



SP-10
Host Interface Specifications

Revision 1.03

Revised on September 21, 2012

Sysmex Corporation

Table of Contents

1	Scope	3
2	General	3
3	Terminology	3
4	Communication Sequence	5
5	Hardware Specifications.....	6
5.1	RS-232C	6
5.1.1	Connector and cable.....	6
5.1.2	Signal lines.....	6
5.1.3	Signal levels	6
5.2	LAN.....	7
5.2.1	Connector and cable.....	7
5.2.2	Signal lines.....	7
5.2.3	Signal levels	7
6	Software Specifications	8
6.1	RS-232C	8
6.1.1	Transmission mode and parameters	8
6.1.2	Character codes	8
6.1.3	Text.....	8
6.1.4	Communication protocol	9
6.1.5	Transmission interval.....	9
6.1.6	Transmission error	9
6.2	LAN.....	10
6.2.1	Network/Transport layers	10
6.2.2	Session layer	10
6.2.3	Presentation layer.....	10
6.2.4	IP address and port number.....	10
7	Format	11
7.1	Slide Preparation Order Inquiry Format	11
7.2	Analysis Order Information Format	13
7.3	Aspiration Result Report Format.....	17
7.4	Smearing Result Report Format	21
7.5	Staining Result Report Format	25
7.6	Manual Print Content Inquiry Format	30
7.7	Manual Print Content Format.....	31
7.8	Consumables Replacement Report Format	34
8	Examples of Communication	36
8.1.1	Slide Preparation Order Inquiry and Analysis Order Information	36
8.1.2	Print Content Inquiry	36
8.1.3	Aspiration Result Report.....	36
8.1.4	Smearing Result Report.....	36
8.1.5	Staining Result Report	37
8.1.6	Consumables Replacement Report	37

1 Scope

This document applies to RS-232C or TCP/IP communications between the SP-10 and the host computer.

2 General

The SP-10 provides the following functions by communicating with the host computer:

- (1) Receives smear and staining orders from the host computer.
- (2) Informs the host computer of the progress of smear and staining.
- (3) Prints certain information on the frosted area of a slide (accepts print only orders).
- (4) Informs the host computer of the status of consumables replacement (staining solution 1, staining solution 2, buffer, rinse water, DiluCell CL, and methanol).

3 Terminology

Definitions of the terms used in this document are described below.

- 1) Numeric character
Single-byte ASCII characters “0” (30h) through “9” (39h).
- 2) Alphabetic character
Single-byte ASCII characters “A” (41h) through “Z” (5Ah) and “a” (61h) through “z” (7Ah).
- 3) Alphanumeric character
Numeric or alphabetical characters.
- 4) Chinese (simplified)
The character code for Chinese (simplified) is GB2312. Two digits (characters) of memory area are used for each character.
- 5) Chinese (traditional)
The character code for Chinese (traditional) is Big5. Two digits (characters) of memory area are used for each character.
- 6) Korean
The character code for Korean is KS C 5601. Two digits (characters) of memory area are used for each character.
- 7) Frosted area of a slide
The opaque area of a slide glass. The sample number or other identification of the sample can be printed on this area.

8) Smear level

A set of several setting parameters for making a smear with the SP-10 is called “a smear level”. Up to 8 smear levels can be preset. The SP-10 determines an appropriate smear level based on the HCT value contained in the order received from the host computer.

9) Slide cassette

The cassette for storing slide glasses to be used for preparing slides. Up to two cassettes can be placed in the instrument. Which cassette to use for preparing slides can be specified from the host computer.

4 Communication Sequence

The SP-10 communicates with the host computer following the sequences described below.

- (1) Receiving a smear and staining order from the host computer

The SP-10 receives the order following the sequence below, and prepares slides according to the order.

SP-10	Direction	Host computer
Inquires about order.	->	
	<-	Transmits order.

- (2) Informing the host computer of the progress of aspiration, smearing, or staining

Every time an aspiration, smearing, or staining process is finished, the SP-10 outputs the progress report.

When aspiration is finished

SP-10	Direction	Host computer
Transmits aspiration result.	->	

When smearing is finished

SP-10	Direction	Host computer
Transmits smearing result.	->	

When staining is finished

SP-10	Direction	Host computer
Transmits staining result.	->	

- (3) Receiving content to be printed on the frosted area of a slide from the host computer

The SP-10 receives the print content following the sequence below, and prints it on the frosted area of a slide.

SP-10	Direction	Host computer
Inquires about print content.	->	
	<-	Transmits print content.

- (4) Informing the host computer of replacement of consumables (staining solution 1, staining solution 2, buffer, rinse water, DiluCell CL, or methanol).

The SP-10 can output a report every time consumables are replaced.

SP-10	Direction	Host computer
Transmits a report on consumables replacement.	->	

Note: The output report is not in the SP-100 compatible format.

5 Hardware Specifications

The SP-10 has ports for RS-232 C (9 pin D-SUB male) and LAN connection (10BASE-T).
Either port can be used for communicating with the host computer.

5.1 RS-232C

5.1.1 Connector and cable

- A 9-pin D-SUB male connector is used on the instrument side.
- A 9-pin D-SUB female connector should be used on the cable side.
- The connector has inch-pitched fixing screws.
- Use a 9-pin D-SUB RS-232C crossover cable to connect to the SP-10.

5.1.2 Signal lines

The following table shows signal lines for the RS-232C port on the SP-10:

Table 1: Signal Lines

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)	

Do not connect to the pins 1 and 9 (NC).

5.1.3 Signal levels

The signal levels are compliant with JIS C6361 as follows:

Table 2: Signal Levels

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

5.2 LAN

5.2.1 Connector and cable

The connector on the instrument is the RJ48 modular jack for a 10BASE-T twist pair wire.

For this jack, use a 2-pair, 4-strand unshielded twisted pair (UTP) cable having the RJ-45 8-pin modular connector.

5.2.2 Signal lines

The following table shows signal lines for the LAN port on the SP-10:

Table 3: Connector Signals

Pin No.	Signal name	Signal direction
1	TD+	OUT
2	TD-	OUT
3	RD+	IN
4	NC	-
5	NC	-
6	RD-	IN
7	NC	-
8	NC	-

5.2.3 Signal levels

The signal levels conform to IEEE802.3.

6 Software Specifications

6.1 RS-232C

6.1.1 Transmission mode and parameters

Data is transmitted in full-duplex asynchronous mode.

The following table shows parameters available for RS-232C communications with the SP10:

(The factory defaults are underlined.)

