



# **CA-600 ASTM Host Interface Specification**

2023/08/07 Ver. 1.05

**Sysmex Corporation**

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# 1. General

CA-600

## 2. Scope

The aim of this document is to supply the information that the CA-600 Automated Blood Coagulation Analyzer communicates with the host computer using ASTM protocol.

ASTM (the American Society for Testing and Materials)

One of the world's largest volunteer non-profit organizations, founded in 1898 to create standard regulations for materials, products and system services.

This specification conforms to the following two standards:

- Specifications for low level protocols to transfer data between clinical laboratory instruments and computer systems.  
ASTM E1381-91
- Standard specifications for transferring data between clinical instruments and computer systems.  
ASTM E1394-91

## 3. Revision History

Revision	Date	Major Contents of Changes
0.00	2010/04/07	Initial Version
0.01	2011/01/18	The test code table was revised.
1.00	2011/03/04	Release of a drawing
1.01	2011/04/12	The unit of PT INR is changed from "INR" to "-". The unit of PT R is changed from "" to "-". When the unit is a ratio or INR, the unit is output.
1.02	2012/01/17	6.3.3.1 Header Record "Exsample of transmission" was changed. Field 7.1.5 Length of software version was changed 5 to 6bytes. ( "00-02" → " 00-02") "Host Name" was added. The number of delimiters was changed. 4 → 5. Field 7.1.10 "Analyzer Name" was added. 6.3.3.3 Inquiry Record "Exsample of transmission" was changed. Field 12.1.5 The component delimiter "^" was added after "Test code". The clerical error of explanation was corrected. Table 12: Test code 040: "PT" was divided into "PT T" and "PT I". Test code 050: "APTT" was divided into "FSL" and "FS". Test code 300: "AT" was added. Test code 340: "HepL" was added. Test code 340: "HepU" was added. Test code 610: "DD" was divided into "DDPl", "DDi" and "AdDD". Test code 700: "+DD" was divided into "+DDP", "+DDi" and "+ADd". 6.3.3.4 Test Order Record

Revision	Date	Major Contents of Changes
		<p>“Exsample of transmission” was changed.</p> <p>Field 9.4.5</p> <p>“8” of the maximum size column was deleted.</p> <p>The clerical error of measurement item ID explanation was corrected.</p> <p>Field 9.4.12 “S(STD)” was added to “Action code”.</p> <p>Table14: same as Table12.</p> <p>6.3.3.5 Result record</p> <p>“Exsample of transmission” was changed.</p> <p>Field 10.1.4 size was changed. 6 → 5</p> <p>Field 10.1.5 size was changed. 7 → 5</p> <p>Table 16:</p> <p>Format length was changed. 6characters → 5characters.</p> <p>Test code 041: “PT” was divided into “PT T” and “PT I”.</p> <p>Test code 051: “APTT” was divided into “FSL” and “FS”.</p> <p>Test code 301: “AT” was added.</p> <p>Test code 302: “AT%” was added.</p> <p>Test code 332: “BCPC” → “BCPC%”.</p> <p>Test code 342: Test name “Hep”: Unit: “IU/mL” → “U/mL”</p> <p>Test code 341: “HepL” was added.</p> <p>Test code 342: “HepL” was added.</p> <p>Test code 341: “HepU” was added.</p> <p>Test code 342: “HepU” was added.</p> <p>Test code 502: “+Fbg C.” → “Fbg C.”</p> <p>Test code 522: “-Fbg C.” → “Fbg C.”</p> <p>Test code 611: “DD” was divided into “DDPI”, “DDi” and “AdDD”.</p> <p>Test code 612: “DD C.” was deleted.</p> <p>Test code 612: “DD PI” was added.</p> <p>Test code 612: “DDi” was added.</p> <p>Test code 612: “Adv.DD” was added.</p> <p>Test code 662: “-vWF%” → “vWF%”</p> <p>Test code 672: “+vWF%” → “vWF%”</p> <p>Test code 701: “+DD” was divided into “+DDP”, “+DDi” and “+Add”.</p> <p>Test code 702: “+DD C.” was deleted.</p> <p>Test code 702: “DD PI” was added.</p> <p>Test code 702: “DDi” was added.</p> <p>Test code 702: “Adv.DD” was added.</p> <p>Test code 722: “+PFD C.” → “PFDP C.”</p> <p>7. Examples of Communication</p> <p>Complete correction</p>
1.03	2014/07/16	<p>The addition of a measurement item (INNOVANCE VWF AC)</p> <p>6.3.3.3. Inquiry Record</p> <p>Test code 800: “WFa” was added.</p> <p>Test code 810: “+WFa” was added.</p> <p>Test code 820: “-WFa” was added.</p> <p>6.3.3.4. Test Order Record</p> <p>Test code 800: “WFa” was added.</p> <p>Test code 810: “+WFa” was added.</p> <p>Test code 820: “-WFa” was added.</p> <p>6.3.3.5 Result record</p> <p>Test code 801: “WFa” was added.</p> <p>Test code 802: “vWFAc%” was added.</p> <p>Test code 811: “+WFa” was added.</p> <p>Test code 812: “vWFAc%” was added.</p> <p>Test code 821: “-WFa” was added.</p> <p>Test code 822: “vWFAc%” was added.</p> <p>The addition of ASTM2 format</p>

Revision	Date	Major Contents of Changes
		6.1.1.5. Interface parameters ASTM2 is added to a format setup. 6.3.1.2. Records The contents of Table 4 "Comment record" were indicated. 6.3.2.3. Analysis results and QC data (CA-600 → Host computer) The comment record output pattern was added to Table 8. 6.3.3.5 Result record The clerical error of a table reference place is corrected. 6.3.3.6. Comment record (Reagent LOT Information) Addition. 6.3.3.7. Comment record (Standard curve Information) Addition. 6.3.3.8. Comment record (QC measurement Information) Addition. 7. Examples of Communication The example of communication of the comment record output was added.
1.04	2019/03/11	Correction of errors.  6.3.3.1 Header Record -7.1.13 Version number not used when sent from host 6.3.3.3 Inquiry Record -Correct the point where O looks like 0 in example of transmission and field 12.1.6 -'^' was deleted after sample ID No. attribute in field 12.1.3. 6.3.3.4 Test Order Record -'^' was added after the sample ID No. attribute from CA-600 in example of transmission and field 9.4.4 -Corrected the point that O looks like a circle in the field 9.4.1. 6.3.3.6 Comment record(Reagent LOT Information) - Correct the test protocol name of Adv.DD to + Adv.DD 6.3.3.8 Comment record(QC measurement Information) - Added the format of QC measurement date
1.05	2023/08/07	6.3.3.1 Header Record Notation form of software version was changed.

## 4. Overview

The aim of this document is to provide information on communication between the CA-600 and the host computer using the ASTM protocol.

## 5. Terminology

The definition of the terminology used in this document is described as follows.

Numerics:

Indicates ASCII codes "0" (30h) through "9" (39h).

Alphabet:

Indicates ASCII codes "A" (41h) through "Z" (5Ah) and "a" (61h) through "z" (7Ah).

Alpha-numeric:

Indicates numerical or alphabetical characters.

## 6. Communication Specifications

Communication specifications are based on a layer protocol.

(1) Physical layer

Specifies the sending and receiving of signals between the CA-600 and the host computer through physical and electrical connections.

See section "6.1 Physical Layer (Hardware)".

(2) Data link layer

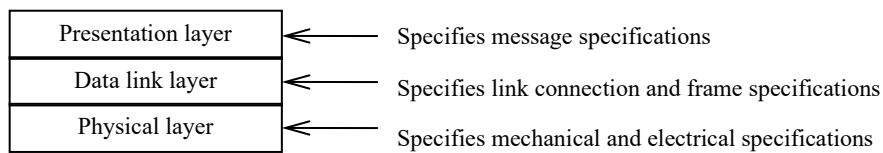
Specifies the sending and receiving of data by link connections and for each frame between the CA-600 and the host computer.

See section "6.2 Data Link Layer (Transmission Protocol)".

(3) Presentation layer

Specifies the messages that are sent and received by the CA-600 and the host computer.

See section "6.3 Presentation Layer".



**Note:**

The CA-600 supports the serial interface. Among combinations of conformance to the standard and connection, the following three combinations are supported:

1. ASTM E1381-91 mode (serial interface)

The presentation layer conforms to ASTM E1394-91.

The data link layer and the physical layer conform to ASTM E1381-91.

## 6.1. Physical Layer (Hardware)

### 6.1.1. Serial Connection

#### 6.1.1.1. Connectors

Although the ASTM standard specifies a D-SUB-25-pin male connector as standard, a D-SUB-9-pin-male I/O connector, which is located on the rear of CA-600, is used to communicate.

**Table 1: Connector pin assignment**

Pin No.	Signal name		Signal direction
1	NC		
2	Receive data	RxD	IN
3	Transmit data	TxD	OUT
4	Data terminal ready	DTR	OUT
5	Signal ground	SG	-
6	Data set ready	DSR	IN
7	Request to send	RTS	OUT
8	Clear to send	CTS	IN
9	NC		

The control signals are not used with ASTM specifications. For this reason, do not make connections to unused pins.

#### 6.1.1.2. Signal identification level

**Table 2: Signal identification level**

Level	Data signal	Control signal
+3V or more	Logic "0", start bit	ON
-3V or less	Logic "1", stop bit	OFF



### 6.1.1.3. Connection cable

Please configure a cable with a D-SUB 9 pin female adaptor for connecting to the instrument's D-SUB 9 male connector in accordance with the following connection chart.

