



Lab HL7 Bi-Directional HL7 Specifications

October 2014

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Introduction

PowerSoftMD uses HL7 2.3.1 specifications. The following pages outline our requirements for both Lab Order Requests and Lab Result files.

PowerSoftMD itself does not transmit or receive Message segments. Data Tec does not install, set up, train, endorse, or support any hardware or software used for Lab and Client Communications. The lab company is responsible for setting up a secure folder on the Clients (Doctors Office) computer to send and receive files from. This folder must be on the same Windows shared drive as the PowerSoftMD folders are located.

We recommend a structured folder names, for example:

H:\LabCompanyName\LabOrders

H:\LabCompanyName\LabResults

The lab company might use a VPN or service like HyperSend. Whatever is agreeable with the Client (Doctors Office) and is encrypted and secure to HIPPA standards. Another potential service you could check out is: [LogMeIn Hamachi](#)

Again, the secure transmission is between the Lab Company and the Client (Doctors Office), Data Tec is not involved or responsible for this link or transmission service in any way.

PowerSoftMD will place Order HL7 files in the LabOrders sub-folder, and allow the Client (Doctors Office) to monitor and pick up lab results from the LabResults sub-folder.

Note: We do not install, set up, train, endorse, or support any hardware or software used for Lab and Client Communications.

Technical Basics

Message delivery: Data Tec is not responsible for data delivery or pickup. We look for and leave messages in specified local computer directories.

Standard HL7 message structure,

Segment delimiters <CR>

Messages delimiters <LF>

| - field delimiter

^ - component delimiter

~ - repeat delimiter

\ - escape character

& - sub-component delimiter

The following escape fields are defined.

\H\ start highlighting (Not used)

\N\ normal text (end highlighting) (not used)

\F\ field separator character

\S\ component separator character

\T\ subcomponent separator character

\R\ repetition separator character

\E\ escape character

\Xdddd...\ hexadecimal data (not used)

No Acknowledgement messages are utilized, so as a standard, files should be read & verified before being deleted.

Segments in [] square brackets are optional, { } Curly brackets are repeatable

Order Requests	Result Messages
Message Type = ORM^O01 Segments ----- MSH PID [NTE] [PV1] [{IN1}] [{GT1}] {DG1} ORC {OBR [{OBX}] [{NTE}]}	Message Type = ORU^R01 Segments ----- MSH PID [{NTE}] {ORC OBR [{NTE}] {OBX [{NTE}]}

NTE Segments following an OBX segment will be displayed to clients with that observation, all other NTE segment info will be displayed before observation info.

Order Request Breakdown

MSH Breakdown - Request

Field	Required	Use	Example/Format	Length
MSH-0	Yes	Identify Segment	'MSH'	3
MSH-1	Yes	Separate Field	' '	1
MSH-2	Yes	Special use Characters	'^~\&'	4
MSH-3	Yes	Identify Sending App	'PowerSoft MD'	15
MSH-4	Yes	Identify Client	AlphaNumeric	10
MSH-5	Yes	Identify Recipient Company	AlphNumeric	15
MSH-6	Yes	Identify Recipient Location	AlphaNumeric	15
MSH-7	Yes	Date/Time of Message	yyyymmddhhmm	12
MSH-8	No	Not Used		
MSH-9	Yes	Type of Message Sent	'ORM'	3
MSH-10	No	Not Used		
MSH-11	Yes	Production or Test	'P' or 'T'	1
MSH-12	Yes	HL7 Spec Version	'2.3.1'	5
MSH-13	No	Not Used		
MSH-14	No	Not Used		
MSH-15	No	Not Used		
MSH-16	No	Not Used		
MSH-17	No	Country Code	'US'	2
MSH-18	No	Character Set	'ASCII'	10
MSH-19	No	Principal Language	'en'	60

