]	An internal system error has occurred.	Call service.	L M S	069.000.00081
High side drive IC failure or contact failure of the valve [valve number]	An internal system error has occurred.	Call service.	L M S	070.000.00081

Message	Description	Action	Effect	Event ID
Insufficient number of command parameters. Expected [number of expected command parameter bytes], received [number of received command parameter bytes] bytes	An internal system error has occurred.	Call service.	L M S	252.000.00002
OLV controller error [error number]	An internal system error has occurred.	Call service.	L M S	253.000.00038
OLV controller warning [warning number]	An internal system error has occurred.	Call service.	L M S	253.000.00039
Right arm, LLD/OLV trigger line defect detected	An internal system error has occurred.	Call service.	L M S	253.000.00051
ERROR_ERR_INTERNAL_DE FAULT_SCANNERRESETBAC KGROUND	An internal system error has occurred.	Call service.	L M S	022.000.00219
Data lost during communication	An internal error has occurred.	Call service.	L M S	048.000.00033
Data lost during communication	An internal error has occurred.	Call service.	L M S	052.000.00033
Too many subsequent darkcounts out-of-range	An internal error has occurred.	Call service.	L M S	005.004.00036
tip eject failed	Possible causes: A plausibility check about disposable tips movement did not succeed.	Call service to check the LIAISON® XL system.	L M S	005.001.00037
Not initialized	Degasser received a command which can only be executed after initialization.	If error reoccurs, call service.	L M S	055.000.00001
Not initialized	Degasser received a command which can only be executed after initialization.	If error reoccurs, call service.	L M	055.001.00001

Message	Description	Action	Effect	Event ID
Unknown command	Degasser received a wrong command opcode.	Call service.	L M S	055.000.00002
Parameter value out of range	Degasser received a parameter value out of the allowed range.	Call service.	L M S	055.000.00003
Write failure of permanent parameter	An internal system error has occurred.	Call service.	L M S	055.000.00004
Read failure of permanent parameter	Degasser had a read failure of permanent parameter and is using default values.	Call service.	L M S	055.000.00005
Supply voltage out of range ([Volt] V)	Degasser detected supply voltage out of range.	If error reoccurs, call service.	L M S	055.000.00006
Supply voltage back in range	Only information.	-	L	055.000.00007
Error during self test	Degasser found an error during self test.	Call service.	L M S	055.000.00012
Command parameter value out of range	Degasser received a command with a parameter value out of the allowed range.	Call service.	L M S	055.000.00013
Unable to execute command, because of unsupported device address or subassembly	An internal system error has occurred.	Call service.	L M S	055.000.00014
Unable to execute command,	An internal system error has occurred.	Call service.	L M	055.001.00014
Command not implemented	Degasser: The actual command is not implemented.	Call service.	L M S	055.000.00015
Command execution timeout	A command for the degasser could not be executed within a reasonable time.	Call service.	L M S	055.000.00016

Message	Description	Action	Effect	Event ID
Illegal parameter type definition	Illegal parameter type definition in the Degasser.	• Call service.	L M S	055.000.00017
Invalid parameter index	Degasser: each persistent parameter has an identifier. The current command requires access to an undefined index.	• Call service.	L M S	055.000.00018
Access to parameter not allowed	Degasser received an unauthorized access to parameter.	• Call service.	L M S	055.000.00019
Wrong parameter unlock code	Degasser: persistent parameters may be locked. The current command tries to unlock a parameter but using the wrong code.	• Call service.	L M S	055.000.00020
Illegal parameter type in command	Degasser: the current command tries to access a persistent parameter but using the wrong parameter type.	• Call service.	L M S	055.000.00021
Illegal parameter length in command	Degasser: the current command tries to access a persistent parameter but using the wrong parameter length.	• Call service.	L M S	055.000.00022
CAN Status Message	An internal system error has recovered.	-	L M S	055.000.00031
Internal error due to wrong setting of Driver state	Internal error for the degasser.	• Call service.	L	055.000.00035
Internal error due to wrong setting of Driver state	Internal error for the degasser.	• Call service.	L M S	055.001.00035
Pressure in range	Only information.	-	L M S	055.001.00036

Message	Description	Action	Effect	Event ID
Pressure out of range	Only information.	-	L M S	055.001.00037
Pressure out of range for too long time	Internal error for the degasser.	• Call service.	L	055.001.00038
Pressure in range	Information only.	-	L	055.000.00036
Pressure out of range	The pressure is out of range.	• Call service.	L M S	055.000.00037
Pressure out of range for too long	The pressure has been out of range for too long time.	• Call service.	L M S	055.000.00038
Liquid in vacuum line detected	An internal system error has occurred.	• Call service.	L M S	055.000.00039
Liquid in vacuum line detected	An internal system error has occurred.	• Call service.	L M S	055.001.00039
Bubble sensor calibration failed	Degasser problem.	• Call service.	L M S	055.001.00040
Pressure change at regulation start not detected	Degasser problem.	• Call service.	L M S	055.001.00041
Allowed sensor startup time exceeded	Degasser problem.	• Call service.	L M	055.001.00042
Target pressuer could not be determined	Degasser problem.	• Call service.	L M	055.000.00043
Target pressuer could not be determined	Degasser problem.	• Call service.	L M	055.001.00043
Measured temperature fails plausibility check	Degasser problem.	• Call service.	L M	055.000.00044
Pump is switched too fast. Possible leakage/membrane defect detected	Degasser problem.	• Call service.	L M	055.001.00045

Message	Description	Action	Effect	Event ID
Pump is not switched off within time. Possible leakage/ membrane defect detected	Degasser problem.	Call service.	L M	055.001.00046
Degasser ambient data	Information only.	-	L M	055.000.00160
Pressure pump is switched on	Information only.	-	L M	055.000.00161
Pressure pump is switched off	Information only.	-	L M	055.000.00162
Plumbing is started	Information only.	-	L M	055.000.00163
Plumbing is stopped	Information only.	-	L M	055.000.00164
Cyclic target pressure determination is started	Information only.	-	L M	055.000.00165
Cyclic target pressure determination is stopped	Information only.	-	L M	055.000.00166
Vacuum guard sensor is ready	Information only.	-	L M	055.000.00167