CA-600 DB-9		Host computer DB-9      DB-25		
TxD	3	3	2	TxD
RxD	2	2	3	RxD
SG	5	5	7	SG
RTS	7	7	4	RTS
CTS	8	8	5	CTS
DTR	4	4	20	DTR
DSR	6	6	6	DSR
NC	1			
NC	9			

### 6.1.1.4. Interface circuit

The MAX232 (equivalent) is used in the bit serial voltage type interface circuit.  
See “Appendix 1 Interface Circuit” for the reference

### 6.1.1.5. Interface parameters

**Table 3: Interface parameters**

Parameter	Selection of settings
Format	CA-500, CA-1000, ASTM*, ASTM2*
Baud rate	600, 1200, 2400, 4800, 9600* bps
Data length	7 bits, 8 bits*
Stop bit	1 bit*, 2 bits
Parity	None*, Even, Odd

The value with asterisk mark (\*) allows conformance with the ASTM standard.

[Note]

- However, 7-bit data lengths, even or odd parity and two stop bits are recognized by the ASTM standard for use with special applications.
- In ASTM mode, the settings for the class and response code (ACK/NAK) are ignored.
- In ASTM2 setup, the comment record of the presentation layer becomes effective.

#### 6.1.1.6. Standard specifications (ASTM E1381-91)

The physical layer of the CA-600 conforms to ASTM E1381-91 "5. Physical Layer", except for the connector type. The CA-600 uses a D-SUB-9 pin male connector. (The ASTM standard specifies a 25-pin male connector.)

## 6.2. Data Link Layer (Transmission Protocol)

The data link layer transfers data between systems using a character-based protocol in accordance with ASTM E1381-91 "6. Data Link Layer".

This section briefly describes communication control procedures. For details, see ASTM E1381-91.

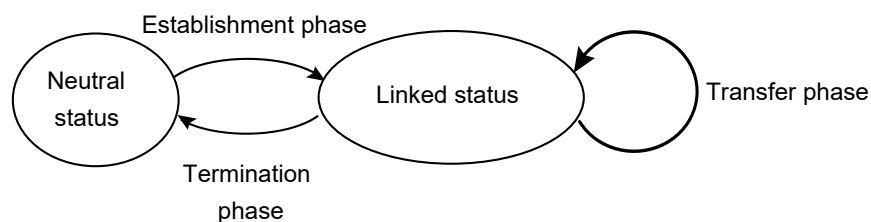
### 6.2.1. Communication status

The data link layer consists of the following two communication states:

- Neutral status
- Linked status

Transition to each status is accomplished through the following three phases.

- 1) Establishment phase  
Establishes communication line, and determines the direction of data transfer. In this way, the sender and the receiver are identified, and the change is made from neutral status to linked status.
- 2) Transfer phase  
The sender transmits messages to the receiver until all messages are transferred.
- 3) Termination phase  
Releases the communication line. Changes both the sender and the receiver from linked status to neutral status.

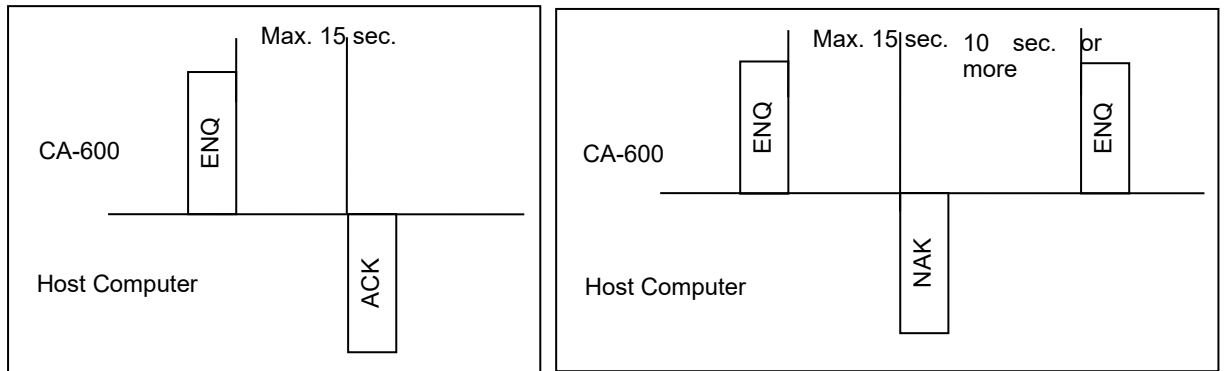


### 6.2.2. Establishment phase

- (1) The sender (CA-600) sends an [ENQ] signal to the receiver (host computer). To respond to the sender, the receiver performs the following action.

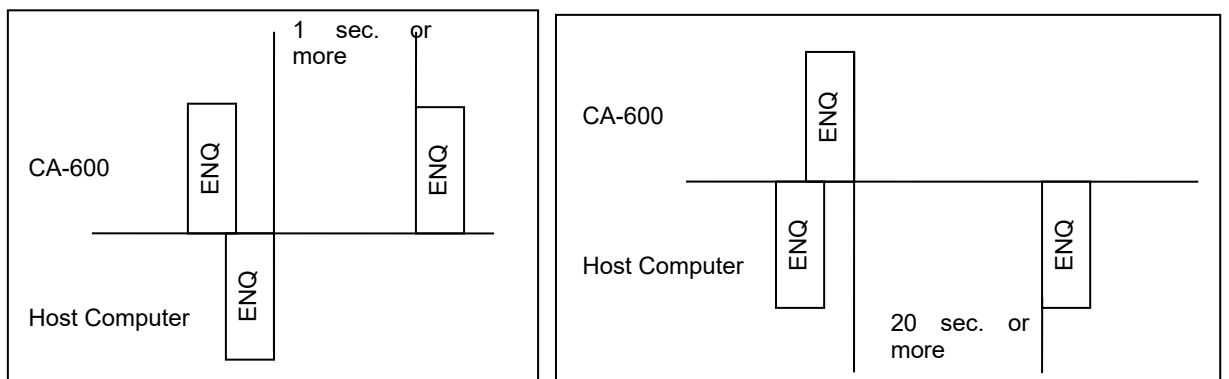
- Returns an [ACK] signal when the communication is enabled.
- Returns a [NAK] when the communication is disabled.

If the receiver responded [NAK], the sender waits for at least 10 seconds before attempting to send another [ENQ] signal.



- (2) When both the sender and receiver send [ENQ] signals, the host computer must yield control authority to the CA-600.

- The CA-600 sends [ENQ] again after one second.
- The host computer must wait for 20 seconds before sending [ENQ] again.



### 6.2.3. Transfer phase

During the transfer phase, the sender sends messages to the receiver. The transfer phase continues until all messages have been sent.

- (1) If the text contains 240 characters or less, a frame with the following structure will be transferred.  
[STX] [F#] [Text] [ETX] [CHK1] [CHK2] [CR] [LF]
- (2) If the text contains more than 240 characters, it is divided into two or more frames. The intermediate frame text termination code is [ETB], and the final frame text termination code is [ETX].

[STX] [F#] [Text] [ETB] [CHK1] [CHK2] [CR] [LF]

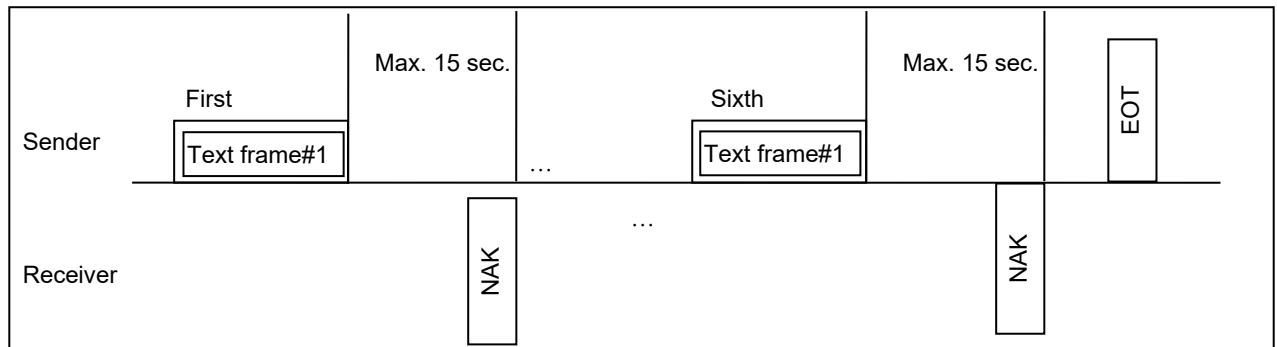
[STX] [F#] [Text] [ETB] [CHK1] [CHK2] [CR] [LF]

.....

[STX] [F#] [Text] [ETX] [CHK1] [CHK2] [CR] [LF]

Symbol	Explanation
[STX]	Start of a frame
[F#]	Frame number One of the numbers 0 to 7 is used, beginning with 1 and repeating 2, 3, 4, 5, 6, 7, and 0. In case of retrains, the same frame number is sent.
[Text]	ASTM E1394-91 records are used. (See 6.3.) For this reason, the codes below will not be used. 0x00-0x06,0x08,0x0A,0x0E-0x1F,0x7F,0xFF
[ETB]	Control code indicating end of text (for intermediate frame)
[ETX]	Control code indicating end of text (for the final frame)
[CHK1] [CHK2]	Expressed by characters "0" - "9" and "A" - "F". Characters beginning from the character following [STX] and until [ETB] or [ETX] (including [ETB] or [ETX]) are added in binary. The 2-digit numbers, which represent the least significant 8 bits in hexadecimal code, are converted to ASCII characters "0" - "9" and "A" - "F". The most significant digit is stored in CHK1 and the least significant digit in CHK2.
[CR] [LF]	Control code indicating end of frame

- (4) If the receiver has successfully received the frame, and is prepared to receive the next frame, the receiver responds with [ACK]. After the sender receives [ACK], the sender advances the frame number and either sends a new frame or transitions to the termination phase.
- (5) If the receiver fails to receive the frame and is prepared to receive the same frame again, the receiver responds with [NAK]. After the sender receives [NAK], the sender sends the most recent frame again, using the same frame number. If a total of six attempts to send the frame failed, the sender transitions to the termination phase and must end sending of the message.