Note: Items enclosed between single apostrophizes (') are examples

PID Breakdown - Request

Field	Required	Use	Example/Format	Length
PID-0	Yes	Identify Segment	'PID'	3
PID-1	Yes	Sequence Number	'1'	1
PID-2	Yes	PSMD* Patient ID	Numeric	20
PID-3	Yes	PSMD* Patient ID	Numeric	20
PID-4	No	Lab Patient ID	AlphaNumeric	20
PID-5	Yes	Patient Name	Last^First^Middle Initial	25^15^15
PID-6	No	Not Used		
PID-7	Yes	Patient Date of Birth	yyyymmdd	8
PID-8	Yes	Patient Gender	'M', 'F', 'N' or 'U'	1
PID-9	No	Not Used		
PID-10	Yes	Patient Race	'A', 'B', 'C', 'H', 'I', 'O', 'U'	1
PID-11	Yes	Patient Address	Line1^Line2^City^State^Zip	35^35^16^2^9
PID-12	No	Not Used		
PID-13	No	Patient Home Phone	'1234567890'	10
PID-14	No	Patient Work Phone	'1234567890'	10
PID-15	No	Not Used		
PID-16	No	Not Used		
PID-17	No	Not Used		
PID-18	No	ID of client office with Lab and Billing Responsibility	ClientID^^^BillingResp Billing Resp: (1 character) 'C' = Client 'P' = Patient 'T' = Third Party	10^^^1
PID-19	No	Patient SSN	'123456789'	9
PID-20	No	Not Used		
PID-21	No	Not Used		
PID-22	No	Ethnic Group	'H', 'N', or 'U'	1

Notes: Items enclosed between single apostrophizes (') are examples

*PSMD - PowerSoftMD

PV1 Breakdown - Request

Field	Required	Use	Example/Format	Length
PV1-0	Yes	Identify Segment	'PV1'	3
PV1-1	Yes	Sequence Number	'1'	1
PV1-2	No	Not Used		
PV1-3	No	Not Used		
PV1-4	No	Not Used		
PV1-5	No	Not Used		
PV1-6	No	Not Used		
PV1-7	Yes	Physician Identification	PhysicianID^LName^FName^MInitial ^^^^IDType('N' = NPI)	20^25^15^1 ^^^^1

Note: Items enclosed between single apostrophizes (') are examples

IN1 Breakdown - Request

Field	Required	Use	Example/Format	Length
IN1-0	Yes	Identify Segment	'IN1'	3
IN1-1	Yes	Sequence Number	'1' or '2'	1
IN1-2	No	Not Used		
IN1-3	Yes	Carrier ID w/Lab	Blank^Carrier Code(A-Z,0-9)	0^5
IN1-4	Yes	Carrier Name	AlphaNumeric	30
IN1-5	Yes	Carrier Address	Street^Line2^City^State^Zip	35^35^16^2^9
IN1-6	No	Not Used		
IN1-7	No	Not Used		
IN1-8	Yes	Insured Group #	AlphaNumeric	15
IN1-9	No	Not Used		
IN1-10	No	Not Used		
IN1-11	Yes	Group Employer Name	AlphaNumeric	15
IN1-12	No	Not Used		
IN1-13	No	Not Used		
IN1-14	No	Not Used		
IN1-15	No	Not Used		
IN1-16	No	Name of Insured	Last^First^Middle	25^15^15
IN1-17	Yes	Insured Relation to Patient	'1' Self '2' Spouse '3' Other '4' Child '5' Parent '7' Employee '6' Sponsored Dependent	1
IN1-18	No	Not Used		
IN1-19	No	Not Used		
IN1-20	No	Not Used		
IN1-21	No	Not Used		
IN1-22	No	Not Used		
IN1-23	No	Not Used		
IN1-24	No	Not Used		
IN1-25	No	Not Used		
IN1-26	No	Not Used		
IN1-27	No	Not Used		
IN1-28	No	Not Used		
IN1-29	No	Not Used		
IN1-30	No	Not Used		
IN1-31	Yes	Worker Comp Flag	'Y' or 'N'	1
IN1-32	No	Not Used		
IN1-33	No	Not Used		
IN1-34	No	Not Used		
IN1-35	No	Not Used		
IN1-36	Yes	Policy Number	AlphaNumeric	25