10 Technical Data

10.1 Power Requirements

System	
Voltage:	100 V - 240 V $\pm$ 10%
Frequency:	50 - 60 Hz
Power consumption:	mean: 400 W (Peak 675 W) mean: 1365 BTU (peak: 2303 BTU)
Input current range	8 A – 3.3 A
Fuses:	250VAC, T 10 A H (High breaking capacity) 5x20 mm

PC	
Voltage	100 V - 240 V
Frequency:	50 - 60 Hz
Power consumption:	mean: 300 W (mean: 1024 BTU)
Rated input current	8 A/ 4 A

10.2 Laser of the Bar-code Scanner

System

Class: Class 2 laser product

Communication: RS 232 C

Available bar-codes

- Codabar (set as default)
- Code 39 (set as default)
- Code 128/ EAN 128 (set as default)
- 2/ 5 Interleaved (to be set)

Please check with local service support the enabling status of the bar-code types of interest.

Barcode types not strictly compliant with this list are not allowed and must not be used on the system.

Barcodes quality shall match Category A or B (according to ANSI X3.182 standard) or category 4 and 3 (according to ISO/IEC 15416 standard). In addition:

- $0.167 \text{ mm} \leq \text{module width} \leq 0.5 \text{ mm}$
- $1:2.5 \leq \text{bar width ratio} \leq 1:3$ (if $0.167 \text{ mm} \leq \text{module width} < 0.2 \text{ mm}$) or
- $1:2 \leq \text{bar width ratio} \leq 1:3$ (if $0.2 \text{ mm} \leq \text{module width} \leq 0.5 \text{ mm}$)

Maximal output radiation: 1.3 mW

Pulse duration: 70 μs , 110 μs

Emitted wave length: 650 - 690 nm

Standards: IEC 60825-1:2007 and IEC 60825-1:2014

Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3, as described in Laser Notice No.56, dated May 8, 2019.

Reading distance: 30 – 310 mm

Handheld barcode reader

Laser Class Safety: Class 2 Laser product

Communication: USB

Output radiation
(Average): 1 mW

Pulse duration: 10 ms

Emitted wave length: 650 nm

Standards: **European Union CE mark**

Laser Safety: European Union IEC 60825-1:2014, US 21CFR 1040

EMI/ RFI: North America (FCC) Part 15 Class B, Canada Class B, European Union EMC Directive.

10.3 Computer and Connections

Hardware:

The following specifications are the minimum requirements.

Processor:	Intel Dual Core E6550, 2.33 GHz or better
Memory (RAM):	At least 2 GB
Hard disk:	2 physical hard disks (at least 200 GB each)
DVD-ROM burner:	16x, compatible with PC system (optional)
Ports:	2 serial RS 232 ports (optional) 1 parallel port (optional) 1 LAN port At least 6 USB (4 on the rear panel and 2 in the front panel)
Modem:	Internal, 56K (optional)
Monitor:	19 inch, touch screen 1280x1024 pixel (VGA connections supported)
Network	10/ 100 Mb Ethernet
Printer	USB printer compatible with the installed operating system. Both network and local printers are supported. The printer that shall be used by Main User Interface shall be defined as "default printer".

Software:

Operating system:	Refer to the release note of the SW version to install/installed
-------------------	--

10.4 Dimensions

System complete	
Width:	LIAISON® XL: 160 cm (63 in)
Depth:	86.5 cm (34 in), monitor excluded
Height:	With closed top cover: 150.4 cm – 156 cm (59.2 in – 61.4 in) (height adjustment feet – 56 mm)
	With open top cover: 215 cm – 220.6 cm (84.6 in – 86.8 in) (height adjustment feet – 56 mm)