Table 4: Transmission Parameters

Parameter	Available options
Baud rate	1200/ <u>2400</u> /4800/9600/19200 bps
Data length	<u>7 bits</u> /8 bits
Stop bit	1 bit/ <u>2 bits</u>
Parity	<u>Even</u> /Odd/None
RTS/CTS *	<u>Enable</u> /Disable

* Whether to enable control on the RTS/CTS signal lines can be selected.

6.1.2 Character codes

The ASCII code is used for communications.

In particular, the control codes [STX] (02H), [ETX] (03H), [ACK] (06H), and [NAK] (15H) are used for controlling communications.

6.1.3 Text

A message enclosed with “STX” (02H) at the beginning and “ETX” (03H) at the end is called “text”. The maximum length of one text block is 255 characters. The text data is transmitted in sequence from the beginning.

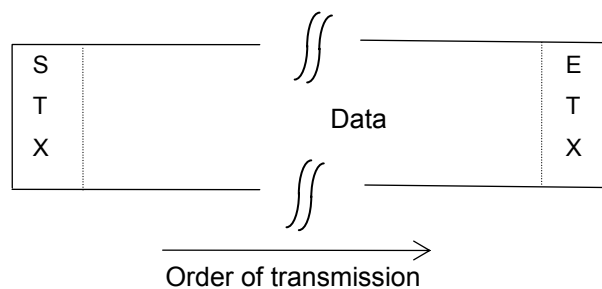


Figure 1: Structure of Text

6.1.4 Communication protocol

Either of the following communication protocols can be selected.

Class A

One-way transmission without requiring responses.

Class B

Alternate transmissions requiring a response (ACK, NAK) from the host computer.

If NAK is returned, the SP-10 resends the data up to 3 times.

ASTM

This is a communication protocol based on the ASTM standard.

For details about ASTM connection with the SP-10, refer to the SP-10 ASTM Host Interface Specifications.

6.1.5 Transmission interval

To secure a processing time, the SP-10 allows for specifying a time interval between text transmissions.

The following table shows available options. The factory default is underlined.

Table 5: Transmission Interval

Parameter	Available options
Interval	0s, <u>2s</u> , 3s, 5s, 7s, 10s, and 15s

6.1.6 Transmission error

In case of any transmission error, the SP-10 aborts the transmission and displays an error message. The following events are determined as errors:

- The control signal DSR from the host computer is not active.
- The control signal CTS does not become active within 5 seconds after the SP-10 transmits data (RTS/CTS is only effective).
- The text length exceeds the maximum number of characters.
- The message contains an error.
- The host computer fails to respond within 15 seconds after the SP-10 transmits data (Class B only).
- The host computer returns any signal other than ACK/NAK after the SP-10 transmits data (Class B only).
- NAK is returned 4 times after the SP-10 re-transmits data (Class B only).

6.2 LAN

6.2.1 Network/Transport layers

These layers conform to the TCP/IP protocol.

6.2.2 Session layer

- During the start-up process of the SP-10, connection is established with the host computer acting as a server and the SP-10 acting as a client.
- Failing to connect to the host computer is regarded as a connection error; the SP-10 will retry connection when transmitting data again.

6.2.3 Presentation layer

A message enclosed with “STX” (02H) at the beginning and “ETX” (03H) at the end is called “text”. The maximum length of one text block is 255 characters. The text data is transmitted in sequence from the beginning.

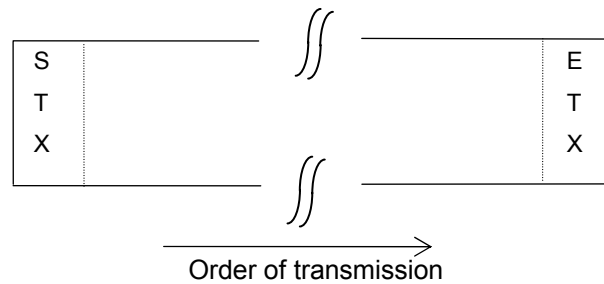


Figure 2: Structure of Text

6.2.4 IP address and port number

To enable the SP-10 to communicate with the host computer via LAN network, the IP addresses of the host computer and the SP-10 have to be specified. In addition, the host computer's port number to which data is transmitted has to be specified.

7 Format

The following formats are used for communicating between the SP-10 and the host computer.

Note 1: Communication formats compliant with the ASTM standard are described in the “SP-10 ASTM Host Interface Specifications”.

Note 2: To use the SP-10 in SP-100 compatible mode, contact our sales branch or service center.

7.1 Slide Preparation Order Inquiry Format

To receive a smear and staining order from the host computer, the SP-10 inquires into the host computer first. The following format is used to inquire about an order for slide preparation:

Table 6: Slide Preparation Order Inquiry Format

Data	Size	Right or left aligned	Space or zero padding	Remarks
STX	1	-	-	(02H)
Text Distinction Code	2	-	-	Fixed to “R2”.
Reserved 1	1	-	-	Fixed to “1”.
Inquired Sample Number	22	Right aligned	Space padding	Ex.: “1234567890”
Reserved 2	6	-	-	Fixed to “000000”.
Reserved 3	2	-	-	Fixed to “00”.
Sample Number Attribute	1	-	-	“M”: Manual input “A”: Automatic assignment by instrument “B”: Barcode reader
Reserved 4	30	-	-	(Filled with spaces)
ETX	1	-	-	(03H)
Total	66			

1) Text Distinction Code

“R2” is transmitted.

2) Inquired Sample Number

Identifies the inquired sample.

The Inquired Sample Number consists of 22 or less digit characters. A hyphen “-” (2DH) can be inserted between characters.

Any hyphen is counted as part of 22 digits. Character codes 20H to FEH (except control codes 00H to 1FH, and FFH) can be used.

A 21 or less digit number is right-aligned with space padding to fill 22 digits.

* Note:

If 16 or more digit sample ID numbers are going to be used, set the SP-10 maximum number of digits displayed for sample IDs to “Max. 22”.

* Note:

If your SP-10 is Ver. 00-04 or lower, use sample IDs of up to 15 digits.

In this case, align the number to the right with space padding to fill 22 digits.

Ex.) “△△△△△△△△△△△△△△1234567890” (The symbol △ represents a space (20h).)

3) Sample Number Attribute

Indicates how the sample number was determined.

“M”: The sample number was manually input.

“A”: The sample number was automatically assigned.

“B”: The sample number was input by means of a barcode label.

