

SQA-VISION

Lab Interface (QwikLink™ LIS) Instructions

Background

Vision Lab Interface is a Windows application that is included in the SQA-Vision software. Once activated in the SQA-Vision settings, the Vision Lab Interface continuously runs in the background as long as the SQA-Vision is turned on. The program retrieves data from the SQA-Vision data base and sends it to an external host computer through the RS232 cable supplied with the SQA-Vision.

Concept

The Vision Lab Interface automatically sends test results to the host computer whenever a test is completed or updated in the SQA-Vision. The interface also supports Bi-Directional communication to retrieve the patient information from the host system.

Document Overview

This document provides instructions for loading and for setting up the Lab Interface software on the SQA-Vision.

System Requirements

- SQA-Vision software installed on the SQA-Vision computer
- SQA-Vision software installed on the SQA-Vision testing device
- USB to RS232 converter
- RS232 cable

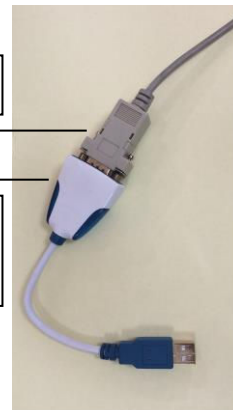
Overview of the 4 Step Vision Lab Interface Set-up Process

1. Hardware Connections
2. Software Set-Up
3. Testing
4. Communication Interface Specifications (Appendix 1)

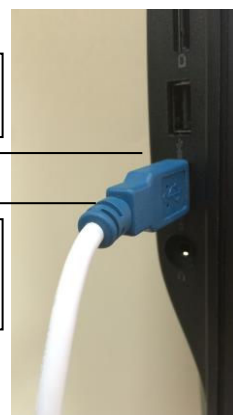
Step 1 Hardware Connections

- Connect one side of the **RS232 CABLE** to the **USB TO RS232 CONVERTER**
- Connect the other side of the **RS232 CABLE** to the **HOST COMPUTER**.

RS232 CABLE

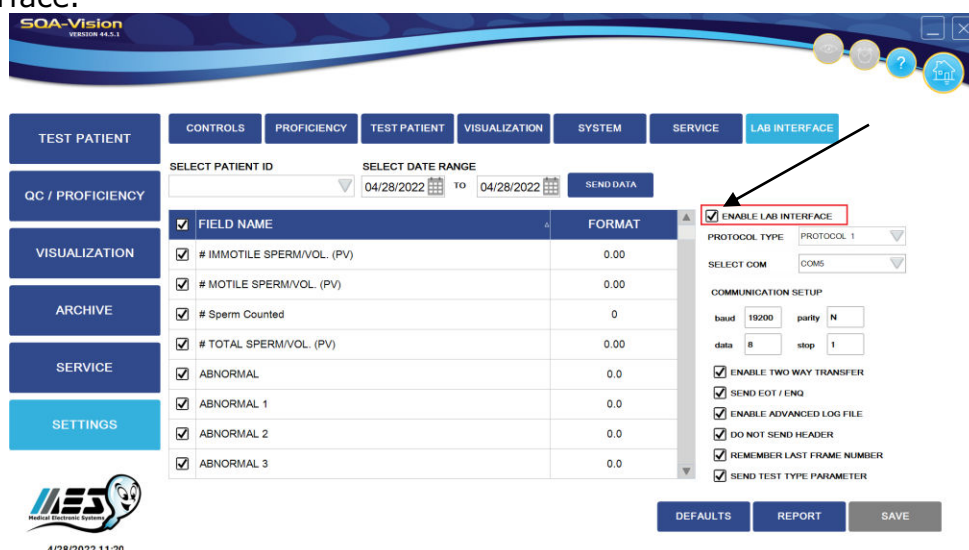
USB TO
RS232
CONVERTER

- Connect the free end of the **USB TO RS232** converter to a USB port in the SQA-VISION PC
- The required drivers will be installed / updated automatically.

Free USB
PORTUSB TO
RS232
CONVERTER

Step 2 Software Set-up

- Turn on the PC and start the Vision software.
- From the SQA-Vision menu on the left side of the screen select: **SETTINGS**
- From the top menu options which are now displayed select: **LAB INTERFACE**
- Click the "**Enable LAB INTERFACE™**" checkbox (✓) to activate the Lab Interface.



- Next, go to the **SELECT COM PORT** drop down menu
- If only one additional PC communication port is available, the SQA-Vision will recognize it and automatically assign it to Vision Lab Interface. If multiple ports are available, select a port for Vision Lab Interface.
- After an appropriate port is selected, verify that the Communication Setup parameters are as follows:
 - Baud - 19200
 - Parity - N
 - Data - 8
 - Stop - 1

- To activate the Bi-Directional function, select the **"ENABLE TWO WAY TRANSFER"** (✓) option.
- Select the parameters that you need to transfer to the Lab Interface HOST by checking the required **FIELD NAME(s)** as seen in the table below.

