IHE PCD-01 DEC (HL7) Communication Guidance

1.3.0

Instrument R&D Department

SDT-FLINE-COMMUNICATION-GUIDANCE-1.0

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History

Date	Rev	Description	Author
2018-01-29	0.0.0.1	Initialize	JH Jang
2018-01-29	0.0.0.2	Improved, Typo Changed, Order of sections	JH Jang
2018-02-01	0.0.0.3	Added, Message samples. Added, Section of Network settings	HG Ko
2018-02-01	0.0.0.4	Improved, Type and Network Settings	JH Jang
2018-06-15	0.0.0.4	Added, Section of Network Settings of F2400	HG Ko
2018-08-31	0.0.0.5	Improved, Message samples which	HG Ko JH Jang
2018-09-14	0.0.0.6	Fixed, Description of CWE observation items. Added, Table of Observation Item	JH Jang

Table of Contents

Introduction

Intended Readership

This document has been written keeping in mind to the developer who make the application which consume data from the FLine analizer by IHE PCD-01.

Purpose

This document does not describes how to implements the IHE PCD-01 and its related standard.

For more information on implementation of the standard, please refer the following links:

- https://wiki.ihe.net/index.php/PCD_Technical_Framework
- http://www.ihe.net/technical_frameworks/#pcd

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Notice

This document is subject to change without any notice.

SD BIOSENSOR

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1. Immunology
    A. Fluorescent Immunoassay
        i. Quantitative FIA
        ii. Qualitative FIA
    B. Immuno-chromatographic assay
        i. Quantitative immunochromatography(MultiCare, A1cCare)
        ii. Qualitative immunochromatography(RDTs)

C. ELISA

2. Electrochemistry & Dry chemistry
   A. Electrochemistry
      i. Blood glucose monitoring system
   B. Dry-chemistry
      i. Quantitative G6PD & Total Hb
      ii. Lipid
3. Genomic new biomarker
   A. Newborn screening gene panel
   B. Hereditary cancer gene panel

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Message Transfer

Supported Matrix

Model	Product Name	UART	TCP/IP
F200	SDB F200 Analyzer	X	O
F2400	SDB F2400 Analyzer	X	O

Message Transfer Issues

Closed Connection after received data from the analyzer

Note. When sending the HL7 messages, **the Analyzer** insuring to for the safe TCP data transfer **uses** the "**Gracefully Close(or Shutdown)**". Please, refer the following pseudo-code and sequences or read the article on the Graceful Shutdown, Linger Options, and Socket Closure, MSDN:

1. Invokes shutdown when after finishing a send an observation data.
2. Then receiving wait until FIN segment for the ACK.
3. Close the socket.

```
// invokes shutdown when after finishing a send an observation record.
shutdown(s, SD_SEND);  // Further sends are disallowed.
// then receive wait until FIN segment for the ACK.
while ((result = recv(s, buf, bufsize, 0)) > 0);
if (result == SOCKET_ERROR)
  ...
closesocket(s);
```

Begin/End of the Message

Every message encapsulated by MLLP(Minimal Lower Layer Protocol).

- Begin: 0x0B
- End : 0x1C and 0x0D
- Specification Download: http://www.hl7.org/documentcenter/public/wg/inm/mllp_transport_specification.PDF

OBR/OBX(Observation) Segment

Observations Patient related

An Observations Patient related protocol implements the IHE PCD-01. The analyzer do an act as the DOR. And approved by IHE Connectathon. Please refer to the IHE technical framework document on a IHE wiki.

- The observation record which generated by an analyzer is represented by LOINC® Code in the OBR and OBX segment.
- The cartridge information(e.g, Kind, Serial Number, Lot Number, Date of manufacture) is writed in a NTE segment of ORDER_OBSERVATION. See the chapter "3.1.4.1.1 PCD-01 Communicate PCD Data (ORU^R01^ORU_R01) static definition" on Vol. 2 (PCD TF-2): Transactions document on the IHE wiki.

Result Status of Observation

It can be valid or invalid and set the OBX-11(Observation Result Status).

- Valid: "F"
- Invalid: "X"
- *It following the HL7 V2 table 0085.*

Qualitative observation result

Most case, it can be Abnormal or Normal and set the OBX-8(Abnormal flag).

- Abnormal: "A" // +, Postive
- Normal: "N" // -, Negative
- *It following the HL7 V2 table 0078.*

Note, Some observation items, like a Flu A/ B, cannot be described with boolean flags(Abnormal or Normal). That case setted the followings:

- OBX-2(Value Type)
  - **"CWE"**: If necessary, it is determined according to the LOINC standard.
    - refer the Sample 3 Coded with Exception (Influenza A/B)
- OBX-5(Observatoin Value)

Quantitative Observation result

It mainly set the followings:

- OBX-2(Value Type): "NM" // Number
- OBX-5(Observatoin Value)
- OBX-6(Unit)
- OBX-7(Reference Range)

Observations Non-Patient related(Quality Control)

It implements that be modified ORU^R01^ORU_R01 HL7 protocol. The analyzer provide Quality Control(QC) information that tagging on the **OBR-4**, **OBX-3** and **OBX-8** segment.

The identifier which represents the Quality control(QC):

- **OBR-4**, **OBX-3**: A concatenate string which Kind Of Item by decimal and "-255". Each items described on section of "Contant Values for Observstion" on the document "SDB Communication Protocol.FLine".
- **OBX-8**: Tagged as "QC"

NTE(Note) Segment - additional information

The device has the additional information and it on the NET segment for the customer or end user. But the PCD-01 framework cannot these pieces of information. For the reason, used the NTE segment.

Each information has a name and a value, delimited by an equals sign(=). The name meaning like the followings:

- LotNo: A Lot number of the device.
- SerialNo
  - A Serial number of the device.
  - Only the qualitative device can have the SerialNo. If the device is quantitative, it is initialized to "00000".
- Kind: It just represents the kind of the device.

