Dräger

Software Protocol

Export Data Description for Jaundice Meter JM-105

WARNING
For a full understanding of this software protocol, the user should carefully read this document as well as the Instructions for Use of the basic device.

Data transmission software JM-S1w Software 1.n

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For Your Safety and that of Your Patients

Strictly follow the instructions for use

Any use of the Software Protocol requires full understanding and strict observation of the instructions for use of Jaundice Meter JM-105.

Description

The jaundice meter, JM-105, can transmit measurement data to a PC using the data transmission software, JM-S1w. The data is sent to an electronic health record system (EHRS) using the health level 7 (HL7) data format/communication protocol. The software can also save the data to a comma-separated value (CSV) file.

This document describes respective HL7 messages exchanged with the EHRS. It also describes the contents of a CSV file.

CSV file description

The CSV file is a text file with data sets that contain data fields separated by commas, or semicolons depending on the regional settings of the PC. Each data set is entered as a separate line in the file.

CSV data set description

An example of a CSV file is provided. The table describes each value within the file.

Example:

```
B_5,N_1,3501002,20130529145640,25,umol/l,20130529145648,38,umol/l,
20130529145657,18,umol/l,NORMAL,NOT,
```

No.	Data field description	Format	Example
0	Baby ID	<baby id>	B_5
1	Nurse ID	<nurse id>	N_1
2	Instrument ID	<device id>	3501002
3	Measurement 1 - Date/Time	YYYYMMDDHHMMSS	2013-05-29 14:56:40
4	Measurement 1 - Value	<value>	25
5	Measurement 1 - Unit	"umol/l", "mg/dl"	umol/l
6	Measurement 2 - Date/Time	YYYYMMDDHHMMSS	2013-05-29 14:56:48
7	Measurement 2 - Value	<value>	38
8	Measurement 2 - Unit	"umol/l", "mg/dl"	umol/l
9	Measurement 3 - Date/Time	YYYYMMDDHHMMSS	2013-05-29 14:56:57
10	Measurement 3 - Value	<value>	18
11	Measurement 3 - Unit	"umol/l", "mg/dl"	umol/l
12	Priority flag	"NORMAL" , "HIGH"	NORMAL
13	Not used - for future use	...	...

HL7 interface description

The jaundice meter communicates with the EHRS using the TCP/IP communication protocol. The connection destination is specified using an IPV4 IP address or host name. Additionally, the communication destination port can be set within the setting dialog.

NOTE

The start-up value in the setting dialog is the HL7 standard port 2575. Proxy cannot be used.

Communication with the EHRS complies with HL7 versions 2.3.1 or 2.5.1.

If communication with the EHRS times out, the data file is saved. The device attempts to retransmit after a selected time period. The results of communication with the EHRS are stored in a log file.

The JM-S1w software is compatible with HL7 version 2.3.1 or version 2.5.1.

The JM-S1w software is compatible with the ORU^R01 of version 2.3.1 and the OUL^R22 of version 2.5.1.

Log file location

Operating system	File location
Windows 7/8.1/10	c:\ProgramData\Draeger\JM-S1w\

HL7 version 2.3.1

Example messages

Messages sent by the JM-S1w software:

MSH|^~\&|JM-S1w|Nursery|LIS System|Lab.|20130628150906| |ORU^R01|20130628150906-0005|P|2.3.1^US|||||ASCII
PID|||231||^^^^^^L
OBR|1|||01^Jaundice^99OP1|||20130628200811|||3501002^ ^ ^^^^^^^U^^^^^A|||||||||||20130628200811|||F
OBX|1|SN|01^Jaundice^99OP1|1|^3.2|mg/dl|||||F|||20130628200811| |N_1^ ^ ^^^^^^^U^^^^^A
OBX|2|CE|02^Priority^99OP1|1|02^HIGH^99OP2||||||F
OBX|3|CE|03^Phototherapy^99OP1|1|01^YES^99OP3||||||F
OBX|4|SN|01^Jaundice^99OP1|2|^1.3|mg/dl|||||F|||20130628200814| |N_1^ ^ ^^^^^^^U^^^^^A
OBX|5|CE|02^Priority^99OP1|2|02^HIGH^99OP2||||||F
OBX|6|CE|03^Phototherapy^99OP1|2|01^YES^99OP3||||||F
OBX|7|SN|01^Jaundice^99OP1|3|^0.8|mg/dl|||||F|||20130628200816| |N_1^ ^ ^^^^^^^U^^^^^A
OBX|8|CE|02^Priority^99OP1|3|02^HIGH^99OP2||||||F
OBX|9|CE|03^Phototherapy^99OP1|3|01^YES^99OP3||||||F

Messages received by the JM-S1w software:

MSH|^~\&|CMDB|Server|JM-S1w|Nursery|20130628210826||ACK|1|P|2.2
MSA|AA|20130628150906-0005|CMDB hat die Nachricht gespeichert!