FIELD NAME	FORMAT
<input checked="" type="checkbox"/> # IMMOTILE SPERM/VOL. (PV)	0.00
<input checked="" type="checkbox"/> # MOTILE SPERM/VOL. (PV)	0.00
<input checked="" type="checkbox"/> # Sperm Counted	0
<input checked="" type="checkbox"/> # TOTAL SPERM/VOL. (PV)	0.00
<input checked="" type="checkbox"/> ABNORMAL	0.0
<input checked="" type="checkbox"/> ABNORMAL 1	0.0
<input checked="" type="checkbox"/> ABNORMAL 2	0.0
<input checked="" type="checkbox"/> ABNORMAL 3	0.0

- Click: **SAVE** to save all the changes.

Step 3 Testing

- To validate that the Vision Lab Interface is sending data stored in the SQA-Vision archive to the host computer go to: **SETTINGS > LAB INTERFACE** and select a **DATE RANGE** (be sure there are test results in the SQA-Vision archive in this date range) or a specific **Patient ID**.
- Click: **SEND DATA** as shown in the screen below.

SQA-Vision
VERSION 44.4.2

CLINICAL ☐ CRYOBANK

TEST PATIENT CONTROLS PROFICIENCY TEST PATIENT VISUALIZATION SYSTEM SERVICE **LAB INTERFACE**

SELECT PATIENT ID SELECT DATE RANGE 04-02-2020 TO 04-02-2020 **SEND DATA**

FIELD NAME	FORMAT
<input checked="" type="checkbox"/> CONTROL TYPE	0
<input checked="" type="checkbox"/> # IMOTILE SPERM/VOL. (PV)	0.00
<input type="checkbox"/> # MOTILE SPERM/VOL. (PV)	0.00
<input type="checkbox"/> # Sperm Counted	0
<input checked="" type="checkbox"/> # TOTAL SPERM/VOL. (PV)	0.00
<input type="checkbox"/> ABNORMAL	0.0
<input checked="" type="checkbox"/> ABNORMAL 1	0.0
<input checked="" type="checkbox"/> ABNORMAL 2	0.0

☒ ENABLE LAB INTERFACE

PROTOCOL TYPE: PROTOCOL 1

SELECT COM: COM3

COMMUNICATION SETUP

baud: 19200 parity: N

data: 8 stop: 1

☒ SEND EOT / ENQ

☒ ENABLE ADVANCED LOG FILE

☒ DO NOT SEND HEADER

☒ REMEMBER LAST FRAME NUMBER

☒ SEND TEST TYPE PARAMETER

DEFAULTS REPORT SAVE

04-02-2020 09:48

- Make sure that the selected test data was transferred by confirming with the HOST COMPUTER.
- Please note : The Vision Lab Interface will not send records with **PENDING** Patient ID.

Bi-Directional

SQA-Vision
VERSION 44.5.1

TEST PATIENT FRESH POST VAS WASHED SWIM UP GRADIENT FROZEN LONGEVITY MANUAL

QC / PROFICIENCY

PATIENT ID: FIRST NAME: LAST NAME:

SAMPLE ID: BIRTH DATE: ABSTINENCE (days):

COLLECTED DATE: 08/03/2022 COLLECTED TIME: 17:29 RECEIVED DATE: 08/03/2022 RECEIVED TIME: 17:29

VOLUME (ml): WBC CONC. (M/ml): pH:

APPEARANCE: NORMAL VISCOSITY: NORMAL LIQUEFACTION: NORMAL

OPTIONAL 1: OPTIONAL 2:

COMMENTS:

1+1 DILUTION 10 MICRO **TEST NOW**

08/03/2022 17:30

- There are two options to get patient test data from the host:
 - Type the selected Patient ID in the **Patient ID** field and press the blue arrow. It will import the relevant information from the Host and populate it in the data entry screen (Selecting a Patient ID can be done also by scanning a barcode that includes the **Patient ID**)

SQA-Vision
VERSION 44.5.1

TEST PATIENT FRESH POST VAS WASHED SWIM UP GRADIENT FROZEN LONGEVITY MANUAL

PATIENT ID: FIRST NAME: LAST NAME:

SAMPLE ID: BIRTH DATE: ABSTINENCE (days):

COLLECTED DATE: 08/03/2022 COLLECTED TIME: 17:29 RECEIVED DATE: 08/03/2022 RECEIVED TIME: 17:29

VOLUME (ml): WBC CONC. (M/ml): pH:

APPEARANCE: NORMAL VISCOSITY: NORMAL LIQUEFACTION: NORMAL

OPTIONAL 1: OPTIONAL 2:

COMMENTS:

1+1 DILUTION 10 MICRO TEST NOW

MED
Medical Electronic Systems

08/03/2022 17:30

- To get the daily test list from the host, make sure that the patient ID field is empty and then press the blue arrow

DAILY TESTS

FILTER BY PATIENT ID FILTER BY PATIENT NAME FILTER BY DATE TO

05/19/2021 04/28/2022 FILTER

PATIENT ID	COLLECTED DATE/TIME	PATIENT NAME	SAMPLE ID
1	05/19/2021	George Johnson	123456789
123	05/28/2021	Jonny Blunt	646856894
2	05/20/2021	Brad James	464
2569	05/20/2021	Tom Franco	8585

CONTINUE SHOW ALL

APPENDIX 1: COMMUNICATION INTERFACE SPECIFICATIONS

Data Flow Protocol

Once the system is installed, the host computer acts as a “listener” and responds to messages sent from the SQA-VISION computer. The “listener” responds with an “acknowledge” to confirm whether the data was accepted correctly.