10.5 System Clearance

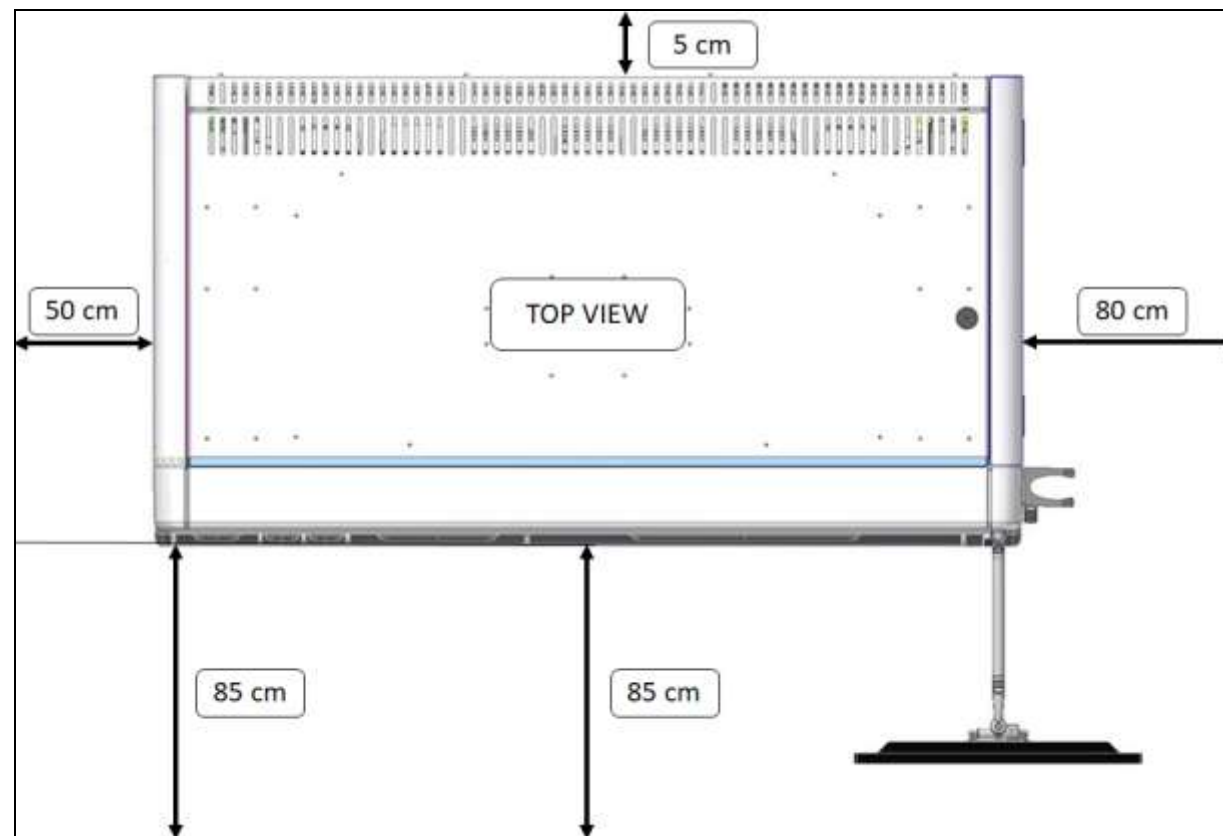


Figure 10-1: System Clearance

10.6 Weight

System complete

LIAISON® XL:	344 kg (758 lb)
---------------------	-----------------

Position the instrument on a stable floor with an adequate load-bearing capacity.

Note: the above sentence is to be intended as a general consideration and does not represent an exception to the indications given in §1.12 and §1.13, concerning the avoidance of placing and removing the instrument.

10.7 Environmental Conditions

Environmental Condition:	This standard applies to equipment designed to be safe at least under following conditions: Indoor use.
Temperature:	Operating: 15 to 32 °C Storage: 5 to 45 °C Transport: -20 °C to 60 °C
Humidity:	Operating: 10 - 85% non-condensing Storage: 10 - 90% non-condensing Transport: 10 - 90% non-condensing
Pollution degree:	2 (EN 61010-1)
Installation Class:	2 (EN 61010-1)
Sunlight:	No direct sunlight. May mislead optical sensors and affect performance.
Altitude:	Operating up to 3000 m above mean sea level. Storage: as required for air travel.
Dust:	No excessive dust

10.8 Noise

At Operator Normal Position	63.9 dBA
At Bystanders Positions	61.4 dBA

10.9 Temperature Range

Ambient	15 °C – 32 °C (59 °F – 89.6 °F)
Incubator	36.5 °C – 38.5 °C (97.7 °F – 101.3 °F)
Inside the system	Ambient temperature $\pm$ 5 °C ($\pm$ 9 °F)
Reagent loading bay	11 °C – 15 °C (51.8 °F – 59 °F)
Sample loading bay	Ambient temperature $\pm$ 3 °C ($\pm$ 5.4 °F)
Starter tubes	35.5 °C – 37.5 °C (95.9 °F – 99.5 °F)

10.10 Water quality

The water to be used for the dilution and reconstitution of the Liaison XL reagents and consumables should comply with the definition of “Instrument Feed Water”, according to CLSI standard “Preparation and Testing of Reagent Water in the Clinical Laboratory; Approved Guideline – Fourth Edition”.

In particular, the water shall contain the following characteristics:

- pH: 5.0 – 8.0
- conductivity: <2 μ Si/cm
- resistivity: > 0.5 M Ohm-cm
- TOC: < 500 ppb
- SiO₂: <1.0 ppm
- Bacteria: <10 CFU/mL

10.11 Optional direct plumbing connection specification

The Liaison® XL Direct Plumbing device is connected through AQUA Stop component to the laboratory DI tap water. To allow a proper connection the laboratory DI tap water must have the following characteristics:

- It must be positioned not far to 9 meters from the instrument, it is recommended foreseen the installation of the taps on the same wall near the instruments.
- The DI tap water have to be equipped by a male thread **G3/4 inches** for connection.
- The connection must be vertical oriented (from top to down) to guarantee the proper functionality of the AQUA Stop component.
- DI Water specifications as defined in Chapter §10.10; pressure range at the tap from **1 to 10 bar**

The following label can be found on the Direct Plumbing device:



11 Appendix A: Disinfection procedure

11.1 Introduction

Purpose of this procedure is to provide instructions to the users to disinfect the analyzer, using disinfectant alcoholic solutions or sodium hypochlorite solution at 0.5 - 0.9% active chlorine. In case commercial sodium hypochlorite solutions are used (e.g. bleach), avoid the use of formulations featuring any fragrance, surfactant, other oxidizer or additive.

The following instructions apply to **LIAISON® XL** analyzer.

The scope of the disinfectant procedure is to address decontamination of the instrument with specific reference to:

- Surfaces or components where the disinfection procedure could be applied.
- Disinfection products to be used.
- Particular directions related to the procedure and the contact time for the disinfection products.

Therefore, the procedures are to be intended as an “extraordinary measure” suggested in case of specific situations (e.g. safety concerns associated to spillage of potentially biohazardous material or any other specific requirements).

This means that the disinfection procedure is not required to ensure the correct functionality of the instrument (which instead is ensured by the regular application of periodical maintenance procedures, prescribed in the chapter 8).

The present procedure describes operations to be executed to make parts of the instrument, which are accessible to the user under standard operative conditions, reasonably safe against possible transmission of infectious diseases, being aware that treatment based on chemical disinfectant does not ensure complete inactivation of all pathogens.

Sodium hypochlorite solution at 0.5 - 0.9% active chlorine or alcoholic solutions with bactericide and virucide high activity shall be used for the scope. Be sure the virucide/bactericide agents used are active also against non-enveloped viruses such as (e.g. norovirus, rotavirus, adenovirus, poliovirus).