7.2 Analysis Order Information Format

The host computer gives an order for smear and staining in response to the order inquiry from the SP-10, whereby the SP-10 receives the order. Use the following format to give the order:

Table 7: Analysis Order Information Format

Data	Size	Right or left aligned	Space or zero padding	Remarks
STX	1	-	-	(02H)
Text Distinction Code	2	-	-	Fixed to "S3".
Sample ID Number	22	Right aligned	Space padding	Ex.: "1234567890"
HCT	4	Right aligned	Zero padding	If no data is available due to analysis error etc., fill with asterisks (*).
WBC	6	Right aligned	Zero padding	
RBC	5	Right aligned	Zero padding	
Number of Prepared Slides	1	-	-	"0": Do not prepare slides. "1": Prepare 1 slide. "2": Prepare 2 slides. "3": Prepare 1 slide with default settings.
Print Number 1	15	Left aligned	Space padding	Content to be printed on the 1st slide (If nothing is to be printed, fill with spaces.)
Print Number 2	15	Left aligned	Space padding	
Print Number 3	15	Left aligned	Space padding	
Reserved 1	6	-	-	"000000" (fixed)
Reserved 2	2	-	-	"00" (fixed)
Designated 1st Slide Glass	1	-	-	"0": Either slide glass can be used. "1": Use slide glass 1. "2": Use slide glass 2.
Designated 2nd Slide Glass	1	-	-	
Reason for Preparation	1	-	-	"1": Order for slide preparation "2": Order based on results generated by analyzer
Print Number 4	15	Left aligned	Space padding	Content to be printed on the 2nd slide (If 2nd slide is not to be prepared, fill with spaces.)
Print Number 5	15	Left aligned	Space padding	
Print Number 6	15	Left aligned	Space padding	
Reserved 3	2	-	-	Fixed to " " (two space characters)
Print Info 1	50	Left aligned	Space padding	Data for 2D barcode to be printed (1st slide)
Print Info 2	50	Left aligned	Space padding	Data for 2D barcode to be printed (If 2nd slide is not to be prepared, fill with spaces.)
Reserved 4	10	-	-	(Fill with spaces)
ETX	1	-	-	(03H)
Total	255			

1) Text Distinction Code

Set this parameter to "S3".

2) Sample ID Number

Identifies the inquired sample.

Set this parameter to the same number as the "Inquired Sample Number" described in "7.1 Slide Preparation Order Inquiry Format". Any number inconsistent with the one transmitted from the SP-10 for inquiry will result in an error.

3) HCT

Indicates the HCT test result for the inquired sample.

Set to a 4 or less digit number.

If no HCT data is available, fill with asterisks (*).

Align any 3 or less digit number to the right with zero padding to fill 4 digits.

Ex.) "0402" (40.2%)

"****" (No data available)

4) WBC

Indicates the WBC test result for the inquired sample.

Set to a 6 or less digit number.

If no WBC data is available, fill with asterisks (*).

Align any 5 or less digit number to the right with zero padding to fill 6 digits.

Ex.) "000600" (600 x 10⁶/μL)

"*****" (No data available)

5) RBC

Indicates the RBC test result for the inquired sample.

Set to a 5 or less digit number.

If no RBC data is available, fill with asterisks (*).

Align any 4 or less digit number to the right with zero padding to fill 5 digits.

Ex.) "00500" (500 x 10⁴/μL)

"*****" (No data available)

6) Number of Prepared Slides

Indicates the number of slides to be prepared. Set this parameter to one of the following:

"0": Do not prepare slides.

"1": Prepare 1 slide.

"2": Prepare 2 slides.

"3": Prepare 1 slide with default settings.

Note: If the Number of Prepared Slides is set to "3" (default), a slide will be prepared according to the settings preset in the SP-10 without reference to any specified values except the Number of Prepared Slides and Sample ID Number.

In this case, the word "Host" is displayed in the Order field of the sample list screen.

7) Print Number 1, Print Number 2, Print Number 3

Indicates contents to be printed on the frosted area of the 1st slide.

If nothing is to be printed, fill the field with 15 spaces (20H).

If the content length is less than 15 digits, left-align the content with space (20H) padding to fill 15 digits.

Character codes that can be used are as follows:

Chinese (simplified)	ASCII codes, GB2312
Chinese (traditional)	ASCII codes, Big5
Korean	ASCII codes, KS C 5601
	(excluding Chinese character codes 0xCA to 0xFD)
Other	20h to 7Eh of Codepage1252

Print Number 1: Content to be printed in the 1st line on the 1st slide

Print Number 2: Content to be printed in the 2nd line on the 1st slide

Print Number 3: Content to be printed in the 3rd line on the 1st slide

The maximum printable length on a slide may be less than 15 digits depending on the print format.

For more information, refer to the instruction manual.

8) Reserved 2

Transmit "00" (30H).

9) Designated 1st Slide Glass

Transmit one of the following as the slide glass to be used for the 1st slide.

"0": Do not specify any slide glass.

"1": Use a slide glass in the Slide Cassette 1.

"2": Use a slide glass in the Slide Cassette 2.

10) Designated 2nd Slide Glass

Transmit one of the following as the slide glass to be used for the 2nd slide.

If the Number of Prepared Slides is set to "1" (1 sample) or "3" (1 sample with the default smear settings), this 2nd slide setting is ignored.

"0": Do not specify any slide glass.

"1": Use a slide glass in the Slide Cassette 1.

"2": Use a slide glass in the Slide Cassette 2.

11) Reason for Preparation

Transmit one of the following to indicate the source of (or reason for) the order:

"1": The word "Host" is displayed in the "Order" field of the sample list screen.

"2": The word "Positive" is displayed in the "Order" field of the sample list screen.

12) Print Number 4, Print Number 5, Print Number 6

Indicates contents to be printed on the frosted area of the 2nd slide.

If nothing is to be printed, fill the field with 15 spaces (20H).

If the content length is less than 15 digits, left-align the content with space (20H) padding to fill 15 digits.

If the Number of Prepared Slides is set to “1” (1 slide) or “3” (1 slide with default smear settings), the Printed Numbers 4, 5, and 6 are ignored.

Character codes that can be used are as follows:

Chinese (simplified)	ASCII codes, GB2312
Chinese (traditional)	ASCII codes, Big5
Korean	ASCII codes, KS C 5601 (excluding Chinese character codes 0xCA to 0xFD)
Other	20h to 7Eh of Codepage1252

Print Number 4: Content to be printed in the 1st line on the 2nd slide

Print Number 5: Content to be printed in the 2nd line on the 2nd slide

Print Number 6: Content to be printed in the 3rd line on the 2nd slide

The maximum printable length on a slide may be less than 15 digits depending on the print format. For more information, refer to the instruction manual.