1. Message structure

Three types of messages, with unique fields, can be sent to the host computer:

1. Facility Data [H]
2. Patient Data [P]
3. Test Data [O] for a specific Patient

A message is composed of several delimited components. Two levels of delimiter are used – vertical bar (|) as the primary, and caret (^) as the secondary. The primary delimiter (|) comes before the parameter name, and the secondary delimiter (^) comes before and after the parameter value i.e. |SID^123456789^

1.1 Protocol 1

The message structure contains the following items:

1. [ENQ] (Optional)
2. [STX]
3. Frame number: 0-7
4. Message type indicator: (H) for Facility Data, (P) for Patient Data, (O) for Test Data.
5. List of fields and values, separated by primary (|) and secondary (^) delimiters. As indicated before, each type of message has its own unique fields (See Appendix 1.0 – Field list).
6. [ETX]
7. Check Sum number.
8. [CR]
9. [LF]
10. [EOT] (Optional)

ASCII Values:

[STX] = 2, [ETX] = 3, [ACK] = 6, [LF] = 10, [CR] = 13, [NAK] = 21, [ENQ] = 5, [EOT] = 4

Example: [STX]20|SN#^52^|SID^6^|FIC^1^|ATM^08:10^[ETX]8D[CRLF]

Primary / Secondary Piece	Description	Example
1	[ENQ] enquiry – Start of Transmission	ENQ
2	[STX] – marks the beginning of the message	STX
3	Frame Number	2
4	Message type indicator	O
5	Parameter Name: Serial Number Field Code: SN# Field value: 52	SN#^52^
6	Parameter Name: Sample Number Field Code: SID Field value: 6	SID^6^
7	Parameter Name: field count -Number of result fields to follow Field Code: FIC Field value: 1	FIC^1^
8	Parameter Name: Test Time Field Code: ATM Field value: 08:10	ATM^08:10^
9	[ETX] – marks the end of the fields list	ETX
10	Check Sum Number(HEX)	8D
11	[CR]	CR
12	[LF]	LF
13	[EOT] End of Transmission	EOT

ENQ\EOT keys

The [ENQ] (Inquire) key prepares the Host to be ready to get the tests data and the [EOT] (end of transmission) announces to the host system that the send tests data session ended.

Host Response

The host must respond with [ACK] character to confirm that the data was accepted correctly and with a [NAK] in cases where erroneous data is received.

Message Order

The order in which the messages are sent to the computer is as follows:

1. First, the Facility Data [H].
2. Second, the Patient Data [P].
3. Last, the Test Data [O] relevant to the first patient and all subsequent patients in the queue is sent until all the Test Data messages for all the Patients are successfully transferred to the Lab Interface.

Frame Number

For each message, the first character after the [STX] is a number between 0 and 7. This number is the Frame Number. The Frame Number is increased by 1 each time a message is successfully sent. When the Frame Number reaches the value of 7, the Frame Number will reset to 0.

If the message has not been sent successfully (Received [NAK] from Host) it will be resent with the same Frame Number. As stated above (section 9.2) after five consecutive [NAK] are sent, the MES SQA-VISION Computer discards the transaction to prevent an endless loop.

Example

Below is an example of the MES SQA-Vision and Host computer communication:

MES SQA-Vision: [ENQ]

{Patient tests example}

HOST: [ACK]

MES SQA-Vision: [STX]0H| MES SQA-V|FIC^2^|TFN^Keiser^|TFC^New York^[ETX]47[CR][LF]

HOST: [ACK]

MES SQA-Vision: [STX]1P|PID^173^|RTY^0^|FIC^1^|PBD^07/08/78^[ETX]80[CR][LF]

HOST: [ACK]

MES SQA-Vision [STX]2O|SN#^52^|SID^6^|FIC^5^|ATM^08:07^|ADT^10/26/06^|VOL^6.0^|
NLMORPH^^|CONC^114.8^[ETX]6E[CR][LF]

HOST: [ACK]

MES SQA-Vision: [STX]3O|SN#^52^|SID^7^|FIC^5^|ATM^09:20^|ADT^10/26/06^|VOL^6.0^|
NLMORPH^^|CONC^321.8^[ETX]6C[CR][LF]

{Control tests example}

HOST: [ACK]

MES SQA-Vision: [STX]4P|SID^15^|RTY^1^|FIC^0^[ETX]A7[CR][LF]

HOST: [ACK]

MES SQA-Vision: [STX]5O|FIC^8^|LOT^1^|EXD^01/00^|TAR^1.0^|RAN^1.0^|CTS^5.3^|RST^1^|COA^1^|
CMSC^^[ETX]52[CR][LF]

HOST: [ACK]

MES SQA-Vision: [EOT]

HOST: [ACK]

1.2: Protocol 2 (Kaiser ONLY)

This specification has been updated to eliminate the initial [ENQ] / [ACK] sequence because it is not required. Whenever the LMS interface program is running it will be ready to receive data.