Message Structure

Observation

Segment	Seq	Name	Max Len	Type	Usage	Len
MSH	1	Field Separator	1	ST	**R**	
	2	Encoding Characters	4	ST	**R**	4
	3	Sending Application	227	HD	**R**	40

	4	Sending Facility	227	HD	RE	5
	7	Date/Time of Message	24	DTM	**R**	19
	9	Message Type	15	MSG	**R**	15
	10	Message Control Id	199	ST	**R**	36
	11	Processing Id	3	PT	**R**	1
	12	Version ID	60	VID	**R**	3
	15	Accept Acknowledgement Type	2	ID	**R**	0
	16	Application Acknowledgement Type	2	ID	**R**	2
	17	Country Code	3	ID	RE	2
	18	Character Set	16	ID	RE	3
	19	Principal Language of Message	705	CWE	RE	6
	21	Message Profile Identifier	427	EI	C	0
PID	3	Patient Identifier List	250	CX	**R**	24
OBR	1	Set ID OBR	4	SI	**R**	1
	2	Placer Order Number	427	EI	C	63
	3	Filler Order Number	427	EI	**R**	63
	4	Universal Service Identifier	705	CWE	**R**	51
	7	Observation Date/Time	24	DTM	RE	14
	8	Observation End Date/Time	24	DTM	RE	
OBX	1	Set ID- OBX	4	SI	**R**	1

	2	Value Type	3	ID	C	2
	3	Observation Identifier	705	CWE	**R**	51
	4	Observation Sub-ID	20	ST	**R**	1
	5	Observation Value	99999	Varies	C	3
	6	Units	705	CWE	C	14
	7	References Range	60	ST	CE	9
	8	Abnormal Flags	5	IS	CE	1
	11	Observation Result Status	1	ID	**R**	1
	14	Date/Time of the Observation	24	DTM	RE	19
	15	Producer's ID	705	CWE	RE	0
	16	Responsible Observer	3220	XCN	RE	0
	17	Observation Method	705	CWE	RE	0
	18	Equipment Instance Identifier	427	EI	RE	0
	19	Date/Time of the Analysis	24	DTM	CE	19
NTE	1	Set ID - NTE	4	SI	**R**	1
	3	Comment	65536	FT	RE	16

Acknowledgement

Segment	Seq	Name	Max Len	Type	Usage	Len
MSH	1	Field Separator	1	ST	**R**	
	2	Encoding Characters	4	ST	**R**	4
	3	Sending Application	227	HD	**R**	40

	4	Sending Facility	227	HD	RE	5
	5	Receiving Application	227	HD	RE	9
	6	Receiving Facility	227	HD	RE	11
	7	Date/Time of Message	24	DTM	**R**	19
	9	Message Type	15	MSG	**R**	15
	10	Message Control Id	199	ST	**R**	36
	11	Processing Id	3	PT	**R**	1
	12	Version ID	60	VID	**R**	3
MSA	1	Acknowledgement code	1	ID	**R**	2
	2	Message Control Id	4	ST	**R**	36

Message Samples

Sample 1 Qualtive (StrepA)

Result : StrepA : Negative (COI : 0.15)

Observation

```
{VT}
MSH|^~\&|FA20B02VA0234^0000000000000000^EUI-64|sdb|||20180831104332-0500||
ORU^R01^ORU_R01|{519a5093-a927-4eff-b906-1468fea313a6}|P|2.6|||AL|NE||UNIC
ODE UTF-8|EN^English^ISO639||IHE_PCD_ORU_R01^IHE
PCD^1.3.6.1.4.1.19376.1.6.4.1^ISO{CR}
PID|||||^^^^^^U{CR}
OBR|1|db524aea-6ed8-4d12-b08d-cf441dd73fb7^FA20B02VA0234^0000000000000000^
GUID|db524aea-6ed8-4d12-b08d-cf441dd73fb7^FA20B02VA0234^0000000000000000^G
UID|6557-3^Group A
Streptococcus^LN|||20180830171701-0500|20180830171701-0500NTE|1||Device
Information,Date of
manufacture=20180528,LotNo=141,SerialNo=00000,Kind=FLine23{CR}
OBX|1||6557-3^Group A
Streptococcus^LN|1.0.0.3||||N|||F|||20180830171701-0500||guest|||201808301
71701-0500NTE|1||Cut Off Index,Value=0.15
{FS}{CR}
```

Acknowledgement

```
{VT}
MSH|^~\&|Vitural SDB HL7
Server^FB6590F3-E233-41A5-BB5F-CB17F5015295^GUID|Instr RnD Dept
SDBIOSENSOR|sdb||20180831104533+0900||ACK^R01^ACK|55A231ED-7EFD-49F1-B11F-
39E692669D87|P|2.6{CR}
MSA|CA|{519a5093-a927-4eff-b906-1468fea313a6}
{FS}{CR}
```

Sample 2 Quantitative (HbA1c)

Result : 9.91 %[NGSP] , Range Min : 4.0, Max : 15.0

Observation

```
{VT}
MSH|^~\&|FA20A01XA0026^70b3d57372300741^EUI-64||||20170201141842-0500||ORU
^R01^ORU_R01|{c0e4c073-0829-4716-89a8-c815747989cb}|P|2.6|||AL|NE||UNICODE
UTF-8|EN^English^ISO639||IHE_PCD_ORU_R01^IHE
PCD^1.3.6.1.4.1.19376.1.6.4.1^ISO{CR}
PID|||||^^^^^^U{CR}
OBR|1|7ea0b17e-bf40-40e1-9478-7ba78ccfb7a9^FA20A01XA0026^70b3d57372300741^
GUID|7ea0b17e-bf40-40e1-9478-7ba78ccfb7a9^FA20A01XA0026^70b3d57372300741^G
UID|55454-3^Hemoglobin A1c^LN|||20170130144834-0500|20170130144834-0500
NTE|1||Device Information,Date of
manufacture=20160811,LotNo=010,SerialNo=00000,Kind=FLine1{CR}
OBX|1|NM|55454-3^Hemoglobin
A1c^LN|1.0.0.7|9.91|%^Percent^NGSP|[4.0;15.0]||||F|||20170130144834-0500||
guest|||20170130144834-0500
{FS}{CR}
```