13) Print Info 1, Print Info 2

If the SP-10 is connected to the thermal printer, a 2-dimensional barcode symbol can be printed on the frosted area of a slide glass.

If nothing is to be printed, fill the field with 50 spaces (20H).

If the content length is less than 50 digits, left-align the content with space (20H) padding to fill 50 digits.

If the Number of Prepared Slides is set to “1” (1 slide) or “3” (1 slide with default smear settings), the Print Info 2 is ignored.

Character codes that can be used are as follows:

Chinese (simplified)	ASCII codes, GB2312
Chinese (traditional)	ASCII codes, Big5
Korean	ASCII codes, KS C 5601 (excluding Chinese character codes 0xCA to 0xFD)
Other	20h to 7Eh of Codepage1252

The maximum printable length in the 2-dimensional barcode may be less than 50 digits depending on the print format. For more information, refer to the instruction manual.

Print Info 1: Content of the 2-dimensional barcode to be printed on the 1st slide glass

Print Info 2: Content of the 2-dimensional barcode to be printed on the 2nd slide glass

7.3 Aspiration Result Report Format

Every time an aspiration process is finished, the SP-10 reports the aspiration result to the host computer in the format described below.

This format is also used when the sample list stored in the SP-10 is manually output.

The manually output data includes the following as updated as of the time when the smearing process was completed:

- Date
- Time
- Status

Table 8: Aspiration Result Report Format

Data	Size	Right or left aligned	Space or zero padding	Remarks
STX	1	-	-	(02H)
Text Distinction Code	9	-	-	“D3520101U”: Fixed
Date	8	Right aligned	Zero padding	“YYYYMMDD”: Date when aspiration completed Ex.) “20050101” (January 1, 2005)
Time	4	Right aligned	Zero padding	“0000” - “2359”
Rack Number	6	Right aligned	Zero padding	“000001” - “999999” Set to “000000” for manual analysis.
Tube Position Number	2	Right aligned	Zero padding	Set to “00” for manual analysis.
Sample ID Number	22	Right aligned	Space padding	Ex.) “1234567890”
Operation Type	1	-	-	“0”: Sampler analysis “1”: Manual analysis
Operation Mode	1	-	-	“1”: Smear “3”: Smear and Stain
Smear Level	1	-	-	“1” - “8”
(Reserved)	1	-	-	(Filled with spaces)
(Reserved)	1	-	-	(Filled with spaces)
(Reserved)	15	-	-	(Filled with spaces)
(Reserved)	15	-	-	
(Reserved)	15	-	-	
Status	1	-	-	“0”: Success “1”: Error “2”: N/B “3”: CAN
(Reserved)	20	-	-	(Filled with spaces)
Aspiration Error Message	20	Right aligned	Space padding	“BloodSensorErr”: Blood sensor error “NotAspErr”: Blood aspiration disabled “ShortSample”: Short of sample volume “Err”: Instrument error
(Reserved)	35	-	-	(Filled with spaces)
ETX	1	-	-	(03H)
Total	179			

1) Text Distinction Code

“D3520101U” is transmitted.

2) Date

Indicates the date when aspiration was completed in the “YYYYMMDD” format.
The format cannot be changed.

YYYY: Year (4 digits)

MM: Month (2 digits, right aligned with zero padding)

DD: Day (2 digits, right aligned with zero padding)

Ex.) “20050101” for January 1, 2005

3) Time

Indicates the time when aspiration was completed in the “HHMM” format.

HH: hour (24-hour basis: “00” - “23”) (2 digits, right aligned with zero padding)

MM: minute (“00” - “59”) (2 digits, right-aligned with zero padding)

Ex.) “0905” for 9 o’clock 5 minutes

4) Rack Number

Indicates the rack number corresponding to the analyzed sample.

The Rack Number consists of 6 or less digit alphanumeric characters. A hyphen “-” (2DH) can be inserted between characters.

Any hyphen is counted as part of 6 digits.

A 5 or less digit number is right-aligned with zero padding to fill 6 digits.

This parameter is set to “000000” for manual mode where slides are prepared without racks.

5) Tube Position Number

Indicates the tube position corresponding to the analyzed sample.

The Tube Position is a 2 or less digit number.

A single digit number is right-aligned with zero padding to fill 2 digits.

This parameter is set to “00” for manual mode where slides are prepared without racks.

6) Sample ID Number

Identifies the sample where aspiration is completed.

The Sample ID Number consists of 22 or less digit characters. A hyphen “-” (2DH) can be inserted between characters.

Any hyphen is counted as part of 22 digits. Character codes 20H to FEH (except control codes 00H to 1FH, and FFH) can be used.

A 21 or less digit number is right-aligned with space padding to fill 22 digits.

* Note:

If 16 or more digit sample ID numbers are going to be used, set the SP-10 maximum number of digits displayed for sample IDs to “Max. 22”.

* Note:

If your SP-10 is Ver. 00-04 or lower, use sample IDs of up to 15 digits.

In this case, align the number to the right with space padding to fill 22 digits.

Ex.) “△△△△△△△△△△△△△△△△1234567890” (The symbol △ represents a space (20h).)

7) Operation Type

Indicates the type of operation used for preparing slides.

“0”: Auto (the sampler unit and the conveyor system were used)

“1”: Manual (the SP-10 main unit was only used with the Closed or Micro mode selected)

8) Operation Mode

Indicates the instrument operation mode used for preparing slides.

There are two operation modes:

“1”: Smear mode (makes a smear only; without staining)

“3”: Smear and Stain mode

9) Smear Level

Indicates the smear level used for preparing the slide.

A set of several setting parameters for making a smear with the SP-10 is called “a smear level”. Up to 8 smear levels can be preset.

Transmitted data	Meaning
1	Level 1
2	Level 2
3	Level 3
4	Level 4
5	Level 5
6	Level 6
7	Level 7
8	Level 8

10) Status

Indicates the status of aspiration.

“0”: Aspiration has been successfully completed.

“1”: Aspiration has been aborted due to a hardware error.

“2”: No slide was prepared due to no blood present.

“3”: No slide was prepared due to an order to cancel.

11) Aspiration Error Message

Indicates any error that occurred during blood aspiration.

An aspiration error message consists of 20 or less digit alphanumeric characters. If the length is less than 20 digits, the message is right-aligned with space (20H) padding to fill 20 digits.

“	”	:	No error
“	BloodSensorErr”	:	Blood aspiration sensor error
“	NotAspErr”	:	No blood present
“	ShortSample”	:	Short of required blood volume
“	Err”	:	Any hardware error other than above

7.4 Smearing Result Report Format

When a smearing process is finished, the SP-10 reports the smearing progress for every slide to the host computer in the format described below.