Transmitted message format

Message header segment (MSH)

Seq.	Element name	Example	Comment
1	Field separator	|	
2	Encoding characters	^~\&	
3	Sending application	JM-S1w	
4	Sending facility	Nursery	
5	Receiving application	LIS system	
6	Receiving facility	Lab.	
7	Date/Time of message	20130628150906	Date/time message sent, YYYYMMDDHHMMSS
8	Security		
9	Message type	ORU^R01	
10	Message control ID	20130628150906-0005	
11	Processing ID	P	
12	Version ID	2.3.1^US	
13	Sequence number		
14	Continuation pointer		
15	Accept acknowledgement type		
16	Application acknowledgement type		
17	Country code		
18	Character set	ASCII	

Patient identification segment (PID)

Seq.	Element name	Example	Comment
1	Set ID - Patient ID		
2	Patient ID (External ID)		
3	Patient ID (Internal ID)	231	Baby ID
4	Alternate Patient ID - PID		
5	Patient name	^^^^^^L	

Observation request segment (OBR)

Seq.	Element name	Example	Comment
1	Set ID - OBR	1	Measurement set ID
2	Placer order number		
3	Filler order number		
4	Universal service ID	01^Jaundice^99OP1	
5	Priority		
6	Requested date/time		
7	Observation date/time	20130628200811	Date/time of measurement, YYYYMMDDHHMMSS
8	Observation end date/time		
9	Collection volume		
10	Collector identifier	3501002^ ^ ^^^^^^^U^^^^^A	Instrument ID
11	Specimen action code		
12	Danger code		
13	Relevant clinical info.		
14	Specimen received date/time		
15	Specimen source		
16	Ordering provider		
17	Order callback phone number		
18	Placer field 1		
19	Placer field 2		
20	Filler field 1		
21	Filler field 2		
22	Results Rpt/Status Chng - Date/Time	20130628200811	Date/time of measurement, YYYYMMDDHHMMSS
23	Charge to practice		
24	Diagnostic serv sect ID		
25	Result status	F	
26	Parent result		

Observation/result segment (OBX - measurement value)

Seq.	Element name	Example	Comment
1	Set ID - OBX	1	Measurement set ID
2	Value type	SN	
3	Observation Identifier	01^Jaundice^99OP1	
4	Observation Sub-ID	1	Measurement sub ID
5	Observation Value	^3.2	<value>
6	Units	mg/dl	<unit>
7	References Range		
8	Abnormal Flags		
9	Probability		
10	Nature of Abnormal Test		
11	Observ Result Status	F	
12	Date Last Obs Normal Values		
13	User Defined Access Checks		
14	Date/Time of the Observation	20130628200811	Date/time of measurement, YYYYMMDDHHMMSS
15	Producer's ID		
16	Responsible Observer	N_1^ ^ ^^^^^^^U^^^^^A	Nurse ID
17	Observation Method		

Observation/result segment (OBX - additional data)

Seq.	Element name	Example	Comment
1	Set ID - OBX	2	
2	Value type	CE	
3	Observation Identifier	02^Priority^99OP1	Additional data name
4	Observation Sub-ID	1	Measurement sub ID
5	Observation Value	02^HIGH^99OP2	<add. data value>
6	Units	mg/dl	
7	References Range		
8	Abnormal Flags		
9	Probability		
10	Nature of Abnormal Test		
11	Observ Result Status	F	

Received message format

JM-S1w accepts acknowledge message with MSH MSA.

Message header segment (MSH)

Seq.	Element name	Required	Example	Comment
1	Field separator		|	
2	Encoding characters		^~\&	
3	Sending application		CMDB	
4	Sending facility		Server	
5	Receiving application		JM-S1w	
6	Receiving facility		Nursery	
7	Date/Time Of Message	Y	20130628210826	Date/time message sent, YYYYMMDDHHMMSS
8	Security			
9	Message type	Y	ACK	Accept ACK R01 or ACK R22
10	Message control ID	Y	1	
11	Processing ID	Y	P	D or P or T
12	Version ID	Y	2.2	2, 2.1, 2.2, 2.3, 2.3.1, 2.4, 2.5, 2.5.1
13	Sequence number			
14	Continuation pointer			
15	Accept acknowledgment type			
16	Application acknowledg-ment type			
17	Country code			
18	Character set			
19	Principal language of message			
20	Alternate character set handling scheme			
21	Message profile identifier			