Acknowledgement

```
{VT}
MSH|^~\&|Virtual SDB HL7
Server^FB6590F3-E233-41A5-BB5F-CB17F5015295^GUID|Instr RnD Dept
SDBIOSENSOR|||20180201141940+0900||ACK^R01^ACK|556E5E35-F94F-4C49-9410-11F
2BCBC961D|P|2.6{CR}
MSA|CA|{c0e4c073-0829-4716-89a8-c815747989cb}
{FS}{CR}
```

Sample 3 Coded with Exception (Influenza A/B)

***Note**, Some test's result, like the Influenza A and B, the **type is CWE(Coded with Exceptions)**. Because it cannot describes by Abnormal and Normal only. e.g., The Flu A/B result can be*

*combined with the result of FluA and FluB, and each has the Abnormal or Normal. In that case, the analyzer uses the **CWE and it placed at OBX-2**.*
*The following sample message is using the LL2214-6 LOINC **AnswerID and its position is OBX-5**.(https://r.details.loinc.org/AnswerList/LL2214-6.html.)*

Result : Influenza A : Positive (COI : 238.74), Influenza B : Negative (COI : 0.04)

Observation

```
{VT}
MSH|^~\&|FA20B01AA0265^0000000000000000^EUI-64||||20180123100803-0500||ORU
^R01^ORU_R01|{d4acc100-7cdd-45dd-bf26-83045c48fb0d}|P|2.6|||AL|NE||UNICODE
UTF-8|EN^English^ISO639||IHE_PCD_ORU_R01^IHE
PCD^1.3.6.1.4.1.19376.1.6.4.1^ISO{CR}
PID|||151089||^^^^^^U{CR}
OBR|1|3a06b5b0-aad6-41ed-971d-75a101613ab0^FA20B01AA0265^0000000000000000^
GUID|3a06b5b0-aad6-41ed-971d-75a101613ab0^FA20B01AA0265^0000000000000000^G
UID|72365-0^Influenza
A/B^LN|||20171204121601-0500|20171204121601-0500NTE|1||Device
Information,Date of
manufacture=20170703,LotNo=015,SerialNo=10502,Kind=FLine23{CR}
OBX|1|CWE|72365-0^Influenza A/B^LN|1.0.0.2|LA19017-5^Influenza A virus
positive^LN||||||F|||20171204121601-0500||guest|||20171204121601-0500NTE|1
||Cut Off Index,Value=238.74{CR}
OBX|2|CWE|72365-0^Influenza A/B^LN|1.0.0.2|LA19020-9^Influenza B virus
negative^LN||||||F|||20171204121601-0500||guest|||20171204121601-0500NTE|2
||Cut Off Index,Value=0.04
{FS}{CR}
```

Acknowledgement

```
{VT}
MSH|^~\&|Virtual SDB HL7
Server^FB6590F3-E233-41A5-BB5F-CB17F5015295^GUID|Instr RnD Dept
SDBIOSENSOR|||20180117093204+0900||ACK^R01^ACK|0B140FC8-ABE7-4955-BFCF-788
2A9A25FC6|P|2.6{CR}
MSA|CA|{d4acc100-7cdd-45dd-bf26-83045c48fb0d}
{FS}{CR}
```

Sample 4 QC Qualtive (Influenza A/B)

Result : Pass (Negative, Control Info : Negative)

Observation

```
{VT}
MSH|^~\&|FA20A01XA0026^70b3d57372300741^EUI-64||||20170201145639-0500||ORU
^R01^ORU_R01|{121cd5aa-e5fe-41a0-845f-10c782eeed46}|P|2.6|||AL|NE||UNICODE
UTF-8|EN^English^ISO639||IHE_PCD_ORU_R01^IHE
PCD^1.3.6.1.4.1.19376.1.6.4.1^ISO{CR}
```

```
OBR|1|11793836-7f57-4fac-8a46-33839b5c70f3^FA20A01XA0026^70b3d57372300741^
GUID|11793836-7f57-4fac-8a46-33839b5c70f3^FA20A01XA0026^70b3d57372300741^G
UID|72365-0^Influenza A/B^LN|||20170203174531-0500|20170203174531-0500
NTE|1||Device Information,Date of
manufacture=20161026,LotNo=001,SerialNo=00039,Kind=FLine23{CR}
OBX|1|ST|QC-2^Influenza A/B Control Set
Negative^SDB|1.0.0.2|Negative|||Pass|||F|||20170203174531-0500||guest|||20
170203174531-0500
NTE|1||Cut Off Index,Value=0.00
{FS}{CR}
```

Acknowledgement

```
{VT}
MSH|^~\&|Vitural HL7
Server^FB6590F3-E233-41A5-BB5F-CB17F5015295^GUID|Instr RnD Dept
SDBIOSENSOR|||20180201145738+0900||ACK^R01^ACK|881168B6-8E37-4619-9E14-D13
096A3959A|P|2.6{CR}
MSA|CA|{121cd5aa-e5fe-41a0-845f-10c782eeed46}
{FS}{CR}
```

Sample 5 QC Quantitative (u-Albumin)

Result : Pass (145.8 mg/L, Control Range Min : 123.0, Max : 222.0)

Observation

```
{VT}
MSH|^~\&|FA20A03AA0155^70b3d57372300be7^EUI-64||||20170201142811-0500||ORU
^R01^ORU_R01|{b65ba417-2f2f-4390-838f-9710b291dc8a}|P|2.6|||AL|NE||UNICODE
UTF-8|EN^English^ISO639||IHE_PCD_ORU_R01^IHE
PCD^1.3.6.1.4.1.19376.1.6.4.1^ISO{CR}
OBR|1|9a3b0abe-5d4d-4154-a3a1-92fb0aa88829^FA20A03AA0155^70b3d57372300be7^
GUID|9a3b0abe-5d4d-4154-a3a1-92fb0aa88829^FA20A03AA0155^70b3d57372300be7^G
UID|14957-5^Microalbumin^LN|||20170512090145-0500|20170512090145-0500
NTE|1||Device Information,Date of
manufacture=20161215,LotNo=011,SerialNo=00000,Kind=FLine1{CR}
OBX|1|NM|QC-8^Microalbumin^SDB|1.0.0.8|145.8|mg/L^milligram per
liter^UCUM|[123.0;222.0]|Pass|||F|||20170512090145-0500||01|||201705120901
45-0500
{FS}{CR}
```