This format is also used when the sample list stored in the SP-10 is manually output.

Table 9: Smearing Result Report Format

Data	Size	Right or left aligned	Space or zero padding	Remarks
STX	1	-	-	(02H)
Text Distinction Code	9	-	-	“D1520101U”: Fixed
Date	8	Right aligned	Zero padding	“YYYYMMDD”: Date when smearing completed Ex.) “20050101” (January 1, 2005)
Time	4	Right aligned	Zero padding	“0000” - “2359”
Rack Number	6	Right aligned	Zero padding	“000001” - “999999” Set to “000000” for manual analysis
Tube Position Number	2	Right aligned	Zero padding	Set to “00” for manual analysis
Sample ID Number	22	Right aligned	Space padding	Ex.: “1234567890”
Operation Type	1	-	-	“0”: Sampler analysis “1”: Manual analysis
Operation Mode	1	-	-	“1”: Smear “3”: Smear and Stain
Smear Level	1	-	-	“1” - “8”
1st or 2nd Slide	1	-	-	“1”: 1st slide “2”: 2nd slide
Slide Glass	1	-	-	Slide glass number used for preparing the slide
Print Number 1	15	Left aligned	Space padding	(If nothing is printed, these fields are filled with spaces.)
Print Number 2	15	Left aligned	Space padding	
Print Number 3	15	Left aligned	Space padding	
Status	1	-	-	“0”: Success “1”: Error “2”: N/B “3”: CAN “4”: Recovery
Smear Error Message	20	Right aligned	Space padding	“ ”: Success “ SmearErr”: Smear error
Aspiration Error Message	20	Right aligned	Space padding	“ ”: Success “ BloodSensorErr”: Blood sensor error “ NotAspErr”: Blood aspiration disabled “ ShortSample”: Short of sample volume “ Err”: Instrument error
(Reserved)	35	-	-	(Filled with spaces)
ETX	1	-	-	(03H)
Total	179			

1) Text Distinction Code

“D1520101U” is transmitted.

2) Date

Indicates the date when smearing was completed in the “YYYYMMDD” format.
The format cannot be changed.

YYYY: Year (4 digits)

MM: Month (2 digits, right-aligned with zero padding)

DD: Day (2 digits, right-aligned with zero padding)

Ex.) “20050101” for January 1, 2005

3) Time

Indicates the time when smearing was completed in the “HHMM” format.

HH: hour (24-hour basis: “00” - “23”) (2 digits, right-aligned with zero padding)

MM: minute (“00” - “59”) (2 digits, right-aligned with zero padding)

Ex.) “0905” for 9 o'clock 5 minutes

4) Rack Number

Indicates the rack number corresponding to the analyzed sample.

The Rack Number consists of 6 or less digit alphanumeric characters. A hyphen “-” (2DH) can be inserted between characters.

Any hyphen is counted as part of 6 digits.

A 5 or less digit number is right-aligned with zero padding to fill 6 digits.

This parameter is set to “000000” for manual mode where slides are prepared without racks.

5) Tube Position Number

Indicates the tube position corresponding to the analyzed sample.

The Tube Position is a 2 or less digit number.

A single digit number is right-aligned with zero padding to fill 2 digits.

This parameter is set to “00” for manual mode where slides are prepared without racks.

6) Sample ID Number

Identifies the sample where smearing is completed.

The Sample ID Number consists of 22 or less digit characters. A hyphen “-” (2DH) can be inserted between characters.

Any hyphen is counted as part of 22 digits. Character codes 20H to FEH (except control codes 00H to 1FH, and FFH) can be used.

A 21 or less digit number is right-aligned with space padding to fill 22 digits.

* Note:

If 16 or more digit sample ID numbers are going to be used, set the SP-10 maximum number of digits displayed for sample IDs to “Max. 22”.

* Note:

If your SP-10 is Ver. 00-04 or lower, use sample IDs of up to 15 digits.

In this case, align the number to the right with space padding to fill 22 digits.

Ex.) “△△△△△△△△△△△△1234567890” (The symbol △ represents a space (20h).)

7) Operation Type

Indicates the type of operation used for preparing slides.

“0”: Auto (the sampler unit and the conveyor system were used)

“1”: Manual (the SP-10 main unit was only used with the Closed or Micro mode selected)

8) Operation Mode

Indicates the instrument operation mode used for preparing slides.

There are two operation modes:

“1”: Smear mode (makes a smear only; without staining)

“3”: Smear and Stain mode

9) Smear Level

Indicates the smear level used for preparing the slide.

A set of several setting parameters for making a smear with the SP-10 is called “a smear level”. Up to 8 smear levels can be preset.

Transmitted data	Meaning
1	Level 1
2	Level 2
3	Level 3
4	Level 4
5	Level 5
6	Level 6
7	Level 7
8	Level 8

10) 1st or 2nd Slide

Indicates which of the slides prepared by one aspiration process.

The SP-10 allows for preparation of up to 2 slides by one aspiration process.

“1”: 1st slide of one slide prepared, or 1st slide of two slides prepared

“2”: 2nd slide of two slides prepared

11) Slide Glass

Indicates which slide glass was used for preparing the slide.

“0”: None (test was cancelled and unfinished)

“1”: Slide glass in the Slide Cassette 1

“2”: Slide glass in the Slide Cassette 2

12) Print Number 1, Print Number 2, Print Number 3

Indicates the content printed on the frosted area of a slide.

If nothing was printed, the field is filled with 15 spaces (20H).

If the content is less than 15 digits, it is left-aligned with space (20H) padding to fill 15 digits.

Character codes that can be used are as follows:

Chinese (simplified) ASCII codes, GB2312

Chinese (simplified)	ASCII codes, GB2312
Chinese (traditional)	ASCII codes, Big5

Korean ASCII codes, KS C 5601

(excluding Chinese character codes 0xCA to 0xFD)

Other	20h to 7Eh of Codepage1252
-------	----------------------------

Print Number 1: Content printed in the 1st line

Print Number 2: Content printed in the 2nd line

Print Number 3: Content printed in the 3rd line

13) Status

Indicates the smearing status of the prepared slide.

“0”: Smearing has been successfully completed.

“1”: Smearing has been aborted due to a hardware error.

"2": No slide was prepared due to no blood present.

“3”: No slide was prepared due to an order to cancel.

“4”: Smearing has been completed as a Recovery slide.

The smearing result “Recovery” is not managed as of now, and thus the parameter is not set to “4”.

This is a reserved number for future extension.

14) Smear Error Message

Indicates any error that occurred during smearing.

