



Coagulation Analyzer: Yumizen G400 / Yumizen G400 DDi

Output Format for Host Connection

Ref: RAA078AEN

Output Format for Host Connection



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1. Foreword

1.1. Revisions

Internal Reference	Software Version	Document Date Issued
RAA078AEN	2.x	September 2020

When a subsequent software version changes the information in this document, a new electronic edition is released and supplied by HORIBA Medical.

2. Connection Specifications

2.1. Overview

The purpose of this document is to specify the complete online communication protocol of Yumizen G400 instrument, from the instrument to the LIS (unidirectional).

2.2. Hardware and Software Characteristics

Complies with software version 2.x.



Serial port RS232 must be used for the connection.

Hardware parameters:

19200 baud, 8 bits, No parity, 1 Stop bit

2.2.1. To Connect the Instrument to the Computer

A CABLE,USB-SERIAL RS232 CONVERTER (1300061449) is needed to connect the instrument to the computer.

1. Connect the RS232 connector at the back of the instrument.



2. Connect the USB connector to the computer.

2.3. Communication Protocol

Standard control characters

Control string	ASCII value
<STX>	02
<ETX>	03
<CR>	13
<LF>	10

Typical discussion between the instrument and the host

Instrument		Host
<STX>Data<CR><LF>	<>	>
<ETX>		

3. Result Record Format Specifications

3.1. Description of Records

Field inside records are separated by "|" (ASCII 124).

Field number	Definition	Transmitted data	Field max. length
1	ID	12 characters	12
2	Date	YYYY.MM.DD	10
3	Time	HH:MM	5
4	Test name	Test ID	5
5	Raw result 1	C:ssss,s (Note 1)	8
6	Raw result 2	C:ssss,s (Note 1)	8
7	Raw result AVG	ssss,s	6
8	Result field: %	ppppp,p or ' --- ' if not defined	7
9	Result field: Ratio	pppp,pp or ' --- ' if not defined	7
10	Result field: INR	pppp,pp or ' --- ' if not defined	7
11	Result field (Note 2);		7
	µg FEU/mL	pppp,pp or ' --- ' if not defined	
	%	pp.p	
12	Result field: g/l	pppp,pp or ' --- ' if not defined	
13	Error code	dddd	5

Example:

9876 |2020.08.26|11:33|PT |2: 14,8|2: 14,8| 14,8| 81,8; --- ; 1,13; --- ; --- |000

Note 1

C: measuring position (1-4)

ssss,s: seconds (123,4) or ΔOD (0.723)

In parallel mode, the measuring position of Raw result 1 and Raw result 2 is different.

In simple mode, the measuring position and seconds are equal (Raw result 1 = Raw result 2).

Note 2

The result is in µg FEU/mL for D-Dimer, and in % for AT.

3.2. Special characteristics for HORIBA Medical data

3.2.1. Data Presentation

Test ID	Test name
APC	Active protein C
PROTC	Protein C
LA	Lupus anticoagulant
PT	Prothrombin
APTT	APTT
FIB	Fibrinogen
TT	TT
D-DIM	D-Dimer

Test ID	Test name
AT	Antithrombin
Neph	Nephelometry
Turb	Turbidimetry
II	Factor II
V	Factor V
VII	Factor VII
X	Factor X
VIII	Factor VIII
IX	Factor IX
XI	Factor XI
XII	Factor XII
QC	Quality Control
undef	Undefined

Error code	Context
0000 0001 0000 0000	Reagent control differences
0000 0010 0000 0000	There is no derivate fibrinogen calibration data
0000 0100 0000 0000	Incubator overheated
0000 1000 0000 0000	Diluted sample (No error)
0001 0000 0000 0000	The sample should be diluted
0010 0000 0000 0000	The result is out of min-max range (Extrapolated result).

Example

If there is **Expired lot** and **Curve error** at the same time: 0000 0000 0100 1000, the error code is 00072



Find in the attached file all the error codes values.



error_codes.xlsx

3.2.2. Error Codes

The Error code is a 5-digit decimal format of the error byte.

Error code	Context
0000 0000 0000 0000	No error
0000 0000 0000 0001	Calibration error
0000 0000 0000 0010	Difference error during parallel measurement
0000 0000 0000 0100	Too much external light
0000 0000 0000 1000	Curve error (suspicious data during measurement phase)
0000 0000 0001 0000	Out of range error (time is out of normal range)
0000 0000 0010 0000	Incubation error (the time was too long)
0000 0000 0100 0000	Expired lot
0000 0000 1000 0000	Control result out of limit

4. Example of Result Sent by the Instrument

<- Instrument


```
<- <STX> 9876 |2020.08.26|11:33|PT |2: 14,8|2: 14,8| 14,8| 81,8; --- ; 1,13; --- ; --- |  
000<CR><LF><ETX>
```

5. To Send Results to the LIS

Access: **Main Menu > Result**

LIS connection must be configured.

You can choose to export the current result, several results, all of them or those which have not been printed yet.

1. For several results, use the arrows and press the **Mark** button to select them. If not, go to next step.
2. Press the **Action** button.

3. Press one of the following options:
 - **Current**
 - **Marked**
 - **All**
 - **Not Printed**
4. Press **Send**.
5. Press the **Validate** button.