Acknowledgement

```
{VT}
MSH|^~\&|Vitural HL7
Server^FB6590F3-E233-41A5-BB5F-CB17F5015295^GUID|Instr RnD Dept
SDBIOSENSOR|||20180201142909+0900||ACK^R01^ACK|F9CFDCB7-5AFC-43B7-A198-6EE
C0A558301|P|2.6{CR}
MSA|CA|{b65ba417-2f2f-4390-838f-9710b291dc8a}
```

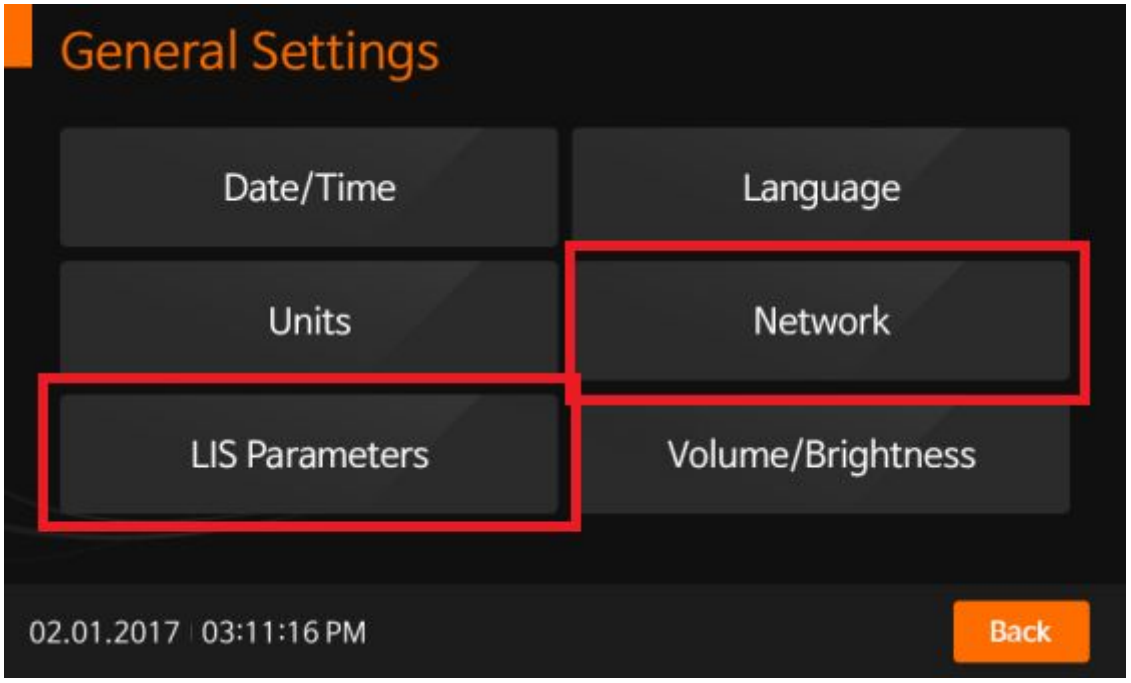
{FS}{CR}

Network Settings

F200

Enter the Setup menu.

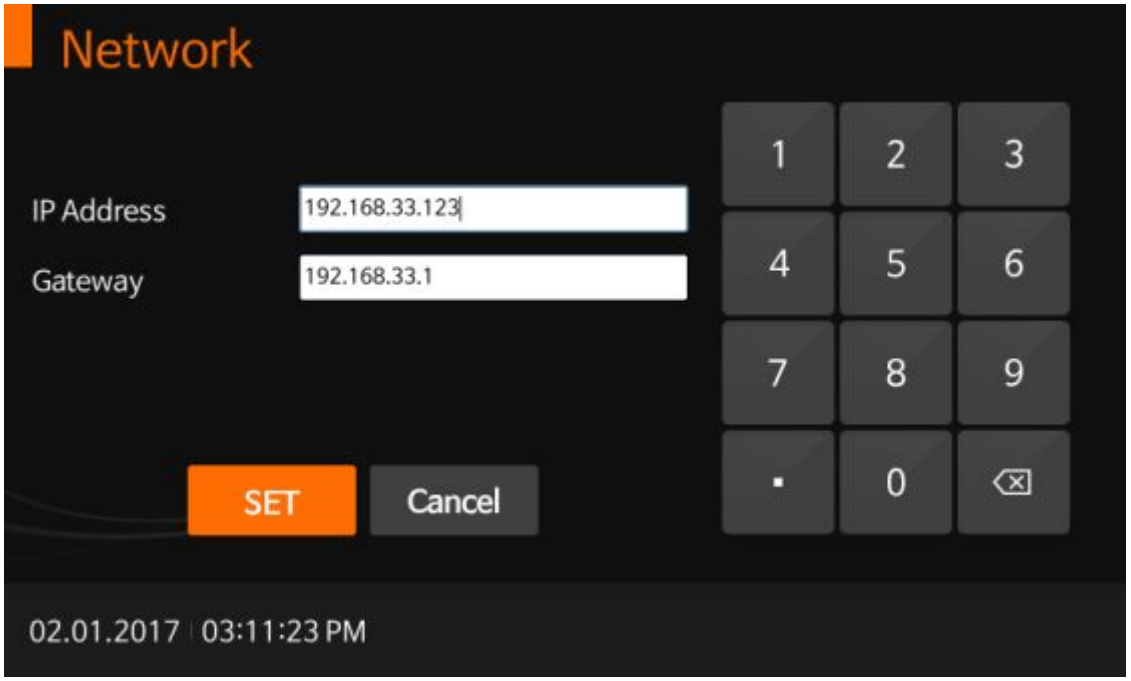
Main menu → Supervisor → Settings → General Settings