Message segment (MSA)

Seq.	Element name	Required	Example	Comment
1	Acknowledgement code	Y	AA	AA,AE,AR,CA,CE,CR
2	Message control ID	Y	20130628150906-0005	Must be same as sent message
3	Text message		Message saved!	
4	Expected sequence number			
5	Delayed acknowledgement type			
6	Error condition			

NOTE

The JM-S1w software displays an error message in several instances: when it receives an acknowledge code of AE or AR, when it receives an unknown error code, or when it fails to parse the acknowledge message.

HL7 version 2.5.1

Example messages

Messages sent by the JM-S1w software:

MSH|^~\&|JM-S1w|Nursery|LIS System|Lab.|20130628145646| |OUL^R22^OUL_R22|20130628145646-0001|P|2.5.1^US||||||ASCII
PID|||251||^^^^^^L
SPM|1|||FOREH||||||||||||20130628195539
OBX|1|SN|01^Jaundice^99OP1|1|^1.1|mg/dl|||||F|||20130628195539||N_1^ ^ ^^^^^^^U^^^^^A||3501002
OBX|2|CE|02^Priority^99OP1|1|01^NORMAL^99OP2||||||F
OBX|3|CE|03^Phototherapy^99OP1|1|00^NO^99OP3||||||F
OBX|4|SN|01^Jaundice^99OP1|2|^2.5|mg/dl|||||F|||20130628195542||N_1^ ^ ^^^^^^^U^^^^^A||3501002
OBX|5|CE|02^Priority^99OP1|2|01^NORMAL^99OP2||||||F
OBX|6|CE|03^Phototherapy^99OP1|2|00^NO^99OP3||||||F
OBX|7|SN|01^Jaundice^99OP1|3|^2.6|mg/dl|||||F|||20130628195544||N_1^ ^ ^^^^^^^U^^^^^A||3501002
OBX|8|CE|02^Priority^99OP1|3|01^NORMAL^99OP2||||||F
OBX|9|CE|03^Phototherapy^99OP1|3|00^NO^99OP3||||||F
OBR|1|||01^Jaundice^99OP1|||20130628195539|||||||||||||| 20130628195539|||F
ORC|CN||||CM|||||||||||||||||||||||I

Messages received by the JM-S1w software:

MSH|^~\&|CMDB|Server|JM-S1w|Nursery|20130628210826||ACK|1|P|2.2
MSA|AA|20130628150906-0005|CMDB hat die Nachricht gespeichert!

Transmitted message format

Message header segment (MSH)

Seq.	Element name	Example	Comment
1	Field separator	|	
2	Encoding characters	^~\&	
3	Sending application	JM-S1w	
4	Sending facility	Nursery	
5	Receiving application	LIS system	
6	Receiving facility	Lab.	
7	Date/Time of message	20130628145646	
8	Security		
9	Message type	OUL^R22^OUL_R22	
10	Message control ID	20130628145646-0001	
11	Processing ID	P	
12	Version ID	2.5.1^US	
13	Sequence number		
14	Continuation pointer		
15	Accept acknowledgement type		
16	Application acknowledgement type		
17	Country code		
18	Character set	ASCII	

Patient identification segment (PID)

Seq.	Element name	Example	Comment
1	Set ID - Patient ID		
2	Patient ID		
3	Patient identifier list	251	Baby ID
4	Alternate Patient ID - PID		
5	Patient name	^^^^^^L	

Specimen probe information (SPM)

Seq.	Element name	Example	Comment
1	Set ID - SPM	1	Measurement set ID
2	Specimen ID		
3	Specimen parent IDs		
4	Specimen type	FOREH	
5	Specimen type modifier		
6	Specimen additives		
7	Specimen collection method		
8	Specimen source site		
9	Specimen source site modifier		
10	Specimen collection site		
11	Specimen role		
12	Specimen collection amount		
13	Grouped specimen count		
14	Specimen description		
15	Specimen handling code		
16	Specimen risk code		
17	Specimen collection date/time	20130628195539	Date/time of measurement, YYYYMMDDHHMMSS

Observation/result segment (OBX - measurement value)