A smear error message consists of 20 or less digit alphanumeric characters. If the length is less than 20 digits, the message is right-aligned with space (20H) padding to fill 20 digits.

“ ” : No error

“SmearErr” : Smearing aborted due to a hardware error

15) Aspiration Error Message

Indicates any error that occurred during blood aspiration.

An aspiration error message consists of 20 or less digit alphanumeric characters. If the error is less than 20 digits, it is right-aligned with space (20H) padding.

“ ” : No error

“BloodSensorErr” : Blood aspiration sensor error

“NotAspErr” : No blood present

“ShortSample” : Short of required blood volume

“Err” : Any hardware error other than above

7.5 Staining Result Report Format

When a staining process is finished, the SP-10 transmits the staining progress for every slide to the host computer in the format described below (note that the SP-10 does not transmit the progress in case an error occurs during the smearing process).

This format is also used when the sample list stored in the SP-10 is manually output (the sample list is output regardless of whether an error occurs during the smearing process).

Table 10: Staining Result Report Format

Data	Size	Right or left aligned	Space or zero padding	Remarks
STX	1	-	-	(02H)
Text Distinction Code	9	-	-	“D2520101U”: Fixed
Date	8	Right aligned	Zero padding	“YYYYMMDD”: Date when staining completed Ex.) “20050101” (January 1, 2005)
Time	4	Right aligned	Zero padding	“0000” - “2359”
Rack Number	6	Right aligned	Zero padding	“000001” - “999999” Set to “000000” for manual analysis.
Tube Position Number	2	Right aligned	Zero padding	Set to “00” for manual analysis.
Sample ID Number	22	Right aligned	Space padding	Ex.: “1234567890”
Operation Type	1	-	-	“0”: Sampler analysis “1”: Manual analysis
Operation Mode	1	-	-	“2”: Stain “3”: Smear and Stain
Smear Level	1	-	-	“1” - “8” (Filled with 0 for staining only)
1st or 2nd Slide	1	-	-	“1”: 1st slide “2”: 2nd slide
Slide Glass	1	-	-	Slide glass number used for preparing the slide “0”: No slide glass used (staining only). “1”: Slide glass 1 was used. “2”: Slide glass 2 was used.
Print Number 1	15	Left aligned	Space padding	(If nothing is printed, these fields are filled with spaces.)
Print Number 2	15	Left aligned	Space padding	
Print Number 3	15	Left aligned	Space padding	
Status	1	-	-	“0”: Success “1”: Error “2”: Recovery
Staining Error Message	20	Right aligned	Space padding	“ ”: Success “ Before Stain Err” : Error occurred before staining “ Staining1 Err” : Error in staining process 1 “ Staining2 Err” : Error in staining process 2 “ Staining3 Err” : Error in staining process 3 “ Rinse Err” : Error in rinsing “ Dry Err” : Error in drying
(Reserved)	55	-	-	(Filled with spaces)
ETX	1	-	-	(03H)
Total	179			

1) Text Distinction Code

“D2520101U” is transmitted.

2) Date

Indicates the date when staining was completed in the “YYYYMMDD” format.

The format cannot be changed.

YYYY: Year (4 digits)

MM: Month (2 digits, right-aligned with zero padding)

DD: Day (2 digits, right-aligned with zero padding)

Ex.) “20050101” for January 1, 2005

3) Time

Indicates the time when staining was completed in the “HHMM” format.

HH: hour (24-hour basis: “00” - “23”) (2 digits, right-aligned with zero padding)

MM: minute (“00” - “59”) (2 digits, right-aligned with zero padding)

Ex.) “0905” for 9 o’clock 5 minutes

4) Rack Number

Indicates the rack number corresponding to the analyzed sample.

The Rack Number consists of 6 or less digit alphanumeric characters. A hyphen “-” (2DH) can be inserted between characters.

Any hyphen is counted as part of 6 digits.

A 5 or less digit number is right-aligned with zero padding to fill 6 digits.

This parameter is set to “000000” for manual mode where slides are prepared without racks.

5) Tube Position Number

Indicates the tube position corresponding to the analyzed sample.

The Tube Position is a 2 or less digit number.

A single digit number is right-aligned with zero padding to fill 2 digits.

This parameter is set to “00” for manual mode where slides are prepared without racks.

6) Sample ID Number

Identifies the sample where staining is completed.

The Sample ID Number consists of 22 or less digit characters. A hyphen “-” (2DH) can be inserted between characters.

Any hyphen is counted as part of 22 digits. Character codes 20H to FEH (except control codes 00H to 1FH, and FFH) can be used.

A 21 or less digit number is right-aligned with space padding to fill 22 digits.

* Note:

If 16 or more digit sample ID numbers are going to be used, set the SP-10 maximum number of digits displayed for sample IDs to “Max. 22”.

* Note:

If your SP-10 is Ver. 00-04 or lower, use sample IDs of up to 15 digits.

In this case, align the number to the right with space padding to fill 22 digits.

Ex.) “△△△△△△△△△△△△△△△△1234567890” (The symbol △ represents a space (20h).)

7) Operation Type

Indicates the type of operation used for preparing slides.

“0”: Auto (the sampler unit and the conveyor system were used)

“1”: Manual (the SP-10 main unit was only used with the Closed or Micro mode selected)

8) Operation Mode

Indicates the instrument operation mode used for preparing slides.

There are two operation modes:

“2”: Stain mode (staining only; without smearing)

“3”: Smear and Stain mode

9) Smear Level

Indicates the smear level used for preparing the slide.

A set of several setting parameters for making a smear with the SP-10 is called “a smear level”. Up to 8 smear levels can be preset.

This parameter is set to “0” in the case of staining only.

Transmitted data	Meaning
0	Staining only
1	Level 1
2	Level 2
3	Level 3
4	Level 4
5	Level 5
6	Level 6
7	Level 7
8	Level 8

10) 1st or 2nd Slide

Indicates which of the slides prepared by one aspiration process.

The SP-10 allows for preparation of up to 2 slides by one aspiration process.

This parameter is set to “1” in the case of staining only.

“1”: 1st slide of one slide prepared, or 1st slide of 2 slides prepared

“2”: 2nd slide of 2 slides prepared

11) Slide Glass

Identifies the Slide Cassette number used for preparing the slide.

“0”: No slide glass used (staining only).

“1”: Slide glass in the Slide Cassette 1

“2”: Slide glass in the Slide Cassette 2

12) Print Number 1, Print Number 2, Print Number 3

Indicates the content printed on the frosted area of a slide.

If nothing was printed, the field is filled with 15 spaces (20H).