ASCII Values:

[STX] = 2, [ETX] = 3, [ACK] = 6, [LF] = 10, [CR] = 13, [NAK] = 21, [ENQ] = 5, [EOT] = 4

Primary / Secondary Piece	Description	Example Data
1	Interface software version – used to verify that our software is written for the correct version of your interface.	MES SQA-V
2	Instrument Identifier – Used to uniquely identify the instrument in case in the future, the interface can send data from multiple instruments.	SN# 10550
3	Test Type	0 - Normal Test 1- Control Test
3	Specimen number	123456789
4	Number of result fields to follow	10
5	Result Field 1	ATM^14:20^
5/1	Assay Code	ATM
5/2	Result Value	14:20
5/3	Flag (for future use)	
6-nn	Result Field 2 – Same as 5	VOL^1.5^

Example:

MES SQA-Vision: [STX]MES SQA V1.2|SN#
10550|123456789|9|ATM^14:20^|VOL^1.5^|NLMORPH^25^|CONC^20.5^|
NPMOT^14^|SPMOT^31^|RPMOT^77^|TPCOUNT^31^[ETX]8F[CR][LF]

HOST: [ACK]

2. Check Sum calculation

[STX]10|SN#^52^|SID^3^|FIC^5^|ATM^07:41^|ADT^10/26/06^|VOL^5.0^|
|NLMORPH^^|CONC^125.3^[ETX]EA[CR][LF]

A standard ASTM checksum calculation is used. The checksum calculation for the example above is displayed below:

1. Set $chksum = \text{mod}(chksum, 256)$; Extract the least significant 8 bits
2. Set $A = \text{mod}(chksum, 16)$; Extract the least significant 4 bits
3. Set $B = \text{int}(chksum / 16)$; Extract the most significant 4 bits

Based on the conditions below...

- The values of A and B are converted to HEX format
- The numbers 0 through 9 are unchanged
- The numbers 10 through 16 (decimal format) are converted to A through F (HEX format) resulting in 2 single-byte values.

...the Check Sum of the ASCII values is 6038

- The value associated with #1 (above) is 150 (the least significant 8 bits)
- The value associated with #2 (above) is 6 (the least significant 4 bits)
- The value associated with #3 (above) is 9 (the most significant 4 bits)

Comments:

1. The [STX], [CR] and [LF] values are not included in the checksum calculation
The check sum calculation used the [ETX] value as 3.

Bi-Directional

Once the system is installed, Vision can get the Patient tests data from the host computer. To do so, a request (with a pre-defined structure) should be sent to the host computer. The data flow is based on the ASTM protocol which is already used for sending the data to the host.

1. Request Structure

The order in which the messages are sent to the host computer is as follows:

1. First, send the Facility Data [H]
2. Second, send request message with the [Q] record type

Select the request type is:

1. Request information for a specific patient only. In this case, only information for selected patient will be sent by the host
2. Request all pending "daily Patient Tests". In this case, all pending tests will be sent from the host

1.1. Request protocol

The message structure contains the following items:

1. [ENQ] **Optional**
2. [STX]
3. Frame number: 0-7
4. Message type indicator: (Q) for query Data.
5. List of fields and values, separated by primary (|) and secondary (^) delimiters. As indicated before, each type of message has its own unique fields (See Appendix 1.0 – Field list).
6. [ETX]
7. Check Sum number.
8. [CR]
9. [LF]
10. [EOT] **Optional**

ASCII Values:

[STX] = 2, [ETX] = 3, [ACK] = 6, [LF] = 10, [CR] = 13, [NAK] = 21, [ENQ] = 5, [EOT] = 4

Example: [STX]4Q|^1^|RTY^0^[ETX]58[CR][LF]

Primary / Secondary Piece	Description	Example
1	[ENQ] enquiry – Start of Transmission	ENQ
2	[STX] – marks the beginning of the message	STX
3	Frame Number	4
4	Message type indicator	Q
5	Selected Patient (All or ^selected Patient ID^)	1
6	Record Type	0
7	[ETX] – marks the end of the fields list	ETX
8	Check Sum Number(HEX)	58
9	[CR]	CR
10	[LF]	LF
11	[EOT] End of Transmission	EOT

2. Received Message structure

Two types of messages, with unique fields, can be sent to the Vision computer:

1. Patient Data [P]
2. Test Data [O] for a specific Patient

A message is composed of several delimited components. Two levels of delimiter are used – vertical bar (|) as the primary, and caret (^) as the secondary. The primary delimiter (|) comes before the parameter name, and the secondary delimiter (^) comes before and after the parameter value i.e. |SID^123456789^

Frame Number

For each message, the first character after the [STX] is a number between 0 and 7. This number is the Frame Number. The Frame Number is increased by 1 each time a message is successfully sent. When the Frame Number reaches the value of 7, the Frame Number will reset to 0.

If the message has not been sent successfully (Received [NAK] from Host) it will be resent with the same Frame Number. As stated above (section 9.2) after five consecutive [NAK] are sent, the sending system discards the transaction to prevent an endless loop.