Disinfection with sodium hypochlorite solution at 0.5% of active chlorine requires contact time of at least 10 minutes; for alcohol based disinfectants, the user must refer to the contact time recommended by the manufacturer for the specific disinfectant.

Activities herein described must be performed by personnel specifically trained in good laboratory practices, analyzer use and wearing personal protective equipment to prevent transmission of infectious diseases by contact and droplets.

Fully comply with the present procedure in order to avoid instrument damage or malfunction.

11.2 Hazards

Please refer to paragraph 1.8 of present manual, for a detailed and complete description of potential hazards involved in instrument use and maintenance.

11.2.1 Biological Hazards

Performing the following activities may expose the user to potentially infectious materials:

- Handling samples, reagents, calibrators, and controls.
- Cleaning spills.
- Handling and disposing of waste.
- Performing maintenance procedures.
- Performing cleaning or disinfection procedures.

The following information will help the user in minimizing the impact of this exposure.

User should consider all clinical samples, reagents, calibrators, controls, and used reaction vessels and consumables (e.g. tips, cuvettes) that contain human-sourced material as potentially infectious. User should consider all system surfaces or components that have come in contact with human-sourced material as potentially infectious. No known test method can offer complete assurance that products derived from human-sourced material will not transmit infection. Therefore, all products derived from human-sourced materials and system components exposed to human-sourced materials should be considered potentially infectious.

Precautions include, but are not limited to the following:

- Observe local and national provisions, legislation and laboratory regulations.
- Use appropriate resistant protective gloves suitable for biological risk.
- Use an appropriate lab coat or other protective clothing.
- Use appropriate eye protection.
- Avoid contact between skin/mucous membrane and samples/test reagents or parts of the instrument.
- Do not pipette by mouth.

- Do not eat, drink, smoke, apply cosmetics or handle contact lenses when handling human-sourced material or contaminated system components.
- Clean and disinfect the system immediately if potentially infectious material has been spilled.
- Any reagent spills should be washed with a chemical use sodium hypochlorite solution with 0.5% - 0.9 % active chlorine (e.g. dilution 1:10 of a solution at 5% active chlorine) and all waste should be disposed of as though potentially infectious.
- All samples, biological reagents and materials used in the assays must be considered potentially able to transmit infectious agents. They should therefore be decontaminated and disposed of in accordance with the prevailing regulations and guidelines of the agencies holding jurisdiction over the laboratory, and the regulations of each Country.
- Liquid waste must be decontaminated with a chemical use sodium hypochlorite solution with 0.1% active chlorine (e.g. dilution 1:50 of a solution at 5% active chlorine) for at least 30 minutes.
- Do not use broken or chipped tubes or bottles.
- Observe the instructions in the package inserts for a correct use of the reagents.

DANGER



Risk of infection!

All internal parts of the system that are not defined as user interfaces and for which specific procedures are described, must be treated as being potentially infectious. Improper handling of instrument parts that have come in contact with infectious materials may cause skin irritations, illnesses and possibly death.

DANGER



Disposal of Infectious Waste

Potentially infectious material and all parts that may come in contact with potentially infectious material must be disposed according to the local and national provisions, legislation and laboratory procedures.

11.2.2 Chemical Hazards

User may be exposed to hazardous chemicals when handling reagents, calibrators and controls.

Exposure to hazardous chemicals is minimized by following instructions provided in the assay-specific documentation (such as a package insert) and on product-specific labels, and product-specific MSDS (Material Safety Data Sheets).

In general, observe the following precautions when handling chemicals:

- Consult MSDS for safe use instructions and precautions.
- Avoid contact with skin and eyes. If contact with material is anticipated, wear suitable protective gloves, protective eye wear, and clothing.
- Maintain good housekeeping. Do not eat, drink, or store food and beverages in areas where chemicals are used.
- Seek medical attention if irritation or signs of toxicity occur after exposure.

WARNING



Handling of Disinfectant Products

- Disinfectant products may be harmful. Read all instructions provided with the disinfectant products before use.
 - Do not mix sodium hypochlorite solution (e.g. bleach) with alcohol based disinfectants.
 - Observe the proper dilution of chemicals, as stated by the SW (Software)
-

11.2.3 Spill clean-up

Clean spills in accordance with established biosafety practices and follow instructions in the MSDS (Material Safety Data Sheets). In general, safe work practices for cleaning spills include:

- Wear appropriate personal protective equipment, such as gloves, eye wear and lab coat.
- Absorb the spill with absorbent material.
- Wipe and clean the area with an appropriate disinfectant such as a chemical use sodium hypochlorite solution with 0.5% - 0.9% active chlorine (e.g. dilution 1:10 of a solution at 5% active chlorine) or disinfectant alcoholic based solution at recommended alcohol concentration of 60-90%.

11.2.4 Waste handling and disposal

Each facility is responsible for labeling all waste tanks and characterizing its waste stream to ensure waste is disposed in accordance with the appropriate local regulations.

See the manufacturer's assay-specific documentation (such as a package insert or reagent application sheet), the product-specific label, or the product-specific MSDS (Material Safety Data Sheet).

11.3 Preparation of Liqui-Nox[®] solution

For the preparation of the Liqui-Nox[®] solution refer to chapter 8.4 of present manual.

For the use of the Liqui-Nox[®] solution refer to chapter 8.5 of present manual.

11.4 Alcoholic solution specifications

Alcohol based solutions used shall be defined by the manufacturer as high activity bactericide and virucide. Be sure the virucide/bactericide agents are active also against non-enveloped viruses such as e.g. norovirus, rotavirus, adenovirus, and poliovirus. An alcohol concentration of 60-90% is generally recommended. Refer to manufacturer's instruction for safety handling and other technical information.