Note: Items enclosed between single apostrophizes (') are examples

GT1 Breakdown - Request

Field	Required	Use	Example/Format	Length
GT1-0	Yes	Identify Segment	'GT1'	3
GT1-1	Yes	Sequence Number	'1'	1
GT1-2	No	Not Used		
GT1-3	Yes	Guarantor Name	Last^First^Middle	25^15^1
GT1-4	No	Not Used		
GT1-5	Yes	Guarantor Address	Street^Line2^City^State^Zip	35^35^16^2^9
GT1-6	Yes	Guarantor Phone	Numeric	10
GT1-7	No	Not Used		
GT1-8	No	Not Used		
GT1-9	No	Not Used		
GT1-10	No	Not Used		
GT1-11	Yes	Relation to Patient	'1' Self '3' Other	1
GT1-12	No	Not Used		
GT1-13	No	Not Used		
GT1-14	No	Not Used		
GT1-15	No	Not Used		
GT1-16	No	Guarantor Employer	AlphaNumeric	15

Note: Items enclosed between single apostrophizes (') are examples

DG1 Breakdown - Request

Field	Required	Use	Example/Format	Length
DG1-0	Yes	Identify Segment	'DG1'	3
DG1-1	Yes	Sequence #	Numeric, 1-8	1
DG1-2	No	Not Used		
DG1-3	Yes	Diagnosis Code	Identifier^Description^CodingSys I9 – ICD9 or I10 - ICD10	8^49^3

Note: Items enclosed between single apostrophizes (') are examples

ORC Breakdown - Request

Field	Required	Use	Example/Format	Length
ORC-0	Yes	Identify Segment	'ORC'	3
ORC -1	Yes	New Orders Flag	'NW'	2
ORC -2	Yes	Order/Spec. ID	Alphanumeric	30
ORC -3	No	Not Used		
ORC -4	No	Not Used		
ORC -5	No	Not Used		
ORC -6	No	Not Used		
ORC -7	No	Not Used		
ORC -8	No	Not Used		
ORC -9	No	Order Date/Time	yyyymmddhhmm	12
ORC -10	No	Not Used		
ORC -11	No	Not Used		
ORC -12	Yes	Ordering Provider	ID^LName^First^Middle ^^^^IDType	20^25^15^1^^^^1

Note: Items enclosed between single apostrophizes (') are examples

OBR Breakdown - Request

Field	Required	Use	Example/Format	Length
OBR-0	Yes	Identify Segment	'OBR'	3
OBR-1	Yes	Sequence Number	Numeric	4
OBR-2	Yes	Specimen ID	AlphaNumeric	30
OBR-3	No	Not Used		
OBR-4	Yes	Lab Test ID	Code^Name^CodeSystem	15^30^5
OBR-5	No	Not Used		
OBR-6	No	Not Used		
OBR-7	Yes	Spec. Collect Time	yyyymmddhhmm	12
OBR-8	No	Not Used		
OBR-9	No	Collected Volume	Number^UnitOfMeasure	4^10
OBR-10	No	Not Used		
OBR-11	Yes	Action Code	'N'	1
OBR-12	No	Not Used		
OBR-13	No	Clinical Info	AlphaNumeric	64
OBR-14	No	Not Used		
OBR-15	No	Specimen Source	AlphaNumeric	26
OBR-16	Yes	Ordering Provider	ID^LName^First^Middle^^^^ IDType	20^25^15^1^^^^1
OBR-27	No	Priority of Request	'^^^^^S' S-Stat R-Regular	1

Note: Items enclosed between single apostrophizes (') are examples

NTE Breakdown - Request

Field	Required	Use	Example/Format	Length
NTE-0	Yes	Identify Segment	'NTE'	3
NTE-1	Yes	Sequence #	Numeric	4
NTE-2	Yes	Comment Source	'P' Placer	1
NTE-3	Yes	Comment Text	AlphaNumeric	Unlimited