- (6) The CA-600 processes the response of [EOT] from the Host computer as [ACK]. (Response of [EOT] from the receiver is usually a request to suspend a transmission to the sender. However, the CA-600 does not support this function.)

#### 6.2.4. Termination phase

During the termination phase, the status returns to neutral.

The sender sends the [EOT] to inform the receiver that the message transmission has been completed.

When the sender sends [EOT], the sender transitions to neutral status. When the receiver receives [EOT], the receiver transitions to neutral status.

#### 6.2.5. Time out

The timer is used to detect a failure to coordinate between the sender and the receiver. The timer is used as a mean of the recovery for communication line and communication destination device failure.

- (1) During the establishment phase, the timer is set when the sender sends [ENQ]. The time out results if a response of [ACK], [NAK] or [ENQ] is not received within 15 seconds. After time out, the sender transitions to the termination phase.
- (2) During transfer phase, the 15-second timer is set when the sender sends the final character of a frame. Time out results if no response is received within 15 seconds. After time out, the sender transitions to the termination phase. The receiver sets a 30-second timer when first entering the transfer phase or when responding (either [ACK] or [NAK]) to a frame. Time out results if the receiver does not receive a frame or [EOT] from the sender within 30 seconds. After time out, the receiver discards the latest incomplete message and transitions to the termination phase.

## 6.3. Presentation Layer

### 6.3.1. Messages, Records and Fields

#### 6.3.1.1. Messages

In the presentation layer, all data is transmitted using messages. Messages are composed of record arrays that start with message header record (H) and end with message termination record (L).

#### 6.3.1.2. Records

A record is a series of text, beginning with an ASCII alphabet characters referred to as the identifier, and ending with [CR].

**Table 4: Records**

Record type	Record identifier	Level	Description
Header record	H	0	Contains the sender and the receiver information
Patient information record	P	1	Contains the patient information
Inquiry record	Q	1	Requires test order information requesting to the host computer
Test order record	O	2	Contains test order information
Test result record	R	3	Contains test result information
Comment record	C	1–4	Contains information on the comment.
Manufacturer information record	M	1–4	Not used
Scientific information record	S	N/A	Not used
Message terminator record	L	0	Indicates the end of the message

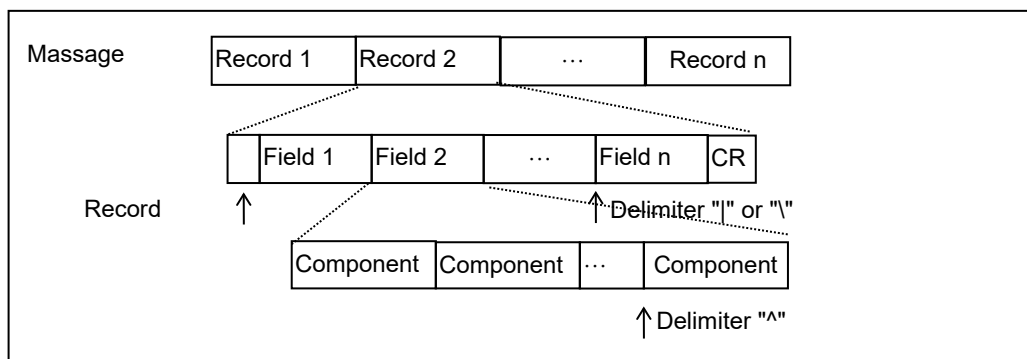
- A smaller level number indicates a higher level.
- A higher-level record contains information that is common to all lower-level records.
- All levels other than 0 must be located after higher levels. However, the comment record can be inserted at any level. They are considered to be one lower level than the preceding record.
- Example transmission  
H → P → O → R → L..... Correct  
H → R → L ..... Incorrect, because P and O must be transmitted in prior to R

### 6.3.1.3. Fields

A record is further divided into multiple fields by field delimiters. A field is identified by its position within a record and has a variable length. The following is used as delimiters.

**Table 5: Fields**

Type	Code	Description
Field delimiter	Vertical bar ( ) (7Ch)	Separates adjacent field within a record
Repeat delimiter	Back slash (\) (5Ch)	Separates multiple numbers of descriptors in a field
Component delimiter	Caret ^ (5Eh)	Separates data elements within a field that has a hierarchical or qualifier nature
Escape delimiter	Ampersand & (26H)	Used within a text field to identify special case operations. (" " → &F&, "\" → &R&, "^" → &S&, "&" → &E&, and hexadecimals → &Xxxxx&)



### 6.3.2. Communication Protocol

#### 6.3.2.1. Analysis order inquiry (CA-600 → Host computer)

This protocol is used for the CA-600 to inquire to the host computer analysis information to obtain the sample information.

Inquiry can be made with keyword of the sample ID Number in the CA-600.

**Table 6: Analysis Order Inquiry**

CA-600	Direction	Host computer
ENQ	→	
	←	ACK
H (Header Record)	→	
	←	ACK
Q (Inquiry Record)	→	
	←	ACK
L (Message Terminator Record)	→	
	←	ACK
EOT	→	

#### 6.3.2.2. Analysis information (Host computer → CA-600)

This protocol is used for the host computer to respond analysis information against the inquiry made by the CA-600.

**Table 7: Analysis Information**

CA-600	Direction	Host computer
	←	ENQ
ACK	→	
	←	H (Header Record)
ACK	→	
	←	P (Patient Information Record)
ACK	→	
	←	O (Test Order Record)
ACK	→	
	←	L (Message Terminator Record)
ACK	→	
	←	EOT



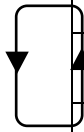
### 6.3.2.3. Analysis results and QC data (CA-600 → Host computer)

This protocol is used for the CA-600 to transmit the analysis result, the QC data in a real-time transmission (QC sample Number is "QCXX" and transmitted as similar to the regular sample data), and the QC data in the manual output.

**Table 8: Analysis results and QC data**

	CA-600	Direction	Host computer
	ENQ	→	
		←	ACK
	H (Header Record)	→	
		←	ACK
	P (Patient Information Record)	→	
		←	ACK
	O (Test Order Record)	→	
		←	ACK
	R: Result Record	→	
		←	ACK
	C: Comment Record	→	
		←	ACK
	L (Message Terminator Record)	→	
		←	ACK
	EOT	→	

Replicating  
the No. of  
parameters



\* Comment Record becomes effective in ASTM2 format.

### 6.3.3. Details of Record

#### 6.3.3.1. Header Record

[Example of transmission]

- CA-600 → Host computer  
H|\^&|||CA-600^ 00-02|||||||1<CR>
- Host computer → CA-600  
H|\^&|||Host Name^^^^|||CA-600<CR>

**Table 9: Details of Header Record**

ASTM Field	Field name	CA-600 ↓ Host computer	Host computer ↓ CA-600	Max. size (byte)	Remarks
7.1.1	Record type	H	H	1	Fixed
7.1.2	Delimiter definition	\^&	\^&	4	Fixed
7.1.3	Message control ID	Not used	Not used	-	
7.1.4	Access password	Not used	Not used	-	
7.1.5	Sender name or ID	Analyzer name^ Software version^ Analyzer serial No.^ Interface version^ Logical ID number	Host Name^^^^	16^ 6^ ^ ^	
7.1.6	Sender street address	Not used	Not used	-	
7.1.7	Reserved field	Not used	Not used	-	
7.1.8	Sender Telephone No.	Not used	Not used	-	
7.1.9	Sender characteristics	Not used	Not used	-	
7.1.10	Receiver ID	Not used	Analyzer name	6	
7.1.11	Comment	Not used	Not used	-	
7.1.12	Processing ID	Not used	Not used	-	
7.1.13	ASTM Version No.	ASTM Version No.	Not used	1	Fixed
7.1.14	Date and Time of message	Not used	Not used	-	

[Detailed explanation of the field]

1) 7.1.2 Delimiter definition

"|\^&" is used as a fixed character string. No field delimiter is required between 7.1.1 and 7.1.2.

2) 7.1.5 Sender name or ID

Analyzer name: Fixed to "CA-600"

\*When "CA-500" is selected by "flag format" of the "host computer" setting, "CA-500" is set to the analyzer name.

Software version: Refers to the software version loaded to the CA-600

"XX-XX". Each "X" represents a number between 0 and 9.

\*From Ver. 0.30-XX, the version notation format will be changed to "Ver. X.XX-XX".

The new version will be set as follows.

[Example]

Ver. 0.30-02 → "02-30"

Analyzer serial No.: Not used

Interface version: Not used

Logical ID number: Not used

HostName: Up to 16 characters.

3) 7.1.10 ReceiverID

Analyzer name: Fixed to "CA-600"

\*When "CA-500" is selected by "flag format" of the "host computer" setting, "CA-500" is set to the analyzer name.

4) 7.1.13 Version No.

