Chapter 6

APPENDIX

## 6-1 Transmission Specifications

6-1-1   Protocol

Transmission format   Start-stop system (asynchronous) unidirectional transmission by serial transmission format (in compliance with JIS X5101).

Data format

One character consists of the following 11 bits.

Start bit: 1 bit

Data bit: 7 bits (ASCII code)

Parity bit: 1 bit (even)

Stop bit: 2 bits

Baud rate

Baud rate can be selected out of the following 6 rates.

300, 600, 1200, 2400, 4800, 9600bps

Hand shake

Suppression by CFT and RTS are possible. (Suppression is not set by default.) XON/XOFF control is not available.

Time gap

2-second waiting time is inserted between each block (from < ETX > or < ETB > to < STX >).

Forced finish

Data transmission is sometimes forced to stop halfway by key operation. It is not promptly stopped by pressing a key, but transmission continues until < ETX > or < ETB > is output.

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Block structure is regular. One block consists of start, data and end. This is illustrated below in the following descriptions.

Start	Data	End
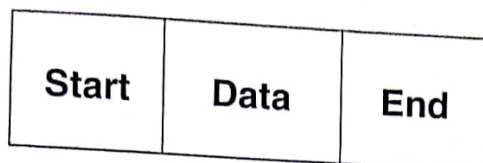
● **Start (S)**

Start of each block is < STX >.

Start of block is expressed as S in the following illustrations.

● **Data**

Data (text) of each block is the main body of transmission contents, and is expressed by arrangement of ASCII characters.

< CR >, < LF >, < RS > or < US > is sometimes involved in data. Characters other than these cannot be involved.

● **End (E)**

End of each block is < RTX > or < ETB >.

< ETX > or < ETB > is distinguished by whether it is in the last block or not.

If it is in the last block, it is < ETX >, and if it is in the middle block, it is <ETB >.

The block end is expressed by E in the following illustrations.

6-1-3 Format for measurement results (format 1)

The measurement result (format 1) is the same as the "regular format" in SP-4410 or SP-4420. The receiving program designed to receive the measurement results of SP-4420 (regular format) can normally receive the measurement results (format 1) of SP-4430.

■ Transmission data of measurement results (format 1)

When transmitting the measurement results with format 1, the number of blocks differs depending on the combination of the reagent strips.

A. When only Multi Reagent Strips are measured.

S	Header	Multi Reagent Strip measurement results	E

B. When only Single Reagent Strips are measured.

S	Header	Single Reagent Strip measurement results	E

C. When Multi and Single Reagent Strips are measured.

S	Header	Multi Reagent Strip measurement results	E

S	Single Reagent Strip measurement results	E

●Format of header

001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022
■	■	/	■	■	/	■	■						■	■	:	■	■			CR	LF

023	024	025	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044
I	D	#		■	■	■	■	■	■	■	■	■	■	■						CR	LF

●Format of Multi Reagent Strip measurement results

001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022
	M	U	L	T	I	:	■	■	■	■	■	■	■	■	■	■				CR	LF

023	024	025	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044
■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■	CR	LF

045	046	047	048	049	050	051	052	053	054	055	056	057	058	059	060	061	062	063	064	065	066
■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	CR	LF

067	068	069	070	071	072	073	074	075	076	077	078	079	080	081	082	083	084	085	086	087	088
■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■	CR	LF

089	090	091	092	093	094	095	096	097	098	099	100	101	102	103	104	105	106	107	108	109	110
■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■	CR	LF

111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132
■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■	CR	LF

133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154
■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■	CR	LF

Start	Finish	Description
008	017	Name of Multi Reagent Strip
023	027	Item name
029	029	Abnormal mark ● Within the range of standard values: Blank (20H) ● Low value: <US>(1FH) ● High value: <RS>(1EH)
030	034	Measurement value

●Format of Single Reagent Strip measurement results

001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022
■	■	■	■	■	■	■														CR	LF

023	024	025	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044
■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■	CR	LF

045	046	047	048	049	050	051	052	053	054	055	056	057	058	059	060	061	062	063	064	065	066
■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■	CR	LF

067	068	069	070	071	072	073	074	075	076	077	078	079	080	081	082	083	084	085	086	087	088
■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■	CR	LF

Start	Finish	Description
001	007	When only Single Reagent Strips are measured: Blank (20H) When Multi Reagent Strips are measured: Fixed character string "SINGLE"
023	027	Item name
029	029	Abnormal mark ● Within the range of standard values: Blank (20H) ● Low value: <US>(1FH) ● High value: <RS>(1EH)
030	034	Measurement value
036	041	Unit symbol
042	042	Temperature ● 37℃: Blank(20H) ● 30℃: " + " ● 25℃: " ✳ " ● Items other than enzyme: Blank
045	048	The same repetition as 023~044. No extra output is made. The block length of this block changes according to the number of Reagent Strips (items). For example, if the number of the Reagent Strips are 2 (2 items), the block length is completed as 66 bytes.

Start	Finish	Description
023	027	Item name
029	035	● Over the range: Fixed character string "OVER >" ● Under the range: Fixed character string "UNDER >" ● Prozone (OVER): Fixed character string "OVER >"
037	041	● Over the range: Upper limit of measurement range ● Under the range: Lower limit of measurement range ● Prozone (OVER): Upper limit of measurement range
042	042	Temperature ● 37°C: Blank(20H) ● 30°C: " + " ● 25°C: " * " ● Items other than enzyme: Blank

6-1-4   Format of measurement results (format 2)

The measurement result (format 2) is the same as the "extended format" in SP-4410 or SP-4420. The receiving program designed to receive the measurement results of SP-4420 (extended format) can normally receive the measurement results of SP-4430 (format 2).

■ Transmission data of measurement results (format 2)
A. When only Multi Reagent Strips are measured.

When transmitting the measurement results with format 2, 1 item is output as 1 block. The order of the items are, Multi Reagent Strip, Single Reagent Strip.

S	Data in Item 1	E		S	Data in Item 2	E	·······	S	Data in Item n	E
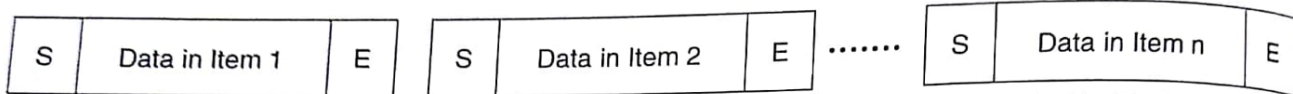
※ The end of the block is all block <ETX>.

● Format of "data in item x"

001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019
■	■	■	■	■	■	■	■	■	■		■		■	■		/	■	■

020	021	022	023	024	025	026	027	028	029	030	031	032	033	034	035	036	037	038	039
■	■	/	■	■	/	■	■		■	■	:	■	■		■			■	CR	LF

040	041	042	043	044	045	046	047	048	049	050
■	■	■	■	■	■	■	■	■	■	■

051	052	053	054	055	056	057	058	059	060	061	062	063	064	065	066	067	068	069
■	■	■	■	■		■	■	■	■	■		■	■	■	■	■	■	

070	071	072	072	074	075	076	077	078	079	080	081	082	083	084	085	086	087	088	089
0																		CR	LF