If the content is less than 15 digits, it is left-aligned with space (20H) padding to fill 15 digits.

Character codes that can be used are as follows:

Chinese (simplified)	ASCII codes, GB2312
Chinese (traditional)	ASCII codes, Big5
Korean	ASCII codes, KS C 5601 (excluding Chinese character codes 0xCA to 0xFD)
Other	20h to 7Eh of Codepage1252

Print Number 1: Content printed in the 1st line

Print Number 2: Content printed in the 2nd line

Print Number 3: Content printed in the 3rd line

13) Status

Indicates the staining status of the prepared slide.

“0”: Staining has been successfully completed.

“1”: Staining has been aborted due to a hardware error.

“2”: Staining has been completed as a Recovery slide.

Depending on the instrument settings, either “0” or “1” can be set and output for the sample whose slide preparation result is “Recovery”.

In this case, the word “Recovery” is displayed in the sample list screen, but either “0” or “1” is assigned to the output result.

14) Staining Error Message

Indicates any error that occurred during staining.

A staining error message consists of 20 or less digit alphanumeric characters. If the message length is less than 20 digits, it is right-aligned with space (20H) padding to fill 20 digits.

“	”	: No error
“	Before Stain Err”	: An error occurred before the staining process.
“	Staining1 Err”	: An error occurred during staining process 1.
“	Staining2 Err”	: An error occurred during staining process 2.
“	Staining3 Err”	: An error occurred during staining process 3.
“	Rinse Err”	: An error occurred during rinsing process.
“	Dry Err”	: An error occurred during drying process.

7.6 Manual Print Content Inquiry Format

The SP-10 can be used to only print data on a slide glass without smearing or staining.

To receive the content to be printed from the host computer, the SP-10 inquires about a print order into the host computer first. The following format is used to inquire about the print content.

Table 11: Manual Print Content Inquiry Format

Data	Size	Right or left aligned	Space or zero padding	Remarks
STX	1	-	-	(02H)
Text Distinction Code	2	-	-	Fixed to "R4".
Inquiry Method	1	-	-	Fixed to "1".
Inquired Sample Number	22	Right aligned	Space padding	Ex.: "A1234567890"
Sample Number Attribute	1	-	-	"M": Manual input "A": Automatic assignment by instrument "B": Barcode reader
Reserved 1	8	-	-	Fixed to " " (8 space characters)
Reserved 2	30	-	-	(Filled with spaces)
ETX	1	-	-	(03H)
Total	66			

1) Text Distinction Code

"R4" is transmitted.

2) Inquiry Method

"1" is transmitted.

3) Inquired Sample Number

Identifies the inquired sample.

The Inquired Sample Number consists of 22 or less digit characters. A hyphen "-" (2DH) can be inserted between characters.

Any hyphen is counted as part of 22 digits. Character codes 20H to FEH (except control codes 00H to 1FH, and FFH) can be used.

A 21 or less digit number is right-aligned with space padding to fill 22 digits.

* Note:

If 16 or more digit sample ID numbers are going to be used, set the SP-10 maximum number of digits displayed for sample IDs to "Max. 22".

* Note:

If your SP-10 is Ver. 00-04 or lower, use sample IDs of up to 15 digits.

In this case, align the number to the right with space padding to fill 22 digits.

Ex.) "△△△△△△△△△△△△1234567890" (The symbol △ represents a space (20h).)

4) Sample Number Attribute

Indicates how the sample number was determined.

"M": The sample number was manually input.

"A": The sample number was automatically assigned.

"B": The sample number was input by means of a barcode label.

7.7 Manual Print Content Format

The host computer provides print content in response to the print content inquiry from the SP-10, whereby the SP-10 receives the content. Use the following format to provide the content:

Table 12: Manual Print Content Format

Data	Size	Right or left aligned	Space or zero padding	Remarks
STX	1	-	-	(02H)
Text Distinction Code	2	-	-	Fixed to "S4".
Sample ID Number	22	Right aligned	Space padding	Ex.: "1234567890"
Reserved 1	6	-	-	"000000" (fixed)
Reserved 2	2	-	-	"00" (fixed)
Number of Slides Printed	1	-	-	"0": Do not print. "1": Print on 1 slide. "2": Print on 2 slides.
Print Number 1	15	Left aligned	Space padding	Content to be printed on the 1st slide (If nothing is to be printed, fill these fields with spaces.)
Print Number 2	15	Left aligned	Space padding	
Print Number 3	15	Left aligned	Space padding	
Designated 1st Slide Glass	1	-	-	"0": Either slide glass can be used. "1": Use slide glass 1. "2": Use slide glass 2.
Designated 2nd Slide Glass	1	-	-	
Print Number 4	15	Left aligned	Space padding	
Print Number 5	15	Left aligned	Space padding	Content to be printed on the 2nd slide (If nothing is to be printed, fill these fields with spaces.)
Print Number 6	15	Left aligned	Space padding	
Reserved 3	2	-	-	
Print Info 1	50	Left aligned	Space padding	Data for 2D barcode to be printed (1st slide)
Print Info 2	50	Left aligned	Space padding	Data for 2D barcode to be printed (2nd slide)
Reserved 4	26	-	-	(Fill with spaces)
ETX	1	-	-	(03H)
Total	255			

1) Text Distinction Code

Transmit "S4".

2) Sample ID Number

Identifies the inquired sample.

Set to the same number as the "Inquired Sample Number" described under "Manual Print Content Inquiry Format". Any number inconsistent with the one transmitted from the SP-10 for inquiry will result in an error.

3) Number of Slides Printed

Indicates the number of slide glasses on which the content will be printed. Transmit one of the following:

- “0”: Do not print.
- “1”: Print on 1 slide.
- “2”: Print on 2 slides.

4) Print Number 1, Print Number 2, Print Number 3

Indicates contents to be printed on the frosted area of the 1st slide.

If nothing is to be printed, fill the field with 15 spaces (20H).

If the content length is less than 15 digits, left-align the content with space (20H) padding to fill 15 digits.

Character codes that can be used are as follows:

Chinese (simplified)	ASCII codes, GB2312
Chinese (traditional)	ASCII codes, Big5
Korean	ASCII codes, KS C 5601 (excluding Chinese character codes 0xCA to 0xFD)
Other	20h to 7Eh of Codepage1252

Print Number 1: Content to be printed in the 1st line on the 1st slide

Print Number 2: Content to be printed in the 2nd line on the 1st slide

Print Number 3: Content to be printed in the 3rd line on the 1st slide

The maximum printable length on a slide may be less than 15 digits depending on the print format.
For more information, refer to the instruction manual.