OBX Breakdown – Request (AOE Information)

Field	Required	Use	Example/Format	Length
OBX-0	Yes	Identify Segment	'OBX'	3
OBX-1	Yes	Sequence #	Numeric	4
OBX-2	Yes	Indicates Text	'TX'	2
OBX-3	Yes	AOE Title	'808401^Specimen Type' AlphaNumeric	Unlimited
OBX-4	No	Not Used		
OBX-5	Yes	AOE Value	'Blood' AlphaNumeric	Unlimited

Note: Items enclosed between single apostrophizes (') are examples

Result Breakdown

MSH Breakdown

Field	Required	Use	Example/Format	Length
MSH-0	Yes	Identify Segment	'MSH'	3
MSH-1	Yes	Separate Field	' '	1
MSH-2	Yes	Special use Characters	'^~\&'	4
MSH-3	Yes	Identify Sending Company	AlphaNumeric	15
MSH-4	Yes	Identify Sending Location	AlphaNumeric	10
MSH-5	Yes	Identify Receiving App	'PowerSoft MD'	15
MSH-6	Yes	Identify Receiving Office	AlphaNumeric	10
MSH-7	Yes	Date/Time of Message	yyyymmddhhmm	12
MSH-8	No	Not Used		
MSH-9	Yes	Type of Message Sent	'ORU'	3
MSH-10	No	Lab Message ID	AlphaNumeric	20
MSH-11	Yes	Production or Test	'P' or 'T'	1
MSH-12	Yes	HL7 Spec Version	'2.3.1'	5
MSH-13	No	Not Used		
MSH-14	No	Not Used		
MSH-15	No	Not Used		
MSH-16	No	Not Used		
MSH-17	No	Country Code	'US'	2
MSH-18	No	Character Set	'ASCII'	10
MSH-19	No	Principal Language	'en'	60

Note: Items enclosed between single apostrophizes (') are examples

PID Breakdown - Result

Field	Required	Use	Example/Format	Length
PID-0	Yes	Identify Segment	'PID'	3
PID-1	Yes	Sequence Number	'1'	1
PID-2	Yes	PSMD* Patient ID	Numeric	20
PID-3	Yes	PSMD* Patient ID	Numeric	20
PID-4	No	Lab assigned Pat ID	AlphaNumeric	20
PID-5	Yes	Patient Name	Last^First^Middle	25^15^15
PID-6	No	Not Used		
PID-7	Yes	Patient Date of Birth	yyyymmdd	8
PID-8	Yes	Patient Gender	'M', 'F', 'N', or 'U'	1
PID-9	No	Not Used		
PID-10	No	Patient Race	ID^Text^Coding	1^69^10
PID-11	Yes	Patient Address	Line1^Line2^City^State^Zip	35^35^16^2^9
PID-12	No	Not Used		
PID-13	No	Patient Home Phone	'1234567890'	10
PID-14	No	Patient Work Phone	'1234567890'	10
PID-15	No	Not Used		
PID-16	No	Not Used		
PID-17	No	Not Used		
PID-18	No	ID of client office with Lab *See Notes for detail	ClientID^^^^Status^Fasting '1234567890^^^^!^F^Y'	10^^^^1^1
PID-19	No	Patient SSN	'123456789'	9
PID-20	No	Not Used		
PID-21	No	Not Used		
PID-22	No	Ethnic Group	'H', 'N', or 'U'	1

Notes: Items enclosed between single apostrophizes (') are examples

* PSMD - PowerSoftMD

PID-10.1 ID: A-Asian, B-Black, C-Caucasian, H-Hispanic, I-Indian, O-Other, U-Unknown

PID-18 Subcomponents:

Client ID: Your ID for the client office

Status: F = Final, P = Preliminary

Fasting: Y = Yes, N = No

ORC Breakdown - Result

Field	Required	Use	Example/Format	Length
ORC-0	Yes	Identify Segment	'ORC'	3
ORC -1	Yes	New Orders Flag	'RE'	2
ORC -2	Yes	Order/Spec. ID	Alphanumeric	30
ORC -3	Yes	Lab Specimen ID	AlphaNumeric	22
ORC -4	No	Not Used		
ORC -5	No	Not Used		
ORC -6	No	Not Used		
ORC -7	No	Not Used		
ORC -8	No	Not Used		
ORC -9	Yes	Order Date/Time	yyyymmddhhmm	12
ORC -10	No	Not Used		
ORC -11	No	Not Used		
ORC -12	Yes	Ordering Provider	ID^LName^First^Middle ^^^^IDType	20^25^15^1^^^^1

Note: Items enclosed between single apostrophizes (') are examples

OBR Breakdown - Result

Field	Required	Use	Example/Format	Length
OBR-0	Yes	Identify Segment	'OBR'	3
OBR-1	Yes	Sequence Number	Numeric	4
OBR-2	Yes	Order/Spec. ID	AlphaNumeric	27
OBR-3	Yes	Lab Specimen ID	AlphaNumeric	22
OBR-4	Yes	Test ID	Code^Name^CodeSystem	15^30^5
OBR-5	No	Not Used		
OBR-6	No	Not Used		
OBR-7	Yes	Spec. Collect Time	yyyymmddhhmm	12
OBR-8	No	Not Used		
OBR-9	No	Collected Volume	Number^UnitOfMeasure	4^10
OBR-10	No	Not Used		
OBR-11	Yes	Action Code	'A' Add, 'C' Cancel, or 'G' Reflex	1
OBR-12	No	Not Used		
OBR-13	No	Clinical Info	AlphaNumeric	64
OBR-14	Yes	Time of Spec. Receipt	yyyymmddhhmm	12
OBR-15	No	Specimen Source	AlphaNumeric	26
OBR-16	Yes	Ordering Provider	ID^LName^First^Middle^^^^ IDType	20^25^15^1 ^^^^1
OBR-17	No	Not Used		
OBR-18	No	Alt. Specimen ID	AlphaNumeric	11
OBR-19	No	Not Used		
OBR-20	No	Not Used		
OBR-21	No	Not Used		
OBR-22	Yes	Time of Observation	yyyymmddhhmm	12
OBR-23	No	Not Used		
OBR-24	No	Diagnostic Service Provider	AlphNumeric	10
OBR-25	Yes	Results Status	'F' Final, 'P' Prelim, 'X' Canceled, or 'C' Corrected	6

Note: Items enclosed between single apostrophizes (') are examples

OBX Breakdown - Result

Field	Required	Use	Example/Format	Length
OBX-0	Yes	Identify Segment	'OBX'	3
OBX-1	Yes	Sequence Number	Numeric	4
OBX-2	Yes	Data Type	'SN' Structured Numeric, 'NM' Numeric, 'ST' String, 'TX' Text	2
OBX-3	Yes	Observation	TestID^TestName^IDType	15^30^7
OBX-4	No	Not Used		
OBX-5	No	Observation Value	AlphaNumeric	Variable
OBX-6	No	Units	ShortHand^FullUnitDescript.	15^75
OBX-7	No	Reference Range	AlphNumeric	60
OBX-8	No	Abnormal Flag	'L' < Low Normal, 'H' > High Normal, 'LL' Alert Low, 'HH' Alert High, '<' Panic Low, '>' Panic High, 'A' – Abnormal (applies to non-numeric results)	2
OBX-9	No	Not Used		
OBX-10	No	Not Used		
OBX-11	Yes	Results Status	'F' Final, 'P' Prelim, 'X' Canceled, or 'C' Corrected	1
OBX-12	Yes	Last Date Ref Range changed	yyyymmdd	8
OBX-13	No	Not Used		
OBX-14	No	Time of Observation	yyyymmddhhmm	12
OBX-15	Yes	Producer ID	ID^Text	10^50