The General Settings proves the following items:

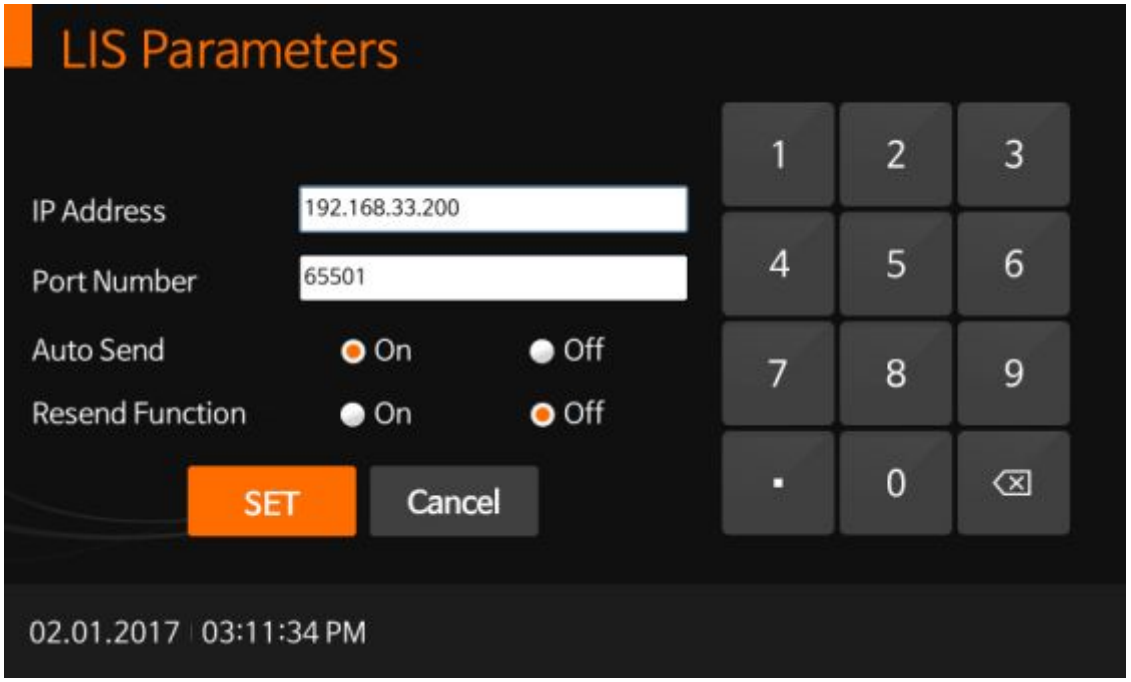
- Network
  - In this menu, it provides the settings for TCP-client which for an analyzer connected to the local network.
- LIS Parameters
  - In this menu, it provides the settings for TCP-server which consuming contents from the analyzer.
    e.g., The consumer is LIS/HIS server, and the content is PCD-01 message.

Network Menu



Enter the IP Address and Gateway.

LIS Parameters Menu



Enter the IP Address and Port Number

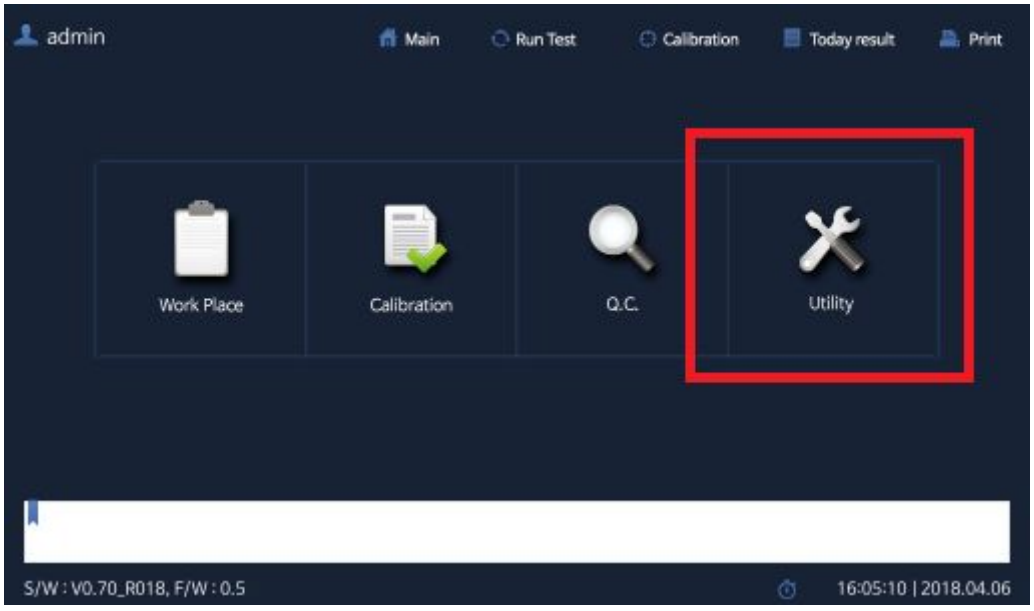
- Auto Send
  - If this is on, the analyzer auto sends the observation result after a test completed.
- Resend Function
  - If this is on, the analyzer tries to re-sending to the LIS/HIS when the server has no response or closed.