5) Designated 1st Slide Glass

Transmit one of the following as the slide glass to be used for the 1st slide.

- “0”: Do not specify any slide glass.
- “1”: Use a slide glass in the Slide Cassette 1.
- “2”: Use a slide glass in the Slide Cassette 2.

6) Designated 2nd Slide Glass

Transmit one of the following as the slide glass to be used for the 2nd slide.

If the Number of Slides Printed is set to “1” (1 slide), any value specified for printing on the 2nd slide glass will be ignored.

- “0”: Do not specify any slide glass.
- “1”: Use a slide glass in the Slide Cassette 1.
- “2”: Use a slide glass in the Slide Cassette 2.

7) Print Number 4, Print Number 5, Print Number 6

Indicates contents to be printed on the frosted area of the 2nd slide.

If nothing is to be printed, fill the field with 15 spaces (20H).

If the content length is less than 15 digits, left-align the content with space (20H) padding to fill 15 digits.

If the Number of Slides Printed is set to "1" (1 slide), any value specified for Print Numbers 4, 5, or 6 will be ignored.

Character codes that can be used are as follows:

Chinese (simplified)	ASCII codes, GB2312
Chinese (traditional)	ASCII codes, Big5
Korean	ASCII codes, KS C 5601
	(excluding Chinese character codes 0xCA to 0xFD)
Other	20h to 7Eh of Codepage1252

Print Number 4: Content to be printed in the 1st line on the 2nd slide

Print Number 5: Content to be printed in the 2nd line on the 2nd slide

Print Number 6: Content to be printed in the 3rd line on the 2nd slide

The maximum printable length on a slide may be less than 15 digits depending on the print format.

For more information, refer to the instruction manual.

8) Print Info 1, Print Info 2

If the SP-10 is connected to the thermal printer, a 2-dimensional barcode symbol can be printed on the frosted area of a slide glass.

If nothing is to be printed, fill the field with 50 spaces (20H).

If the content length is less than 50 digits, left-align the content with space (20H) padding to fill 50 digits.

If the Number of Slides Printed is set to "1" (1 slide), any value specified for Printed Info 2 will be ignored.

Character codes that can be used are as follows:

Chinese (simplified)	ASCII codes, GB2312
Chinese (traditional)	ASCII codes, Big5
Korean	ASCII codes, KS C 5601
	(excluding Chinese character codes 0xCA to 0xFD)
Other	20h to 7Eh of Codepage1252

Print Info 1: Content of the 2-dimensional barcode to be printed on the 1st slide glass

Print Info 2: Content of the 2-dimensional barcode to be printed on the 2nd slide glass

The maximum printable length in the 2-dimensional barcode may be less than 50 digits depending on the print format. For more information, refer to the instruction manual.

7.8 Consumables Replacement Report Format

When a consumable (staining solution 1, staining solution 2, buffer, rinse water, DiluCell CL, or methanol) is replaced, the SP-10 informs the host computer of the replacement in the following format:

Table 13: Consumables Replacement Report Format

Data	Size	Right or left aligned	Space or zero padding	Remarks
STX	1	-	-	(02H)
Text Distinction Code	8	-	-	"M1520101": Fixed
Date	8	Right aligned	Zero padding	"YYYYMMDD": Date when replacement completed Ex.) "20050101" (January 1, 2005)
Time	4	Right aligned	Zero padding	"0000" - "2359"
Consumables Information	1	-	-	Replaced consumable "1": Staining solution 1 "2": Staining solution 2 "3": Buffer "4": Rinse water "5": DiluCell CL "6": Methanol
(Reserved)	10	-	-	(Filled with spaces)
(Reserved)	30	-	-	(Filled with spaces)
ETX	1	-	-	(03H)
Total	63			

1) Text Distinction Code

"M1520101" is transmitted.

2) Date

Indicates the date when staining was completed in the "YYYYMMDD" format.
The format cannot be changed.

YYYY: Year (4 digits)

MM: Month (2 digits, right-aligned with zero padding)

DD: Day (2 digits, right-aligned with zero padding)

Ex.) "20050101" for January 1, 2005

3) Time

Indicates the time when staining was completed in the "HHMM" format.

HH: hour (24-hour basis: "00" - "23") (2 digits, right-aligned with zero padding)

MM: minute ("00" - "59") (2 digits, right-aligned with zero padding)

Ex.) "0905" for 9 o'clock 5 minutes

4) Consumables Information

Identifies the replaced consumable.

Transmitted data	Meaning
1	Staining solution 1
2	Staining solution 2
3	Buffer
4	Rinse water
5	DiluCell CL
6	Methanol

8 Examples of Communication

The following describes communication examples between the SP-10 and the host computer under the conditions:

Connection port: RS232C

Connection cable: D-SUB 9-pin RS-232C crossover cable

Communication protocol: Class B

8.1.1 Slide Preparation Order Inquiry and Analysis Order Information

SP-10	[STX] R21_____12345678901234500000000M_____ [ETX]
Host computer	[ACK]
Host computer	[STX] S3_____1234567890123450250123456123452123456789012345abcdefghijklmno ABCDEFGHIJKLMNO00000000121XABCDEFGHIJKLMNX12345678901234 Xabcdefghijklmn__12345678901234567890123456789012345678901234567890 abcdefghijklABCDEFGHIJabcdefghijklABCDEFGHIJabcdefghijkl_____ [ETX]
SP-10	[ACK]

8.1.2 Print Content Inquiry

SP-10	[STX] R41_____123456789012345M_____ [ETX]
Host computer	[ACK]
Host computer	[STX] S4_____123456789012345000000001123456789012345abcdefghijklmnoABCDEFGHIJKLMNO 00_____ 123456789012345678901234567890123456789012345678901234567890 _____ [ETX]
SP-10	[ACK]

8.1.3 Aspiration Result Report

SP-10	[STX] D3520101U20040408091800000101_____123456789012345035 0_____ [ETX]
Host computer	[ACK]

8.1.4 Smearing Result Report

SP-10	[STX] D1520101U20040408091800000101_____12345678901234503512 123456789012345abcdefghijklmnoABCDEFGHIJKLMNO 0_____ [ETX]
Host computer	[ACK]

8.1.5 Staining Result Report

SP-10	[STX]D2520101U20040408093800000101_____12345678901234503512 123456789012345abcdefghijklmnoABCDEFGHJKLMNO 0_____ [ETX]
Host computer	[ACK]

8.1.6 Consumables Replacement Report

SP-10	[STX]M15201012004040816491_____ [ETX]
Host computer	[ACK]