Fixed to "1"

### 6.3.3.2. Patient information record

[Example of transmission]

- CA-600 → Host computer  
P |1<CR>
- Host computer → CA-600  
P |1<CR>

**Table 10: Details of Patient Information Record**

ASTM Field	Field name	CA-600 ↓ Host computer *1	Host computer ↓ CA-600	Max. size (byte)	Remarks
8.1.1	Record type	P	P	1	Fixed
8.1.2	Sequence No.	Sequence No.	Sequence No.	1	Sequence No. of records
8.1.3	Practice assigned patient ID	Not used	Not used	-	
8.1.4	Laboratory assigned patient ID	Not used	Not used	-	
8.1.5	Patient ID No.	Not used	Not used	-	
8.1.6	Patient name	Not used	Not used	-	
8.1.7	Mother's maiden name	Not used	Not used	-	
8.1.8	Birth date	Not used	Not used	-	
8.1.9	Patient sex	Not used	Not used	-	
8.1.10	Patient race	Not used	Not used	-	
8.1.11	Patient address	Not used	Not used	-	
8.1.12	Reserved	Not used	Not used	-	
8.1.13	Patient telephone No.	Not used	Not used	-	
8.1.14	Attending physician name	Not used	Not used	-	
8.1.15	Special field 1	Not used	Not used	-	
8.1.16	Special field 2	Not used	Not used	-	
8.1.17	Patient height	Not used	Not used	-	
8.1.18	Patient weight	Not used	Not used	-	
8.1.19	Patient's known or suspected diagnosis	Not used	Not used	-	
8.1.20	Patient active medications	Not used	Not used	-	
8.1.21	Patient diet	Not used	Not used	-	
8.1.22	Practice field 1	Not used	Not used	-	
8.1.23	Practice field 2	Not used	Not used	-	
8.1.24	Admission and discharge dates	Not used	Not used	-	
8.1.25	Admission status	Not used	Not used	-	

ASTM Field	Field name	CA-600 ↓ Host computer *1	Host computer ↓ CA-600	Max. size (byte)	Remarks
8.1.26	Location	Not used	Not used	-	
8.1.27	DRG or AVG	Not used	Not used	-	
8.1.28	DRG or AVG2	Not used	Not used	-	
8.1.29	Patient religion	Not used	Not used	-	
8.1.30	Marital status	Not used	Not used	-	
8.1.31	Isolation status	Not used	Not used	-	
8.1.32	Language	Not used	Not used	-	
8.1.33	Hospital service	Not used	Not used	-	
8.1.34	Hospital institution	Not used	Not used	-	
8.1.35	Dosage category	Not used	Not used	-	

[Detailed explanation of the field]

1) 8.1.2 Sequence No.

The sequence number starts with 1 and indicates the sequence position in which the record appeared in the message.

This number is reset to 1 when a higher-level record appears in the message.

This number is virtually fixed to 1 since the CA-600 can use the P record only once.

### 6.3.3.3. Inquiry Record

[Example of transmission]

- CA-600 → Host computer  
Q|1|000001^01^123456789012345^B||^040^PT T |O|20010905150000<CR>
- Host computer → CA-600  
Not used

**Table 11: Details of Request Information Record**

ASTM Field	Field name	CA-600 ↓ Host computer	Host computer ↓ CA-600	Max. size (byte)	Remarks
12.1.1	Record Type	Q	Not used	1	
12.1.2	Sequence No.	1	Not used	4	
12.1.3	Starting Range ID No.	Rack No.^ Tube position^ Sample ID No.^ Sample ID No. attribute	Not used	6^ 2^ 15^ 1	
12.1.4	Ending Range ID No.	Not used	Not used	-	
12.1.5	Universal test ID	^^^Test code (See Table 12) ^ Test name When requesting multiple parameters, use the repeat symbol as below: Test parameter information 1\Test parameter information 2\Test parameter information 3\Test parameter information 4\Test parameter information 5	Not used	^^^3 ^8	
12.1.6	Nature of request day limit	O	Not used	1	O: Request date Request date is not defined in the ASTM.
12.1.7	Beginning request date and time	YYYYMMDDHHMMSS	Not used	14	
12.1.8-12.1.13	Ending request result date through Requested information status code	Not used	Not used	-	

## [Detailed explanation of the field]

## 1) 12.1.2 Sequence No.

The sequence number starts with 1 and indicates the sequence position in which the record appeared in the message. This number is reset to 1 when a higher-level record appears in the message.

## 2) 12.1.3 Starting Range ID No.

Rack No.: Assigned to the rack. Normal sample or STAT sample: 6-digit number

If the number of digits is less than six, the rack number will be aligned to the right and the missing digits will be padded with zeros.

In the CA-600, only the two rightmost digits are displayed on the screen.

Tube position: A 2-digit number that indicates the position of the sample in the rack

Normal sample: 01 - 10

STAT sample: 00

Sample ID number: A 15-digit number consisting of alpha-numeric characters. Depends on the direction for use, the hyphen "-" (2DH) can be inserted between characters. "-" is included in 15-digit number. The zero suppression function is not performed. If the number is less than 15-digit, it is aligned to the right and spaces (020H) are padded to the most significant digit. If the sample barcode cannot be read, sample ID numbers beginning with "ΔΔERR0000000001" are assigned sequentially to the samples. (The symbol "Δ" indicates a space.)

The sample number beginning with "QC" is reserved to use for the QC analysis.

## Sample ID No. attribute:

M: Manually entered

This attribute is used for sample numbers that were manually entered.

A: Automatically assigned number by the analyzer

This attribute is used for sample numbers that were assigned by the automatic increment function or when an ID read error occurred and sample numbers that begin with "ERR" were set.

B: Barcode reader read number

This is used when the sample ID number is read by the ID barcode reader.

## 3) 12.1.5 Universal test ID

Test code: Suffixing 0 to the "Host ID" in the "Test Protocol" makes the test code. See Table 12.

Test name: Up to 8 characters. See Table 12.

## 4) 12.1.7 Beginning request result date and time

The date format is fixed to "YYYYMMDDHHMMSS".

Here, YYYY indicates the year, MM the month, DD the day, HH the hour in the 24-hour system (00-23), MM the minute (00-59), SS the second (00).

In the CA-600, the second is fixed to 00.

**Table 12: Test code (For the requested information record)**

Test code	Test name	Test code	Test name
040	PT T	440	<b>Reserved</b>
040	PT I	450	<b>Reserved</b>
050	FSL	460	<b>Reserved</b>
050	FS	470	<b>Reserved</b>
060	Fbg	500	+Fbg
070	<b>Reserved</b>	510	TT
080	<b>Reserved</b>	520	-Fbg
090	<b>Reserved</b>	600	<b>Reserved</b>
100	<b>Reserved</b>	610	DDPI
120	II	610	DDi
150	V	610	AdDD
170	VII	620	PFDP
180	VIII	630	<b>Reserved</b>
190	IX	640	<b>Reserved</b>
200	X	650	vWF
210	XI	660	-vWF
220	XII	670	+vWF
250	PCcl	680	<b>Reserved</b>
260	BXT	690	<b>Reserved</b>
270	LA1	700	+DDP
280	LA2	700	+DDi
290	<b>Reserved</b>	700	+ADd
300	AT3	710	<b>Reserved</b>
300	AT	720	+PFD
310	APL	800	WFa
320	Plg	810	+WFa
330	BCPC	820	-WFa
340	Hep	830	<b>Reserved</b>
340	HepL	840	<b>Reserved</b>
340	HepU	850	<b>Reserved</b>
360	<b>Reserved</b>	860	<b>Reserved</b>
370	<b>Reserved</b>	870	<b>Reserved</b>
390	<b>Reserved</b>	880	<b>Reserved</b>
400	<b>Reserved</b>	890	<b>Reserved</b>
410	<b>Reserved</b>	900	<b>Reserved</b>
420	<b>Reserved</b>	000	<b>Reserved</b>
430	<b>Reserved</b>	999	<b>Reserved</b>

\* The test code and test name are the settings when shipping from the factory.

\* Due to the possibility that parameters will be added in the future, prepare a receiving program that skips data when a code that is not included in the list is received.

### 6.3.3.4. Test Order Record

[Example of transmission]

- CA-600 → Host computer  
O|1||000001^01^123456789012345^B^||R|||||N<CR>
- Host computer → CA-600  
O|1|000001^01^123456789012345^B|^040^100\^^050^100  
\^^060^100|R|20010807101000|||||N<CR>

**Table 13: Details of Test Order Record**

ASTM Field	Field name	CA-600 ↓ Host computer	Host computer ↓ CA-600	Max. size (byte)	Remarks
9.4.1	Record type	O	O	1	Fixed
9.4.2	Sequence No.	1	Sequence No.	4	Sequence No. of records
9.4.3	Specimen ID	Not used	Rack No.^ Tube Position^ Sample ID No.^ Sample ID No. attribute	6^ 2^ 15^ 1	Sample ID No. attribute is one of the followings: M: Manually entered A: Automatically assigned number by the analyzer B: Barcode reader read number C: Host computer
9.4.4	Instrument specimen ID	Rack No.^ Tube Position^ Sample ID No.^ Sample ID No. attribute^	Not used	6^ 2^ 15^ 1^	
9.4.5	Universal test ID	Not used	^^^Test code ^^Dilution ratio  When requesting multiple parameters, use the repeat symbol as below: Test parameter information 1\Test parameter information 2\Test parameter information 3\Test parameter information 4\Test parameter information 5	^^3 ^^3	
9.4.6	Priority	Priority	Priority	1	S(STAT, STAT sample) R(Routine, Normal sample)
9.4.7	Requested/order date and time	Not used	YYYYMMDDHH MMSS	14	
9.4.8 – 9.4.11	Specimen collection date and time through Collector ID	Not used	Not used	-	
9.4.12	Action code	Action code	Action code	1	N Normal sample Q QC material S STD
9.4.13 – 9.4.31	Danger code through Material institution	Not used	Not used	-	



## [Detailed explanation of the field]

## 1) 9.4.2 Sequence No.

The sequence number starts with 1 and indicates the sequence position in which the record appeared in the message. This number is reset to 1 when a higher-level record appears in the message.