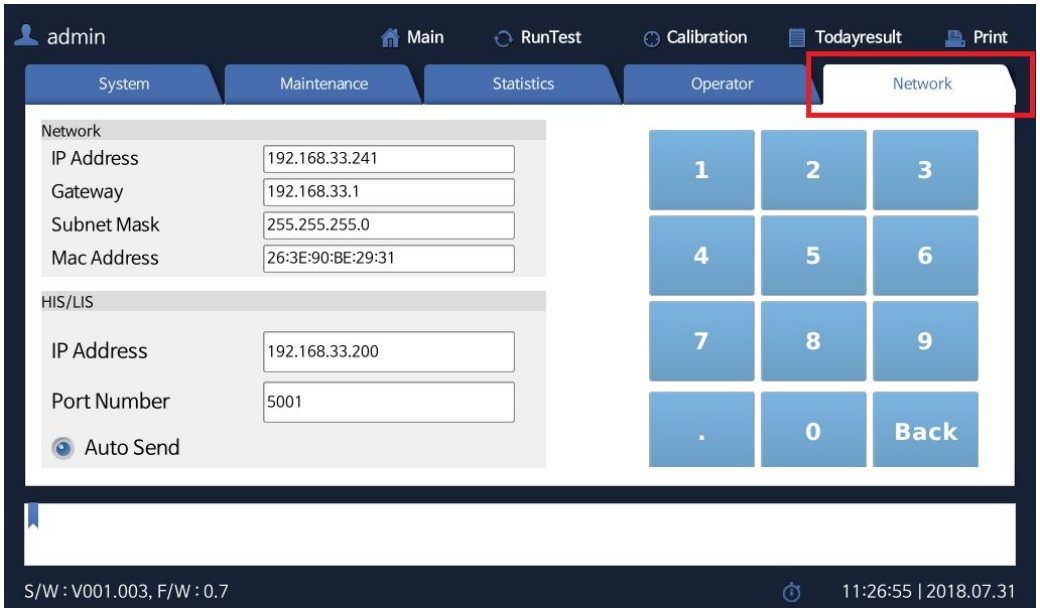
- **Note**, this item should be must off if the server does not send an ack message after received message.

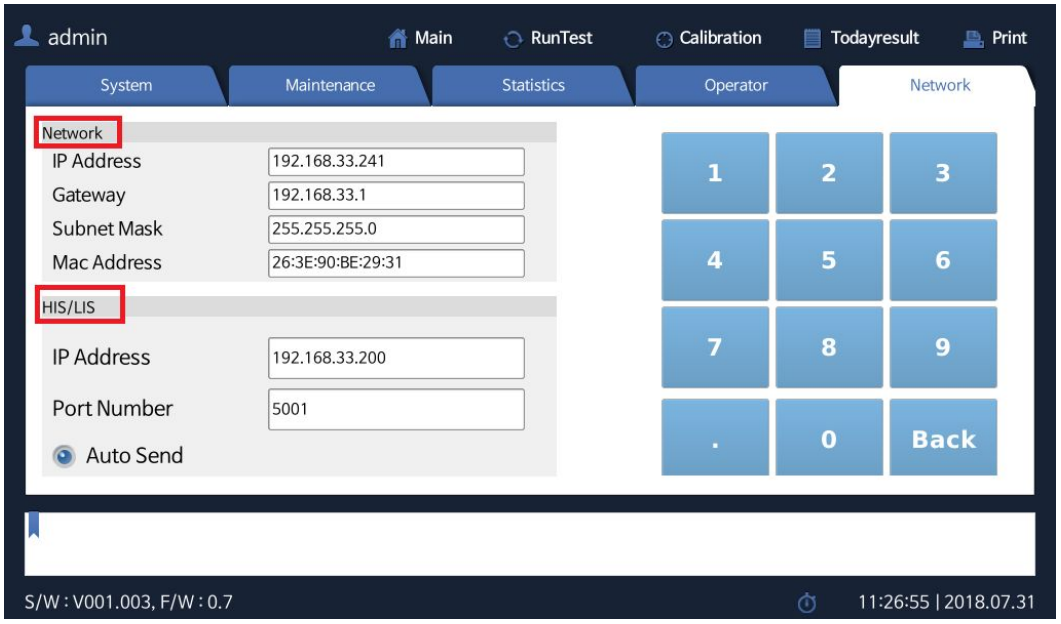
F2400

Enter the Setup menu.

MainMenu -> Utility -> Network



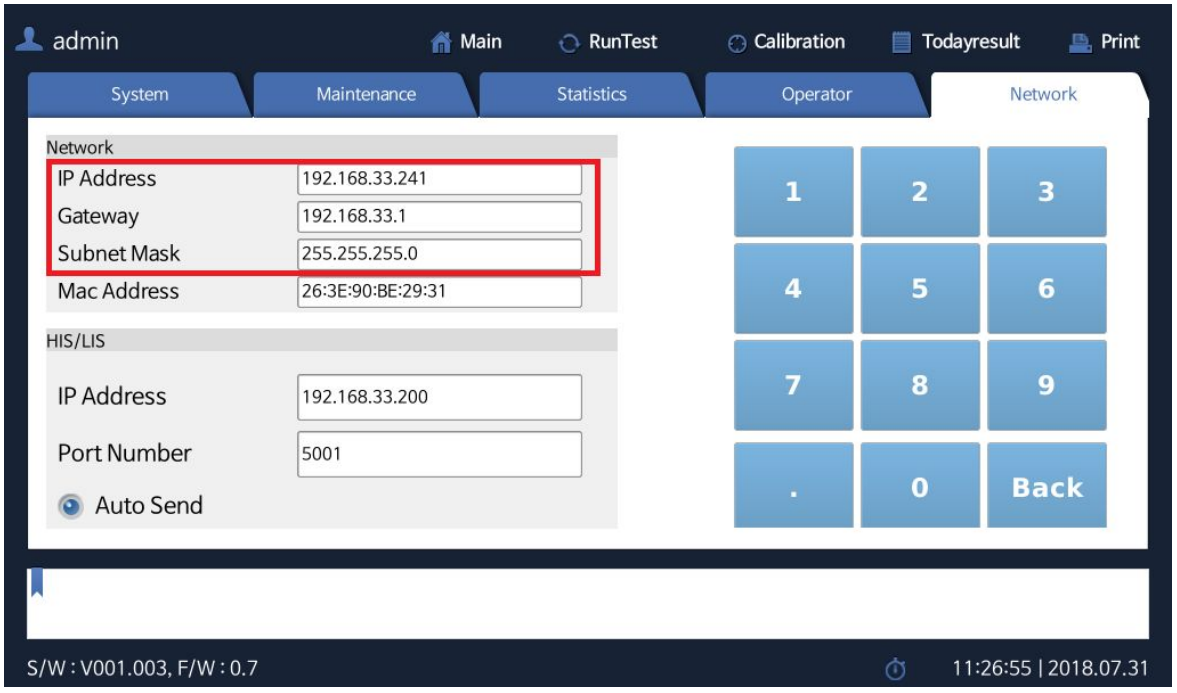




The General Settings proves the following items:

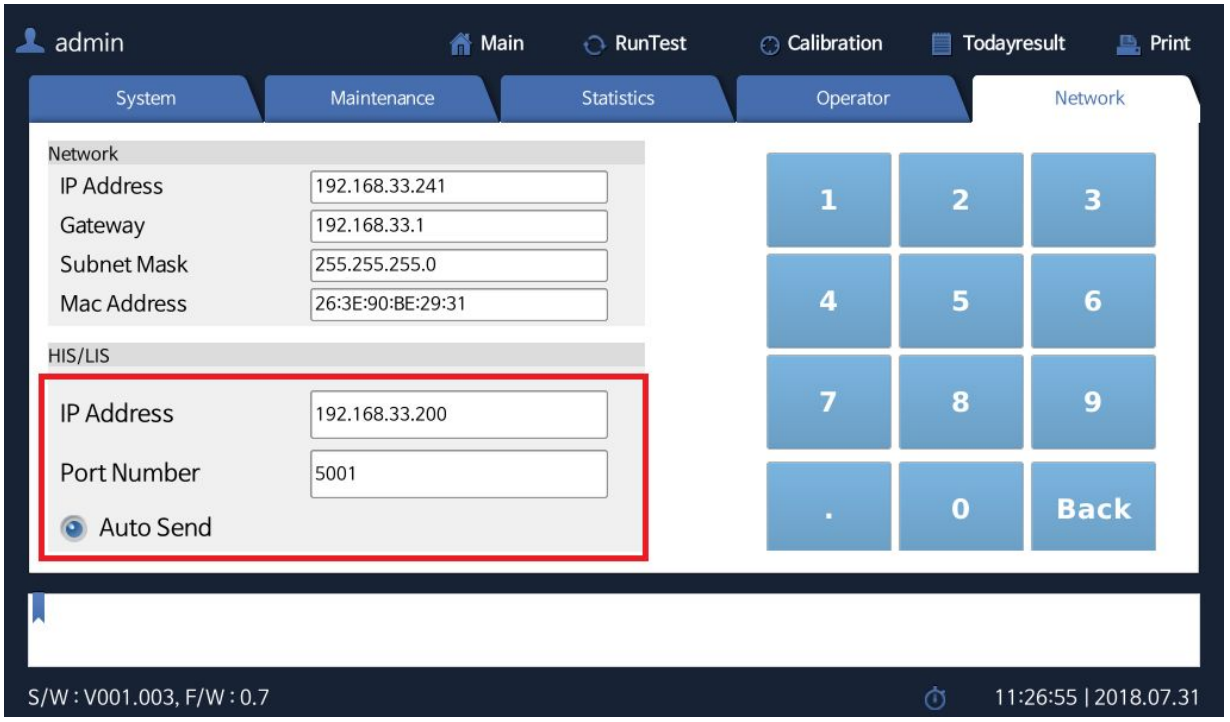
- Network
  - In this menu, it provides the settings for TCP-client which for an analyzer connected to the local network.
- HIS/LIS
  - In this menu, it provides the settings for TCP-server which consuming contents from the analyzer.
    e.g., The consumer is LIS/HIS server, and the content is PCD-01 message.

Network Setting



Enter the IP Address and Gateway and Subnet Mask.

LIS Parameters Menu



Enter the IP Address and Port Number

- Auto Send
    - If this is on, the analyzer auto sends the observation result after a test completed.

Appendix I

Table of Observation Items

Type	Short Name (for F100 Analyzer)	Long Name	Unit	Specimen	LOINC CD	LOINC Sub ID	LOINC DESC
Qualitative	RSV	Respiratory Syncytial Virus	nominal	Nasopharyngeal Swab Nasopharyngeal Aspirate Nasopharyngeal Wash	77390-3	1.0.0.1	Respiratory syncytial virus Ag [Presence] in Nasopharynx by Immunofluorescence

CWE	Flu A+B	Influenza A+B	nominal	Nasal Swab Nasopharyngeal Swab Nasopharyngeal Aspirate Nasopharyngeal Wash	72365-0	1.0.0.2	Influenza virus A and B Ag [Identifier] in Nose by Immunofluorescence https://r.details.loinc.org/AnswerList/LL2214-6.html 1 Influenza A virus positive LA19017-5 2 Influenza A virus negative LA19018-3 3 Influenza B virus positive LA19019-1 4 Influenza B virus negative LA19020-9 5 Procedure control valid LA19021-7 6 Procedure control invalid LA19022-5
Qualitative	Strep A	Group A Streptococcus	nominal	Throat swab	6557-3	1.0.0.3	Streptococcus pyogenes Ag [Presence] in Throat by Immunofluorescence
Qualitative	Legionella	Legionella pneumophila (L. pneumophila)	nominal	Urine	17059-7	1.0.0.4	Legionella pneumophila Ag [Presence] in Urine by Immunofluorescence
Qualitative	S.pneumo	Streptococcus pneumoniae	nominal	Urine Cerebrospinal Fluid (CSF)	6553-2	1.0.0.5	Streptococcus pneumoniae Ag [Presence] in Unspecified specimen by Immunofluorescence
Quantitative	HbA1c	Hemoglobin A1c	NGSP(%) IFCC(mmol/mol) JDS(%) mono-S(%)	whole blood	4548-4 59261-8 62388-4	1.0.0.7	Hemoglobin A1c/Hemoglobin.total in Blood Hemoglobin A1c/Hemoglobin.total in Blood by IFCC protocol Hemoglobin A1c/Hemoglobin.total in Blood by JDS/JSCC protocol