Seq.	Element name	Example	Comment
1	Set ID - OBX	1	Measurement set ID
2	Value type	SN	
3	Observation Identifier	01^Jaundice^99OP1	
4	Observation Sub-ID	1	Measurement sub ID
5	Observation Value	^1.1	<value>
6	Units	mg/dl	<unit>
7	References Range		
8	Abnormal Flags		
9	Probability		
10	Nature of Abnormal Test		
11	Observ Result Status	F	
12	Date Last Obs Normal Values		
13	User Defined Access Checks		
14	Date/Time of the Observation	20130628195539	Date/time of measurement, YYYYMMDDHHMMSS
15	Producer's ID		
16	Responsible Observer	N_1^ ^ ^^^^^^^U^^^^^A	Nurse ID
17	Observation Method		
18	Equipment Instance Identifier	3501002	Instrument ID

Observation/result segment (OBX - additional data)

Seq.	Element name	Example	Comment
1	Set ID - OBX	2	
2	Value type	CE	
3	Observation Identifier	02^Priority^99OP1	Additional data name
4	Observation Sub-ID	1	Measurement sub ID
5	Observation Value	01^NORMAL^99OP2	<add. data value>
6	Units		
7	References Range		
8	Abnormal Flags		
9	Probability		
10	Nature of Abnormal Test		
11	Observ Result Status	F	

Observation request segment (OBR)

Seq.	Element name	Example	Comment
1	Set ID - OBR	1	Measurement sub ID
2	Placer order number		
3	Filler order number		
4	Universal service identifier	01^Jaundice^99OP1	
5	Priority_OBR		
6	Requested date/time		
7	Observation date/time	20130628195539	Date/time of measurement, YYYYMMDDHHMMSS
8	Observation end date/time		
9	Collection volume		
10	Collector identifier		
11	Specimen action code		
12	Danger code		
13	Relevant clinical information		
14	Specimen received date/time		
15	Specimen source		
16	Ordering provider		
17	Order callback phone number		
18	Placer field 1		
19	Placer field 2		
20	Filler field 1		
21	Filler field 2		
22	Results Rpt/Status Chng - Date/Time	20130628195539	Date/time of measurement, YYYYMMDDHHMMSS
23	Charge to practice		
24	Diagnostic serv sect ID		
25	Result status	F	

Common order segment (ORC)

Seq.	Element name	Example	Comment
1	Order control	CN	Combined result
2	Placer order number		
3	Filler order number		
4	Placer group number		
5	Order status	CM	Order is completed
6	Response flag		
7	Quantity/timing		
8	Parent		
9	Date/Time of transaction		
10	Entered by		
11	Verified by		
12	Ordering provider		
13	Enterer’s location		
14	Callback phone number		
15	Order effective date/time		
16	Order control code reason		
17	Entering organization		
18	Entering device		
19	Action by		
20	Advanced beneficiary notice code		
21	Ordering facility name		
22	Ordering facility address		
23	Ordering facility phone number		
24	Ordering provider address		
25	Order status modifier		
26	Advanced beneficiary notice over-ride reason		
27	Filler's expected availability date/time		
28	Confidentiality code		
29	Order type		

Received message format

JM-S1w accepts acknowledge message with MSH MSA ERR*.

NOTE
The ERR field does not affect the behavior of the JM-S1w software.

Message header segment (MSH)

Seq.	Element name	Required	Example	Comment
1	Field separator		|	
2	Encoding characters		^~\&	
3	Sending application		CMDB	
4	Sending facility		Server	
5	Receiving application		JM-S1w	
6	Receiving facility		Nursery	
7	Date/time of message	Y	20130628205603	YYYYMMDDHHMMSS
8	Security			
9	Message type	Y	ACK	Accept ACK R01 or ACK R22
10	Message control ID	Y	1	
11	Processing ID	Y	P	D or P or T
12	Version ID	Y	2.2	2, 2.1, 2.2, 2.3, 2.3.1, 2.4, 2.5, 2.5.1
13	Sequence number			
14	Continuation pointer			
15	Accept acknowledgment type			
16	Application acknowledgment type			
17	Country code			
18	Character set			
19	Principal language of message			
20	Alternate character set handling scheme			
21	Message profile identifier			

Message segment (MSA)

Seq.	Element name	Required	Example	Comment
1	Acknowledgement code	Y	AA	AA,AE,AR,CA,CE,CR
2	Message control ID	Y	20130628145646-0001	Must be same as sent message
3	Text message		CMDB hat die Nachricht gespeichert!	
4	Expected sequence number			
5	Delayed acknowledgement type			
6	Error condition			

NOTE

The JM-S1w software displays an error message in several instances: when it receives an acknowledge code of AE or AR, when it receives an unknown error code, or when it fails to parse the acknowledge message.

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