## 2) 9.4.3 Specimen ID

Rack No.: Assigned to the rack. Normal sample or STAT sample: 6-digit number

If the number of digits is less than six, the rack number will be aligned to the right and the missing digits will be padded with zeros.

In the CA-600, only the two rightmost digits are displayed on the screen.

Return the same number that was the subject of the inquiry.

Tube position: A 2-digit number that indicates the position of the sample in the rack (00 - 99)

Return the same number that was the subject of the inquiry.

Sample ID number: A 15-digit number consisting of alpha-numeric characters or hyphens "-" (2Dh).

"Return the same number that was the subject of the inquiry.

Sample ID No. attribute: Indicates how the sample ID No. was registered.

Return the same number that was the subject of the inquiry. " "

## 3) 9.4.4 Instrument Specimen ID

Rack No.: Assigned to the rack. Normal sample or STAT sample: 6-digit number

If the number of digits is less than six, the rack number will be aligned to the right and the missing digits will be padded with zeros.

In the CA-600, only the two rightmost digits are displayed on the screen.

Tube position: A 2-digit number that indicates the position of the sample in the rack

Normal sample: 01 - 10

STAT sample: 00

Sample ID number: A 15-digit number consisting of numeric characters. Depends on the direction for use, the hyphen "-"(2DH) can be inserted between characters. "-"is included in 15-digit number. The zero suppression function is not performed. If the number is less than 15-digit, it is aligned to the right and spaces (020H) are padded to the most significant digit. If the sample barcode cannot be read, sample ID numbers beginning with "ΔΔERR0000000001" are assigned sequentially to the samples. (The symbol "Δ" indicates a space.)

For QC analysis, "QC01" - "QC06" are used (Specify Q for the action code in 9.4.12).

Sample ID No. attribute:

M: Manually entered

Sample ID No. is manually entered through the touch panel.

A: Automatically assigned number by the analyzer

This attribute is used for sample numbers that were assigned by the automatic increment function or when an ID read error occurred and sample numbers that begin with "ERR" were set.

B: Barcode reader read number

This is used when the sample ID number is read by the ID barcode reader.

C: Host computer

This attribute is used for sample numbers that were specified from the host computer.

## 4) 9.4.5 Universal Test ID

When an order is sent from the host computer to the CA-600, set the test code that was sent as 12.1.5 Universal Test ID of the request information record. If there are no parameters, it can be skipped.

Test code: Suffixing 0 to the "Host ID" in the "Test Procotol" makes the test code.

**Table 14: Test code for the test order record**

Test code	Test name	Test code	Test name
040	PT T	440	<b>Reserved</b>
040	PT I	450	<b>Reserved</b>
050	FSL	460	<b>Reserved</b>
050	FS	470	<b>Reserved</b>
060	Fbg	500	+Fbg
070	<b>Reserved</b>	510	TT
080	<b>Reserved</b>	520	-Fbg
090	<b>Reserved</b>	600	<b>Reserved</b>
100	<b>Reserved</b>	610	DDPI
120	II	610	DDi
150	V	610	AdDD
170	VII	620	PFDP
180	VIII	630	<b>Reserved</b>
190	IX	640	<b>Reserved</b>
200	X	650	vWF
210	XI	660	-vWF
220	XII	670	+vWF
250	PCcl	680	<b>Reserved</b>
260	BXT	690	<b>Reserved</b>
270	LA1	700	+DDP
280	LA2	700	+DDi
290	<b>Reserved</b>	700	+AdD
300	AT3	710	<b>Reserved</b>
300	AT	720	+PFD
310	APL	800	WFa
320	Plg	810	+WFa
330	BCPC	820	-WFa
340	Hep	830	<b>Reserved</b>
340	HepL	840	<b>Reserved</b>
340	HepU	850	<b>Reserved</b>
360	<b>Reserved</b>	860	<b>Reserved</b>
370	<b>Reserved</b>	870	<b>Reserved</b>
390	<b>Reserved</b>	880	<b>Reserved</b>
400	<b>Reserved</b>	890	<b>Reserved</b>
410	<b>Reserved</b>	900	<b>Reserved</b>
420	<b>Reserved</b>	000	<b>Reserved</b>
430	<b>Reserved</b>	999	<b>Reserved</b>

\* The test code and test name are the settings when shipping from the factory.

\* Due to the possibility that parameters will be added in the future, prepare a receiving program that skips data when a code that is not included in the list is received.

Dilution ratio: The dilution ratio cannot be set for the CA-600.

Set a fixed number of "100".

## 5) 9.4.6 Priority

S (STAT): STAT sample

R (Routine): Normal sample

## 6) 9.4.7 Requested/order date and time

Indicates the date and time of the analysis for the inquiry sample.

The date format is fixed to "YYYYMMDDHHMMSS".

Here, YYYY indicates the year, MM the month, DD the day, HH the hour in the 24-hour system (00-23), MM the minute (00-59), SS the second (00-59).

## 7) 9.4.12 Action code

CA-600 → Host computer

N: Normal sample

Q: QC sample

S: STD sample

Host Computer → CA-600

N: Normal sample

Q: QC sample

STD measurement cannot be directed from a host computer.

### 6.3.3.5.Result record

[Example of transmission]

- CA-600 → Host computer  
R|1|^^^041^PT T ^100^1| 10.2|sec ||N|||||20070328135000<CR>  
R|2|^^^042^PT% ^100^1| 99.4|% ||N|||||20070328135000<CR>  
.....
- Host computer → CA-600  
Not used

**Table 15: Details of the Result Record**

ASTM Field	Field name	CA-600 ↓ Host computer	Host computer ↓ CA-600	Max. size (byte)	Remarks
10.1.1	Record type	R	Not used	1	
10.1.2	Sequence No.	Sequence No.	Not used	4	Sequence No. beginning with 1
10.1.3	Universal test ID	^^^Test code^ Parameter^ Dilution ratio^ Analysis result type	Not used	^^^3^ 8^3^ 1	Test code: Described as follows (Table 16) Test name: Up to 8 characters
10.1.4	Data or measurement value	Value	Not used	5	Up to 5 characters
10.1.5	Units	Units	Not used	5	Up to 5 characters
10.1.6	Reference ranges	Not used	Not used	-	
10.1.7	Result abnormal flags	Result abnormal flags	Not used	1	
10.1.8	Nature of abnormality testing	Not used	Not used	-	
10.1.9	Result status	Not used	Not used	-	
10.1.10	Date of change in instrument normative values	Not used	Not used	-	
10.1.11	Operator identification	Not used	Not used	-	
10.1.12	Date/Time test started	Not used	Not used	-	
10.1.13	Date/Time test completed	YYYYMMDDHH MMSS	Not used	14	
10.1.14	Instrument identification	Not used	Not used	-	

[Detailed explanation of the field]

- 1) 10.1.2 Sequence No.  
The sequence number starts with 1 and indicates the sequence position in which the record appeared in the message. This number is reset to 1 when a higher-level record appears in the message.
- 2) 10.1.3 "Universal test ID" through 10.1.13 "Date time test completed"  
Fields to be set will vary depending on the contents to be transmitted.

2.1) When multiple parameters are output: Parameters with analysis order are output.

a) 10.1.3 Universal Test ID

Test code: Indicates analysis procedure parameters. This code is a combination of a 2-digit universal test code and the following 1-digit IDs. See Table 16.