11.5 Preparation of sodium hypochlorite solution

For the preparation of the Sodium Hypochlorite solution at 0.5 - 0.9% active chlorine refer to chapter 8.8.1.1 of present manual.

11.6 Disinfection procedure – Front and System Modules

The following procedure shall be executed to complete the disinfection:

1. In Main Category Maintenance, Sub-category Schedule selects the “Weekly Maintenance Task”: comply with all the required actions with the exception of the manual cleaning steps related to the steel needle of the Right Arm and the tip adapter of the Left Arm.
2. Quit the Main UI.
3. Switch off the instrument and disconnect it from the main supply.
4. Open the sample area flap and extract the available sample racks; remove the sample tubes.
5. Open the reagent area flaps and extract the reagent integrals, store them according to the corresponding IFUs.
6. Open the top cover and move the right and left arms to a position easy to access.
7. Wipe with a tissue saturated with an alcoholic/disinfectant solution the following parts/surfaces:
 - Sample racks.
 - Left arm adapter (wipe downward).
 - Sample area interior (or sample area cover, where available).
 - Reagent area cover.
 - Incubator cover.
 - Monitor.

NOTE

Avoid colliding with the right and left arms while performing the described tasks.

Use a new tissue for each part; dispose used tissues as biological hazardous materials.

8. Repeat step 7 twice.
9. Wipe with a tissue saturated with a hypochlorite solution at 0.5 - 0.9% active chlorine the following parts/surfaces:
 - Right arm steel probe (wipe downward).
 - Tip drop off are.
 - Pipettor wash station (upper rim).

NOTE

Avoid colliding with the right and left arms while performing the described tasks.

Use a new tissue for each part; dispose used tissues as biological hazardous materials.

10. Repeat step 9 twice.
11. Wipe all previous treated surfaces with a tissue soaked with DI water.

NOTE

Use a new tissue for each part; dispose used tissues as biological hazardous materials.

12. Wipe all previous treated surfaces with a dry tissue.

NOTE

Use a new tissue for each part; dispose used tissues as biological hazardous materials.

11.7 Disinfection procedure – Cabinet

The following procedure shall be executed to complete the disinfection:

1. Quit the Main UI.
2. Switch off the instrument and disconnect it from the main supply.
3. Open the leftmost cabinet door.
4. Empty both the waste tanks following the User manual instructions.
5. Wipe with a tissue saturated with a sodium hypochlorite solution at 0.5 - 0.9% active chlorine the following parts/surfaces:
 - a. Exterior surfaces of both tanks.
 - b. Joint connector probes and the slot for disconnected waste tubing and sensor.
 - c. Waste basin.

NOTE

Use a new tissue for each part; dispose used tissues as biological hazardous materials.

6. Repeat step 5 twice.

NOTE

Use a new tissue for each part; dispose used tissues as biological hazardous materials.

7. Open the middle left cabinet door.
8. Unload the solid waste bin according to LIAISON® XL User Manual, chapter 5.5.7.
9. Wipe the waste bin internal surface with a tissue saturated with a sodium hypochlorite solution at 0.5 - 0.9% active chlorine.

NOTE

Use a new tissue for each part; dispose used tissues as biological hazardous materials.

10. Repeat step 9 twice.
11. If the decontamination procedure has been completed, reconnect the instrument to the main supply and switch it on.

12 Appendix B: Optional direct plumbing connection for DI water

12.1 Introduction

Purpose of Appendix B is to give the users the instruction to handle the optional direct plumbing connection for DI water; direct plumbing is a device that allows an automatic refilling of DI water containers from the DI water tap of the laboratory without manual intervention.

These instructions allow to handle the direct plumbing including maintenance procedure that have to be performed instead of the one reported at chapter 8.8 of present User Manual in case direct plumbing is in use.

The following instructions apply to **LIAISON® XL** analyzers equipped with the optional direct plumbing device.

NOTE

Please note that the following instructions do not apply in case **LIAISON® diluteX** is connected to the analyzer.

12.2 Direct plumbing components

The direct plumbing device consists of three main parts: Intermediate tank with quick connector, AQUA-Stop device to connect the DI water supply tube to the water tap and the electronic box used to manage the AQUA-Stop device.

Intermediate tank with quick connector:



Figure 12-1: Intermediate tank with quick connector

AQUA-Stop device:



Figure 12-2: AQUA-Stop

Electronic box



Figure 12-3: Electronic box

12.3 Direct plumbing functionalities

Direct plumbing device allow an automatic refill of DI water tanks (both primary and intermediate tank) triggered by the level sensor of the DI water intermediate tank, independently from any other software or other modules of the instrument.

The electronic box must be kept ON (the switch is turn to I symbol).

The DI tap water connected to the AQUA-Stop must be kept open.

The module is holding the level of DI water inside the intermediate container automatically between the two levels as shown in figure 12-4.

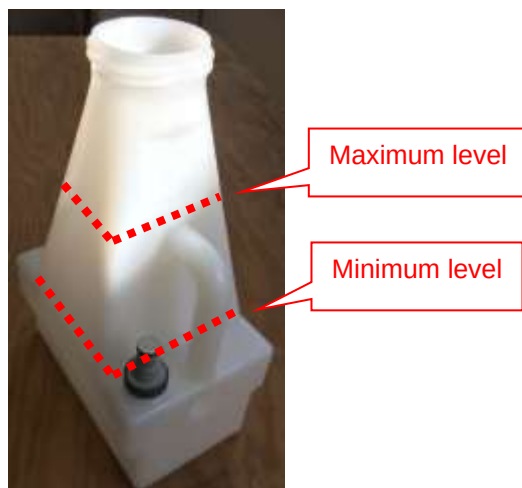


Figure 12-4: DI water level

The module starts the water flow when the level in the intermediate container is lower than the minimum level (figure 12-4)

The module stops the water flow when the level in the intermediate container is higher than the maximum level (figure 12-4).