Quantitative	CRP	C-reactive Protein	mg/L	whole blood, Serum, Plasma	48421-2 1988-5	1.0.0.32	C reactive protein [Mass/volume] in Capillary blood C reactive protein [Mass/volume] in Serum or Plasma
Quantitative	U-ALB	Microalbumin	mg/L	Urine	14957-5	1.0.0.8	Microalbumin [Mass/volume] in Urine
Quantitative	PCT	Procalcitonin	ng/ml	Serum, plasma	33959-8	1.0.0.9	Procalcitonin [Mass/volume] in Serum or Plasma
Quantitative	Vit. D	Vitamin D	ng/ml	Serum	35365-6	1.0.0.10	Vitamin D+Metabolites [Mass/volume] in Serum or Plasma
Quantitative	CK-MB	creatne kinase MB	ng/mL	serum	13969-1	1.0.0.22	Creatine kinase.MB [Mass/volume] in serum or plasma
				whole blood	49551-5		Creatine kinase.MB [Mass/volume] in blood
Quantitative	D-Dimer	D-dimer	ng/mL FEU	plasma, whole blood	71427-9	1.0.0.31	D-dimer is elevated in disseminated intravascular coagulation (DIC), deep vein thrombosis (DVT), and pulmonary embolism (PE).
Quantitative	cTnI	cardiac Troponin I	ng/mL	serum	10839-9	1.0.0.21	Troponin I.cardiac [Mass/volume] in serum or plasma
				whole blood	42757-5		Troponin I.cardiac [Mass/volume] in Blood

Quantitative	hsCRP	high sensitivity C-reactive protein	mg/L	serum, whole blood	30522-7	1.0.0.24	C-reactive protein (CRP) is characterized by its precipitation by the C-fraction of pneumococci. This protein is an acute phase reactant and confers immunity against some bacterial infections. CRP is a sensitive and quantitative measurement of the body's acute-phase response. Elevated values are consistent with an acute inflammatory process such as a bacterial infection or rheumatic disease.
Quantitative	iFOB	fecal occult blood	ng/mL	stool	80372-6	1.0.0.39	Hemoglobin.gastrointestinal [Presence] in Stool by Rapid immunoassay
Quantitative	PSA	Prostate specific Ag [Mass/volume] in Serum or Plasma	ng/mL	Serum/Plasma	2857-1	1.0.0.34	Prostate-specific antigen is a glycoprotein and in the blood. PSA complexed with the serine protease inhibitor or alpha-1-antichymotrypsin,
Quantitative	TSH	Thyrotropin [Units/volume] in Serum or Plasma	μIU/mL	Serum	3016-3	1.0.0.25	Thyroid-stimulating hormone (TSH or thyrotropin) is a hormone synthesized and secreted by thyrotrope cells in the anterior pituitary gland. It regulates the endocrine function of the thyroid gland.
CWE	Dengue IgM/IgG	Dengue IgM/IgG	nominal	Ser/Plas/Bld	75223-8	1.0.0.15	Dengue virus IgG and IgM [Identifier] in Serum, Plasma or Blood by Rapid immunoassay 1 SDB75223-8-1 IgM 2 SDB75223-8-2 IgG

Qualitative	Dengue Ag	Dengue NS1 Ag	nominal	Ser/Plas/Bld	75377-2	1.0.0.12	Dengue virus NS1 Ag [Presence] in Serum, Plasma or Blood by Rapid immunoassay
Qualitative	HCV Ab	Hepatitis C virus Ab [Presence] in Serum, Plasma or Blood by Rapid immunoassay	nominal	Serum, Plasma or Blood	72376-7	1.0.0.20	Hepatitis C virus (HCV) is a small (50 nm in size), enveloped, single-stranded, positive sense RNA virus in the genus hepacivirus, which is in the Flaviviridae family.
CWE	Rota/Adeno	Rotavirus and Adenovirus Ag	nominal	Stool	80376-7	1.0.0.29	Rotavirus and Adenovirus Ag panel - Stool by Rapid immunoassay https://r.details.loinc.org/AnswerList/LL2021-5.html 1 Rotavirus Positive LA6576-8 2 Rotavirus Negative LA6577-6 3 Rotavirus Invalid LA15841-2 https://r.details.loinc.org/AnswerList/LL2021-5.html 1 Adenovirus Positive LA6576-8 2 Adenovirus Negative LA6577-6 3 Adenovirus Invalid LA15841-2
Qualitative	Rota Ag	Rotavirus Ag	nominal	Stool	72174-6	1.0.0.27	Rotavirus Ag [Presence] in Stool by Rapid immunoassay
Quantitative	LH	LH	mIU/mL	Serum/Plasma	10501-5	1.0.0.33	Lutropin [Units/volume] in Serum or Plasma
				whole blood	SDB-		Lutropin [Units/volume] in whole blood

					0330		
Quantitative	Beta-hCG	Beta human chorionic gonadotropin	mIU/mL	Serum	20415-6	1.0.0.19	Human chorionic gonadotropin, beta subunit [Units/volume] in serum or plasma by Immunoassay (EIA) 3rd IS
				whole blood	SDB-0190		Human chorionic gonadotropin, beta subunit [Units/volume] in whole blood by Immunoassay (EIA) 3rd IS
Quantitative	PCT(Whole blood)	procalcitonin	ng/mL	serum/plasma	33959-8	1.0.0.26	Procalcitonin [Mass/volume] in Serum or Plasma
CWE	Zika IgM/IgG	Zika IgM/IgG	nominal	Se/Plas/Bld	SDB-0160	1.0.0.16	Zika virus IgM and IgG AB [Identifier] in Serum or plasma or whole blood by Immunofluorescence 1 SDB0160-1 IgM 2 SDB0160-2 IgG
Qualitative	Zika Ag	Zika Ag	nominal	Se/Plas/Bld	SDB-0130	1.0.0.13	Zika virus NS1 and ENV Ag [Presence] in Serum, Plasma or Blood by Rapid immunoassay
CWE	Chikunguya IgM/IgG	Chikungunya IgM/IgG	nominal	Se/Plas/Bld	SDB-0170	1.0.0.17	Chikungunya virus IgM and IgG Ab [Presence] in Serum or Plasma or whole blood by Immunofluorescence 1 SDB0170-1 IgM 2 SDB0170-2 IgG