- 1: Time
- 2: Percent activity/concentration
- 3: Ratio
- 4: INR
- 5: DFbg

Table 16: Test code

Test code	Test name	Unit	Format	Test code	Test name	Unit	Format
041	PT T	sec	###.#	312	APL%	%	###.#
041	PT I	sec	###.#	321	Plg	dOD	#.###
042	PT%	%	###.#	322	Plg%	%	###.#
043	PT R.	-	###.##	331	BCPC	dOD	#.###
044	PT INR	-	###.##	332	BCPC%	%	###.#
045	dFbg	mg/dL	####	341	Hep	dOD	#.###
051	FSL	sec	###.#	342	Hep	U/mL	###.##
051	FS	sec	###.#	341	HepL	dOD	#.###
061	Fbg	sec	###.#	342	HepL	IU/mL	###.##
062	Fbg C.	mg/dL	####	341	HepU	dOD	#.###
07X	<b>Reserved</b>	<b>Reserved</b>		342	HepU	IU/mL	###.##
08X	<b>Reserved</b>	<b>Reserved</b>		36X	<b>Reserved</b>	<b>Reserved</b>	
09X	<b>Reserved</b>	<b>Reserved</b>		37X	<b>Reserved</b>	<b>Reserved</b>	
10X	<b>Reserved</b>	<b>Reserved</b>		39X	<b>Reserved</b>	<b>Reserved</b>	
121	II	sec	###.#	40X	<b>Reserved</b>	<b>Reserved</b>	
122	II%	%	###.#	41X	<b>Reserved</b>	<b>Reserved</b>	
151	V	sec	###.#	42X	<b>Reserved</b>	<b>Reserved</b>	
152	V%	%	###.#	43X	<b>Reserved</b>	<b>Reserved</b>	
171	VII	sec	###.#	44X	<b>Reserved</b>	<b>Reserved</b>	
172	VII%	%	###.#	45X	<b>Reserved</b>	<b>Reserved</b>	
181	VIII	sec	###.#	46X	<b>Reserved</b>	<b>Reserved</b>	
182	VIII%	%	###.#	47X	<b>Reserved</b>	<b>Reserved</b>	
191	IX	sec	###.#	501	+Fbg	sec	###.#
192	IX%	%	###.#	502	Fbg C.	mg/dL	####
201	X	sec	###.#	511	TT	sec	###.#
202	X%	%	###.#	521	-Fbg	sec	###.#
211	XI	sec	###.#	522	Fbg C.	mg/dL	####
212	XI%	%	###.#	60X	<b>Reserved</b>	<b>Reserved</b>	
221	XII	sec	###.#	611	DDPl	dOD	.####
222	XII%	%	###.#	612	DD Pl	ug/L	####
251	PCcl	sec	###.#	611	DDi	dOD	.####
252	PC.cl%	%	###.#	612	DDi.	mg/L	###.##
261	BXT	sec	###.#	611	AdDD	dOD	.####
271	LA1	sec	###.#	612	Adv.DD	mg/L	###.##
281	LA2	sec	###.#	621	PFDP	dOD	.####
29X	<b>Reserved</b>	<b>Reserved</b>		622	PFDP C.	ug/mL	###.#
301	AT3	dOD	#.###	63X	<b>Reserved</b>	<b>Reserved</b>	
302	AT3%	%	###.#	64X	<b>Reserved</b>	<b>Reserved</b>	
301	AT	dOD	#.###	651	vWF	dOD	.####
302	AT%	%	###.#	652	vWF%	%	###.#
311	APL	dOD	#.###	661	-vWF	dOD	.####

Test code	Test name	Unit	Format	Test code	Test name	Unit	Format
662	vWF%	%	###.#	802	vWFAc%	%	###.#
671	+vWF	dOD	.####	811	+WFA	dOD	.####
672	vWF%	%	###.#	812	vWFAc%	%	###.#
68X	<b>Reserved</b>	<b>Reserved</b>		821	-WFA	dOD	.####
69X	<b>Reserved</b>	<b>Reserved</b>		822	vWFAc%	%	###.#
701	+DDP	dOD	.####	83X	<b>Reserved</b>	<b>Reserved</b>	
702	DD Pl	ug/L	.####	84X	<b>Reserved</b>	<b>Reserved</b>	
701	+DDi	dOD	.####	85X	<b>Reserved</b>	<b>Reserved</b>	
702	DDi	mg/L	##.##	86X	<b>Reserved</b>	<b>Reserved</b>	
701	+AdD	dOD	.####	87X	<b>Reserved</b>	<b>Reserved</b>	
702	Adv.DD	mg/L	##.##	88X	<b>Reserved</b>	<b>Reserved</b>	
71X	<b>Reserved</b>	<b>Reserved</b>		89X	<b>Reserved</b>	<b>Reserved</b>	
721	+PFD	dOD	.####	90X	<b>Reserved</b>	<b>Reserved</b>	
722	PFD C.	ug/mL	###.#	000	<b>Reserved</b>	<b>Reserved</b>	
801	WFA	dOD	.####	999	<b>Reserved</b>	<b>Reserved</b>	

\* The test code and test name are the settings when shipping from the factory.

Test name:                      Test name. For calculation parameters, the calculation parameter name. Up to eight characters  
See Table 16.

Dilution ratio:                      Outputs the dilution percentage used in analysis. Up to 3 characters

Analysis result type:

- 1 : Normal (Auto output)
- 2 : Average (Auto output)
- 5 : Normal (Manual Output)
- 6 : Average (Manual Output)

b) 10.1.4 Data or measurement value

Analysis data for each test parameter is output. This is a number of up to 5 digits. The data format is described in Table 16. If the analysis results can not be obtained, the mask characters are input in part of the integral number. The mask characters are as follows.

- \*: Analysis failure
- /: Average calculation failure
- +: Display digit overflow
- : Calculation failure

When less than 5 characters, it is buried by right-justification by an en space (20h) in front.

c) 10.1.5 Units

The unit for each test parameter is output. Up to 5 characters. When less than 5 characters, the unit name is left-justification and is back filled up with an en space (20h).

The units set in the CA-600 are output. (The ASTM describes the abbreviation of ISO standard should be used.) See Table 16.

d) 10.1.7 Result abnormal flag

L: Below lower patient limit  
H: Above upper patient limit  
<: Below lower report limit.  
>: Above upper report limit  
N: Normal test result  
A: Analysis error

e) 10.1.13 Date /time test completed

Indicates the date and time the test was completed.

The date format is fixed to "YYYYMMDDHHMMSS".

Here, YYYY indicates the year, MM the month, DD the day, HH the hour in the 24-hour system (00-23), MM the minute (00-59), SS the second (00).

In the CA-600, the second is fixed to 00.

### 6.3.3.6.Comment record (Reagent LOT Information)

An one-line comment record (Reagent LOT Information) is outputted after a result record of each measurement item. (\*)

When there are two or more calculation parameters, it is outputted after a result record of the last calculation parameters.

It outputs, when a format setup is ASTM2.

\* There are three kinds of comment records. An output is performed in order of "Standard curve Information → Reagent LOT Information → QC measurement Information".When a comment record (Standard curve Information) is outputted, an output is performed after that.

Comment record (Standard curve Information) : See 6.3.3.7.

Comment record (QC measurement Information) : See 6.3.3.8.

[Example of transmission]

- CA-600 → Host computer  
C|1|I|LOT^040^527501|I<CR>
- Host computer → CA-600  
Not used

**Table 17: Details of the Comment Record (Reagent LOT Information)**

ASTM Field	Field name	CA-600 ↓ Host computer	Host computer ↓ CA-600	Max. size (byte)	Remarks
11.1.1	Record type	C	Not used	1	
11.1.2	Sequence No.	Sequence No.	Not used	4	Sequence No. of records
11.1.3	Annotation source	I	Not used	1	Clinical equipment system
11.1.4	Annotation text	Information class^ Test code^ Transmit 1 reagent LOT, Transmit 2 reagent LOT, Transmit 3 reagent LOT, Transmit 4 reagent LOT	Not used	3^ 3^ 12, 12, 12, 12	
11.1.5	Annotation format	I	Not used	1	Equipment information annotation

[Detailed explanation of the field]

- 1) 11.1.2 Sequence No.  
The sequence number starts with 1 and indicates the sequence position in which the record appeared in the message.  
This number is reset to 1 when a higher-level record appears in the message.
- 2) 11.1.3 Annotation source  
Fixed to I. It indicates clinical equipment system.



## 3) 11.1.4 Annotation text

Information class:

It is the Information class of the text field. Reagent lot information is set to LOT.

Test code:

Test code: Suffixing 0 to the "Host ID" in the "Test Protocol" makes the test code.

See Table 18.

Transmit 1-4 Reagent LOT:

It is a LOT number of a reagent and a dilution used by measurement.

For transmission order, refer to Table 18.

It is omitted when the setup of the reagent information in a standard curve menu is not performed.

## 4) 11.1.5 Annotation format

Fixed to I. Signifies annotation of equipment information.

Table 18: Test code and reagent LOT transmission order

Test code	Test name	Test Protocol	Transmission order			
			Transmit 1 reagent LOT	Transmit 2 reagent LOT	Transmit 3 reagent LOT	Transmit 4 reagent LOT
040	PT T	PT THS	PT THS	-	-	-
	PT I	PT INN	PT INN	-	-	-
050	FSL	APTT FSL	APTT FSL	CaCl2	-	-
	FS	APTT FS	APTT FS	CaCl2	-	-
060	Fbg	Fbg	Fbg	OVb	-	-
		Fbg MFU	Fbg MFU	-	-	-
070	Reserved	-	-	-	-	-
080	Reserved	-	-	-	-	-
090	Reserved	-	-	-	-	-
100	Reserved	-	-	-	-	-
120	II	II-THS	II	PT THS	OVb	-
		II-INN	II	PT INN	OVb	-
150	V	V-THS	V	PT THS	OVb	-
		V-INN	V	PT INN	OVb	-
170	VII	VII-THS	VII	PT THS	OVb	-
		VII-INN	VII	PT INN	OVb	-
180	VIII	VIII-ACT	VIII	APTT ACT	CaCl2	OVb
		VIII-FSL	VIII	APTT FSL	CaCl2	OVb
		VIII-FS	VIII	APTT FS	CaCl2	OVb
		VIII-PSL	VIII	APTT PSL	CaCl2	OVb
190	IX	IX -ACT	IX	APTT ACT	CaCl2	OVb
		IX -FSL	IX	APTT FSL	CaCl2	OVb
		IX -FS	IX	APTT FS	CaCl2	OVb
		IX -PSL	IX	APTT PSL	CaCl2	OVb
200	X	X-THS	X	PT THS	OVb	-
		X-INN	X	PT INN	OVb	-
210	XI	XI -ACT	XI	APTT ACT	CaCl2	OVb
		XI -FSL	XI	APTT FSL	CaCl2	OVb
		XI -FS	XI	APTT FS	CaCl2	OVb
		XI -PSL	XI	APTT PSL	CaCl2	OVb