If the water flow is not stopping after 9 minutes the module stops with a visible and audible alert (see chapter 12.5 for error handling).

Status indicating LEDs

The electronics box of the direct plumbing module is equipped with two LEDs (figure 12-5) indicating the following status:



Green LED (1)	Red LED (2)	Status
OFF	OFF	Module not powered
ON	OFF	Module powered ON – working status
ON	Blinking	Error occurred and audible alarm sound

Figure 12-5: Electronic box

12.4 Clean the primary and the intermediate tanks

This procedure replaces the one reported at chapter 8.8 of present manual in case direct plumbing is in use.

Tanks and intermediate tanks containing water and wash solution shall be cleaned during the execution of the monthly maintenance procedure, as indicated by a dedicated pop-up that appears during the execution of the task.

WARNING



Handling of Decontamination Products

- Pay attention in managing the decontamination products, because they may be harmful. Read the instructions of the decontamination products before use.
- Do not mix sodium hypochlorite solution (e.g. bleach) with alcohol or any other flammable.
- Observe the proper dilution of chemicals, as stated by the SW.

12.4.1 Preparation of sodium hypochlorite solution

The cleaning of the tank shall be performed with a sodium hypochlorite solution at 0.5% - 0.9% active chlorine. In case commercial sodium hypochlorite solutions are used (e.g. bleach), avoid formulations featuring any fragrance, surfactant, other oxidizer or additive.

This paragraph reports the instructions to prepare 1 L or 2 L of solution.

As described in the procedure below, 1 L of solution is necessary for cleaning 1 tank, therefore a total of 4 L of hypochlorite solution is necessary for the whole maintenance.

Instruction to prepare 2 L of solution at 0.5 - 0.9% active chlorine:

1. Fill a graduate cylinder with 1.8 L of water;
2. Add 200 mL of a sodium hypochlorite solution (e.g. bleach) with a 5 - 9% content of active chlorine. In case the available sodium hypochlorite should have a different titer, please adjust the dilution accordingly;
3. Briskly mix.

Instruction to prepare 1 L of solution at 0.5 - 0.9% active chlorine:

1. Fill a graduate cylinder with 0.9 L of water;
2. Add 100 mL of a sodium hypochlorite solution (e.g. bleach) with a 5 - 9% content of active chlorine. In case the available sodium hypochlorite should have a different titer, please adjust the dilution accordingly;
3. Briskly mix.

12.4.2 Procedure

The following procedure shall be executed to complete the cleaning:

Wash buffer tanks removal

1. Open the cabinet middle right door.
2. Pull the right drawer out of the cabinet.
3. Remove the wash buffer main tank (white cap) and dispose the liquid.
4. Remove the sponge placed in front of the intermediate tank (Figure 12-6).



Figure 12-6: Sponge removal

5. Disconnect sensor (b) and liquid (a) connectors from the intermediate tank (Figure 12-7).

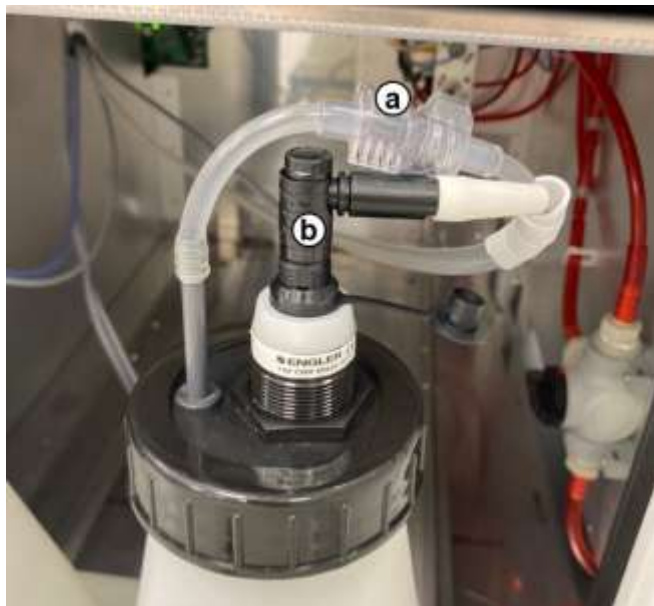


Figure 12-7: Wash buffer intermediate tank connectors

6. Using the handle, move the intermediate tank to the front (Figure 12-8).



Figure 12-8: Wash buffer intermediate tank moved to the front

7. Raise the intermediate tank up (Figure 12-9) and remove it from the dedicated slot of the drawer.



Figure 12-9: Wash buffer intermediate tank raised up and removed

8. Remove the black cap of the wash buffer intermediate tank and dispose the liquid.

Water tanks removal

9. Remove the water main tank (blue cap) and dispose the liquid.
10. Remove the sponge placed in front of the intermediate tank (Figure 12-10).