2.1 Protocol 1

The message structure contains the following items:

1. [ENQ] (Optional)
2. [STX]
3. Frame number: 0-7
4. Message type indicator: (H) for Facility Data, (P) for Patient Data, (O) for Test Data.
5. List of fields and values, separated by primary (|) and secondary (^) delimiters. As indicated before, each type of message has its own unique fields (See Appendix 1.0 – Field list).
6. [ETX]
7. Check Sum number.
8. [CR]
9. [LF]
10. [EOT] (Optional)

ASCII Values:

[STX] = 2, [ETX] = 3, [ACK] = 6, [LF] = 10, [CR] = 13, [NAK] = 21, [ENQ] = 5, [EOT] = 4

Example: [STX]20|SN#^52^|SID^6^|FIC^1^|ATM^08:10^[ETX]8D[CRLF]

Primary / Secondary Piece	Description	Example
1	[ENQ] enquiry – Start of Transmission	ENQ
2	[STX] – marks the beginning of the message	STX
3	Frame Number	2
4	Message type indicator	O
5	Parameter Name: Serial Number Field Code: SN# Field value: 52	SN#^52^
6	Parameter Name: Sample Number Field Code: SID Field value: 6	SID^6^
7	Parameter Name: field count -Number of result fields to follow Field Code: FIC Field value: 1	FIC^1^
8	Parameter Name: Test Time Field Code: ATM Field value: 08:10	ATM^08:10^
9	[ETX] – marks the end of the fields list	ETX
10	Check Sum Number(HEX)	8D
11	[CR]	CR
12	[LF]	LF
13	[EOT] End of Transmission	EOT

ENQ\EOT keys

The [ENQ] (Inquire) key prepares the SQA-Vision to be ready to get the tests data and the [EOT] (end of transmission) announces to the host system that the send tests data session ended.

SQA-Vision Response

The SQA-Vision will respond with [ACK] character to confirm that the data was accepted correctly and with a [NAK] in cases where erroneous data is received.

Example

Below is an example of the MES SQA-Vision and Host computer communication:

{Request – selected Patient example}

```

MES SQA-Vision:    [ENQ]
HOST:              [ACK]
MES SQA-Vision:    [STX]0H|MES SQA-V|FIC^2^|TFN^Keiser^|TFC^New York^[ETX]27[CR][LF]
HOST:              [ACK]
MES SQA-Vision:    [STX]1Q|^1^|RTY^0^[ETX]55[CR][LF]
HOST:              [ACK]
MES SQA-Vision:    [EOT]
HOST:              [ACK]

```

{Start HOST of Transitions}

```

HOST:              [ENQ]
MES SQA-Vision:    [ACK]

```

{Get Patient tests example}

```

HOST:              [STX]0P|PID^5643^|FIC^4^|PFN^George^|PLN^Johnson^|PBD^1980-5-21^[ETX]F0[CR][LF]
MES SQA-Vision:    [ACK]
HOST:              [STX]1O|FIC^16^|VOL^3.312^|ABS^3^|APPR^0^|VISC^0^|LIQ^0^|PH^7.2^|WBCCONC^0^|OP
T1^o1^|OPT2^o2^|COMM^Test^|COLLDATE^5/19/2021 12:00:00 PM^|RECEDATE^5/19/2021
2:00:00 PM^|COLLTIME^5/19/2021 12:00:00 PM^|RECETIME^5/19/2021 2:00:00
PM^|SID^123456789^|AGE^41^[ETX]A8[CR][LF]
MES SQA-Vision:    [ACK]

```

{Request – Daily List example}

```

MES SQA-Vision:    [ENQ]
HOST:              [ACK]
MES SQA-Vision:    [STX]0H|MES SQA-V|FIC^2^|TFN^Keiser^|TFC^New York^[ETX]27[CR][LF]
HOST:              [ACK]
MES SQA-Vision:    [STX]1Q|ALL|RTY^0^[ETX]41[CR][LF]
HOST:              [ACK]
MES SQA-Vision:    [EOT]
HOST:              [ACK]

```

{Start HOST of Transitions}

```

HOST:              [ENQ]
MES SQA-Vision:    [ACK]

```

{Get Patient tests example}

```

HOST:              [STX]2P|PID^1^|FIC^4^|PFN^George^|PLN^Johnson^|PBD^5/21/1980^[ETX]55[CR][LF]
MES SQA-Vision:    [ACK]

```



HOST: [STX]30|FIC^16^|VOL^3.312^|ABS^3^|APPR^0^|VISC^0^|LIQ^0^|PH^7.2^|WBCCONC^0^|OPT1^o1^|OPT2^o2^|COMM^Test^|COLLDATE^5/19/2021 12:00:00 PM^|RECEDATE^5/19/2021 2:00:00 PM^|COLLTIME^5/19/2021 12:00:00 PM^|RECETIME^5/19/2021 2:00:00 PM^|SID^123456789^|AGE^41^[ETX]AA[CR][LF]

MES SQA-Vision: [ACK]

{End of Transitions}

HOST: [EOT]

MES SQA-Vision: [ACK]