Test code	Test name	Test Protocol	Transmission order			
			Transmit 1 reagent LOT	Transmit 2 reagent LOT	Transmit 3 reagent LOT	Transmit 4 reagent LOT
220	XII	XII -ACT	XII	APTT ACT	CaCl2	OVB
		XII -FSL	XII	APTT FSL	CaCl2	OVB
		XII -FS	XII	APTT FS	CaCl2	OVB
		XII -PSL	XII	APTT PSL	CaCl2	OVB
250	PCcl	PCcl	PC.A.cl	PC.APTT	CaCl2	PC.DefP
260	BXT	BXT	Batrox	-	-	-
270	LA1	LA1	LA1	-	-	-
280	LA2	LA2	LA2	-	-	-
290	Reserved	-	-	-	-	-
300	AT	AT	ATReag	ATSub	ATBuf	-
	AT3	BCAT3	AT3Thro	AT3Subs	OVB	-
310	APL	APL	AplReag	PlSubs	OVB	-
320	Plg	Plg	Strepto	PlSubs	OVB	-
330	BCPC	BCPC	BCPCAct	BCPCSub	OVB	-
340	Hep	Hep	AT3Reag	FXaReag	HepSubs	SHP
		HepL	AT3Reag	FXaReag	HepSubs	SHP
		HepU	AT3Reag	FXaReag	HepSubs	SHP
360	Reserved	-	-	-	-	-
370	Reserved	-	-	-	-	-
390	Reserved	-	-	-	-	-
400	Reserved	-	-	-	-	-
410	Reserved	-	-	-	-	-
420	Reserved	-	-	-	-	-
430	Reserved	-	-	-	-	-
440	Reserved	-	-	-	-	-
450	Reserved	-	-	-	-	-
460	Reserved	-	-	-	-	-
470	Reserved	-	-	-	-	-
500	+Fbg	+Fbg	Fbg	OVB	-	-
510	TT	TT	TestThr	-	-	-
		TT TC	Thrombo	-	-	-
520	-Fbg	-Fbg	Fbg	OVB	-	-
600	Reserved	-	-	-	-	-
610	DD	DD PLUS	DD.P.I.A	DD.P.I.R	OVB	-
	DDi	DD INN	DDi.SUP	DDi.BUF	DDi.REA	DDi.DIL
	AdDD	Adv.DD	Ad.DD.A	Ad.DD.R	OVB	-
620	PFDP	PFDP	PFDP.B	PFDP.L	PFDP.SB	-
630	Reserved	-	-	-	-	-
640	Reserved	-	-	-	-	-
650	vWF	vWF	vWBuf	vWReag	OVB	-
660	-vWF	-vWF	vWBuf	vWReag	OVB	-
670	+vWF	+vWF	vWBuf	vWReag	OVB	-
680	Reserved	-	-	-	-	-
700	+DD	+DD PLUS	DD.P.I.A	DD.P.I.R	OVB	-
	+DDi	+DD INN	DDi.SUP	DDi.BUF	DDi.REA	DDi.DIL
	+AdDD	+Adv.DD	Ad.DD.A	Ad.DD.R	OVB	-
710	Reserved	-	-	-	-	-
720	+PFDP	+PFDP	PFDP.B	PFDP.L	PFDP.SB	-
730	Reserved	-	-	-	-	-

Test code	Test name	Test Protocol	Transmission order			
			Transmit 1 reagent LOT	Transmit 2 reagent LOT	Transmit 3 reagent LOT	Transmit 4 reagent LOT
800	WFa	WFa	WFAcII	WFAcIII	WFAcI	OVB
810	+WFa	+WFa	WFAcII	WFAcIII	WFAcI	OVB
820	-WFa	-WFa	WFAcII	WFAcIII	WFAcI	OVB
830	Reserved	-	-	-	-	-
840	Reserved	-	-	-	-	-
850	Reserved	-	-	-	-	-
860	Reserved	-	-	-	-	-
870	Reserved	-	-	-	-	-
880	Reserved	-	-	-	-	-
890	Reserved	-	-	-	-	-
900	Reserved	-	-	-	-	-
000	Reserved	-	-	-	-	-
999	Reserved	-	-	-	-	-

\* The test code, test name, Test Protocol and Transmission order are the settings when shipping from the factory.

### 6.3.3.7. Comment record (Standard curve Information)

An one-line comment record (Standard curve Information) is outputted after a result record of each Test item. (\*)  
 A comment record is not outputted when calculation parameters is Time or Ratio. A case does not output a comment record as calculation parameters is INR and CurveFit is ISI input.  
 It outputs, when a format setup is ASTM2.

\* There are three kinds of comment records. An output is performed in order of "Standard curve Information → Reagent LOT Information → QC measurement Information".

Comment record (Reagent LOT Information) : See 6.3.3.6.

Comment record (QC measurement Information) : See 6.3.3.8.

[Example of transmission]

- CA-600 → Host computer  
C|1|I|CAL^042^20140701^1^502501|I<CR>
- Host computer → CA-600  
Not used

**Table 19: Details of the Comment Record (Standard curve Information)**

ASTM Field	Field name	CA-600 ↓ Host computer	Host computer ↓ CA-600	Max. size (byte)	Remarks
11.1.1	Record type	C	Not used	1	
11.1.2	Sequence No.	Sequence No.	Not used	4	Sequence No. of records
11.1.3	Annotation source	I	Not used	1	Clinical equipment system
11.1.4	Annotation text	Information class ^ Test code ^ Standard curve measurement date ^ Standard curve ID ^ Calibrator LOT	Not used	3 ^ 3 ^ 8 ^  1 ^ 12	
11.1.5	Annotation format	I	Not used	1	Equipment information annotation

[Detailed explanation of the field]

- 1) 11.1.2 Sequence No.  
 The sequence number starts with 1 and indicates the sequence position in which the record appeared in the message.  
 This number is reset to 1 when a higher-level record appears in the message.
- 2) 11.1.3 Annotation source  
 Fixed to I. It indicates clinical equipment system.

## 3) 11.1.4 Annotation text

## Information class:

It is the Information class of the text field. Standard curve Information is set to CAL.

## Test code:

Indicates analysis procedure parameters. This code is a combination of a 2-digit universal test code and the following 1-digit IDs. See Table 16.

- 1: Time
- 2: Percent activity/concentration
- 3: Ratio
- 4: INR
- 5: DFbg

## Standard curve measurement date:

Signifies the date of standard curve measurement of the measurement item of the result record.

"YYYYMMDD" Format fixed.

YYYY: Western calendar year, MM: Month, DD: Day

When the standard curve is not measured, this is omitted.

## Standard curve ID:

Fixed to 1.

## Calibrator LOT:

A LOT number of a calibrator is used for standard curve measurement in the measurement item of the result record.

When the calibrator information of the standard curve is not set, this is omitted.

\* Since calibrator information that can be registered in the reagent setting screen of standard curve is one type, only one piece of information can be transmitted even using SHP and PT multi calibrator at creating PT% standard curve and PT-INR.

## 4) 11.1.5 Annotation format

Fixed to I. Signifies annotation of equipment information.

### 6.3.3.8. Comment record (QC measurement Information)

An one-line comment record (QC measurement Information) is outputted after a result record of each measurement item. (\*)

When there are two or more calculation parameters, it is outputted after a result record of the last calculation parameters.

It outputs, when a format setup is ASTM2.

\* There are three kinds of comment records. An output is performed in order of "Standard curve Information → Reagent LOT Information → QC measurement Information". When a comment record (Standard curve Information) and a comment record (Reagent LOT Information) is outputted, an output is performed after that.

Comment record (Reagent LOT Information) : See 6.3.3.6.

Comment record (Standard curve Information) : See 6.3.3.7.

[Example of transmission]

- CA-600 → Host computer  
C|1|I|QC^040^201407011530^^502701\QC^040^201407011600^^512601|I<CR>
- Host computer → CA-600  
Not used

**Table 20: Details of the Comment Record (QC measurement Information)**

ASTM Field	Field name	CA-600 ↓ Host computer	Host computer ↓ CA-600	Max. size (byte)	Remarks
11.1.1	Record type	C	Not used	1	
11.1.2	Sequence No.	Sequence No.	Not used	4	Sequence No. of records
11.1.3	Annotation source	I	Not used	1	Clinical equipment system
11.1.4	Annotation text	Information class^ Test code^ Measurement date^ Control name^ Control LOT	Not used	3^ 3^ 12^ 12^ 12	When two or more control is being used, it divides by the repeat \.
11.1.5	Annotation format	I	Not used	1	Equipment information annotation

[Detailed explanation of the field]

- 1) 11.1.2 Sequence No.  
The sequence number starts with 1 and indicates the sequence position in which the record appeared in the message.  
This number is reset to 1 when a higher-level record appears in the message.
- 2) 11.1.3 Annotation source  
Fixed to I. It indicates clinical equipment system.

3) 11.1.4 Annotation text

Information class:

It is the Information class of the text field. QC measurement information is set to QC.

Test code:

Test code: Suffixing 0 to the "Host ID" in the "Test Procotol" makes the test code.

See Table 18.

Measurement date:

The newest QC measurement date.

The date format is fixed to "YYYYMMDDHHMM".

YYYY indicates the year, MM the month, DD the day, HH the hour in the 24-hour system (00-23), MM the minute (00-59).

Control name:

Not used in CA-600 series.

Control LOT:

A LOT number of control that is used for QC control measurement of the measurement item of the result record.

When a setup of the control information on QC control is performed by two or more QC files, it divides by the repeat \.

When the QC control information is not set in each QC file, this is omitted.

4) 11.1.5 Annotation format

Fixed to I. Signifies annotation of equipment information.