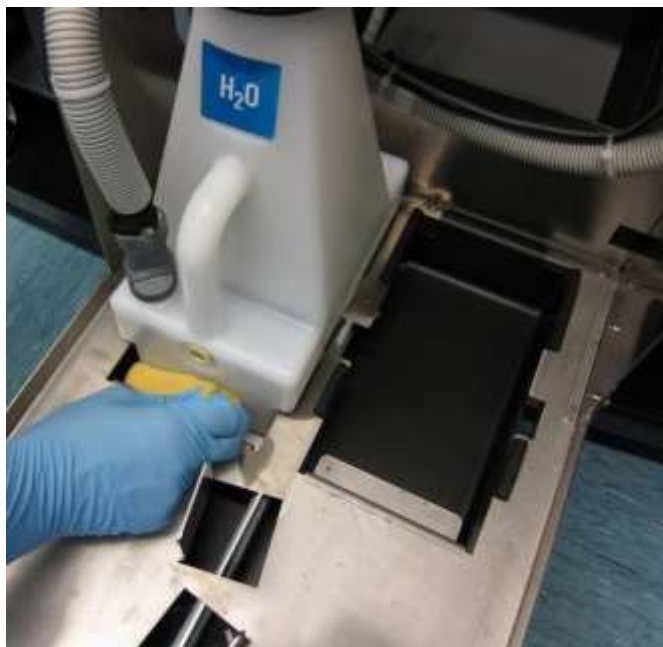


Figure 12-10: Sponge removal

11. Disconnect sensor (b) and liquid (a) connectors from the intermediate tank (Figure 12-11).

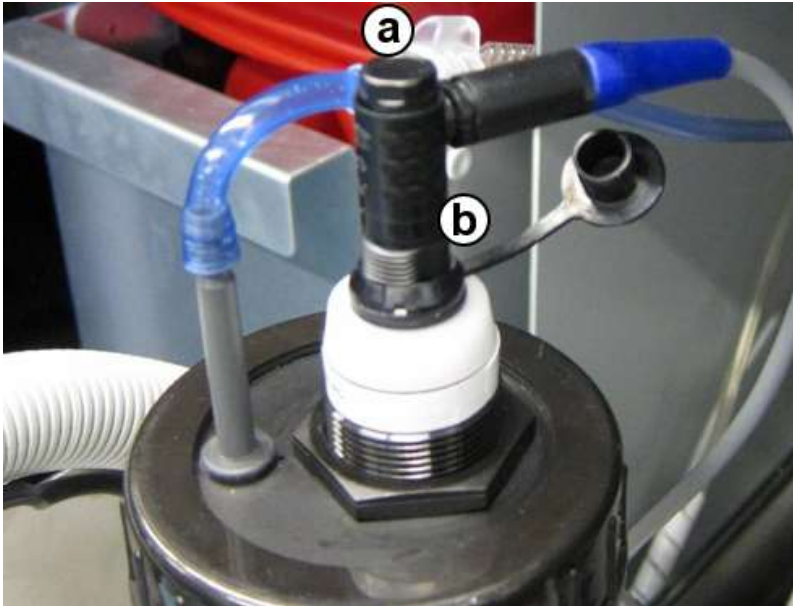


Figure 12-11: Water intermediate tank connectors

12. Disconnect the direct plumbing quick release connector from the DI intermediate bottle by pushing the the button on the connector (Figure 12-12).



Figure 12-12: Direct plumbing quick release connector disconnection

13. Using the handle, move the intermediate tank to the front (Figure 12-13).



Figure 12-13: Intermediate tank moved to the front

14. Raise water intermediate tank up (Figure 12-14) and remove it from the dedicated slot of the drawer.

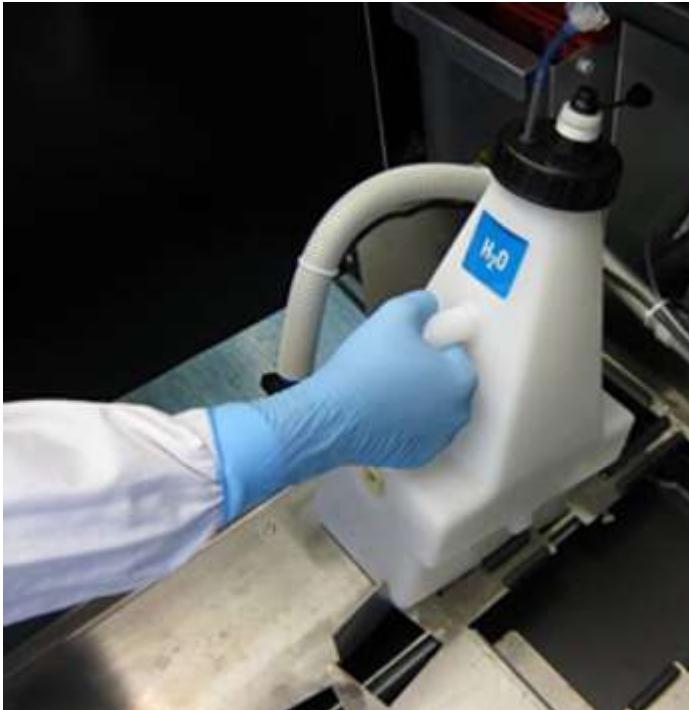


Figure 12-14: Intermediate tank raised up and removed

15. Remove the black cap of the water intermediate tank and dispose the liquid.

Tanks cleaning

16. Fill each primary and intermediate tank with 1 L of sodium hypochlorite solution prepared according to chapter 12.4.1.
17. Close all the tanks with the dedicated caps.
18. Gently shake each tank, avoiding spilling and limiting the formation of foam.

12 Appendix B: Optional direct plumbing connection for DI water

19. Empty carefully each tank and rinse it thoroughly with distilled water (to ensure an adequate rinsing, it is recommended to fill each tank at least at half volume). Water to be used has to be defined according to CLSI guidelines for laboratory water ("Instrument Feed Water" type).
20. Repeat operation at previous point at least two more times for each tank.
21. Screw the caps of intermediate tanks.

**Water Tanks
insertion**

22. Place the water intermediate tank into the dedicated slot of the drawer.
23. Holding the handle of the drawer by hand, push the intermediate tank back to the end of the slot (Figure 12-15).