Appendix 2: SQA-Vision LAB INTERFACE – Fields List

Transfer Flag	Field Code	Field Name in MES Data Base	Format	Description	Msg Type	Rec. Type
Facility Data						
AUTOMATIC		MES SQA-VISION		Header	H	0
AUTOMATIC	FIC	Fields count	0	# Fields in 1 record transferred to LIS	H	0
1 or 0	TFN ¹	TF_Name	String	Testing Facility name	H	0
1 or 0	TFA	Address	String	Testing Facility address	H	0
1 or 0	TFP	Phone	String	Testing Facility Phone	H	0
1 or 0	TFF	Fax	String	Testing Facility Fax	H	0
1 or 0	TFS	Site	String	Testing Facility Site	H	0
1 or 0	TFZ	E-Mail	String	Testing Facility E-Mail	H	0
Patient Data						
AUTOMATIC	PID	PatientID	String	Number identifying the patient	P	1
AUTOMATIC	RTY	Record Type	0	Record Type 0 –Test 1 – Control	P	1
AUTOMATIC	FIC	Fields count	0	# Fields in 1 record transferred to LIS	P	1
1 or 0	PFN	PatientFName	String	First name of patient	P	1
1 or 0	PLN	PatientLName	String	Last name of patient	P	1
1 or 0	PBD	BirthDate	MM/DD/YY	Birth date of patient	P	1
Test/Sample Identifying Data						
AUTOMATIC	SN#	SDSN	String	SQA-Vision system serial number	O	1
AUTOMATIC	SID	SampleID	String	Semen sample identification number	O	1
AUTOMATIC	FIC	Fields count	0	# Fields in 1 record transferred to LIS	O	1
1 or 0	PVTOTIMM	PV_ImmotileVol	0.00	# IMMOTILE SPERM/VOL. (PV)	O	1
1 or 0	PVTOTMOTIMM	PV_MotileVol	0.00	# MOTILE SPERM/VOL. (PV)	O	1
1 or 0	PVTOTSPE	PV_TotalVol	0.00	# TOTAL SPERM/VOL. (PV)	O	1
1 or 0	DNAT	DNATotal	0.00	# Sperm Counted (DNA)	O	1
1 or 0	ABNOR	MorphABNormalp	0.0	ABNORMAL	O	1
1 or 0	AB1	MorphAB1p	0.0	ABNORMAL 1	O	1
1 or 0	AB2	MorphAB2p	0.0	ABNORMAL 2	O	1
1 or 0	AB3	MorphAB3p	0.0	ABNORMAL 3	O	1
1 or 0	AB4	MorphAB4p	0.0	ABNORMAL 4	O	1
1 or 0	AB5	MorphAB5p	0.0	ABNORMAL 5	O	1
1 or 0	AB6	MorphAB6p	0.0	ABNORMAL 6	O	1
1 or 0	AB7	MorphAB7p	0.0	ABNORMAL 7	O	1
1 or 0	AB8	MorphAB8p	0.0	ABNORMAL 8	O	1
1 or 0	AB9	MorphAB9p	0.0	ABNORMAL 9	O	1
1 or 0	ABS	Abstinence	0	ABSTINENCE	O	1
1 or 0	PAGE	TestAge	0	AGE	O	1

¹ The Transfer-Flag of the highlighted parameters is set to 1 by default.

Transfer Flag	Field Code	Field Name in MES Data Base	Format	Description	Msg Type	Rec. Type
1 or 0	AGGL	Aggl	@	AGGLUTINATION (1-4, A-E)	O	1
1 or 0	APPR	Appearance	0	APPEARANCE 1 - CLEAR/WHITE/GREY 2 - YELLOW 3 - PINK 4 - RED/BROWN 5 - OTHER 6 - NA	O	1
1 or 0	ARTID	IVFID	0	ART PREP ID	O	1
1 or 0	ARTS	IVFStep	0	ART PREP STEP 1 - PRE PREP 2 - POST PREP	O	1
1 or 0	ARTTETY	IVFTestType	0	ART PREP Test Type 1 - FRESH 2 - WASHED 3 - FROZEN 6 - SWIM UP 8 - GRADIENT	O	1
1 or 0	COLLDATE	Colldate	MM/DD/YY	COLLECTED DATE / TIME	O	1
1 or 0	COLLTIME	Colldate	HH:mm	COLLECTED TIME	O	1
1 or 0	CLOC	Collloc	@	COLLECTION LOCATION 1, AT LABORATORY; 2, AT HOME	O	1
1 or 0	COMM	Comments	@	COMMENTS	O	1
1 or 0	COMSAM	ComSample	@	COMPLETE SAMPLE (1, COMPLETE; 2, INCOMPLETE)	O	1
1 or 0	STAND	TestChamberType	0	CONC. STANDARD 1 - CONC. STANDARD 1 2 - CONC. STANDARD 2	O	1
1 or 0	CONC	TSC	0.0	CONCENTRATION	O	1
1 or 0	MORPHINDEX	MorphType	0	CRITERIA 1 - WHO 3 RD 2 - WHO 4 TH 3 - WHO 5 TH 4 - WHO 6 TH	O	1
1 or 0	VOLC	VolCupWht	0.00	CUP WEIGHT	O	1
1 or 0	ROUNCELL	Deb_Round	0	DEBRIS / ROUND CELLS 1 - NONE/FEW 2 - MODERATE 3 - MANY 4 - GROSS	O	1
1 or 0	DIFF	Colldiff	@	DIFFICULTIES WITH COLLECTION	O	1
1 or 0	DIRIB2	DirIBTestIgA	@	DIRECT IB-TEST IgA (% with beads) [<50]	O	1
1 or 0	DIRIB1	DirIBTestIgG	@	DIRECT IB-TEST IgG (% with beads) [<50]	O	1
1 or 0	DIRMAR2	DirMarTestIgA	@	DIRECT MAR-TEST IgA (%) (3 or 10 minute) [<50]	O	1
1 or 0	DIRMAR1	DirMarTestIgG	@	DIRECT MAR-TEST IgG (%) (3 or 10 minute) [<50]	O	1
1 or 0	FVOL	FinalVol	0.00	FINAL VOL.	O	1
1 or 0	VOLF	VolFinalWht	0.00	FINAL WEIGHT	O	1
1 or 0	DFI	DNADFI	0.00	DNA FREGMENTATION INDEX DFI	O	1