Note: Items enclosed between single apostrophizes (') are examples

NTE Breakdown - Result

Field	Required	Use	Example/Format	Length
NTE-0	Yes	Identify Segment	'NTE'	3
NTE-1	Yes	Sequence #	Numeric	4
NTE-2	Yes	Comment Source	'L' Lab, 'AC' Accession, 'RC' Result, 'RI' Normal, 'UK' Undefined	2
NTE-3	Yes	Comment Text	AlphaNumeric	80

Note: Items enclosed between single apostrophizes (') are examples

Passing Back PDF's

We will accept PDF results embedded in the OBX-5.2 segment encoded in Base64 format. In this case, OBX-5.1 must be "Base64".

For Example: OBX|1|ED|13PS086742CYT.PDF|1|^PDF^Base64^JVBERi0xLj [...] VmCjY3MDkxDSUIRU9GCg==|||||F|||201303180759|||||

PDF results can also be passed in a separate file with the same name as the HL7 file and a **.pdf** file extension in the same directory as HL7 results.

The HL7 may also reference the associated PDF file name. This is done by placing the code "ED" in an OBX-2 segment & the PDF file name in the OBX-5 segment. The PDF file must be placed in the same folder as the original HL7 file or in a subfolder called PDF below the folder where the HL7 file is located.

For Example: OBX|7|ED|PDFReport1^PDF Report^ADTX||D13-027498.pdf

Example HL7 Request Text

MSH|^~\&|PowerSoftMD|Example Client Office|Milton
Street Laboratory|Milton Street
Laboratory|201112281230||ORM||P|2.3.1|||||US|ASCII|en

PID|1|00120|00120||SANCHEZ^TINA^G||19881007|F||U^Unknown^HL70005|Oak Road Lane, # 18^^New York^NY^69260

NTE|1|P|HEIGHT: 065 WEIGHT: 120LBS

PV1|1|||||0123456789^SMITH^JOHN^S^^^N

IN1|1||^12345|Medicare|123 Any St^^Boise^IA^12345|
||1234567890|||McDonalds||||SANCHEZ^RAUL^F|2|||||||
||||N||||1234567890

GT1|1||SANCHEZ^RAUL^F||Oak Road Lane, # 18^^New
York^NY^69260|987654321||||2

DG1|1||919.0^ABRASION^I9

DG1|2||285.9^ANEMIA^I9

ORC|NW|20111228123044|||||201112281230|||0123456789^S
MITH^JOHN^S^^^N

OBR|1|20111228123044||123456^Fasting Blood Glucose^L|
||201112281230||5^mL||N||Hemolyzed||Arterial catheter|
0123456789^SMITH^JOHN^S^^^N

OBX|1|TX|Specimen Label||1

OBX|2|TX|Specimen Type||Blood

NTE|2|P|Hemolyzed

Note: Blank Lines are for clarity only

Example HL7 Results Text

MSH|^~\&|Milton Street Laboratory|Milton Street
Laboratory|PowerSoftMD|Example Client Office|
201112290930||ORU|20111229093015|P|2.3.1||||
US|ASCII|en

PID|1|00120|00120||SANCHEZ^TINKER^G||19881007|F||U^Unkn
own^HL70005|Oak Road Lane, # 18^^New York^NY^69260

ORC|RE|20111228123044|20111229083001|||||201112281230|
||0123456789^SMITH^JOHN^S^^^N

OBR|1|20111228123044|20111229083001|123456^Fasting
Blood Glucose^L|||201112281230||5^mL||A||Hemolyzed|
201112290830|Arterialcatheter|0123456789^SMITH^JOHN^S^^
^N|||||201112290930||Milton St|F

OBX|1|NM|123456^Fasting Blood Glucose^L||178^Chemistry|
mg/dl^milligrams per deciliter^L|70-100|H|||F|19800101|
|201112290930|12345^Milton Street Laboratory, 40025
Milton Street, Aurora, CO 80011

NTE|1|L|Source: Arterial catheter

NTE|2|L|Condition: Hemolyzed

Note: Blank Lines are for clarity only

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