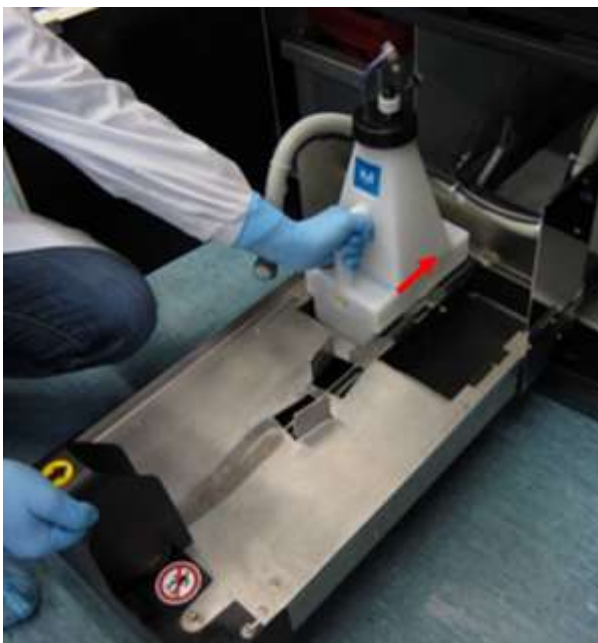


Figure 12-15: Water intermediate tank insertion

24. Put the sponge in front of the intermediate tank (Figure 12-16).

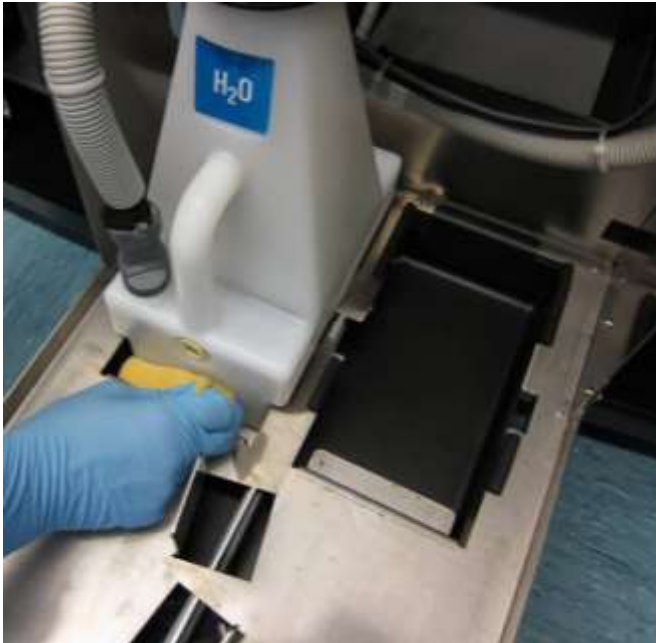


Figure 12-16: Sponge placement

12 Appendix B: Optional direct plumbing connection for DI water

25. Screw the cap of the water tank and load it empty into the system.
26. Connect the direct plumbing quick release connector to the DI intermediate bottle, a “click” noise should be heard (Figure 12-17).



Figure 12-17: Direct plumbing quick release connector insertion

27. Connect liquid and sensor connectors to the intermediate tank (Figure 12-11).
28. Direct plumbing recognizes the empty bottle and starts the DI water filling

Wash Buffer Tanks insertion

29. Place the wash buffer intermediate tank into the dedicated slot of the drawer.
30. Holding the handle of the drawer by hand, push the intermediate tank back to the end of the slot (Figure 12-18).



Figure 12-18: Wash buffer intermediate tank insertion

31. Connect liquid and sensor connectors to the intermediate tank (Figure 12-7).
32. Put the sponge in front of the intermediate tank (Figure 12-19).



Figure 12-19: Sponge placement

33. Fill the wash buffer tank with the dedicated solution, screw the cap and load it into the system.

NOTE

For the preparation of the wash solution, refer to the Instruction for Use available in Wash Buffer packages. Use the red line available on the tank as a guide during the preparation of the wash solution (refer to chapter 1.10.14).

34. Push the right drawer back into the cabinet.

35. Close the cabinet doors.

36. Wait approximately 5-10 minutes in order to allow the filling of the intermediate tanks.

37. Continue with the execution of the other cleaning procedures.

12.5 Error condition and error handling on direct plumbing

This chapter describes the direct plumbing errors and gives instruction on error recovery.

NOTE

If the error reoccurs, please call service.

12.5.1 Error condition

Direct plumbing system error is indicated by a red flashing LED and by a beeping sound generated by the electronic box.

The error handling of the Direct Plumbing system is independent of the **LIAISON® XL** analyzer. This means, an error condition of the Direct Plumbing system does not generate an error message on the instruments UI. There is no error message or warning message popping up on the screen, there is also no entry in the message list in the user software.

To silence the alarm, the electronic box needs to be switched off.

An error is generated under two conditions:

1. If the flooding sensor in the drip pan below the system liquid intermediate container is activated and the aqua stop valve is turned off.
2. If the filling of the container takes more than 9 minutes. The alarm is generated by a time-out condition.

12.5.2 Error handling

In this chapter, the term “intermediate container” always refers to the system liquid intermediate container.

The following steps should be performed if the Direct Plumbing system detects an error.

1. Switch off the electronics box and switch it on again. If the alarm starts again within a few seconds after switching on, the error is caused by the overflow sensor. Please continue with step 2. If the alarm does not start again within a few seconds, continue with step 3.
2. The error condition is caused by the overflow sensor. The sensor detected liquid. Try to figure out where the liquid is coming from.
 - a. The liquid might originate from the intermediate container because the container is overflowing. This could be the case if the level sensor is defect and does not monitor the liquid level correctly any longer. In this case, there should be an error message in the instruments UI as well.
 - b. If the liquid leakage originates from the outer protective tubing of the Direct Plumbing system, there might be a leak in the inner tube of the Direct Plumbing.
 - c. There is also the possibility that liquid in the drip pan does not indicate an actual failure of the system but is due to spillage, caused e.g. by another part which is not correctly functioning on the Liaison XL.
3. If the alarm was not caused by the overflow sensor, the alarm was triggered by the time-out condition. The Direct Plumbing system assumes that refilling of the intermediate container does not take longer than 8 (± 1) minutes. If it takes longer, an alarm is generated.
 - a. Most likely the water tap is not opened. Please check the water tap.
 - b. Please also check whether the direct plumbing tubing has a sharp bend which might interrupt the liquid flow.
 - c. Make sure that the direct plumbing tubing is correctly connected to the intermediate container.