Transfer Flag	Field Code	Field Name in MES Data Base	Format	Description	Msg Type	Rec. Type
1 or 0	FRUC	Fructose	@	FRUCTOSE (μmol per ejaculate) [≥ 13]	O	1
1 or 0	FSC	FSC	0.0	FUNCTIONAL SEPRM CONC.	O	1
1 or 0	FUNCSPE	FuncSperm	0.0	FUNCTIONAL SPERM	O	1
1 or 0	DNAF	DNAFregp	0.0	FREGMENTED DNA - No Halo	O	1
1 or 0	DNADG	DNADegradedp	0.0	FREGMENTED DNA - No Halo Degraded		
1 or 0	AGLUC	Glucos	@	GLUCOSIDASE (NEUTRAL) (mU per ejaculate) [≥ 20]	O	1
1 or 0	IMMOT5	Immotility5	0	WHO 5 TH : IMMOTILE IM	O	1
1 or 0	PVIMM	PV_Immotile	0.00	IMMOTILE SPERM (PV)	O	1
1 or 0	IMMOT	Immotility	0.0	WHO 3 RD /4 TH : IMMOTILITY d: WHO 6 TH : IMMOTILE	O	1
1 or 0	IVOL	INTVol	0.00	INITIAL VOL.	O	1
1 or 0	LES	TestLES	0	LES 1 - US 2 - ROW	O	1
1 or 0	LIQ	Liquefaction	0	LIQUEFACTION 1 - 0-30 MINUTES 2 - 30-60 MINUTES 3 - 60+ MINUTES 4 - NA	O	1
1 or 0	LONGID	LongID	0	LONGEVITY ID	O	1
1 or 0	LONGS	LongStep	0	LONGEVITY STEP	O	1
1 or 0	MEDI	Mediacation	@	MEDICATION	O	1
1 or 0	MORPHSPE	MorphSperm	0.0	MORPH. NORMAL SPERM	O	1
1 or 0	MOTSPE	MotileSperm	0.0	MOTILE SPERM	O	1
1 or 0	PVMOT	PV_Motile	0.00	MOTILE SPERM (PV)	O	1
1 or 0	MOT	Motility	0.0	WHO 3 RD /4 TH /WHO 6 TH : MOTILITY	O	1
1 or 0	MSC	MSC	0.0	MOTILE SPERM CONC.	O	1
1 or 0	MURL	MorphDec	0.0	Morphology Upper Range Limit (MURL)	O	1
1 OR 0	DNANF	DNADegradedp	0.0	NON-FREGMENTED DNA - Halo / Large Halo	O	1
1 OR 0	DNANF	DNANonFregMedp	0.0	NON-FREGMENTED DNA - Medium Halo	O	1
1 OR 0	DNANFS	DNANonFregSmp	0.0	NON-FREGMENTED DNA - Small Halo	O	1
1 or 0	NPMOT	Nonprog	0.0	WHO 3 RD /4 TH : NON-PROGRESSIVE c WHO 6 TH : NON-PROGRESSIVE	O	1
1 or 0	NPMOT5	Nonprog5	0	WHO 5 TH : NON-PROGRESSIVE NP	O	1
1 or 0	NLMORPH	Morph	0.0	NORMAL FORMS	O	1
1 or 0	MORPHA	MorphAuto	0.0	NORMAL FORMS (Automatic value)	O	1
1 or 0	OPT1	OI1	@	OPTIONAL 1	O	1
1 or 0	OPT2	OI2	@	OPTIONAL 2	O	1
1 or 0	OIN1	UF1	@	OPTIONAL INPUT 1	O	1
1 or 0	OIN2	UF2	@	OPTIONAL INPUT 2	O	1
1 or 0	OIN3	UF3	@	OPTIONAL INPUT 3	O	1