### 6.3.3.9. Message termination record

[Example of transmission]

- CA-600 → Host computer  
L|1|N<CR>
- Host computer → CA-600  
L|1|N<CR>

**Table 21: Message termination record**

ASTM Field	Field name	CA-600 ↓ Host computer	Host computer ↓ CA-600	Max. size (byte)	Remarks
13.1.1	Record type	L	L	1	Fixed
13.1.2	Sequence No.	1	1	4	Always 1
13.1.3	Termination cord	N	N	1	N: Normal termination



## 7. Examples of Communication

The following examples are communication via a serial interface (ASTM E1381-02 mode).

### 7.1. ASTM format

#### 7.1.1. Inquiry of Analysis Order (CA-600 → Host computer)

- When the order inquiry is performed from the CA-600

CA-600	<ENQ>
Host	<ACK>
CA-600	<STX>1H \^&   CA-600^ 00-02       1 <CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2Q 1 000001^01^1^B  ^040^PT T \^050^FSL \^060^Fbg \^500\+Fbg \^510\-Fbg  0 20100328133300<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<EOT>

#### 7.1.2. Analysis Information (Host computer → CA-600)

- When the host computer sends orders

Host	<ENQ>
CA-600	<ACK>
Host	<STX>1H \^&   HostName^^^   CA-600<CR><ETX><CHK1><CHK2><CR><LF>
CA-600	<ACK>
Host	<STX>2P 1<CR><ETX><CHK1><CHK2><CR><LF>
CA-600	<ACK>
Host	<STX>3O 1 000001^01^1^B  ^040^^100\^050^^100 R 20100330123100    N<CR><ETX><CHK1><CHK2><CR><LF>
CA-600	<ACK>
Host	<STX>4L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
CA-600	<ACK>
Host	<EOT>

#### 7.1.3. Analysis Results (CA-600 → Host computer)

##### 7.1.3.1. When analysis is performed once

CA-600	<ENQ>
Host	<ACK>
CA-600	<STX>1H \^&   CA-600^ 00-02       1 <CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2P 1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3O 1  000001^01^1^B^  R    N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>4R 1 ^041^PT T ^100^1  10.2 sec   N     20100328135000<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>

CA-600	<STX>5R 2 ^^^042^PT% ^100^1  99.4 %   N     20100328135000<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>6R 3 ^^^044^PT INR ^100^1  0.81 -   N     20100328135000<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>7R 4 ^^^051^FSL ^100^1  27.4 sec   N     20100328135000<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>0R 5 ^^^061^Fbg ^100^1  8.5 sec   N     20100328135000<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>1R 6 ^^^062^Fbg C. ^100^1  588 mg/dL  N     20100328135000<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<EOT>

### 7.1.3.2. When analysis is performed twice

PT: 2times, APTT: 1time

Example: Analysis result (The first analysis)

CA-600	<ENQ>
Host	<ACK>
CA-600	<STX>1H \^&   CA-600^ 00-02      1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2P 1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3O 1  000001^01^ 1^M^  R     N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>4R 1 ^^^041^PT T ^100^1  10.2 sec   N     20111228110100<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>5R 2 ^^^042^PT% ^100^1  99.4 %   N     20111228110100<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>6R 3 ^^^044^PT INR ^100^1  0.81 -   N     20111228110100<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>7L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<EOT>

Example: Analysis result (The second analysis)

CA-600	<ENQ>
Host	<ACK>
CA-600	<STX>1H \^&   CA-600^ 00-02      1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2P 1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3O 1  000001^01^ 1^M^  R     N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>4R 1 ^^^041^PT T ^100^1  10.2 sec   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>5R 2 ^^^042^PT% ^100^1  99.4 %   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>

CA-600	<STX>6R 4 ^^^044^PT INR ^100^1  0.81 -   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>7R 5 ^^^051^FSL ^100^1  29.5 sec   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>0L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<EOT>

## Analysis result (Mean)

CA-600	<ENQ>
Host	<ACK>
CA-600	<STX>1H \^&   CA-600^ 00-02      1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2P 1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3O 1  000001^01^ 1^M^  R     N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>4R 1 ^^^041^PT T ^100^2  10.2 sec   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>5R 2 ^^^042^PT% ^100^2  99.4 %   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>6R 3 ^^^044^PT INR ^100^2  0.81 -   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>7R 4 ^^^051^FSL ^100^2  29.5 sec   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>0L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<EOT>

## 7.2. ASTM2 format

### 7.2.1. Inquiry of Analysis Order (CA-600 → Host computer)

- When the order inquiry is performed from the CA-600

CA-600	<ENQ>
Host	<ACK>
CA-600	<STX>1H \^&   CA-600^ 00-02       1 <CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2Q 1 000001^01^1^B  ^040^PT T \^050^FSL \^060^Fbg \^500\+Fbg \^510\ -Fbg  0 20100328133300<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<EOT>

### 7.2.2. Analysis Information (Host computer → CA-600)

- When the host computer sends orders

Host	<ENQ>
CA-600	<ACK>
Host	<STX>1H \^&   HostName^^^^   CA-600<CR><ETX><CHK1><CHK2><CR><LF>
CA-600	<ACK>
Host	<STX>2P 1<CR><ETX><CHK1><CHK2><CR><LF>
CA-600	<ACK>
Host	<STX>3O 1 000001^01^1^B  ^040^100\^050^100 R 20100330123100    N<CR><ETX><CHK1><CHK2><CR><LF>
CA-600	<ACK>
Host	<STX>4L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
CA-600	<ACK>
Host	<EOT>

### 7.2.3. Analysis Results (CA-600 → Host computer)

#### 7.2.3.1. When analysis is performed once

CA-600	<ENQ>
Host	<ACK>
CA-600	<STX>1H \^&   CA-600^ 00-02       1 <CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2P 1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3O 1  000001^01^1^B^   R       N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>4R 1 ^041^PT T ^100^1  10.2 sec   N     20100328135000<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>5R 2 ^042^PT% ^100^1  99.4 %   N     20100328135000<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>

CA-600	<STX>6C 1 I CAL^042^20100320^1^502501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>7R 3 ^044^PT INR ^100^1  0.81 -   N     20100328135000<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>0C 1 I CAL^044^20100320^1^502501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>1C 2 I LOT^040^527501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2C 3 I QC^040^201003280900^502701\QC^040^201003270900^512601 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3R 4 ^051^FSL ^100^1  27.4 sec   N     20100328135000<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>4C 1 I QC^050^201003281000^502701\QC^050^201003271000^512601 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>5R 5 ^061^Fbg ^100^1  8.5 sec   N     20100328135000<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>6R 6 ^062^Fbg C. ^100^1  588 mg/dL  N     20100328135000<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>7C 1 I CAL^062^20100320^1^502501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>0C 2 I LOT^060^538050,A2008 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>1C 3 I QC^060^201003281000^502701\QC^040^201003271000^512601 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<EOT>

\* Comment Record becomes effective in ASTM2 format.

### 7.2.3.2. When analysis is performed twice

PT: 2times, APTT: 1time

Example: Analysis result (The first analysis)

CA-600	<ENQ>
Host	<ACK>
CA-600	<STX>1H \^&   CA-600^ 00-02     1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2P 1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3O 1  000001^01^1^M^  R     N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>4R 1 ^041^PT T ^100^1  10.2 sec   N     20111228110100<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>5R 2 ^042^PT% ^100^1  99.4 %   N     20111228110100<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>6C 1 I CAL^042^20111220^1^502501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>

CA-600	<STX>7R 3 ^044^PT INR ^100^1  0.81 -   N     20111228110100<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>0C 1 I CAL^044^20111220^1^502501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>1C 2 I LOT^040^527501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2C 3 I QC^040^201112280900^^502701\QC^040^201112270900^^512601 I<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<EOT>

\* Comment Record becomes effective in ASTM2 format.

Example: Analysis result (The second analysis)

CA-600	<ENQ>
Host	<ACK>
CA-600	<STX>1H \^&   CA-600^ 00-02      1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2P 1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3O 1  000001^01^ 1^M^  R     N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>4R 1 ^041^PT T ^100^1  10.2 sec   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>5R 2 ^042^PT% ^100^1  99.4 %   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>6C 1 I CAL^042^20111220^1^502501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>7R 4 ^044^PT INR ^100^1  0.81 -   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>0C 1 I CAL^044^20111220^1^502501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>1C 2 I LOT^040^527501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2C 3 I QC^040^201112280900^^502701\QC^040^201112270900^^512601 I<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3R 5 ^051^FSL ^100^1  29.5 sec   N     20111228110300<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>4C 1 I QC^050^201112281000^^502701\QC^050^201112271000^^512601 I<CR> <ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>5L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<EOT>

\* Comment Record becomes effective in ASTM2 format.

## Analysis result (Mean)

CA-600	<ENQ>
Host	<ACK>
CA-600	<STX>1H \^&   CA-600^ 00-02       1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2P 1<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3O 1  000001^01^1^M^  R     N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>4R 1 ^041^PT T ^100^2  10.2 sec   N     20111228110300<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>5R 2 ^042^PT% ^100^2  99.4 %   N     20111228110300<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>6C 1 I CAL^042^20111220^1^502501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>7R 3 ^044^PT INR ^100^2  0.81 -   N     20111228110300<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>0C 1 I CAL^044^20111220^1^502501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>1C 2 I LOT^040^527501 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>2C 3 I QC^040^201112280900^^502701\QC^040^201112270900^^512601 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>3R 4 ^051^FSL ^100^2  29.5 sec   N     20111228110300<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>4C 1 I QC^050^201112281000^^502701\QC^050^201112271000^^512601 I<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<STX>5L 1 N<CR><ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CA-600	<EOT>

\* Comment Record becomes effective in ASTM2 format.

Appendix 1 Interface Circuit

