

GOLD STANDARDSM

D I A G N O S T I C S

ThunderBolt™ LIS Specifications



CE

Table of contents:

Overview 3

Header Record Specifics 3

Request Information Record Specifics 3

Patient Information Record Specifics 3

Test Order Record Specifics 4

Result Record Specifics 4

LIS Configuration..... 5

Examples 6

Example 1: Query of sample IDs 6

Example 2: Transmission of results 6

Example 3: Transmission of multiple test results per patient 6

Example 4: Transmission of multiple subtest results per patient 7

Overview

The LIS implementation of the Thunderbolt EIA software conforms 100% to the NCCLS LIS2-A2 and NCCLS LIS01-A2 (formerly known as ASTM E1394-91 and ASTM E1381-91) specifications.

In addition to the TCP-IP implementation of NCCLS LIS01-A2, the software also supports a “clean” TCP-IP transmission.

In this mode the software will send the unmodified NCCLS LIS2-A2 frames including the <CR> at the end of the frame. But no checksum or control characters are added.

Header Record Specifics

All communications begin with the header record.

In the “Sender Name or ID” field we put the name of the software and the version.

Example:

```
H|\^&|||Thunderbolt EIA^0.42.0.73|||||P|LIS2-A2|20101022162157
```

Request Information Record Specifics

The software will query the LIS system using “Request Information Records”.

The field that we use to transmit the Sample ID to the LIS is the “Starting Range ID Number” field. In this field we use the first component: “Patient ID”

Example:

```
Q|1|S001^^|ALL
```

Here the Sample ID is “S001”

Patient Information Record Specifics

The LIS system will respond to the software using “Patient Information Records”.

In the “Laboratory Assigned Patient ID” field is the Sample ID stored.

Example:

```
P|1||S001||
```

Here the Sample ID is “S001”

Test Order Record Specifics

The LIS system will give specific Patient/Test information using “Test Order Records”.

In the “Specimen ID” field the Sample ID is stored.

From the “Universal Test ID” field we use the “Manufacturer defined test code” component to store the test information. This can be defined by the lab; we use a lookup table to match those codes to the real test names.

Example:

O|1|S004| |^^^CMVIgG|R

Here the Sample ID is “S004”, the test name is “CMVIgG”.

Result Record Specifics

The instrument will send the results of patients back to the LIS using “Result Records”.

In the “Data or Measurement Value” field we store the numerical result of a patient.

If the test has a message (e.g. “Low”, “Medium”, “High”) then it is stored after the numerical result separated by a component delimiter.

In the “Units” field we store the units of the numerical result.

From the “Universal Test ID” field we use the “Manufacturer defined test code” component to store the test information. This can be defined by the lab; we use a lookup table to match those codes to the real test names.

If a test contains multiple results (subtests) (e.g. panel based tests) then the subtest name is added after the test ID separated by a component delimiter.

If a sample is skipped then the result is still transmitted but the “Result Status” field is then set to “X” (order cannot be done). If the result is ok this field is set to “F” (final results).

Examples:

R|1|^^^CMVIgG|1.33|ng/ml| | |F

R|1|^^^CMVIgG|1.33^high|ng/ml| | |F

R|1|^^^CMVIgG^Subtest1|1.33|ng/ml| | |F

LIS Configuration

The screenshot shows the 'LIS Settings' window. At the top, there is a checkbox labeled 'LIS Enabled' which is checked. Below this, there are two main sections: 'RS-232' and 'TCP-IP'. The 'RS-232' section contains four dropdown menus: 'Baud Rate' set to 9600, 'Data Bits' set to 8, 'Parity' set to None, and 'Stop Bits' set to 1. The 'TCP-IP' section contains a text field for 'Server Address' with the value '192.168.1.11', a spinner box for 'Server Port' set to 7777, and two checkboxes: 'Use Frame Pooling' and 'Use LIS01-A2 Encoding', both of which are unchecked. At the bottom of the window, there are two radio buttons: 'Use RS-232' (which is selected) and 'Use TCP-IP'. To the right of these radio buttons is a button labeled 'Map Test Names'.

In the **RS-232** part you can set the baud rate, data bits, parity and stop bits of the connection.

In the **TCP-IP** part of the LIS setup you can select the Server address and the Server port of the LIS TCP Server.

The “Use Frame Pooling” option allows the system to put more than one ASTM message (for example a Header Record) into a TCP Packet. This can speed up the transfer.

If you use “Use LIS01-A2 Encoding” option the software will use a “telnet”- like system (same data as through the RS-232 connection).

In the **Map Test Names** part you can give the available tests a LIS name.

An LIS name is seldom the real test name, but often a shorter one.

It could also be a number or code, depending on the laboratory policy.

Examples

Example 1: Query of sample IDs

Instrument → LIS

```
H|\^&|||Thunderbolt EIA^0.42.0.73|||||P|LIS2-A2|20101022162157
Q|1|^S001^|ALL
Q|2|^S002^|ALL
Q|3|^S004^|ALL
L|1|N
```

LIS → Instrument

```
H|\^&|||LIS|||||P|LIS2-A2|20101022162157
P|1||S001
O|1|S001|^^^CMVIG|R
P|2||S002
O|1|S002|^^^CMVIG|R
O|2|S002|^^^HPLIG|R
P|3||S004
O|1|S004|^^^CMVIG|R
O|2|S004|^^^HPLIG|R
L|1|N
```

Example 2: Transmission of results

Instrument → LIS

```
H|\^&|||Thunderbolt EIA^0.42.0.73|||||P|LIS2-A2|20101022162157
P|1||S001
O|1|S001|^^^CMVIG|R
R|1|^^^CMVIG|1.33|ng/ml|||F
L|1|N
```

Example 3: Transmission of multiple test results per patient

Instrument → LIS

```
H|\^&|||Thunderbolt EIA^0.42.0.73|||||P|LIS2-A2|20101022162157
P|1||S001
O|1|S001|^^^CMVIG|R
R|1|^^^CMVIG|1.33|ng/ml|||F
O|2|S002|^^^HPLIG|R
R|1|^^^HPLIG|1.24|ng/ml|||F
L|1|N
```

Example 4: Transmission of multiple subtest results per patient

Instrument → LIS

```
H|\^&|||Thunderbolt EIA^0.42.0.73|P|LIS2-A2|20101022162157
P|1|S001
O|1|S001|^CMVIG|R
R|1|^CMVIG^ST1|1.33|ng/ml|F
R|2|^CMVIG^ST2|1.24|ng/ml|F
L|1|N
```

Document Revision: 4

Document Revision Date: March 9, 2011

Document Author: Jeroen Vandezande

© 2011 Gold Standard Diagnostics.

Contact Information

User Assistance

Gold Standard Diagnostics

2851 Spafford St.

Davis, CA 95618

U.S.A.

Phone 530-759-8000 fax: 530-759-8012

tbhelp@goldstandarddiagnostics.com

Internet: <http://www.GoldStandardDiagnostics.com>

Or email to: info@goldstandarddiagnostics.com