Transfer Flag	Field Code	Field Name in MES Data Base	Format	Description	Msg Type	Rec. Type
1 or 0	OIN4	UF4	@	OPTIONAL INPUT 4	O	1
1 or 0	PEROX	PeroPos	@	PEROXIDASE-POSITIVE LEUKOCYTES (M/ml)	O	1
1 or 0	PH	PH	0.0	pH	O	1
1 or 0	AB10	MorphAB10p	0.0	PINHEAD	O	1
1 or 0	PMOTSPE	ProgMotile	0.0	PROG. MOTILE SPERM	O	1
1 or 0	PMSC	PMSC	0.0	PROG. MOTILE SPERM CONC.	O	1
1 or 0	PMSCA	PMSCA	0.0	WHO 3 RD /4 TH : PROG. MOTILE SPERM CONC. A WHO 6 TH : RAPID PR MOTILE SPERM CONC.	O	1
1 or 0	PMSCB	PMSCB	0.0	WHO 3 RD /4 TH : PROG. MOTILE SPERM CONC. B WHO 6 TH : SLOW PR MOTILE SPERM CONC.	O	1
1 or 0	PMOT	PMOT	0.0	WHO 5 TH : PROGRESSIVE PR	O	1
1 or 0	PMOTA	PMOTA	0.0	WHO 3 RD /4 TH : RAPID PROGRESSIVE a WHO 6 TH : RAPIDLY PROGRESSIVE	O	1
1 or 0	RECEDATE	RecDate	MM/DD/YY	RECEIVED DATE / TIME	O	1
1 or 0	RECETIME	RecDate	HH:mm	RECEIVED TIME	O	1
1 or 0	TESTM	TestMode	0	SAMPLE TESTED 1- FULL VOLUME 2- DILUTED 1+1 3- 10 MICROLITERS	O	1
1 or 0	SEMTRE	Treat	@	SEMEN TREATMENT (e.g. BROMELAIN / CHYMOTRYPSIN)	O	1
1 or 0	PMOTB	PMOTB	0.0	WHO 3 RD /4 TH : SLOW PROGRESSIVE b WHO 6 TH : SLOWLY PROGRESSIVE	O	1
1 or 0	TSPE	TotalSperm	0.0	SPERM #	O	1
1 or 0	SMI	SMI	0	SPERM MOTILITY INDEX	O	1
1 or 0	ADT	TestDate	MM/DD/YY	TEST DATE / TIME	O	1
1 or 0	ATM	TestDate	HH:mm	TEST TIME	O	1
1 or 0	TRB	UserFullName	@	TEST RUN BY	O	1
1 or 0	SAMTY	SampleType	0	TEST TYPE 1 – FRESH 2 – WASHED 3 – FROZEN 4 - POST VASECTOMY 5 – LONGEVITY 6 - SWIM UP 7 – MANUAL 8 – GRADIENT 9 – NONE 10 – DOSING 11 – ART PREP	O	1
1 or 0	PVTETY	PV_TestType	0	TEST TYPE (PV) 1 – ROW 2- CENTRIFUGED (Step 1) 3- CENTRIFUGED (Step 2)	O	1
1 or 0	PVTEMO	PV_Mode	0	TEST MODE (PV) 1- Only Automated 2- Manual 3-Semi Auto	O	1
1 or 0	MOT5	Motility5	0	WHO 5 TH : TOTAL MOTILE PR + NP	O	1
1 or 0	PVTOTMOT	PV_Total	0.00	TOTAL SPERM (PV)	O	1

Transfer Flag	Field Code	Field Name in MES Data Base	Format	Description	Msg Type	Rec. Type
1 or 0	VELOC	Velocity	0	VELOCITY	O	1
1 or 0	VISC	Viscosity	0	VISCOSITY 1 - NORMAL 2 - ABNORMAL 3 - DECREASED	O	1
1 or 0	VITD	ViabDeadp	0.0	VITALITY (DEAD)	O	1
1 or 0	VIT	ViabLivep	0.0	VITALITY (LIVE)	O	1
1 or 0	VOL	Volume	0.00	VOLUME	O	1
1 or 0	WBCCONC	WBCConc	0	WBC CONC. 1 - <1 2 - >=1	O	1
1 or 0	ZINC	Zinc	@	ZINC (µmol per ejaculate) [>=2.4]	O	1
Main Control Data						
AUTOMATIC	SID	Serial_Number	String	Number identifying the device	P	2
AUTOMATIC	RTY	Record Type	0	Record Type: 0 -Test 1 - Control	P	2
AUTOMATIC	FIC	Fields count	0	# Fields in 1 record transferred to LIS	P	2
Controls Data						
AUTOMATIC	FIC	Fields count	0	# Fields in 1 record transferred to LIS	O	2
1 or 0	CTM	ControlDate	HH:MM	Time the control test was run	O	2
1 or 0	CDT	ControlDate	MM/DD/YY	Date the control test was run	O	2
1 or 0	CLEV	ControlLevel	0	Control Level: 1 - Level 1 2 - level 2 3 - Negative Control/Level 3	O	2
1 or 0	CTY	ControlType	0	Control Type: 1 - Latex-beads 2 - Stabilized Sperm 3 - Proficiency	O	2
1 or 0	LOT	ControlLot	String	Lot Number	O	2
1 or 0	EXD	ControlExpDate	MM/YY	Expire Date	O	2
1 or 0	TAR	ControlTargetVal	0.0	Target Value	O	2
1 or 0	RAN	ControlRangeVal	0.0	Range +/-	O	2
1 or 0	CTSC	ControlTSC	0.0	Conc. Results	O	2
1 or 0	RST	ControlOverRange	0	Range Status 0 - Pass 1 - High 2 - Low 3 - NA	O	2
1 or 0	COA	CorrectiveAction	0.0	Corrective Action	O	2
1 or 0	CMSC	MSC	0.0	MSC	O	2
1 or 0	STY	StandardType	0	Standard Type 1 - CAP 2 - NEQAS	O	2